PROCEEDING OF THE EIGHTEENTH MEETING OF COMBINED AGRICULTURAL RESEARCH COUNCIL (AGRESCO) OF SAUs AND KAMDHENU UNIVERSITY OF GUJARAT - 2021-22

Organized by (Through Virtual Mode)

JUNAGADH AGRICULTURAL UNIVERSITY
JUNAGADH

DURATION (Online Mode):
MAY 04-18, 2022

Directorate of Research
Junagadh Agricultural University
Junagadh-362001

CONTENT

Sr. No.	Particulars		Page No.
I	Inaugural Session		i-iv
II	AGRESCO sub committees proceeding		
	18.1	Crop Improvement	1-17
	18.2	Crop Production/ Natural Resource Management	18-75
	18.3	Plant Protection / Crop Protection	76-126
	18.4	Horticulture & Forestry	127-160
	18.5	Agricultural Engineering & AIT	161-171
	18.6	Animal Science (Animal Health, Animal Production & Fisheries Science)	172-195
	18.7	Dairy Science/ Food Technology/ Food Processing Technology & Bio Energy	196-210
	18.8	Basic Science & Humanities/ Plant Physiology/ Bio-chemistry & Biotechnology	211-222
	18.9	Social Science	223-244
III	Plenary Session		v-ix
IV	Summary of the Recommendations and New Technical Programmes		x

Proceedings of 18thMeeting of Combined AGRESCO meeting of SAUs and Kamdhenu University (Virtual Mode) (May 04-18, 2022)

INAUGURAL SESSION

Date: 04/05/2022 **Time: 09.00 hrs onwards**

Welcome address	**:**	Dr. D. R. Mehta, Director of Research, JAU, Junagadh
Chairman	**:**	Prof. (Dr.) N. K. Gontia, Hon'ble VC, JAU, Junagadh
Co-chairmen	**:**	Dr. R. M. Chauhan, Hon'ble VC, SDAU, Sardarkrushinagar Dr. Z. P. Patel, Hon'ble VC, NAU, Navsari Dr. K. B. Kathiria, Hon'ble VC, AAU and GOAU, Anand Dr. N. H. Kelawala, Hon'ble VC, KU, Gandhinagar
Rapporteurs	**:**	Dr. P. Mohnot, ADR, JAU Dr. S. N. Shah, ADR, AAU Dr. Lalit Mahatma, ADR, NAU Dr. L. D. Parmar, ADR, SDAU
Vote of Thanks	**:**	Dr. K. B. Parmar, Associate Director of Research, JAU, Junagadh

The meeting was commenced at 9:00 am through virtual platform hosted by Junagadh Agricultural University, Junagadh under the chairmanship of Prof. (Dr.) N. K. Gontia, Hon’ble Vice Chancellor, JAU in august presence of Dr. K. B. Kathiria, Hon’ble Vice Chancellor, AAU & GOAU, Anand; Dr. R. M. Chauhan, Hon’ble Vice Chancellor, SDAU, Sardarkrushinagar; Dr. Z. P. Patel, Hon’ble Vice Chancellor, NAU, Navsari and Dr. N. H. Kelawala, Hon’ble Vice Chancellor, KU, Gandhinagar along with Directors of Research, Directors of Extension Education and Associate Directors of Research of all SAU’s, Conveners of various AGRESCO Subcommittee and Scientists from all the five universities remained present. The programme was started with a prayer for well being of the professional, farmers and all human beings.

Dr. D. R. Mehta, Director of Research and Dean PG studies, JAU, Junagadh welcomed all the Hon’ble VC of all SAU’s, Directors of Research and Dean PGS, Director of Extension Education, Deans, Directors, Senior Professors and Scientists, Conveners of different AGRESCO Sub-committees, Scientists and colleagues. In his welcome address, the SAUs & KU are contributing through development and dissemination of new technology to the end user and also developing competent human resources to address present and future requirement of the state. During the last decade Gujarat has recorded highly appreciable average agricultural growth rate due to the committed and dedicated efforts by all the stalkholders including interprising, responsive and hard working farmers of the state. He has also brief for addressing some issues like Refinement of seed-production technologies and production of breeder seed, development of location specific, cost effective, eco-friendly production technologies, conservation and sustainable use of genetic resources of plants, insects, enhancing the shelf life of perishable fruits, vegetables, flowers, product diversification and value addition for better profitability, developing system for productive use of nutrients, water and reducing impact of pest and disease through the use of innovative diagnostic techniques.

He highlighted that, in this combined AGRESCO, we are discussing total of 942 programmes, including 21 new varieties proposed for approval besides 220 technologies for farming recommendations, 172 for scientific recommendations, industries and policy makers are as well as 529 new technical programmes formulated by scientific faculty of all SAU's to address problems of agricultural, animal husbandry and allied fields will be discussed. At last, he thanked all the deans and scientific faculty for their efforts in the form of recommendations for the benefits of the farmers.

Dr. R. M. Chauhan, Hon'ble Vice Chancellor, SDAU, Sardarkrushinagar narrated the achievements of SDAU during last year in terms of awards, Rural Business Incubation Center (RBIC) sanctioned by NABARD, contribution of university in TAUKTE, establishment/re-organization of new research centers, collaboration of SDAU with other renowned institutions, patents *etc*., Further he informed that SDAU, Sardarkrushinagar has proposed four new varieties *viz;* Gujarat Mung 9 (GM 9) (Banas Kuber), Fodder sorghum variety GDFS 1 (Banas Chari), Pearl millet hybrid GDHB 11 (Banas Nayan) and Mustard variety GM7 (Banas Anmol) for its approval and 2 varieties *viz;* Fenugreek variety Gujarat Methi 3 (GM 3) and Bread Wheat variety GW 513 for their endorsement. Besides this, 63 technological recommendations for farming communities and 26 for scientific communities are proposed for their approval. In addition, scientists of the university formulated 104 new technical programs for solutions of the applied and basic problems of agriculture and allied field. At last, he stated that SDAU's achievement in research is possible only through visionary mode, zeal of scientific faculty and experts and at last thanked all the Deans, faculty and scientific faculty for actively working in teaching, research and extension to solve the farmers' problems.

Dr. N. H. Kelawala, Hon'ble Vice Chancellor, Kamdhenu University, Gandhinagar in his address appreciated the efforts of scientific faculty for bringing recommendations to the farming and scientific communities and also requested to churn the new technical programmes (NTPs) with thorough discussion on NTPs proposed from Animal Health, animal production and Dairy & FPT proposed by scientists.

Dr. K. B. Kathiria, Hon'ble Vice Chancellor, AAU and GOAU, Anand in his address said that AAU, Anand has proposed total five varieties of different crops, 136 recommendations (farmers + Scientific) and 158 new technical programmes. He emphasized that two of the varieties proposed this time in crops like mango and ornamental okra are very unique in their type. A mango variety developed has most of the attributes at par with the popular Kesar variety of mango along with higher quantity of pulp. A new variety of ornamental Okra has been developed and proposed in this AGRESCO which is quite unique in its type being vegetative in propagation, responsive to pruning, can be grown like a hedge with beautiful flowers with other attributes which very well fulfil the criteria of an ornamental plant. He further added that this ornamental variety of okra will be a kind of first ornamental variety of Okra in the country, which has been developed through distant hybridization by the "Centre for Distant Hybridization in Field and Fruit Crops" at AAU. He further stated that AAU, Anand has good strength in Biotechnology and in the coming years, good formulations may come up in the form of recommendations / new technology. He emphasized that all the SAUs of Gujarat must have a uniform policy regarding the testing trials for application of biostimulants under agency projects. As done in the past, JAU, Junagadh should coordinate with all the SAUs for other agency projects, for which AAU has already submitted the draft suggestions to JAU, Junagadh.

Dr. Z. P. Patel, Hon'ble Vice Chancellor, NAU, Navsari in his address mentioned that NAU, Navsari has proposed 53 recommendations for the farming community of these, 18 recommendations are from NRM; 6 from Plant Protection; 18 from Horticulture & Forestry; 2 from Agricultural Engineering; 7 from Animal Science and 2 from Dairy Science group. NAU also has proposed 39 scientific recommendations and 122 New Technical Programmes. Among these, NAU has proposed six varieties including two varieties of rice, one variety each of cowpea, sun-hemp, finger millet and sorghum. Out of these, finger millet variety CFMV-3 (Ekvijay) and Sorghum variety GNJ-1 are endorsed varieties. He emphasized that all the SAUs of Gujarat are having excellent infrastructure, state of art instrumentation facilities and committed manpower. We should emphasize on advanced research programme or projects so that we can come out with more authenticated, robust and long lasting technologies for the development of agriculture in the state and nation. The technologies developed should be logical and based on scientific investigation. He congratulated the scientists for their recommendations and conveyed best wishes to all the scientists/faculty members of SAUs of Gujarat for working hard in developing varieties, technologies for farmers and generation of scientific information in large numbers which shall empower the farmers of this state. He wished 18th Combined AGRESCO for a grand success.

Dr. N. K. Gontia, Hon'ble Vice Chancellor, JAU, Junagadh in his chairmanship address expressed that contribution of SAUs and KU in growth and development of agriculture sector through development and propagation of new varieties, farm implements, production technologies among the farmers. He has also highlighted the significant achievements in agriculture and allied sector by Junagadh Agricultural University.

1. In Gujarat State Institutional Rating Framework (GSIRF) 2021-22, Junagadh Agricultural University got 5th position with Five Star Rating.
2. JAU secured **40th rank** by ICAR ranking of Agricultural Universities among all SAUs, CAU and Deemed Universities for the year 2020.
3. CAET, JAU, Junagadh ranked 5th for Outstanding Engineering Colleges of Excellence in India and 2nd in Gujarat State as per CSR-GHRDC Engineering Colleges Survey 2021.
4. **Main Pearl millet Research Station, JAU, Jamnagar** received **Best Performing ICAR AICRP on Pearl millet Centre (2020-21) Award** to carry out all the assigned research work by ICAR-All India Coordinated Research Project on Pearl Millet Jodhpur, Rajasthan.
5. **Total 27 other awards of National/State level** were received by JAU Scientists.
6. JAU under **green initiatives** took firm steps by installing **600 kW** Solar Power Plants on different buildings with earning Carbon Credit of approximate **559.2 ton/year** and got **Clean Campus Award** at district level.
7. The 34 UG students of College of Agriculture, College of Horticulture and College of Agricultural Engineering and Technology of JAU selected for three months international training at the **University of California, Davis, USA; Nebraska, USA; Wageningen University & Research, Netherlands; AIT, Thailand; ICBA, Dubai and HUJ, Israel** under the aegis of NAHEP-IDP of ICAR, New Delhi.
8. Six MoUs have been done by University with different Agro-based industries for collaborative activities.

He also suggest to prepare road map for addressing the following prime issues.

- In respect of the crop improvement, there is need to develop climate resilient varieties i.e. early and late sowing variety, salinity/drought tolerant variety, heat tolerant with use of the biotechnology tools especially with MAS and genome editing.

- Need to initiate new research experiment with concept of organic/cow based organic farming, low cost natural farming, Zero budget, MIS, conservation tillage, integrated farming system, precision farming, fustigation, micronutrients in context to crop production.
- Due to climate change, introduction of new pests and diseass in many crops, over use of pesticides and fungicides which reduce micro fauna and flora in soil. Hence there is need to research on use of bio-pesticide, bio-agent and bio-rational for plant protection in field and horticultural crops. There is a need to have more efforts on apiculture and mushroom cultivation.
- In addition to mandatory horticultural crops, there is a need to weightage on minor fruit crops, flower crops, medicinal crops, ornamental crops and unexploited vegetables.
- Water harvesting is one of the techniques more effective in climate change, and therefore, there is need to strengthen R & D and propagate the technology among the farmers for raising cultivated areas by more than one crops in a year. Need to promotion of photovoltaic crop cultivation with additional generation of renewable energy. Also need to promote post-harvest management like grading, cleaning through mechanization and value addition through processing for obtaining higher price on sustainable basis.
- Need to strengthen R & D for minimize crop damage by vertebrate animals, expansion of pure breed programme through AI and mobile diagnosis service at village level.
- Micro-propagation through plant tissue culture particular in horticulture crops is the needs of a days. Varietal development by use of the biotechnological tools helps to accelerate plant breeding programmes. Role of biochemical in bearing and flowering in fruit crops and quality of the produce are also important.
- Need to study of socio-economic impact of production technologies.

At the end, Dr. K. B. Parmar, Associate Director of Research, JAU, Junagadh expressed the vote of thanks to all the Vice Chancellors, Director of Research, Director of Extension Education, Conveners of various AGRESCO sub committes, scientists and all the technical staff from different SAUs and KU for joining the inaugural session of 18th combined AGRESCO meeting through virtual mode. He has also thanks to the technical staff and all others who are directly or indirectly joined and made success of this meeting.

18.1 CROP IMPROVEMENT

DATE: May 07-09, 2022

Chairman	Dr. K. B. Kathiria, Honorable Vice-Chancellor, AAU, Anand
Co-Chairmen	1) Dr. S. D. Solanki, Dean (Agri.), SDAU, Sardarkrushinagar 2) Dr. K. H. Dabhi, Research Scientist (Wheat), JAU, Junagadh
Rapporteurs	1) Dr. M. G. Valu, Research Scientist (Cotton), JAU, Junagadh 2) Dr. G. B. Patil, Assistant Professor, Dept. of Agri. Biotech., AAU, Anand 3) Dr. R. K. Patel, Associate Professor, Dept. of GPB, NAU, Navsari 4) Dr. N. B. Patel, Associate Professor, Dept. of GPB, SDAU, SKNagar
Statistician	Dr. D. J. Parmar, Associate Professor, AAU, Anand

The 18th Combined AGRESCO online meeting of four SAUs for Crop Improvement Sub-committee for release proposals / recommendations and new technical programmes was held during 7 -9 May, 2022 hosted by JAU, Junagadh. At the outset, Dr. K. B. Kathiria, Chairman of the Combined AGRESCO of Crop Improvement Sub-committee meeting and Hon'ble Vice Chancellor, AAU, Anand welcomed all the Vice Chancellors of SAUs, Co-Chairmen, Conveners and scientists of crop improvement sub-committee. In his welcome speech, he appreciated the research activities carried out for releasing new varieties/recommendations by different scientists.

Presentation of release proposal, recommendations and new technical programmes by Conveners of SAUs

Sr.	Name	Designation & University
1	Dr. R. B. Madariya	Research Scientist (Groundnut), MORS, JAU, Junagadh
2	Dr. J. N. Patel	Research Scientist, BTRS, AAU, Anand
3	Dr. D. A. Chauhan	Associate Research Scientist, Nodal Officer, NAU, Navsari
4	Dr. M. P. Patel	Research Scientist, PRS, SDAU, Sardarkrushinagar

Summary of the Release Proposals and Recommendations

Name of University	Proposed			Approved		
	Crop Varieties	Farmer Reco.	Scientific Reco.	Crop Varieties	Farmer Reco.	Scientific Reco.
JAU	4	-	1	4	-	0
AAU	5	-	-	5	-	-
NAU	6	-	-	6	-	-
SDAU	6	1	2	6	1	1+1*
Total	**21**	**1**	**3**	**21**	**1**	**1**

* Scientific recommendation of SDAU shifted to Basic Science Subcommittee

18.1.1 RELEASE PROPOSALS OF CROP VARIETIES AND HYBRIDS/ JUNAGADH AGRICULTURAL UNIVERSITY

Sr. No.	Title/ Suggestions/ Action
18.1.1.1	**Proposal for release of High Oleic Groundnut variety: Gujarat Groundnut 39 (GG 39: Sorath Uttam)** The farmers of Gujarat state growing groundnut during *kharif* season are recommended to grow Spanish bunch high oleic groundnut variety Gujarat Groundnut 39 (GG 39: Sorath Uttam). This variety has recorded mean pod yield of 2619 kg/ha, which was 34.43, 11.74 and 2.24 per cent higher than the check varieties, GJG 9 (1949 kg/ha), TG 37A (2248 kg/ha) and GJG 32 (2489 kg/ha), respectively. This variety has also recorded higher kernel yield, oil yield and oleic acid (>79 %)

Sr. No.	Title/ Suggestions/ Action
	than the check varieties. Stem rot disease was lower in GG 39, while tikka, rust and collar rot diseases were comparable to the check varieties. The infestation due to leaf defoliators was lower than the check varieties. ગુજરાત રાજ્યમાં ચોમાસું ઋતુમાં મગફળી ઉગાડતા ખેડૂતોને ઉભડી પ્રકારની વધારે ઓલીક એસીડ ધરાવતી મગફળીની જાત ગુજરાત મગફળી ૩૯ (જીજી ૩૯: સોરઠ ઉત્તમ) નું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. આ જાતના ડોડવાનું સરેરાશ ઉત્પાદન ૨૬૧૯ કિગ્રા/હે મળેલ છે, જે અંકુશ જાતો જીજેજી ૯ (૧૯૪૯ કિગ્રા/હે), ટીજી ૩૭ એ (૨૨૪૮ કિગ્રા/હે) અને જીજેજી ૩૨ (૨૪૮૯ કિગ્રા/હે) કરતા અનુક્રમે ૩૪.૪૩, ૧૧.૭૪ અને ૨.૨૪ ટકા વધારે માલુમ પડેલ છે. અંકુશ જાતોની સરખામણીએ આ જાતમાં દાણાનું ઉત્પાદન, તેલનું ઉત્પાદન અને ઓલીક એસીડ (>૭૯ %) વધારે મળેલ છે. આ જાતમાં થડનો સુકારો ઓછો જોવા મળેલ છે, જ્યારે પાનના ટપકા, ગેરૂ અને ઉગસુકના રોગોનું પ્રમાણ અંકુશ જાતો જેટલું જોવા મળેલ છે. આ જાતમાં પાન ખાનાર ઈયળોથી થતું નુકસાન અંકુશ જાતો કરતા ઓછું જોવા મળે છે. **Release proposal was accepted by the house with following suggestions:** 1. Provide pedigree detail in point number 5a. 2. Give DNA fingerprinting alongwith checks. ***[Action: Research Sci. (Groundnut), Main Oilseeds Res. Station, JAU, Junagadh]***
18.1.1.2	**Proposal for release of Indian bean variety: Gujarat Indian Bean 3 (GIB 3: Sorath Harita)** The farmers of Gujarat state except South Gujarat growing Indian bean (Papdi) crop during late *kharif*/ *rabi* season are recommended to grow Indian bean (Papdi) variety Gujarat Indian Bean 3 (GIB 3: Sorath Harita). It has recorded the mean green pod yield of 225.24 q/ha, which was 13.96, and 12.81 per cent higher over local check varieties; Gujarat Papdi-1 (197.65 q/ha) and GJIB 2 (148.85 q/ha), respectively. The pods of GIB 3 are medium long in size with whitish green colour. This variety contains higher protein content. This variety has cluster pod bearing habit hence, it is suitable for easy pod picking. It is moderately resistance against leaf spot, mosaic diseases whereas, pod borer damage was found low as compare to check varieties. ગુજરાત રાજ્યના, દક્ષિણ ગુજરાત સિવાયના વિસ્તારમાં પાછોતરા ખરીફ/રવી ઋતુમાં પાપડી ઉગાડતા ખેડૂતોને પાપડીની ગુજરાત પાપડી-૩ (જીઆઈબી-૩: સોરઠ હરિતા) જાતનું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. આ જાતની લીલી શીંગોનું સરેરાશ ઉત્પાદન ૨૨૫.૨૪ ક્વિ/હે મળેલ છે, જે અંકુશ જાતો ગુજરાત પાપડી-૧ (૧૯૭.૬૫ ક્વિ/હે) અને ગુજરાત જૂનાગઢ વાલોળ-૨ (૧૪૮.૮૫ ક્વિ/હે) કરતા અનુક્રમે ૧૩.૯૬, અને ૧૨.૮૧ ટકા વધારે માલુમ પડેલ છે. આ જાતની શીંગો મધ્યમ લાંબી અને સફેદ પડતા પીળા રંગની છે. આ જાત પ્રોટીનની વધુ માત્રા ધરાવે છે. આ જાતમાં શીંગો ઝૂમખામાં આવે છે, જેથી સહેલાઈથી વીણી થઇ શકે છે. આ જાત પાનના ટપકાંનો રોગ તથા પંચરંગીયા સામે મધ્યમ રોગ પ્રતિકારક શક્તિ ધરાવે છે, જ્યારે ફળ કોરી ખાનાર ઈયળથી થતું નુકસાન અંકુશ જાતો કરતા ઓછું જોવા મળે છે. **Release proposal was accepted by the house with following suggestions:** 1. Remove data of GNIB 21 (check) from the proposal. 2. Mention only distingushable traits in point 9b. 3. DUS characters should be mentioned as separate annexure. ***[Action: Research Scientist (G & O), Vegetable Research Station, JAU, Junagadh]***

Sr. No.	Title/ Suggestions/ Action
18.1.1.3	**Proposal for release of Soybean variety: Gujarat Soybean 4 (G.Soy 4: Sorath Sonali)** The farmers of Gujarat state growing soybean during *kharif* season are recommended to grow soybean variety Gujarat Soybean 4 (G.Soy 4: Sorath Sonali). This variety has recorded mean seed yield of 2160 kg/ha, which was 11.46, 43.05 and 9.87 per cent higher over the check varieties, JS 335 (1938 kg/ha), G.Soy 2 (1510 kg/ha) and GJS 3 (1966 kg/ha), respectively. This variety has also recorded 10.38 per cent high oil yield over the check variety GJS 3. This variety was found comparable to the check varieties against Rhizoctonia root rot and Cercospora leaf spot diseases. The damage due to sucking pest and leaf defoliators was also comparable in G.Soy 4 to the check varieties. ગુજરાત રાજ્યમાં ચોમાસું ઋતુમાં સોયાબીન ઉગાડતા ખેડૂતોને સોયાબીનની જાત ગુજરાત સોયાબીન ૪ (જી.સોય ૪: સોરઠ સોનાલી) નું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. આ જાતનું સરેરાશ બીજ ઉત્પાદન ૨૧૬૦ કિગ્રા/હે મળેલ છે, જે અંકુશ જાતો જેએસ ૩૩૫ (૧૯૩૮ કિગ્રા/હે), જી.સોય ૨ (૧૫૧૦ કિગ્રા/હે) અને જીજેએસ ૩ (૧૯૬૬ કિગ્રા/હે) કરતા અનુક્રમે ૧૧.૪૬, ૪૩.૦૫ અને ૯.૮૭ ટકા વધારે માલુમ પડેલ છે. અંકુશ જાત જીજેએસ ૩ ની સરખામણીએ આ જાતમાં તેલનું ઉત્પાદન ૧૦.૩૮ ટકા વધારે મળેલ છે. આ જાતમાં રાઈઝોકટોનીયાથી થતો મૂળનો કોહવારો અને સરકોસ્પોરાથી થતા પાનના રોગનું પ્રમાણ અંકુશ જાતો જેટલું જોવા મળેલ છે. આ જાતમાં ચુસીયા પ્રકારની જીવાત તથા પાન ખાનાર ઇયળોથી થતું નુકશાન પણ અંકુશ જાતો જેટલું જોવા મળેલ છે. **Release proposal was accepted by the house:** ***[Action: Research Scientist (Pl. Br.), Agricultural Research Station, JAU, Amreli]***
18.1.1.4	**Proposal for endorsement of Bt Cotton hybrid: Gujarat Cotton Hybrid-26 BG-II (G.Cot.Hy-26 BG-II: Sorath Swet Kanchan)** The farmers of Gujarat state growing Bt cotton hybrid (*Gossypium hirsutum* L.) are recommended to grow cotton hybrid Gujarat Cotton Hybrid-26 BG-II (G.Cot.Hy-26 BG-II: Sorath Swet Kanchan) under irrigated condition. This hybrid has recorded a 2798 kg/ha seed cotton yield, which was 1.8, 39.7, 21.0 and 5.4 per cent higher over BG-II check hybrids *viz*., GTHH-49 (2806 kg/ha), RCH-2 (2045 kg/ha), MRC-7351 (2255 kg/ha) and PCH-4599 (2589 kg/ha), respectively. This hybrid gave lint yield of 997 kg/ha, which was 1.1, 48.5, 28.1 and 12.0 per cent higher over BG-II check hybrids GTHH-49 (999 kg/ha), RCH-2 (680 kg/ha), MRC-7351 (767 kg/ha) and PCH-4599 (877 kg/ha), respectively. It possesses 35.3 per cent ginning outturn. This hybrid is medium in maturity. It is found resistant to alternaria leaf spot and bacterial leaf blight diseases and found moderately tolerance against sucking pests. ગુજરાત રાજ્યના પિયત વિસ્તારમાં બીટી સંકર કપાસ ઉગાડતા ખેડૂતોને હિરસુતમ કપાસની જાત ગુજરાત કપાસ સંકર-૨૬ બોલગાર્ડ ૨ (જી.કોટ.હાઇબ્રીડ-૨૬ બોલગાર્ડ ૨: સોરઠ સ્વેત કંચન) નું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. આ હાઇબ્રીડમાં કપાસનું ઉત્પાદન ૨૭૯૮ કિગ્રા/હે મળેલ છે, જે અંકુશ બોલગાર્ડ ૨ હાઇબ્રીડ જાતો જેવી કે, જીટીએચએચ-૪૯ (૨૮૦૬ કિગ્રા/હે), આરસીએચ-૨ (૨૦૪૫ કિગ્રા/હે), એમઆરસી-૭૩૫૧ (૨૨૫૫ કિગ્રા/હે) અને પીસીએચ-૪૫૯૯ (૨૫૮૯ કિગ્રા/હે) કરતા અનુક્રમે ૧.૮, ૩૯.૭, ૨૧.૦ અને ૫.૪ ટકા વધુ માલુમ પડેલ છે. આ હાઇબ્રીડ જાતમાં રૂનું ઉત્પાદન ૯૯૭ કિગ્રા/હે મળેલ છે, જે અંકુશ બોલગાર્ડ ૨ હાઇબ્રીડ જાતો જેવી કે જીટીએચએચ-૪૯ (૯૯૯ કિગ્રા/હે), આરસીએચ-૨ (૬૮૦ કિગ્રા/હે), એમઆરસી-૭૩૫૧ (૭૬૭ કિગ્રા/હે) અને પીસીએચ-૪૫૯૯ (૮૭૭ કિગ્રા/હે)

Sr. No.	Title/ Suggestions/ Action
	કરતા અનુક્રમે ૧.૧, ૪૮.૫, ૨૮.૧ અને ૧૨.૦ ટકા વધુ માલુમ પડેલ છે. આ હાઇબ્રીડ જાતમાં રૂની ટકાવારી ૩૫.૩ ટકા જોવા મળેલ છે. આ મધ્યમ પાકતી હાઇબ્રીડ જાત છે. આ હાઇબ્રીડ બળિયા ટપકા અને ખુણીયા ટપકાના રોગ સામે પ્રતિકારક શક્તિ ધરાવે છે અને ચુસીયા જીવાતો સામે મધ્યમ પ્રતિકારક શક્તિ ધરાવે છે. **Endorsement proposal was accepted by the house with following suggestion:** 1. Use the word "endorsement" instead of "release". ***[Action: Research Scientist (Cotton), Cotton Research Station, JAU, Junagadh]***

ANAND AGRICULTURAL UNIVERSITY

Sr. No.	Title/ Suggestions/ Action
18.1.1.5	**Proposal for release of Brinjal variety: Gujarat Green Brinjal 9 (Anand Harit)** The farmers of Gujarat are recommended to grow brinjal variety Gujarat Green Brinjal 9 (GGB 9: Anand Harit) during *kharif*-rabi season. The proposed genotype recorded 404 q/ha average fruit yield in Gujarat condition. It depicted 12.12, 19.48, 11.79 and 13.61 *per cent* higher fruit yield than the checks GAOB 2, GOB 1, GRB 5 and Swarna Mani Black against its respective mean values in Gujarat. The genotype has obovate shaped fruit with green fruit skin colour having smooth surface. It has less or comparable prevalence of little leaf disease reaction, jassid, whitefly as well as shoot and fruit borer damage as compared to the checks. The proposed genotype contains higher phenol (0.132%), flavanoid (92.00 mg/100 g), total antioxidant activity (0.108 mg/100g) and total soluble sugars (4.59%) as compared to the check varieties GAOB 2, GOB 1, GRB 5 and Swarna Mani Black. ગુજરાતમાં ખરીફ-રવી ઋતુમાં રીંગણનો પાક ઉગાડતા ખેડૂતોને ગુજરાત લીલા રીંગણ ૯ (જીજીબી ૯: આણંદ હરિત) જાતનું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. ગુજરાતમાં આ જાતનું સરેરાશ ઉત્પાદન ૪૦૪ ક્વિ./હે જોવા મળેલ છે. ગુજરાતમાં અંકુશ જાતો જીએઓબી ૨, જીઓબી ૧, જીઆરબી ૫ અને સ્વર્ણ મણી બ્લેક કરતા અનુક્રમે ૧૨.૧૨, ૧૯.૪૮, ૧૧.૭૯ અને ૧૩.૬૧ ટકા વધારે ઉત્પાદન આપે છે. આ જાતના ફળ લંબગોળ અને લીલા રંગના હોય છે. આ જાતમાં અંકુશ જાતોની સરખામણીમાં ગટ્ટીયા પાનનો રોગ, તડતડીયા, સફેદ માખી તથા ડૂંખ અને ફળ કોરી ખાનાર ઈયળનું નુકશાન ઓછુ અથવા તુલનાત્મક જોવા મળેલ છે. આ જાતમાં ફીનોલ (૦.૧૩૨%), ફ્લેવેનોઈડ (૯૨ મીલીગ્રામ/૧૦૦ ગ્રામ), કુલ એન્ટીઓક્ષીડન્ટ એક્ટીવીટી (૦.૧૦૮ મીલીગ્રામ/૧૦૦ ગ્રામ) અને કુલ દ્રાવ્ય શર્કરા (૪.૫૯%) ચકાસણી હેઠળની બધી જ અંકુશ જાતો કરતાં વધારે માલુમ પડેલ છે. **Release proposal was accepted by the house with following suggestions:** 1. Rename the variety GGB 9 instead of GAGB 9 as per common nomenclature. 2. Write "Gujarat" instead of "middle Gujarat" in recommendation text. 3. Add detailed pedigree. ***[Action: Research Scientist (Veg.), MVRS, AAU, Anand]***
18.1.1.6	**Proposal for release of Mustard variety: Gujarat Mustard 8 (Anand Hema)** The farmers of Gujarat are recommended to grow early maturing mustard (*Brassica juncea* L.) variety Gujarat Mustard 8 (Anand Hema) under irrigated condition during *rabi* season. The proposed genotype gave 2791 kg/ha seed yield which was 18.57 and 20.03 *per cent* higher over the check varieties GM 1 and PM 25, respectively. The proposed genotype ANDM 14-09 possesses higher oil content (38.39%) as compared to checks GM 1 (36.25%) and PM 25 (35.52%). It gave 1071.46 kg/ha oil yield which is higher than the checks GM 1 (853.69 kg/ha) and PM 25 (826.20 kg/ha). The proposed genotype is early in maturity (94 days). It gives

Sr. No.	Title/ Suggestions/ Action
	higher per day productivity (29.62 kg/day) as compared to check varieties GM 1 (21.65 kg/day) and PM 25 (22.20 kg/day). In terms of percentage increase it is 36.81 and 33.42 *per cent*, respectively. It has determinate growth habit, more branches and siliqua per plant and medium siliqua length with 13-16 seeds per siliqua. Seeds are of black color with medium size (5.11 g/1000 seed). This genotype has less or comparable prevalence of powdery mildew disease and aphid as compared to the checks GM 1 and PM 25. **ગુજરાતમાં શિયાળુ ઋતુમાં પિયત રાઈની ખેતી કરતા ખેડૂતો માટે વહેલી પાકતી ગુજરાત રાઈ ૮ (આણંદ હેમા) જાતનું વાવેતર કરવા ભલામણ કરવામાં આવે છે. આ જાતના દાણાનું ઉત્પાદન ૨૭૯૧ કિ.ગ્રા./હે. છે, જે અંકુશ જાતો ગુજરાત રાઈ ૧ અને પી. એમ. ૨૫ કરતાં અનુક્રમે ૧૮.૫૭ અને ૨૦.03 ટકા વધારે છે. આ જાતમાં તેલના ટકા (૩૮.૩૯%) અંકુશ જાતો ગુજરાત રાઈ ૧ (૩૬.૨૫%) અને પી. એમ. ૨૫ (૩૫.૫૨%) કરતાં વધારે માલુમ પડેલ છે. આ જાત તેલનું ઉત્પાદન ૧૦૭૧.૮૪ કિ.ગ્રા./હે. આપે છે જે અંકુશ જાતો ગુજરાત રાઈ ૧ (૮૫૩.૬૯ કિ.ગ્રા./હે.) અને પી. એમ. ૨૫ (૮૨૬.૨૦ કિ.ગ્રા./હે.) કરતાં વધારે છે. વહેલી પાકતી જાતોના ગ્રુપમાં આ જાતની પ્રતિ દિન ઉત્પાદકતા (૨૯.૬૨ કિ.ગ્રા./ દિવસ) અંકુશ જાતો ગુજરાત રાઈ ૧ (૨૧.૬૫ કિ.ગ્રા./દિવસ) અને પી. એમ. ૨૫ (૨૨.૨૦ કિ.ગ્રા./ દિવસ) કરતાં અનુક્રમે ૩૬.૮૧ અને ૩૩.૪૨ ટકા વધારે છે. આ જાત નિયંત્રિત વૃધ્ધિવાળી, છોડ વધારે ડાળીઓવાળા અને વધુ શીંગો ધરાવે છે. તેની શીંગો મધ્યમ લંબાઈવાળી અને ૧૩ થી ૧૬ દાણાવાળી છે. આ જાતના દાણા કાળા રંગના અને મધ્યમ કદના (૫.૧૧ ગ્રામ/૧૦૦૦ દાણા) છે. આ જાતમાં ભૂકી છારાનો રોગ અને મોલોનું પ્રમાણ અંકુશ જાતો ગુજરાત રાઈ ૧ અને પી. એમ. ૨૫ કરતા ઓછું અથવા તેના જેટલું જોવા મળેલ છે.** **Release proposal was accepted by the house with following suggestions:** 1. Rename the variety GM 8 instead of GAM 11 as per common nomenclature. 2. Remove the word determinate from the proposal and “Anthocyanin colour on stem” from point number 9b. 3. Give Scale instead of Index for aphid infestation in Table 8. 4. Remove data of GDM 4 from table 3. 5. Mention only distingushable traits in point 9b. 6. Write “Gujarat” instead of “middle Gujarat” in recommendation text. ***[Action: Research Scientist, RRS, AAU, Anand]***
18.1.1.7	**Proposal for endorsement of Chickpea variety: Jawahar Gram 14 (JG 14)** The notified chickpea variety Jawahar Gram 14 (JG 14) developed by Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur, is endorsed for *rabi* season under irrigated condition of Gujarat. The proposed variety gave 2235 kg/ha seed yield, which was 20.86, 15.55, 22.44 and 22.78 *per cent* higher over the checks GG 2, GJG 3, GG 5 and GJG 6, respectively in middle Gujarat. The variety JG 14 is early maturing with semi-erect in nature, pink flower colour, green pod, large seeded with brown colour. It is resistant against wilt disease with less prevalence of pod borer under natural field condition. It possesses higher crude protein content (18.09%), total carbohydrate (57.47%), total soluble sugar (9.35%) and phenol (0.392%) as compared to check GJG 6. **ચણાની નોટીફાઈડ જાત જવાહર ચણા૧૪ (જે.જી. ૧૪) જે જવાહરલાલ નેહરુ કૃષિ વિશ્વ વિધ્યાલય, જબલપુર દ્વારા વિકસાવવામાં આવેલ છે, તેને ગુજરાતમાં શિયાળુ ઋતુમાં પિયત ચણાનું વાવેતર કરવા માટે એન્ડોર્સ કરવામાં આવે છે. આ જાતનું મધ્ય ગુજરાતમાં બીજનું ઉત્પાદન ૨૨૩૫ કિગ્રા પ્રતિ હેક્ટર છે જે અંકુશ જાતો જી.જી.૨, જી.જે.જી.૩, જી.જી.૫ અને**

Sr. No.	Title/ Suggestions/ Action
	જી.જે.જી. ૬ ના સરેરાશ કરતા અનુક્રમે ૨૦.૮૬, ૧૫.૫૫, ૨૨.૪૪ અને ૨૨.૭૮ ટકા વધારે છે. આ જાત વહેલી પાકતી, મધ્યમ ઘેરાવો, ગુલાબી ફુલવાળી, લીલા પોપટા, મોટા બદામી રંગના દાણા ધરાવે છે. આ જાત સુકારા સામે પ્રતિકારકતા ધરાવે છે તેમજ પોપટા કોરી ખાનાર ઇયળનું પ્રમાણ આ જાતમાં અંકુશ જાતોની સરખામણીએ ઓછું જોવા મળેલ છે. આ જાતમાં ક્રુડ પ્રોટીન (૧૮.૦૯%), કુલ કાર્બોહાઈડ્રેટ (૫૭.૪૭%), કુલ દ્રાવ્ય શર્કરા (૯.૩૫%) અને ફીનોલ (૦.૩૯૨%) અંકુશ જાત જીજેજી ૬ કરતા વધારે માલુમ પડેલ છે. **Endorsement proposal was accepted by the house with following suggestions:** 1. In title of the proposal incorporate the word “irrigated condition”. 2. Verify and edit morphological and ancillary observations in tabel 2 & 3. 3. Mention breeder seed quantity in proposal. 4. Clarify about stunt disease incidence during trial period. 5. Remove the traits (erect type of leaves, pink flower) from Point No 9b as well as from salient features. 6. Write “large seeded” instead of “medium bold seed” in salient features. 7. Check the data of wilt incidence (%) in Table No-5. 8. Write “Gujarat” instead of “middle Gujarat” in recommendation text. ***[Action: Research Scientist, TRTC, AAU, Devgadhbaria]***
18.1.1.8	**Proposal for release of Mango variety: Gujarat Mango 1 (Anand Rasraj)** The farmers of Gujarat state are recommended to grow mango variety Gujarat Mango 1 (Anand Rasraj). This mango variety gave 57.4 kg/tree (11.49 t/ha) fruit yield (mean of 7 to 9 years old trees), which is 29.86, 44.95, 30.45, 31.35, 77.16 and 27.84 *per cent* higher than checks Langra, Dashehari, Kesar, Sonpari, Sindhu and Mallika, respectively with regular fruit bearing habit. The mature fruits have broad elliptic shape in cross section, long to medium in size and smooth surface as well as yellow skin and medium yellow pulp colour at ripening. The proposed genotype has higher average fruit weight (268.2 g), pulp weight per fruit (210 g), pulp to stone ratio (7.15) and pulp to peel ratio (7.28) as compared to check variety kesar and comparable with sonpari, whereas number of fruits per plant (254) was higher than kesar and sonpari. The proposed genotype has lower fruit fly damage as compared to all the checks. This variety contains higher non-reducing sugar (14.36%), phenol (0.29%), total anti-oxidant activity (0.123%), flavanoid (0.051%), β-carotene (12.17 ppm), total carotenoids (19.03 mg/100 g) and acidity (0.219%) as compared to check varieties kesar and sonpari. The proposed genotype contains less crude fiber (0.48 %) as compared to all the checks which is an important quality character in mango fruits. ગુજરાતમાં આંબાની વાડી કરતા ખેડૂતોને આંબાની જાત ગુજરાત આંબા ૧ (આણંદ રસરાજ) નું વાવેતર કરવા ભલામણ કરવામાં આવે છે. આંબાની આ જાત સાતથી નવમા વર્ષે ૫૭.૪ કિ.ગ્રા. પ્રતિ ઝાડ (૧૧.૪૯ ટન/હે.) ફળનું ઉત્પાદન આપે છે જે અંકુશ જાતો લંગડો, દશેહરી, કેસર, સોનપરી, સિંધુ અને મલ્લિકા કરતાં અનુક્રમે ૨૯.૮૬, ૪૪.૯૫, ૩૦.૪૫, ૩૧.૩૫, ૭૭.૧૬ અને ૨૭.૮૪ ટકા વધારે છે અને દર વર્ષે ફળ બેસે છે. આ જાતના ફળ મધ્યમથી લાંબા, વચ્ચેથી ગોળ, લીસા તથા પાકે ત્યારે ઉપરથી પીળા રંગની છાલ ધરાવતા અને માવો મધ્યમ પીળા રંગનો હોય છે. આ જાતમાં ફળનું વજન (૨૬૮.૨ ગ્રામ), માવાનું વજન પ્રતિ ફળ (૨૧૦ ગ્રામ), માવા: ગોટલાનો રેશિયો (૭.૧૫), માવા: છાલનો રેશિયો (૭.૨૮) અંકુશ જાત કરતાં વધારે અને સોનપરી જેટલો માલૂમ પડેલ છે જ્યારે ફળો પ્રતિ છોડ (૨૫૪) અંકુશ જાતો કેસર અને સોનપરી કરતા વધારે છે. આ જાતમાં ફળમાખીથી થતું નુકસાન અંકુશ જાતો કરતાં

Sr. No.	Title/ Suggestions/ Action
	પ્રમાણમાં ઓછું જોવા મળેલ છે. આ જાતમાં નોન-રિડ્યૂસીંગ સુગર (૧૪.૩૬%), ફીનોલ (૦.૨૯%), કુલ એન્ટીઓકસીડન્ટ એક્ટિવિટી (૦.૧૨૩%), ફ્લેવેનોઈડ (૦.૦૫૧%), બીટા કેરોટીન (૧૨.૧૭ પીપીએમ) અને કુલ કેરોટીનોઇડ્સ (૧૯.૦૩ મિ.ગ્રા./૧૦૦ ગ્રામ) અંકુશ જાતો કેસર અને સોનપરી કરતાં વધારે છે. આ જાતના ફળમાં અંકુશ જાતોની સરખામણીએ રેસાઓનું પ્રમાણ (૦.૪૮%) ઓછું જોવા મળેલ છે જે કેરીના ફળ માટે મહત્વનો ગુણ છે. **Release proposal was accepted by the house with following suggestion:** 1. Correct the breeding method in point 5c. ***[Action: Assoc. Research Scientist, ARS, College of Agri., AAU, Jabugam]***
18.1.1.9	**Proposal for release of Ornamental Okra: Gujarat Ornamental Okra Hybrid 1 (Anand Shobha)** A novel Gujarat Ornamental Okra Hybrid 1 (Anand Shobha) developed through distant hybridization is recommended for the pot plants as well as for live ornamental hedge in parks and orchards. The proposed hybrid has cluster bearing habit, with at least one flower opening every day or alternate day. The hybrid has attractive flowers having dark red coloured on upper side of petals with creamish white streaks on lower side of petals with 7-8 hours longevity on plants. The average flower diameter is 11.0 cm and hybrid produced on an average 24 to 28 flowers/ day/plant round the year with maximum 40-45 flowers in *kharif* season. It is semi-spreading, perennial in nature and can be easily propagated through semi-hard wood cuttings. This hybrid is free from powdery mildew and YVMV. No insect pests were observed during course of evaluation due to hairiness on all the parts of the plants. It can be grown round the year and it is well suited during winter season also and bears very good flowers. It can be pruned as per the requirements to get more flowers per plant. આંતર-પ્રજાતિય સંકરણ દ્વારા વિકસાવેલ નવીન ગુજરાત સુશોભિત ભીંડા હાઈબ્રીડ ૧ (આણંદ શોભા) જાત કુંડામાં તેમજ બાગ-બગીચામાં જીવંત ફુલની વાડ તરીકે વાવેતર કરવા ભલામણ કરવામાં આવે છે. આ જાત ઝુમખામાં કળીઓ ધરાવે છે અને આ દરેક ઝુમખામાંથી દરરોજ અથવા દર બીજા દિવસે ઓછામાં ઓછું એક ફુલ ખીલે છે. આકર્ષક ફુલ ધરાવતી આ જાતમાં પાંદડીનો ઉપરનો ભાગ ઘેરા લાલ રંગનો તેમજ નીચેના ભાગમાં આછા સફેદ રંગની છાંટ હોય છે અને ૭-૮ કલાક સુધી ફુલો છોડ પર ખીલેલા રહે છે. આ જાતના ફુલોનો સરેરાશ ઘેરાવો ૧૧.૦ સેમી છે તેમજ અંદાજે વર્ષ દરમ્યાન ૨૪ થી ૨૮ ફુલો અને ચોમાસું ઋતુ દરમ્યાન મહત્તમ ૪૦ થી ૪૫ ફુલો દરરોજના એક છોડ પર આવે છે. આ જાત અર્ધફેલાતી અને બહુવર્ષાયુ છે તેમજ વાનસ્પતિક વૃધ્ધી અર્ધ-કાષ્ઠ કટકા દ્વારા થઈ શકે છે. આ જાતમાં ભુકીછારો અને પીળી નસનો પંચરંગીયો રોગ જોવા મળેલ નથી. આ જાતના છોડ પર રૂંવાટી હોવાને કારણે જીવાત જોવા મળેલ નથી. આ જાત આખા વર્ષ દરમિયાન ઉગાડી શકાય છે અને શિયાળાની ઋતુમાં પણ ખુબ સારા ફુલ આપે છે. આ જાતને જરૂરિયાત મુજબ છટણી કરવાથી એક છોડ પર વધુ ફુલો આવી શકે છે. **Release proposal was accepted by the house:** ***[Action: Research Scientist, Biotechnology, AAU, Anand]***

NAVSARI AGRICULTURAL UNIVERSITY

Sr. No.	Title/ Suggestions/ Action
18.1.1.10	**Proposal for release of Cowpea variety: Gujarat Vegetable Cowpea 9 (Shakambhari)** The farmers of Gujarat cultivating *kharif* and summer vegetable cowpea are recommended to grow Gujarat vegetable Cowpea 9 (Shakambhari) variety. The average green pod yield of this variety in *kharif* season was 6020 kg/ha with overall yield advantage of 31.4, 10.2 and 11.7 % over the checks Pusa Phalguni, GDVC-2 and AVCP-1, respectively. In summer, this variety recorded 5431 kg/ha green pod yield with overall yield advantage of 49.3, 22.5 and 37.8 % over the checks Pusa Phalguni, GDVC-2 and AVCP-1, respectively. It matures within 80-90 days (seed to seed). This variety possesses high protein content in green pods (25.4 %) as compared to checks. The green pods are thin with medium size and white seeds. Days for first green pod picking is 55-60 days and it is highly resistant to YMV disease. ગુજરાતના ચોમાસુ અને ઉનાળુ શાકભાજી ચોળીનું વાવેતર કરતાં ખેડૂતોને ગુજરાત શાકભાજી ચોળી ૯ (શાકંભરી) જાતનું વાવેતર કરવા ભલામણ કરવામાં આવે છે. આ જાત ચોમાસામાં લીલી ચોળીનું સરેરાશ ઉત્પાદન ૬૦૨૦ કિ.ગ્રા./હે. આપેલ છે, જે અન્ય અંકુશ જાતો પુસા ફાલ્ગુની, જી.ડી.વી.સી.-૨ અને એ.વી.સી.પી.-૧ કરતાં અનુક્રમે ૩૧.૪, ૧૦.૨ અને ૧૧.૭ % ઉત્પાદન વધુ છે. આ જાત ઉનાળામાં લીલી ચોળીનું સરેરાશ ઉત્પાદન ૫૪૩૧ કિ.ગ્રા./હે. આપેલ છે, જે અન્ય અંકુશ જાતો પુસા ફાલ્ગુની, જી.ડી.વી.સી.-૨ અને એ.વી.સી.પી.-૧ કરતાં અનુક્રમે ૪૯.૩, ૨૨.૫ અને ૩૭.૮ % ઉત્પાદન વધુ છે. આ જાત ૮૦-૯૦ દિવસમાં પાકે છે (બીજ થી બીજ). આ જાતમાં પ્રોટીનનું પ્રમાણ અંકુશ જાતો કરતાં વધારે છે જે લીલી શીંગમાં ૨૫.૪% છે. પાતળી લીલી શીંગ અને મધ્યમ કદનાં સફેદ રંગના દાણા ધરાવે છે. આ જાત પીળા પંચરંગીયા રોગ સામે વધુ પ્રતિકારક અને લીલી શીંગ ની પ્રથમ વીણી ૫૫-૬૦ દિવસે થાય છે. **Release proposal was accepted by the house with following suggestions:** 1. Change the proposed name as "Gujarat Vegetable Cowpea 9" 2. Include summer vegetable cowpea in the title and recommendation text. 3. Remove *kharif* trial data from Table 1 and the quality parameter data of *kharif*-2021 from Table-7. 4. Remove the average picking period duration from Table-11. 5. Remove kharif season data from Table 7. 6. Verify the data of characters No 3, 8 & 9 in Table 11 and 1, 3 & 16 in Annexure I. 7. Write "Gujarat" instead of "south Gujarat" in recommendation text. ***[Action: Associate Research Scientist, PCRS, NAU, Navsari]***
18.1.1.11	**Proposal for release of Rice variety: GR 23 (Navsari Paushtik)** The farmers of Gujarat state are recommended to grow biofortified rice variety GR 23 (Navsari Paushtik) in transplanted condition during *kharif* season. The proposed variety recorded average grain yield of 5631 kg/ha in Gujarat, which was 25.3, 37.6, 10.9 and 12.9 % higher over the check varieties GNR-2, GR-11, GAR-13 and GNR-7, respectively. It has medium slender grain, long panicle, more productive tillers and more number of grains per panicle. It has high protein content (12.18 %), intermediate amount of zinc content (20.40 ppm) and amylose content (24.80 %) with high head rice recovery (60.80%). The variety is moderately resistant against bacterial leaf blight, grain discoloration and leaf blast diseases whereas tolerant reaction against brown plant hopper and leaf folder pests. ગુજરાતમાં ખરીફ ઋતુમાં રોપાણ ડાંગરનો પાક ઉગાડતા ખેડૂતોને જી.આર. ૨૩

<table>
<tr><th>Sr. No.</th><th>Title/ Suggestions/ Action</th></tr>
<tr><td></td><td>(નવસારી પૌષ્ટિક) જાતનું વાવેતર કરવા ભલામણ કરવામાં આવે છે. ડાંગરની સુચિત જાતનું ગુજરાતમાં સરેરાશ ઉત્પાદન ૫૬૩૧ કિ.ગ્રા./હે. મળેલ છે, જે અંકુશ જાતો જી.એન.આર.-૨, જી.આર.-૧૧, જી.એ.આર.-૧૩ અને જી.એન.આર.-૭ કરતાં અનુક્રમે ૨૫.૩, ૩૭.૬, ૧૦.૯ અને ૧૨.૯% વધુ છે. આ જાતનો દાણો મધ્યમ પાતળો, કંટીની લંબાઈ, ફુટ તેમજ કંટીમાં દાણાની સંખ્યા વધુ છે. આ જાતના દાણામાં વધુ પ્રોટીન (૧૨.૧૮%), મધ્યમ ઝીંક (૨૦.૪૦ પીપીએમ) અને એમાઇલોઝ (૨૪.૮૦%) તેમજ વધુ આખા દાણાનું પ્રમાણ (૬૦.૮૦%) ધરાવે છે. ડાંગરની આ જાતમાં પાનનો સુકારા, ભુખરા દાણાનો રોગ અને પાનના કરમોડી રોગ સામે મધ્યમ પ્રતિકારક શકિત ધરાવે છે તેમજ બદામી ચુસીયા અને પાન વાળનારી ઈયળ જીવાતો સામે પ્રતિકારક શકિત ધરાવે છે.

Release proposal was accepted by the house with following suggestions:
1. Change the proposed name as “GR 23” (Navsari Paushtik)
2. Incorporate the additional quality traits data of other location.
3. Check biofortification release requirements and attach necessary data of biochemical analysis.
4. Include all centre data of AICRP testing in table 4.
[Action: Associate Research Scientist, MRRC, NAU, Navsari]</td></tr>
<tr><td>18.1.1.12</td><td>Proposal for release of Rice variety: GR 24 (Navsari Parimal)
The farmers of Gujarat state are recommended to grow early maturing, non-lodging rice variety GR 24 (Navsari Parimal) in transplanted condition during kharif season. The proposed variety recorded average grain yield of 5038 kg/ha in Gujarat, which was 21.8 and 9.0% higher over the check varieties GR-7 and GAR-3, respectively. Long slender grain rice variety, GR 24 contains intermediate amylose (24.8%) and high head rice recovery (58.2%). The proposed variety showed moderately resistance against leaf blast disease, brown plant hopper and white backed plant hopper pests.
ગુજરાતમાં ખરીફ ઋતુમાં રોપાણ ડાંગરનો પાક ઉગાડતા ખેડૂતોને વહેલી પાકતી, ઢળી ન પડે તેવી જી.આર. ૨૪ (નવસારી પરિમલ) જાતનું વાવેતર કરવા ભલામણ કરવામાં આવે છે. ડાંગરની સુચિત જાતનું ગુજરાતમાં સરેરાશ ઉત્પાદન ૫૦૩૮ કિ. ગ્રા/ હેકટર મળેલ છે, જે અંકુશ જાતો જી.આર.-૭ અને જી.એ.આર.-૩ કરતાં અનુક્રમે ૨૧.૮ અને ૯.૦ % વધુ ઉત્પાદન આવેલ છે. લાંબો અને પાતળો દાણો ધરાવતી આ જાત જી.આર. ૨૪, મધ્યમ એમાઇલોઝ (૨૪.૮%) તેમજ વધુ આખા ચોખાનું પ્રમાણ (૫૮.૨ %) ધરાવે છે. ડાંગરની સુચિત જાત પર્ણનો કરમોડી રોગ તથા બદામી અને સફેદ પીઠવાળા ચુચિયા પ્રકારની જીવાતો સામે મધ્યમ પ્રતિકારકતા ધરાવે છે.

Release proposal was accepted by the house with following suggestions:
1. Change proposed name as “GR 24” (Navsari Parimal).
2. Incorporate the AICRP trial data in final proposal.
3. Remove GNR-5 from the photograph.
4. Merge table 3 & 4 and add days to maturity and per day productivity.
5. Incorporate one year data on biochemical quality characters of different locations.
[Action: Associate Research Scientist, RRRS, NAU, Vyara]</td></tr>
<tr><td>18.1.1.13</td><td>Proposal for release of Sunnhemp variety: GSUN 1 (Vijay)
The farmers of Gujarat are recommended to grow sunnhemp variety GSUN 1 (Vijay) for green manuring. It recorded 30.75 t/ha average green biomass yield. It exhibited overall 38.20 and 44.37% green biomass yield superiority over checks K-12 (B) and Swastik, respectively. This variety recorded 50% flowering at 50-55 days after sowing. It possesses higher initial vegetative growth, fresh weight of plant, plant height, primary branches per plant, leaf length, leaf width and leaves per plant,</td></tr>
</table>

Sr. No.	Title/ Suggestions/ Action
	which are highly desirable for green manuring. It also possesses long root coupled with higher number of root nodules per plant as well as fresh weight of root nodules, which help to fix higher amount of atmospheric nitrogen into soil. It adds higher organic carbon, available N, available P_2O_5 and available K_2O into soil after green biomass soil incorporation. The lower C: N ratio favours faster decomposition of green biomass into soil. The proposed variety is moderately resistant to damping off. ગુજરાતમાં શણનો લીલો પડવાશ કરતાં ખેડૂતોને જી.એસ.યુ.એન ૧ (વિજય) જાતની ભલામણ કરવામાં આવે છે. આ જાતનું સરેરાશ લીલા બાયોમાસનું ઉત્પાદન ૩૦.૭૫ ટન/હે. મળેલ છે. આ જાત એકંદરે કે-૧૨ અને સ્વસ્તિક જેવી અંકુશ જાતો કરતાં અનુક્રમે ૩૮.૨૦ અને ૪૪.૩૭% જેટલો વધારે લીલો બાયોમાસ આપે છે. વાવણીના ૫૦-૫૫ દિવસ પછી આ જાતમાં ૫૦% ફૂલની અવસ્થા જોવા મળે છે. આ જાતમાં પ્રારંભિક વાનસ્પતિક વૃધ્ધિ, તાજા છોડનું વજન, છોડની ઉંચાઇ, ડાળીઓની સંખ્યા, પાનની લંબાઇ, પાનની પહોળાઇ તેમજ પાનની સંખ્યા વધુ હોવાથી લીલા પડવાશ માટે વધારે અનુકુળતા ધરાવે છે. આ જાતમાં મૂળની લંબાઈ, મૂળગંડિકાઓ અને મૂળગંડિકાઓનુ વજન વધારે હોવાથી વાતાવરણમાંથી જમીનમાં વધુ નાઇટ્રોજન પ્રસ્થાપિત કરે છે. લીલો પડવાશ કર્યા પછી આ જાત જમીનમાં સેન્દ્રિય કાર્બન, ઉપલબ્ધ નાઇટ્રોજન, ઉપલબ્ધ ફોસ્ફરસ તેમજ ઉપલબ્ધ પોટાશ વધુ ઉમેરે છે. આ જાત ઓછો કાર્બન: નાઇટ્રોજન ગુણોતર ધરાવતી હોવાથી ખુબ જ ઝડપથી જમીનમાં લીલા પડવાશનું વિઘટન થાય છે. આ જાત કોહવારા રોગ સામે મધ્યમ પ્રતિકારક છે. **Release proposal was accepted by the house with following suggestions:** 1. Incorporate days to 50 % flowering in recommendation text. 2. Write "Gujarat" instead of "south Gujarat" in recommendation text. 3. Indicate time of biochemical analysis in title of Table 3. 4. Add data on NPK content of the plant. ***[Action: Professor, Department of GPB, NAU, Navsari]***
18.1.1.14	**Proposal for endorsement of Finger millet variety: CFMV 3 (Ekvijay)** Finger millet variety CFMV 3 (Ekvijay) is recommended for endorsement in finger millet growing regions of Gujarat. This finger millet variety produced average grain yield of 3429 kg/ha which was 12.45 % higher over local check GNN-6 and 30.88 % higher over national check VL-352. The variety has attractive reddish brown colour with bold grain, uniform maturity and having non-lodging plant type. It is moderately resistant to foot rot as well as leaf, neck and finger blast diseases. It is also tolerant to stem borer and aphids under field condition. નાગલીની જાત સી.એફ.એમ.વી. 3 (એકવિજય) ગુજરાતનાં નાગલી ઊગાડતા વિસ્તારમાં વાવેતર માટે ભલામણ કરવામાં આવે છે. નાગલીની આ જાતનું દાણાનું સરેરાશ ઉત્પાદન ૩૪૨૯ કિ.ગ્રા./હે. મળેલ છે જે સ્થાનિક અંકુશ જાત જી.એન.એન. ૬ કરતાં ૧૨.૪૫ % અને રાષ્ટ્રીય અંકુશ જાત વી.એલ. ૩૫૨ કરતા ૩૦.૮૮ % વધુ ઉત્પાદન આવેલ છે. આ જાત લાલ કથ્થઈ રંગના ભરાવદાર અને મોટા દાણાવાળી, એકી સાથે પાકતી અને ઢળી પડવા સામે પ્રતિકારકતા ધરાવે છે. આ જાત થડનો કોહવારો તથા પાનનાં, કણસલાની ગાંઠનાં અને કણસલાનાં કરમોડીનાં રોગ સામે મધ્યમ પ્રતિકારકતા ધરાવે છે. આ જાત, થડ કોરી ખાનાર ઈયળ અને મોલો જેવી જીવાતો સામે મધ્યમ પ્રતિકારક શક્તિ ધરાવે છે. **Endorsement proposal was accepted by the house with following suggestions:** 1. Check the name of the variety with original notification. ***[Action: Associate Research Scientist, HMRS, NAU, Waghai]***

Sr. No.	Title/ Suggestions/ Action
18.1.1.15	**Proposal for endorsement of Sorghum variety: GNJ-1** Farmers of Gujarat state are recommended for endorsement of sorghum variety GNJ-1 in irrigated condition during *Rabi* season. The variety GNJ-1 produced average 2920 kg/ha grain yield and 7355 kg/ha dry fodder yield with grain yield increment of 33.7, 20.8, 14.7, 31.8 and 21.6% over check varieties Nizer Goti, BP-53, Phule Revati, CSV 216R and CSV 29R, respectively. It contains starch 63.7%, protein 10.1% in grain and Crude Protein 4.76%, Neutral Detergent Fiber 56.37% in dry fodder. The proposed variety showed moderately resistant reaction to grain mold, anthracnose, leaf blight and sugary disease. This variety showed low infestations of stem borer. ગુજરાત રાજ્યનાં ખેડૂતોને દાણાની જુવારની જાત ગુજરાત નવસારી જુવાર-૧ (જીએનજે-૧) નું વાવેતર શિયાળુ ઋતુમાં પિયત પરીસ્થિતિમાં કરવા ભલામણ કરવામાં આવે છે. જુવારની આ જાતનું પિયત વિસ્તારમાં દાણાનું સરેરાશ ઉત્પાદન ૨૯૨૦ કિગ્રા/હે તથા ઘાસચારાનું સરેરાશ ઉત્પાદન ૭૩૫૫ કિગ્રા/હે છે, જે અંકુશ જાતો નિઝર ગોટી, બીપી-૫૩, ફુલે રેવતી, સીએસવી-૨૧૬આર અને સીએસવી-૨૯આર કરતા અનુક્રમે ૩૩.૭, ૨૦.૮, ૧૪.૭, ૩૧.૮ અને ૨૧.૬ ટકા જેટલું વધુ ઉત્પાદન આપે છે. આ જાતના દાણામાં સ્ટાર્ચ ૬૩.૭%, પ્રોટીન ૧૦.૧% અને ઘાસચારામાં ક્રુડ પ્રોટીન ૪.૭૬% અને એન.ડી.એફ. ૫૬.૩૭% છે. આ જાતમાં જુવારના રોગો જેવા કે અંગારિયો, પાનના ટપકા, પાનનો ઝાળ અને મધિયા રોગ સામે મધ્યમ પ્રતિકારકતા જોવા મળેલ છે. આ જાતમાં ગાભમારાની ઇયળનો ઉપદ્રવ ઓછો જોવા મળેલ છે. **Endorsement proposal was accepted by the house with following suggestions:** 1. Check the name of the variety with original notification. ***[Action: Research Scientist, MSRS, NAU, Surat]***

SARDARKUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

Sr. No.	Title/ Suggestions/ Action
18.1.1.16	**Proposal for release of Mungbean variety: GM 9 (Banas Kuber)** The farmers of Gujarat State growing mungbean in *kharif* season are recommended to grow Gujarat Mungbean 9 (Banas Kuber) variety which was early in flowering, high yielding, synchronous maturity and resistant against MYMV. This variety gave 998 kg/ha average seed yield which was 21.12, 13.54, 8.00 and 11.98 per cent higher over the check varieties Meha (824 kg/ha), GM 4 (879 kg/ha), GM 6 (926 kg/ha) and GM 7 (818 kg/ha), respectively. Moreover, this variety also exhibited lesser damage by pod borer. ગુજરાત રાજયમાં ચોમાસુ ઋતુમાં મગની વાવણી કરતા ખેડૂતોને વહેલી તથા એક સાથે પાકતી, વધુ ઉત્પાદન આપતી અને પીળા પંચરંગીયા રોગ સામે પ્રતિકારકતા ધરાવતી જાત ગુજરાત મગ ૯ (બનાસ કુબેર)નું વાવેતર કરવા ભલામણ કરવામાં આવે છે. આ જાતના દાણાનું સરેરાશ ઉત્પાદન ૯૯૮ કિ.ગ્રા/ હે મળેલ છે, જે અંકુશ જાતો મેહા (૮૨૪ કિ.ગ્રા/હે), ગુજરાત મગ ૪ (૮૭૯ કિ.ગ્રા/હે), ગુજરાત મગ ૬ (૯૨૬ કિ.ગ્રા/હે) અને ગુજરાત મગ ૭ (૮૧૮ કિ.ગ્રા/હે) કરતાં અનુક્રમે ૨૧.૧૨, ૧૩.૫૪, ૮.૦૦ અને ૧૧.૯૮ ટકા વધારે છે. વધુમાં આ જાતમાં શિંગ કોરી ખાનાર ઇયળનો ઉપદ્રવ ઓછો જોવા મળેલ છે. **Release proposal was accepted by the house with following suggestions:** 1. Recast the recommendation para as per the standard format. 2. Test of Significance should be indicated on data and instead of locations. 3. Verify the data of test weight (Table-5).

Sr. No.	Title/ Suggestions/ Action
	4. Incorporate complete DNA finger printing related information. 5. Keep per cent increase over data uniform either one or two digit after decimal. 6. Use the word “resistant” instead of “resistance”. ***[Action: Research Scientist, Pulses Res. Station, SDAU, Sardarkrushinagar]***
18.1.1.17	**Proposal for release of Single cut fodder sorghum variety: Gujarat Fodder Sorghum 8 (GFS 8: Banas Chari)** The farmers of Gujarat state growing forage sorghum during the *Kharif* season are recommended to grow medium maturing single cut forage sorghum Gujarat Forage Sorghum 8 (GFS 8: Banas Chari). This variety has recorded mean green forage and dry fodder yield of 434 q/ha and 143 q/ha, respectively, which was 28.1, 24.2, 8.2 and 6.4% higher in green forage yield and 26.6, 17.9, 1.8 and 7.2% in dry fodder as compared to the check varieties GFS-5, GAFS-12, GFS-6 and CSV-21F (NC), respectively. This variety has very long & medium broad leaves and a thin stem diameter. It is moderately resistant to leaf blight and anthracnose diseases and exhibited lower infestation of shoot fly and stem borer. Quality point of view this variety has recorded higher TSS (% Brix) and crude protein (%) as well as low HCN content (ppm). ગુજરાત રાજ્યમાં ચોમાસુ ઘાસચારા જુવારનું વાવેતર કરતા ખેડૂતોને મધ્યમ પાકતી એક કાપણી વાળી ઘાસચારા જુવાર ગુજરાત ઘાસચારા જુવાર ૮ (જીએફએસ ૮: બનાસ ચારી) નુ વાવતેર કરવા માટે ભલામણ કરવામાં આવે છે. આ જાત હેકટરે સરેરાશ ૪૩૪ કિવન્ટલ લીલા ઘાસચારાનુ તથા ૧૪૩ કિવન્ટલ સુકા ઘાસચારાનુ ઉત્પાદન આપે છે. જે અંકુશ જાતો જીએફએસ ૫, જીએએફએસ ૧૨, જીએફએસ ૬ અને સીએસવી ૨૧ એફ કરતા અનુક્રમે ૨૮.૧, ૨૪.૨, ૮.૨ અને ૬.૪ ટકા વધુ લીલા ઘાસચારાનુ તેમજ અનુક્રમે ૨૬.૬, ૧૭.૯, ૧.૮ અને ૭.૨ ટકા વધુ સુકા ઘાસચારાનુ ઉત્પાદન મળેલ છે. આ જાત લાંબા અને મધ્યમ પહોળા પાન અને પાતળા રાડાવાળી છે. આ જાત સુકારા અને કાલવર્ણ રોગો સામે મધ્યમ પ્રતિકારક શક્તિ ધરાવે છે. આ જાતમાં સાંઠાની માખી અને ગાભમારાની ઈયળનો ઉપદ્રવ ઓછો જોવા મળેલ છે. ગુણવત્તાની દ્ર્ષ્ટીએ આ જાતમાં વધુ ટીએસએસ (%બ્રિક્સ) અને ક્રૂડ પ્રોટીન (%) તેમજ ઓછુ એચસીએન (પીપીએમ) જોવા મળેલ છે. **Release proposal was accepted by the house with following suggestions:** 1. Recast the recommendation para as per the standard format. 2. Change proposed name as “GFS 8” and consider for Gujarat state. 3. Add data of CSV 46F as a check. 4. Consider the data of Kothara for dry and green fodder in Table 1 and 2,. 5. All the DUS characteristics should be included in Table 5. 6. Check biochemical observation on TSS in Table 6. 7. Verify ancillary observations in proposal point 9b. ***[Action: Associate Research Scientist, Center for Millets Research, SDAU, Deesa]***
18.1.1.18	**Proposal for release of Pearl millet hybrid: Gujarat Hybrid Bajara 1351 (GBH 1351: Banas Nayan)** The farmers of Gujarat state growing pearl millet during summer season are recommended to grow Gujarat Hybrid Bajara 1351 (Banas Nayan). This hybrid has recorded average grain yield of 5817 kg/ha and dry fodder yield of 8274 kg/ha, which was 40.70 and 5.46 per cent higher than the check hybrid GHB 558, respectively. This hybrid also found resistant to downy mildew disease. ગુજરાતના ઉનાળુ ઋતુમાં બાજરી ઉગાડતા ખેડુતોને ગુજરાત હાઇબ્રીડ બાજરા ૧૩૫૧ (બનાસ નયન) નુ વાવેતર કરવા માટે ભલામણ કરવમાં આવે છે. આ સંકર જાતના દાણાનું સરેરાશ ઉત્પાદન ૫૮૧૭ કિગ્રા/હેક્ટર અને સુકા ચારાનું ૮૨૭૪ કિ.ગ્રા/હેકટર મળેલ છે, જે

Sr. No.	Title/ Suggestions/ Action
	અંકુશ સંકર જાત જીએચબી ૫૫૮ કરતાં અનુક્રમે ૪૦.૭૦ તથા ૫.૪૬ ટકા વધારે માલુમ પડેલ છે. આ જાત કૂતુલ રોગ સામે પણ પ્રતિકારક શકિત ધરાવતી જોવા મળેલ છે. **Release proposal was accepted by the house with following suggestions:** 1. Recast the recommendation para as per the standard format. 2. Follow uniform nomenclature of hybrid by concerning RS, PMRS, JAU, Junagadh. 3. Verify the data of helicoverpa incidence (Table-8B). 4. Incorporate downey mildew disease data of epiphytotic condition. 5. Verify the data of seed setting (%) under bag (Table-4). 6. Correct the information in Point 5c ,7a, 13 & 15. 7. Include appropriate information for recommended ecology (Point No-8). 8. Remove helicoverpa resistance from the recommendation text. 9. Add data for disease incidence of susceptible check in Table 7a. 10. Verify fodder quality data of Crude fat in Table 6c. 11. Remove grain yield from heading of Table 3c. 12. Write oil content instead of fat (%) in table 6b. 13. Remove Name of agronomist from contributors. ***[Action: Associate Research Scientist, Center for Millets Research, SDAU, Deesa]***
18.1.1.19	**Proposal for release of Mustard variety: GM 7 (Banas Anmol)** The farmers of Gujarat state growing mustard during *rabi* season are recommended to grow early maturing mustard variety Gujarat Mustard 7 (GM 7: Banas Anmol). This variety gave 2647 kg/ha average seed yield which was 13.92 and 12.47 per cent higher over check varieties GM 1 and PM 25, respectively. This variety also possesses higher oil content (39.38%) as compared to checks GM 1 (39.17%) and PM 25 (37.85%). It gave 1042 kg/ha oil yield which is higher than the checks GM 1 (910 kg/ha) and PM 25 (891 kg/ha). It is early in maturity (105 days). Seeds are of black color with medium size (6.03 g/1000 seed). It has less or comparable prevalence of powdery mildew disease and aphid as compared to the checks GM 1 and PM 25. ગુજરાત રાજયના શિયાળુ ઋતુમાં રાઈની વાવણી કરતા ખેડૂતોને રાઈની વહેલી પાકતી જાત ગુજરાત રાઈ ૭ (ગુ.રાઈ ૭: બનાસ અનમોલ) નું વાવેતર કરવા ભલામણ કરવામાં આવે છે. આ જાતના દાણાનું સરેરાશ ઉત્પાદન ૨૬૪૭ કિ.ગ્રા/હે. છે, જે અંકુશ જાતો ગુજરાત રાઈ ૧ અને પી.એમ. ૨૫ કરતાં અનુક્રમે ૧૩.૯૨ અને ૧૨.૪૭ ટકા વધારે છે. આ જાત ૩૯.૩૮ ટકા તેલ ધરાવે છે જે અંકુશ જાતો ગુજરાત રાઈ ૧ (૩૯.૧૭%) અને પી. એમ. ૨૫ (૩૭.૮૫%) કરતાં વધારે માલુમ પડેલ છે. આ જાત તેલનું ઉત્પાદન ૧૦૪૨ કિ.ગ્રા./હે. આપે છે જે અંકુશ જાતો ગુજરાત રાઈ ૧ (૯૧૦ કિ.ગ્રા./હે.) અને પી.એમ. ૨૫ (૮૯૧ કિ.ગ્રા./હે.) કરતાં વધારે છે. આ જાત વહેલી (૧૦૫ દિવસે) પાકી જાય છે. આ જાતના દાણા કાળા રંગના અને મધ્યમ કદ (૬.0૩ ગ્રામ/૧૦૦૦ દાણા) ના છે. આ જાતમાં ભૂકી છારાનો રોગ અને મોલોનું પ્રમાણ અંકુશ જાતો ગુજરાત રાઈ ૧ અને પી.એમ. ૨૫ કરતા ઓછું અથવા તેના જેટલું જોવા મળેલ છે. **Release proposal was accepted by the house with following suggestions:** 1. Recast the recommendation para as per the standard format. 2. Incorporate irrigated *rabi* conditions in Point No 8. 3. Add Pedigree detail with generation advancement 4. Remove early word from the trials name. 5. Add specific characters in recommendation. 6. Remove blank columns. 7. Write Data in two digits in table 6. ***[Action: Research Scientist, Centre for Oilseeds Res., SDAU, Sardarkrushinagar]***

Sr. No.	Title/ Suggestions/ Action
18.1.1.20	**Proposal for endorsement of fenugreek variety Gujarat Methi 3 (GM 3)** The farmers of Gujarat State growing fenugreek are recommended to grow fenugreek variety Gujarat Methi 3 (GM 3). This variety has recorded average seed yield of 2302 kg/ha, which was 3.60 per cent higher over check variety Gujarat Methi 2 at state as well as it gave 1604 kg/ha average seed yield at national level, which was 16.31 and 12.97 per cent higher over check varieties Hissar Sonali and Gujarat Methi 2, respectively. This variety is bold seeded and less prone to powdery mildew diseases. ગુજરાત રાજ્યના મેથીની વાવણી કરતા ખેડૂતોને મેથીની જાત ગુજરાત મેથી ૩ (જીએમ ૩) નું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. આ જાતનું રાજ્યમાં સરેરાશ બીજ ઉત્પાદન ૨૩૦૨ કિ.ગ્રા./હે છે, જે અંકુશ જાત ગુજરાત મેથી ૨ (જીએમ ૨) કરતા ૩.૬૦ ટકા વધારે છે. આ ઉપરાંત રાષ્ટ્રીય કક્ષાએ આ જાતનું સરેરાશ બીજ ઉત્પાદન ૧૬૦૪ કિ.ગ્રા./હે છે, જે અંકુશ જાતો હિસ્સાર સોનાલી અને ગુજરાત મેથી ૨ કરતા અનુક્રમે ૧૬.૩૧ અને ૧૨.૯૭ ટકા વધારે છે. આ જાત મોટા દાણાવાળી અને ભૂકીછારાના રોગ સામે મધ્યમ પ્રતીકારકતા ધરાવે છે. **Endorsement proposal was accepted by the house with following suggestion:** 1. Recast the recommendation para as per the standard format. ***[Action: Research Scientist, Seed Spices Research Station, SDAU, Jagudan]***
18.1.1.21	**Proposal for endorsement of bread wheat variety GW 513** The farmers of Gujarat state growing bread wheat are recommended to grow wheat variety GW 513 under irrigated timely sown condition during *rabi* season. This variety recorded mean grain yield of 5590 kg per hectare, which was 12.2 and 4.7% higher than the check varieties GW 496 and GW 366, respectively. This variety was resistant to stem rust leaf rust under artificial epiphytotic condition. GW 513 has desired levels of protein content (10.7%). This variety possessed good chapatti making quality. ગુજરાત રાજ્યના પિયત ઘઉની સમયસરની વાવણી કરતા ખેડૂતોને વધુ ઉત્પાદન આપતી અને સારી ગુણવત્તા ધરાવતી ઘઉંની જાત ગુજરાત ઘઉં ૫૧૩ (જીડબલ્યુ ૫૧૩) જાતનુ વાવેતર કરવા ભલામણ કરવામાં આવે છે. આ જાતના દાણાનું સરેરાશ ઉત્પાદન (૫૫૯૦ કિલોંગ્રામ/હેક્ટર) છે, જે અંકુશ જાતો જીડબલ્યુ ૪૯૬ અને જીડબલ્યુ ૩૬૬ કરતાં અનુક્રમે ૧૨.૨ અને ૪.૭ ટકા વધારે માલુમ પડેલ છે. આ જાત ઘઉ ના કાળા અને બદામી ગેરુ રોગ સામે પ્રતીકારક શકતિ ધરાવે છે. આ જાતમા પ્રોટીન નુ પ્રમાણ ૧૦.૭ ટકા છે. આ જાત રોટલી માટે સારી ગુણવત્તા ધરાવે છે. **Endorsement proposal was accepted by the house with following suggestion:** 1. Recast the recommendation para as per the standard format. ***[Action: Research Scientist, Wheat Research Station, SDAU, Vijapur]***

18.1.2 RECOMMENDATIONS FOR FARMERS/ SEED PRODUCERS

SARDARKUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

Sr. No.	Title and Suggestion/s
18.1.2.1	**Standardization of hybrid seed production technique in GCH 8** The castor hybrid seed producing farmers/ seed producers of GCH 8 are recommended to grow male parent DCS 89 ten days earlier than female parent JP 96

	to obtain higher hybrid seed yield with standard genetic purity. દિવેલા જી.સી.એચ. ૮ નું સંકર બીજ ઉત્પાદન કરતા ખેડૂતો તેમજ બીજ ઉત્પાદકોને પ્રમાણિત જનિનિક શુધ્ધતા યુક્ત વધારે ઉત્પાદન મેળવવા માટે નર હાર ડી.સી.એસ. ૮૯ નું વાવેતર માદા હાર જે.પી ૯૬ કરતાં દસ (૧૦) દિવસ વહેલા કરવા ભલામણ કરવામાં આવે છે. **The recommendation was accepted by the house:** ***[Action: Research Scientist, SST, SDAU, Sardarkrushinagar]***

18.1.3 RECOMMENDATIONS FOR SCIENTIFIC COMMUNITY

JUNAGADH AGRICULTURAL UNIVERSITY

Sr. No.	Title and Suggestion/s
18.1.3.1	**The effect of different seed containers and seed treatments on viability and vigour of sorghum [*Sorghum bicolor* (L.) Moench] cv. Gundari** It is informed to scientific community that the seed of Sorghum cv. Gundari after harvesting can be stored in polythene bag (700 guage) with seed treatment of Carboxin 37.5 % + Thiram 37.5 % WS (3 g/kg of seeds) for 8 months (up to late *kharif* season sowing) with good germination. **The information was not accepted by the house and dropped** **[*Action: Professor & Head, Department of Seed Sci. & Tech., JAU, Junagadh]***

SARDARKUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

Sr. No.	Title and Suggestion/s
18.1.3.2	**Evaluation of bread wheat genotypes for suitability under late sown condition** It is informed to scientific community that based on heat susceptibility index of grain yield and its attributes (late and very late sown condition), bread wheat genotypes *i.e.* GW 496, GW 11, Lok 1, GW 451and GW 2011-362 could be considered as highly heat tolerant (HSI <0.5) whereas, genotypes GW 340, GW 459, GW 461, GW 487, GW 493, GW 504, GW 512, GW 2013-482, GW 2010-288, GW 2014-582, GW 2017-803, GW 2017-807, GW 2017-808 and GW 2017-814 could be considered as moderately heat tolerant (HIS >0.5 - ≤ 0.9). Genotypes with HSI value >0.91 - <1.0 *i.e.* GW 418, GW 500 and GW 508 may be considered as heat tolerant genotypes. These genotypes could be a potential genetic resource and be utilized in wheat breeding programme aimed at suitability for late sown condition and heat stress. **The information was accepted by the house with following suggestion:** 1. Categories the identified genotypes into tolerant, moderately tolerant and highly tolerant group. ***[Action: Research Scientist, Wheat Research Station, SDAU, Vijapur]***
18.1.3.3	**Induced mutagenesis and molecular characterization of wilt resistance in cumin (*Cuminum cyminum* L.)** Gamma radiation 40 kR found effective dose of mutagen in cumin that can be used for induction of mutations. **The information was accepted by the house with following suggestion:** 1. Recast recommendation only on the basis of optimum dose of mutgen and to be reported in Basic Science group. ***[Action: Principal, College of Basic Science and Humanities, SDAU, SKNagar]***

18.1.4 NEW TECHNICAL PROGRAMMES

Summary

Name of University	Proposed	Approved	Not Approved	Remarks
JAU	1	1	-	-
AAU	5	5	-	-
NAU	0	0	-	-
SDAU	5	2	2	One NTP shifted to Basic Science
Total	**11**	**8**	**2**	**1**

JUNAGADH AGRICULTURAL UNIVERSITY

Sr. No.	Title	Suggestion/Action
18.1.4.1	Effect of pre-sowing seed treatment on germination, yield and its components in summer sesame (*Sesamum indicum* L.)	**Approved with following suggestions:** 1. Repeat the same set of trial in laboratory condition. 2. Use pre-sowing word instead of seed priming. 3. Indicate "The seeds used for experimentation will be from previous summer harvest" in experimental detail. 4. Conduct germiantion test of seed lot before experimentation. ***[Action: Professor & Head, Department of SST, JAU, Junagadh]***

ANAND AGRICULTURAL UNIVERSITY

Sr. No.	Title	Suggestion/Action
18.1.4.2	Studies on germination and seedling vigour of summer groundnut seeds stored under different packaging materials	**Approved with following suggestion:** 1. Include seed quality observations at 3, 6 and 9 months duration of storage and perform lab test before starting of the experiment. ***[Action: Assistant Professor and Head, Department of SST, BACA, AAU, Anand]***
18.1.4.3	Effect of number of fruit retention and days to fruit maturity on seed yield and quality parameters of okra	**Approved** ***[Action: Assistant Professor and Head, SST, BACA, AAU, Anand]***
18.1.4.4	Testing apical root cutting (ARC) technology in potato	**Approved** ***[Action: Unit officer, AHRS, AAU, Khambholaj]***
18.1.4.5	Development of minimum seed certification standards in Isabgol	**Approved with following suggestion:** 1. Add observation of genetic purity (%). ***[Action: Associate Research Scientist and Head, M&APRS, AAU, Anand]***
18.1.4.6	Development of minimum seed certification standards in *Aloe*	**Approved** ***[Action: Associate Research Scientist and Head, M&APRS, AAU, Anand]***

SARDARKUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

Sr. No.	Title	Suggestion/Action
18.1.4.7	Development of medicinal garden	**Dropped** ***[Action: Professor and Head, Dept. of GPB, College of Agriculture, SDAU, Tharad]***

18.1.4.8	Genome-wide identification and development of microsatellite markers for Custard apple (*Annona squamosa* L.)	**Noted:** The technical programme to be shifted to Basic Science sub-committee without any modification ***[Action: Principal, College of Basic Science and Humanities, SDAU, SKNagar]***
18.1.4.9	Development of short duration cultivar in castor	**Dropped** ***[Action: Research Scientist, Castor-Mustard Res. Station, SDAU, SKNagar]***
18.1.4.10	Evaluation of clonally selected genotypes of Mehndi for North & North West Gujarat conditions	**Approved with following suggestion:** 1. Include single local check. ***[Action: Research Scientist, Agroforestry Res. station, SDAU, Sardarkrushinagar]***
18.1.4.11	Optimization of rhizome size and planting period for yield and quality characters in turmeric seed (*Curcurma longa* L)	**Approved with following suggestions:** 1. Include rhizome spoilage in observation. 2. Use Rhizome size as 20-25g, 26-30g and 31-35g for treatment 3. Modify the plot size and statistical design as FRBD instead of SPD 4. Correct the fourth plantation period. ***[Action: Research Scientist, Dept. of Seed Technology, SDAU, Sardarkrushinagar]***

General Suggestions:

1. The recommendation proposal should be strictly as per the standard format.
2. Indicate range of data instead of mean in the table of disease and insect/pests incidence.
3. Variety/hybrid is released and notified at national level through AICRP, the same should be put for endorsement in AGRESCO and state seed committee including the data of state trials even though recommended Zone covered the Gujarat state.
4. The name and number of the variety/ hybrid should be kept uniform and continuous as per standard SAUs norms.
5. The name of RA / SRF working in plan scheme should be written in release proposal for concerned crop only in which they are working for minimum three years.
6. The name of RA/ SRF should be included in recommendation provided they are working in research/ teaching plan scheme and their name should be included in new technical programme approved by AGRESCO (Involved in conduction of experiment for more than one season).
7. In release proposal, include name of the persons having role in the development, screening, evaluation and seed multiplication during evaluation of the genotype.
8. The quality parameter data should be over the year and over the location.
9. As per the vernacular letter from Research Scientist (Sorghum), NAU, Surat to Chairman, 18th AGRESCO of Crop Improvement Sub-committee and Hon'ble Vice-Chancellor, AAU, Anand, the fodder Sorghum variety, Gujarat Fodder Sorghum-7 (Tapi Chari) proposed for recommendation by Research Scientist (Sorghum), NAU, Surat in 17th AGRESCO and released in 51st State Seed Sub-committee meeting was already identified and notified by CVRC as CSV 46F (Tapi Chari) Gazette of India S.O 8(E) dated 24/12/2021. Hence, Research Scientist (Sorghum), NAU, Surat is informed to submit the corrected name of this variety in next State Seed Sub-committee meeting of Gujarat State for correction of name.

In general suggestions, point number 5 and 6 are common for implementation in all subcommittees of AGRESCO.

18.2 CROP PRODUCTION/ NATURAL RESOURCE MANAGEMENT

DATE: May 04-06, 2022 and May 10, 2022

Chairman	:	Dr. D. R. Mehta, Director of Research, JAU, Junagadh
Co-Chairmen	:	1. Dr. D. D. Patel, Principal, CoA, NAU, Bharuch
		2. Dr. N. J. Jadav, Professor & Head, Department of Soil Sci. & Agril. Chem., BACA, AAU, Anand
Rapporteurs	**:**	1. Dr. R. M. Solanki, JAU
		2. Dr. V. J. Patel, AAU
		3. Dr. V. P. Usadadiya, NAU
		4. Dr. D. M. Patel, SDAU
Statistician	**:**	Dr. M.S. Shitap, Assistant Professor, JAU, Junagadh

The 18th Combined meeting of AGRESCO of Crop Production Sub Committee (CPSC) of SAUs was held online during 4-6 & 10 May, 2022 under the Chairmanship of Dr. D. R. Mehta, Director of Research, JAU, Junagadh. The Chairman, Dr. D. R. Mehta welcomed Co-Chairmen Dr. D. D. Patel, Principal, CoA, NAU, Bharuch and Dr. N. J. Jadav, Professor & Head, Department of Soil Sci. & Agril. Chem., BACA, AAU, Anand, all the convenors of CPSC of SAUs, rapporteurs and all the scientists who remained present online in the meeting. Convenors of the Crop Production Sub Committee of SAUs presented recommendations for farmers, information for scientific community and new technical programmes of their respective Universities.

Presentation of the recommendations and new technical programmes by conveners of SAUs

Sr.	Name	Designation & University
1	Dr. R. K. Mathukia	Professor & Head, Department of Agronomy, CoA, JAU, Junagadh
2	Dr. S. N. Shah	Associate Director of Research, AAU, Anand
3	Dr. H. M. Viradia	Research Scientist, MSRS, NAU, Navsari
4	Dr. J. R. Jat	Professor & Head, Department of Agril. Chem. & Soil Sci., CPCA, SDAU, Sardarkrushinagar

Summary of the Recommendations

Name of University	Proposed		Approved		Not approved/ Concluded	
	Farmer	Scientific	Farmer	Scientific	Farmer	Scientific
JAU	14	6	14	4	0	2 (1+1#)
AAU	22	9	22	8*	0	1
NAU	18	2	16	2**	2	0
SDAU	28	2	26	0	2	2
Total	**82**	**19**	**78**	**14**	**4**	**5**

* One Recommendation of AAU was considered for scientific community

** One Recommendation of NAU was considered for farmers as well as for scientific community in two parts

One recommendation of JAU presented for confirmation only.

18.2.1 RECOMMENDATIONS FOR FARMING COMMUNITY

JUNAGADH AGRICULTURAL UNIVERSITY

Sr. No.	Title/ Suggestions/ Action
18.2.1.1	**Development and evaluation of microbial consortia enriched vermicompost formulation in wheat (15.2.3.62)** The farmers of South Saurashtra Agro-climatic Zone growing wheat organically are recommended to apply FYM 5 t/ha along with vermicompost 2 t/ha enriched with *Azotobacter* (2 L), PSB (2 L), KSB (2 L), *Trichoderma harzianum* (3 kg), *Pseudomonas fluorescens* (3 L) and *Beauveria bassiana* (3 kg) to obtain higher yield and net return as well as to improve soil health. For enrichment of vermicompost, *Azotobacter* (2 L), PSB (2 L), KSB (2 L), *Trichoderma harzianum* (3 kg), *Pseudomonas fluorescens* (3 L) and *Beauveria bassiana* (3 kg) should be mixed with vermicompost 2 tonne with little water sprinkled (Moisture content 20 %) and apply 10 days after incubation in the field. દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં સેન્દ્રિય ખેતીમાં ઘઉંનું વાવેતર કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે વધારે ઉત્પાદન અને ચોખ્ખી આવક મેળવવા તેમજ જમીનની તંદુરસ્તી સુધારવા માટે હેકટરે ૫ ટન છાણીયુ ખાતર તેમજ એઝેટોબેકટર (૨ લિ.), ફોસ્ફરસ સોલ્યુબિલાઈઝીંગ બેકટેરીયા (૨ લિ.), પોટાશ સોલ્યુબિલાઈઝીંગ બેકટેરીયા (૨ લિ.), *ટ્રાયકોડર્મા હાર્જીયાનમ* (૩ કિ.ગ્રા.), *સ્યુડોમોનસ ફ્લોરેસન્સ* (૩ કિ.ગ્રા.) તથા *બ્યુવેરીયા બાસીયાના* (૩ કિ.ગ્રા.) થી સમૃધ્ધ કરેલ અળસીયાનું ખાતર ૨ ટન/હે આપવું. અળસીયાના ખાતરને સમૃધ્ધ કરવા માટે ૨ ટન અળસીયાના ખાતરમાં એઝેટોબેકટર (૨ લિ.), ફોસ્ફરસ સોલ્યુબિલાઈઝીંગ બેકટેરીયા (૨ લિ.), પોટાશ સોલ્યુબિલાઈઝીંગ બેકટેરીયા (૨ લિ.), *ટ્રાયકોડર્મા હાર્જીયાનમ* (૩ કિ.ગ્રા.), *સ્યુડોમોનસ ફ્લોરેસન્સ* (૩ કિ.ગ્રા.) તથા *બ્યુવેરીયા બાસીયાના* (૩ કિ.ગ્રા.) મેળવી, થોડા પાણીનો છંટકાવ (૨૦ % ભેજ) કરી ૧૦ દિવસના ઈન્કયુબેશન બાદ ખેતરમાં આપવું. *(**Action:** Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)*
18.2.1.2	**Evaluation of microbial consortia enriched vermicompost in *kharif* groundnut (15.2.3.63)** The farmers of South Saurashtra Agro-climatic zone growing *kharif* groundnut organically are recommended to apply FYM 5 t/ha along with vermicompost 2 t/ha enriched with *Rhizobium* (2 L), PSB (2 L), KSB (2 L), *Trichoderma harzianum* (3 kg), *Pseudomonas fluorescens* (3 L) and *Beauveria bassiana* (3 kg) to obtain higher yield and net return as well as to improve soil health. For enrichment of vermicompost, *Rhizobium* (2 L), PSB (2 L), KSB (2 L), *Trichoderma harzianum* (3 kg), *Pseudomonas fluorescens* (3 L) and *Beauveria bassiana* (3 kg) should be mixed with vermicompost 2 tonne with little water sprinkled (Moisture content 20 %) and apply 10 days after incubation in the field. દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં સેન્દ્રિય ખેતીમાં ચોમાસુ મગફળીનું વાવેતર કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે વધારે ઉત્પાદન અને ચોખ્ખી આવક મેળવવા તેમજ જમીનની તંદુરસ્તી સુધારવા માટે હેકટરે ૫ ટન છાણીયુ ખાતર તેમજ રાઈઝોબિયમ (૨ લિ.), ફોસ્ફરસ સોલ્યુબિલાઈઝીંગ બેકટેરીયા (૨ લિ.), પોટાશ સોલ્યુબિલાઈઝીંગ બેકટેરીયા (૨ લિ.), *ટ્રાયકોડર્મા હાર્જીયાનમ* (૩ કિ.ગ્રા.), *સ્યુડોમોનસ ફ્લોરેસન્સ* (૩ કિ.ગ્રા.) તથા *બ્યુવેરીયા બાસીયાના* (૩ કિ.ગ્રા.) થી સમૃધ્ધ કરેલ અળસીયાનું ખાતર ૨ ટન/હે આપવું. અળસીયાના ખાતરને સમૃધ્ધ કરવા માટે ૨ ટન અળસીયાના

<table>
<tr><th>Sr. No.</th><th>Title/ Suggestions/ Action</th></tr>
<tr><td></td><td>ખાતરમાં રાઈઝોબિયમ (૨ લિ.), ફોસ્ફરસ સોલ્યુબિલાઈઝીંગ બેકટેરીયા (૨ લિ.), પોટાશ સોલ્યુબિલાઈઝીંગ બેકટેરીયા (૨ લિ.), ટ્રાયકોડર્મા હાર્જીયાનમ (૩ કિ.ગ્રા.), સ્યુડોમોનસ ફ્લોરેસન્સ (૩ કિ.ગ્રા.) તથા બ્યુવેરીયા બાસીયાના (૩ કિ.ગ્રા.) મેળવી, થોડા પાણીનો છંટકાવ (૨૦ % ભેજ) કરી ૧૦ દિવસના ઈન્કયુબેશન બાદ ખેતરમાં આપવું.
(Action: Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)</td></tr>
<tr><td>18.2.1.3</td><td>Response of rabi castor based intercropping systems to drip irrigation (14.2.3.37)
The farmers of South Saurashtra Agro-climatic Zone growing rabi castor based intercropping system are recommended to irrigate the castor and intercrops through drip irrigation at 0.8 PEF to obtain higher castor seed equivalent yield and net realization along with higher WUE. Farmers are also recommended to sow gram as an intercrop with rabi castor sown at 180 cm spacing in 1:3 row proportion to obtain higher castor seed equivalent yield and net realization.
System details:
<table>
<tr><th rowspan="2">Details</th><th colspan="2">Operating Time</th></tr>
<tr><th>Month</th><th>Minutes</th></tr>
<tr><td>Lateral spacing: 60 cm</td><td>November</td><td rowspan="2">270</td></tr>
<tr><td>Dripper spacing: 40 cm</td><td>December</td></tr>
<tr><td>Dripper discharge rate: 4 lph</td><td>January</td><td rowspan="2">216</td></tr>
<tr><td>Operating pressure: 1.2 kg/cm^2</td><td>February</td></tr>
<tr><td>Operating frequency: Alternate day</td><td>March</td><td>300</td></tr>
</table>
દક્ષિણ સૌરાષ્ટ્ર ખેત-આબોહવાકીય વિસ્તારના શિયાળુ દિવેલા આધારીત આંતરપાક પધ્ધતિ અપનાવતા ખેડૂતોએ વધુ દિવેલા બીજ સમકક્ષ ઉત્પાદન, ચોખ્ખી આવક અને પાણીના કાર્યક્ષામ ઉપયોગ માટે દિવેલા અને આંતરપાકોને ટપક સિચાઈ પધ્ધતિથી ૦.૮ બાષ્પિભવનાંકે પિયત આપવાની ભલામણ કરવામાં આવે છે. આ ઉપરાંત ભલામણ કરવામાં આવે છે કે ૧૮૦ સે.મી.ના અંતરે વાવેતર કરેલ શિયાળુ દિવેલામાં ૧:૩ ની હારના ગુણોતરમાં ચણાનું વાવેતર કરવાથી વધારે દિવેલા બીજ સમકક્ષ ઉત્પાદન અને ચોખ્ખી આવક મેળવી શકાય.
ટપક પધ્ધતિની વિગત:
<table>
<tr><th rowspan="2">વિગત</th><th colspan="2">પરિચલનનો સમય</th></tr>
<tr><th>મહિના</th><th>મિનિટ</th></tr>
<tr><td>પાણીની નળીઓનુ અંતર: ૬૦ સે.મી.</td><td>નવેમ્બર</td><td rowspan="2">૨૭૦</td></tr>
<tr><td>ટપકણીયાનું અંતર: ૪૦ સે.મી.</td><td>ડીસેમ્બર</td></tr>
<tr><td>ટપકણીયાની સ્ત્રાવ ક્ષમતા: ૪ લિ. પ્રતિ કલાક</td><td>જાન્યુઆરી</td><td rowspan="2">૨૧૬</td></tr>
<tr><td>પરિચલનનં દબાણ: ૧.૨ કિ.ગ્રા પ્રતિ ચો.સે.મી.</td><td>ફેબ્રુઆરી</td></tr>
<tr><td>પરિચલનની પુનરાવૃતિ: એકાંતરા દિવસે</td><td>માર્ચ</td><td>૩૦૦</td></tr>
</table>
(Action: Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)</td></tr>
<tr><td>18.2.1.4</td><td>Evaluation of land configuration and intercropping system in Bt. cotton (14.2.3.38)
The farmers of South Saurashtra Agro-climatic Zone adopting Bt. cotton based intercropping system are recommended to sow cotton under broad bed and furrow system (Broad bed 210 cm wide, furrow 30 cm wide & 20 cm deep) to obtain higher seed cotton equivalent yield and net return along with soil moisture conservation. The farmers are also recommended to sow cotton + green gram or</td></tr>
</table>

Sr. No.	Title/ Suggestions/ Action
	black gram in 1:2 row ratio for getting higher seed cotton equivalent yield and net realization. દક્ષિણ સૌરાષ્ટ્ર ખેત-આબોહવાકીય વિસ્તારમાં બીટી કપાસ આધારીત આંતરપાક પધ્ધતિ અપનાવતા ખેડૂતોને વધુ કપાસ સમકક્ષ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા તેમજ જમીનમાં ભેજ જાળવવા માટે કપાસનું પહોળા કયારા અને ચાસમાં (ક્યારાની પહોળાઈ ૨૧૦ સે.મી., ચાસની પહોળાઈ ૩૦ સે.મી. અને ઉંડાઈ ૨૦ સે.મી.) વાવેતર કરવાની ભલામણ કરવામાં આવે છે. તેમજ ખેડૂતોને ભલામણ કરવામાં આવે છે કે કપાસની બે હાર વચ્ચે મગ અથવા અડદની બે હાર આંતરપાક તરીકે લેવાથી વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવી શકાય. **Approved with following suggestion:** 1. Give selling price of produce (Rs./kg): Seed cotton: 45 Green gram seed: 60 Soybean seed: 35 Black gram seed: 50 Cotton stalk: 0.25 Green gram stover: 0.50 Black gram stover: 0.40 Soybean stover: 0.50 *(**Action**: Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)*
18.2.1.5	**Effect of different management practices on yellowing and yield of pre-monsoon groundnut (15.2.3.70)** The farmers of South Saurashtra Agro-climatic Zone growing pre-monsoon groundnut (last week of May) are recommended to apply foliar spray of 0.5 % $FeSO_4$ heptahydrate (50 g/10 L water) with 0.05 % citric acid at 25 DAS and 1 % $FeSO_4$ heptahydrate (100 g/10 L water) with 0.1 % citric acid at 35 and 45 DAS or foliar spray of 0.5 % $FeSO_4$ heptahydrate (50 g/10 L water) with 1 % cow urine at 25 DAS and 1 % $FeSO_4$ heptahydrate (100 g/10 L water) with 2 % cow urine at 35 and 45 DAS or foliar spray of 1.0 % micronutrient mixture grade IV at 45 and 60 DAS in addition to recommended dose of NPK fertilizers (12.5-25-50 N-P_2O_5-K_2O kg/ha) to obtain higher yield, net return and reduction in yellowness. દક્ષિણ સૌરાષ્ટ્ર ખેત-આબોહવાકીય વિસ્તારમાં મગફળીનું આગોતરૂં વાવેતર (મેના છેલ્લા અઠવાડીયામાં) કરતાં ખેડૂતોને વધુ ઉત્પાદન, ચોખ્ખી આવક અને મગફળીમાં પીળાશ ઓછી કરવા માટે ભલામણ કરેલ નાઈટ્રોજન, ફોસ્ફરસ અને પોટાશ ખાતર (૧૨.૫-૨૫-૫૦ ના-ફો-પો કિ.ગ્રા./હે) ઉપરાંત વાવેતર બાદ ૨૫ દિવસે ૦.૫ % ફેરસ સલ્ફેટ (૫૦ ગ્રામ/૧૦ લિ. પાણી) સાથે ૦.૦૫ % સાઈટ્રીક એસીડ અને ૩૫ અને ૪૫ દિવસે ૧ % ફેરસ સલ્ફેટ (૧૦૦ ગ્રામ/૧૦ લિ. પાણી) સાથે ૦.૧ % સાઈટ્રીક એસીડનો છંટકાવ કરવો અથવા વાવેતર બાદ ૨૫ દિવસે ૦.૫ % ફેરસ સલ્ફેટ (૫૦ ગ્રામ/૧૦ લિ. પાણી) સાથે ૧ % ગૌમૂત્ર અને વાવેતર બાદ ૩૫ અને ૪૫ દિવસે ૧% ફેરસ સલ્ફેટ (૧૦૦ ગ્રામ/૧૦ લિ. પાણી) સાથે ૨ % ગૌમૂત્રનો છંટકાવ અથવા માઇકોન્યુટ્રીઅન્ટ મીકસચર ગ્રેડ ૪ ના ૧% દ્રાવણનો વાવેતર બાદ ૪૫ અને ૬૦ દિવસે છંટકાવ કરવાની ભલામણ કરવામાં આવે છે. *(**Action:** Research Scientist, Main Oilseeds Research Station, JAU, Junagadh and Professor & Head, Department of Soil Sci. & Agril. Chem., CoA, JAU, Junagadh)*
18.2.1.6	**Identifying suitable crop geometry and nutrient dose for Spanish bunch *kharif* groundnut (16.2.3.29)** The farmers of South Saurashtra Agro-climatic Zone growing bunch groundnut (GJG 32) during *kharif* season are recommended to sow at spacing of 30 cm x 10 cm and apply 100 % RDF (12.5-25-50 kg N-P_2O_5-K_2O/ha) + Biofertilizer [*Rhizobium* (*Rhizobium leguminosarum* and *Rhizobium meliloti* 1 x 10^7 cfu/ml)] @

Sr. No.	Title/ Suggestions/ Action
	15 ml/kg seed; PSM (*Bacillus subtilis* 1 x 10^8 cfu/ml) & KMB (*Frateuria aurantia* 1 x 10^8 cfu/ml) soil application each @ 3 L/ha) as a basal for obtaining higher yield and net return. દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ચોમાસામાં ઉભડી મગફળી (જીજેજી ૩૨) નું વાવેતર કરતાં ખેડૂતોને વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવવા માટે સાંકડે પાટલે ૩૦ સે.મી. x ૧૦ સે.મી. ના અંતરે વાવેતર કરવુ અને ભલામણ કરેલ ખાતરના ૧૦૦ % (૧૨.૫-૨૫-૫૦ ના-ફો-પો કિ.ગ્રા./હે.) જથ્થા સાથે પ્રવાહી જૈવીક ખાતર [રાઈઝોબીયમ (*રાઈઝોબીયમ લેગ્યુમિનોસારમ* અને *રાઈઝોબીયમ મેલીલોટી* ૧ x $૧૦^{૯}$ સીએફયુ/મિ.લિ.) ૧૫ મિ.લિ./કિ.ગ્રા. પ્રમાણે બીજ માવજત આપવી અને વાવતી વખતે જમીનમાં ૩ લિ./હે. મુજબ પીએસએમ (*બેસીલસ સબ્ટિલિસ* ૧ x $૧૦^{૮}$ સીએફયુ/મિ.લિ.) અને કેએમબી (*ફ્રેટયુરિયા ઓરેન્ટિયા* ૧ x $૧૦^{૮}$ સીએફયુ/મિ.લિ.) પ્રવાહી ખાતર] આપવાની ભલામણ કરવામાં આવે છે. (**Action:** *Research Scientist, Main Oilseeds Research Station, JAU, Junagadh)*
18.2.1.7	**Effect of nano boron on yield and nutrients uptake by summer groundnut (14.2.3.55)** The farmers of Saurashtra region growing summer groundnut in medium black calcareous soil are recommended to apply three sprays of 0.2 % (20 ml/10 L water) nano boron OR 0.2 % (20 g/10 L water) boric acid at 30, 45 and 60 DAS in addition to recommended dose of fertilizer (25-50-50 N-P_2O_5-K_2O kg/ha) to obtain higher yield and net return. સૌરાષ્ટ્ર વિસ્તારમાં મધ્યમ કાળી ચુનાયુક્ત જમીનમાં ઉનાળુ મગફળીનું વાવેતર કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે મગફળીના પાકમાં ભલામણ કરેલ રાસાયણિક ખાતર (૨૫-૫૦-૫૦ ના-ફો-પો કિ.ગ્રા./હે.) ઉપરાંત ૦.૨ % (૧૦ લિ. પાણીમાં ૨૦ મિ.લિ.) નેનો બોરોનના દ્રાવણનો અથવા ૦.૨ % બોરીક એસીડ (૧૦ લિ. પાણીમાં ૨૦ ગ્રામ) ના દ્રાવણનો છંટકાવ વાવેતર બાદ ૩૦, ૪૫ અને ૬૦ દિવસે કરવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મળે છે. **Approved with following suggestion:** 1. Give particle size of nano boron *(**Action:** Professor & Head, Department of Soil Sci. & Agril. Chem., CoA, JAU, Junagadh and Research Scientist, Main Oilseeds Research Station, JAU, Junagadh)*
18.2.1.8	**Effect of different levels of NPK and time of application on cucumber yield under protected condition (16.2.3.44)** The farmers of Gujarat growing cucumber during *kharif* season under protected condition (Poly house) are recommended to apply 50-50-50 N-P_2O_5-K_2O kg/ha in form of water soluble fertilizer (19-19-19) and 30 kg/ha nitrogen in form of urea through fertigation in four equal splits *i.e.* basal, 30, 45 and 60 DAS along with *Azotobacter*, PSB and KSB @ 3 L/ha each through drenching to obtain higher yield and net return. ગુજરાત રાજયમાં ચોમાસા દરમ્યાન પોલીહાઉસમાં કાકડીનું વાવેતર કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે કાકડીનાં પાકમાં ૫૦-૫૦-૫૦ ના-ફો-પો કિ.ગ્રા./હે. પાણીમાં દ્રાવ્ય ખાતર (૧૯-૧૯-૧૯) અને ૩૦ કિ.ગ્રા./હે. નાઈટ્રોજન યુરિયાનાં સ્વરૂપમાં ડ્રીપ સાથે એકસરખા ૪ હપ્તામાં (પાયામાં તથા વાવણી બાદ ૩૦, ૪૫ અને ૬૦ દિવસે) સાથે એઝેટોબેકટર, પીએસબી અને કેએસબી દરેક ૩ લિ./હે. ડ્રેન્ચીગ દ્વારા આપવાથી વધુ ઉત્પાદન અને નફો મળે છે.

Sr. No.	Title/ Suggestions/ Action
	*(**Action:** Professor & Head, Department of Soil Sci. & Agril. Chem., CoA, JAU, Junagadh and Professor & Head, Dept. of Horticulture, CoA, JAU, Junagadh)*
18.2.1.9	**Integrated management practices in groundnut under poorly drained medium black calcareous soil (15.2.3.90)** The farmers of South Saurashtra Agro-climatic Zone growing *kharif* groundnut under poorly drained medium black calcareous soil are recommended to apply *tanch* 50 t/ha or FYM @ 10 t/ha to obtain higher yield and net return. દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં મધ્યમ કાળી ચુનાયુક્ત રેચક જમીનમાં ચોમાસુ મગફળીનું વાવેતર કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે મગફળીના પાકમાં ટાંચ ૫૦ ટન/હે. અથવા છાણીયુ ખાતર ૧૦ ટન/હે. નાખવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મળે છે. *(**Action:** Professor & Head, Department of Soil Sci. & Agril. Chem., CoA, JAU, Junagadh and Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)*
18.2.1.10	**Nutrient management in Bt. cotton under rainfed condition (Kukada) (9.2.2.12)** The farmers of North Saurashtra Agro-climatic Zone (AES-VI) growing Bt. cotton are recommended to apply 100-30-60 N-P_2O_5-K_2O kg/ha for obtaining higher yield and net return as well as sustaining soil fertility under rainfed conditions. The phosphorus and potash should be applied as basal, while nitrogen should be applied in three splits *i.e.* 25 % as basal at the time of sowing, 50 and 25 % as top dressing at 35-40 and 60-65 days after sowing, respectively by drilling in 10 cm soil depth. ઉત્તર સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તાર (ખેત હવામાન પરિસ્થિતિ-૬)માં વરસાદ આધારિત બીટી કપાસનું વાવેતર કરતાં ખેડૂતોને વધારે ઉત્પાદન અને આર્થિક વળતર મેળવવા તેમજ જમીનની ફળદ્રુપતાની જાળવણી માટે ૧૦૦-૩૦-૬૦ ના-ફો-પો કિ.ગ્રા./હે. આપવાની ભલામણ કરવામાં આવે છે. ફોસ્ફરસ અને પોટાશ પાયાના ખાતર તરીકે જયારે નાઈટ્રોજન ત્રણ ભાગમાં એટલે કે ૨૫ % પાયાના ખાતર તરીકે વાવેતર સમયે, બાકીનો ૫૦ % અને ૨૫ % પૂર્તિ ખાતર તરીકે વાવેતર પછી અનુક્રમે ૩૫-૪૦ દિવસે અને ૬૦-૬૫ દિવસે ૧૦ સે.મી.ની ઉંડાઈએ જમીનમાં ઓરીને આપવું. **Approved with following suggestion:** 1. Check S.Em.± and CD at 5 % values in pooled yield table *(**Action:** Research Scientist, Main Dry Farming Research Station, JAU, Targhadia and Associate Research Scientist, Cotton Research Station, JAU, Kukada)*
18.2.1.11	**Productivity of different medium duration pigeonpea varieties under different row spacing (14.2.3.48)** The farmers of South Saurashtra Agro-climatic Zone, growing *kharif* pigeon pea are recommended to grow medium duration pigeonpea variety GJP 1 with spacing of 120 cm x 25 cm to obtain higher seed yield and net realization. દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ચોમાસુ તુવેરનુ વાવેતર કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે તુવેરના મહતમ ઉત્પાદન અને ચોખ્ખા વળતર માટે મધ્યમ મોડી પાકતી તુવેરની જાત જીજેપી ૧ ને બે હાર વચ્ચે ૧૨૦ સે.મી અને બે છોડ વચ્ચેનું અંતર ૨૫ સે.મી. રાખવુ. **Approved with following suggestion:** 1. Mention RDF and seed rate in materials and methods *(**Action:** Research Scientist, Pulses Research Station, JAU, Junagadh)*
18.2.1.12	**Reduction of chemical fertilizer by using biofertilizers and enriched compost in cotton crop (14.2.3.52)** The farmers of South Saurashtra Agro-climatic Zone growing Bt. cotton are

Sr. No.	Title/ Suggestions/ Action
	recommended that to obtain higher yield and net realization as well as saving 25 % fertilizer, apply 75 % RDF (180-37.5-112.5 N-P_2O_5-K_2O kg/ha) along with *Azotobacter* + PSB + KSB each 3 L or Consortia (Bio NPK 5 x 10^8 cfu/ml) 1 L/ha. Full dose of phosphorus as basal, potash in two equal splits as basal and 30 DAS and nitrogen should be given in four equal splits *i.e.* as basal, 30, 60 and 90 DAS. દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં બીટી કપાસનું વાવેતર કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે, કપાસમાં વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા તથા ૨૫ % ખાતરનો બચાવ કરવા માટે ભલામણ કરેલ ખાતરના ૭૫ % (૧૮૦-૩૭.૫-૧૧૨.૫ ના.ફો.પો. કિ.ગ્રા./હે.) સાથે એઝોટોબેક્ટર + પીએસબી + કેએસબી દરેક ૩ લિ. અથવા કન્સોર્ટીયા (બાયો એનપીકે ૫ x ૧૦^{૮} સીએફયુ/મી.લી.) ૧ લિ./હે. પ્રમાણે આપવું. ભલામણ કરેલ ફોસ્ફરસ પાયામાં, પોટાશ બે હપ્તામાં (પાયામાં અને વાવણી બાદ ૩૦ દિવસે) અને નાઈટ્રોજન ચાર હપ્તામાં (પાયામાં તથા વાવણી બાદ ૩૦, ૬૦ અને ૯૦ દિવસે) આપવું. *(**Action:** Research Scientist, Cotton Research Station, JAU, Junagadh and Professor & Head, Department of Soil Sci. & Agril. Chem., CoA, JAU, Junagadh)*
18.2.1.13	**Ratoon management in sugarcane (12.2.2.16)** The farmers of South Saurashtra Agro-climatic Zone growing sugarcane first ratoon crop are recommended to adopt stubble shaving (Shaving of stubbles above the ground level), off barring (by bullock drawn cultivator and blade harrow) and gap filling (Filling the gaps 60 cm or more) to obtain higher cane yield and net return. દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં શેરડીનો પ્રથમ ધોયા/લામ પાક ઊગાડતાં ખેડૂતોને વધારે ઉત્પાદન અને નફો મેળવવા માટે સ્ટબલ શેવિંગ (જમીનની સપાટીએથી પાકની કાપણી), ઓફ બેરિંગ (બળદ ચાલીત દાંતી અને રાંપ વડે ખેડ) તેમજ ખાલાં (૬૦ સે.મી. અથવા તેથી વધારે જગ્યાના ખાલાં) પૂરવાની ભલામણ કરવામાં આવે છે. *(**Action:** Res. Scientist (sugarcane), Main Sugarcane Res. Station, JAU, Kodinar)*
18.2.1.14	**Performance of sesame cultivars/genotypes under different levels of irrigation during summer season (15.2.3.83)** The farmers of Saurashtra region growing sesame during summer season are recommended to grow sesame variety GJT 5 and apply total 12 irrigations scheduled as: first irrigation immediately after sowing, second irrigation at 21 days after sowing and remaining irrigation at 5 to 6 days interval during March-April and 4 to 5 days interval during May (1.0 IW:CPE) to obtain higher seed yield and net return. સૌરાષ્ટ્ર વિસ્તારમાં ઉનાળુ ઋતુમાં તલ ઉગાડતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે તલનાં પાકમાં વધુ ઉત્પાદન અને વધુ આવક મેળવવા તલની જાત જીજેટી ૫ નું વાવેતર કરવું તેમજ પાકને કુલ ૧૨ પિયત આપવા, પ્રથમ પિયત વાવેતર કર્યા બાદ તુરંત, બીજું પિયત વાવેતર બાદ ૨૧ દિવસે અને બાકીના પિયત માર્ચ-એપ્રીલ દરમ્યાન ૫ થી ૬ દિવસનાં ગાળે અને મે દરમ્યાન ૪ થી ૫ દિવસનાં ગાળે (૧.૦ બાષ્પીભવનાંક) આપવા. **Approved with following suggestion:** 1. Keep WUE instead of FWUE in Table 3 *(**Action**: Research Scientist (Pl. Br.), Agril. Research Station, JAU, Amreli)*

ANAND AGRICULTURAL UNIVERSITY

Sr. No.	Title/ Suggestions/ Action
18.2.1.15	**Nutrient management through organic sources in chickpea (14.2.3.2)** The farmers of Middle Gujarat Agro-climatic Zone cultivating irrigated

Sr. No.	Title/ Suggestions/ Action
	chickpea organically are recommended to apply any one of the following for obtaining higher yield and net return. • 10 kg N/ha through NADEP compost (approximate 650 kg) mixed with Bio NP (*Rhizobium* and PSB) 1 L/ha as basal application, **OR** • 20 kg N/ha through NADEP compost (approximate 1300 kg) applied as basal application, **OR** • 10 kg N/ha through vermicompost (approximate 700 kg) mixed with Bio NP (*Rhizobium* and PSB) 1 L/ha as basal application, **OR** • 20 kg N/ha through vermicompost (approx. 1400 kg) applied as basal application મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં સેન્દ્રિય ખેતી દ્વારા પિયત ચણાનું વાવેતર કરતાં ખેડૂતોએ વધુ ઉત્પાદન અને વળતર મેળવવા માટે નીચે પૈકી કોઇપણ એક ભલામણ અપનાવવી. • નાઇટ્રોજન ૧૦ કિ.ગ્રા./હે. નાડેપ કંપોસ્ટ દ્વારા (આશરે ૬૫૦ કિ.ગ્રા.) અને બાયો એન.પી. (રાઇઝોબીયમ અને પીએસબી) પ્રવાહી જૈવિક ખાતર ૧ લિ./હે. પ્રમાણે ભેળવી પાયામાં આપવો. અથવા • નાઇટ્રોજન ૨૦ કિ.ગ્રા./હે. નાડેપ કંપોસ્ટ દ્વારા (આશરે ૧૩૦૦ કિ.ગ્રા.) પાયામાં આપવો. અથવા • નાઇટ્રોજન ૧૦ કિ.ગ્રા./હે. વર્મિકમ્પોસ્ટ દ્વારા (આશરે ૭૦૦ કિ.ગ્રા.) અને બાયો એન.પી. (રાઇઝોબીયમ અને પીએસબી) પ્રવાહી જૈવિક ખાતર ૧ લિ./હે. પ્રમાણે ભેળવી પાયામાં આપવો. અથવા • નાઇટ્રોજન ૨૦ કિ.ગ્રા./હે. વર્મિકમ્પોસ્ટ દ્વારા (આશરે ૧૪૦૦ કિ.ગ્રા.) પાયામાં આપવો. **Approved with following suggestion:** 1. Write the word stover instead of haulm in all tables ***(Action:*** *Professor & Head, Department of Agronomy, BACA, AAU, Anand)*
18.2.1.16	**Efficacy of potassium schoenite as indigenous source of potassic fertilizer for potato (*Solanum tuberosum* L.) (15.2.3.97)** The farmers of Middle Gujarat Agro-climatic Zone growing potato are recommended to apply 75 % RDK (165 kg/ha) through potassium schoenite as a basal dose followed by 1 % foliar spray of potassium schoenite at 30 and 50 DAP for obtaining higher yield and net return. In addition, FYM 10 t/ha as basal and recommended dose of N (220 kg/ha) and P_2O_5 (110 kg/ha) is to be applied. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં બટાટાનું વાવેતર કરતાં ખેડૂતોને વધુ ઉત્પાદન અને વળતર મેળવવા માટે ભલામણનાં ૭૫% પોટાશ (૧૬૫ કિ.ગ્રા./હે.) પોટેશિયમ શોનાઇટ દ્વારા આપવું અને રોપણી બાદ ૩૦ અને ૫૦ દિવસે પોટેશિયમ શોનાઈટનાં ૧% ના દ્રાવણનો છંટકાવ કરવો. વધુમાં પાયામાં છાણીયુ ખાતર ૧૦ ટન/હે. અને ભલામણ કરેલ નાઇટ્રોજન (૨૨૦ કિ.ગ્રા./હે.) તથા ફોસ્ફોરસ (૧૧૦ કિ.ગ્રા./હે.) આપવો. **Approved with following suggestion:** 1. Write number of shoots/hills in Table 3 ***(Action:*** *Professor & Head, Dept. of Soil Sci. & Agril. Chem., BACA, AAU, Anand)*

Sr. No.	Title/ Suggestions/ Action
18.2.1.17	**Field performance of promising *Rhizobium* cultures on pigeon pea (14.2.3.6)** The farmers of Middle Gujarat Agro-climatic Zone growing *kharif* pigeon pea are recommended to coat seed with *Rhizobium pusense* AAU P16, 5 ml/kg before sowing and apply FYM 2 t/ha as basal for getting higher yield and net return. In addition, P_2O_5 40 kg/ha is to be applied as basal. **મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ચોમાસુ તુવેરનું વાવેતર કરતાં ખેડૂતોને વધુ ઉત્પાદન અને વળતર મેળવવા *રાઈઝોબિયમ પુસેન્સ* એએયુ પી ૧૬ નો ૫ મિ.લિ/કિ.ગ્રા. બીજ પ્રમાણે વાવણી પહેલાં બિયારણને પટ આપવો તેમજ છાણિયું ખાતર ૨ ટન/હે. પાયામાં આપવાની ભલામણ કરવામાં આવે છે. વધુમાં ફોસ્ફરસ ૪૦ કિ.ગ્રા./હે. પાયામાં આપવો.** **Approved with following suggestion:** 1. Write RDN instead of RDF in the treatment ***(Action:** Professor & Head, Dept. of Agril. Microbiology, BACA, AAU, Anand)*
18.2.1.18	**Integrated weed management in *rabi* maize (15.2.3.101)** The farmers of middle Gujarat agro-climatic zone growing *rabi* maize are recommended to adopt any one of the following weed management practices for effective weed management, higher yield and net return. ➢ Atrazine 50% WP 1000 g a.i./ha (40 g/10 L of water) PE (1-2 DAS) *fb* IC at 30 DAS. **OR** ➢ Topramezone 336 g/l w/v SC 25.2 g a.i./ha (1.5 ml/10 L of water) EPoE (15-20 DAS) *fb* IC + HW at 40 DAS. **OR** ➢ Topramezone 336 g/l w/v SC + atrazine 50% WP (25.2 + 500 g a.i./ha) (1.5 ml + 20 g/10 L of water) EPoE (15-20 DAS) (tank mix). **OR** ➢ Tembotrione 34.4% w/w SC 120 g a.i./ha (5.72 ml/10 L of water) EPoE (15-20 DAS) *fb* IC + HW at 40 DAS. **OR** ➢ Tembotrione 34.4% w/w SC + atrazine 50% WP (120 + 500 g a.i./ha) (5.72 ml + 20 g/10 L of water) EPoE (15-20 DAS) (tank mix), **OR** ➢ IC *fb* HW at 20 and 40 DAS. **મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં શિયાળુ મકાઈની ખેતી કરતાં ખેડૂતોને અસરકારક નીંદણ વ્યવસ્થાપન અને વધુ વળતર મેળવવા માટે નીચેના પૈકી કોઈ એક નીંદણ વ્યવસ્થાપન અપનાવવા ભલામણ કરવામાં આવે છે.** ➢ **પ્રિ-ઈમરજન્સ (વાવણી બાદ ૧-૨ દિવસે) એટ્રાઝીન ૫૦% વેપા ૧૦૦૦ ગ્રામ સક્રિય તત્વ/હે. (૪૦ ગ્રામ/૧૦ લિ. પાણી) અને ૩૦ દિવસે આંતરખેડ.** **અથવા** ➢ **વાવણી બાદ ૧૫ થી ૨૦ દિવસે ટોપ્રામેઝોન ૩૩૬ ગ્રામ/લિ. ૨૫.૨ ગ્રામ સક્રિય તત્વ/હે. (૧.૫ મિ.લિ./૧૦ લિ. પાણી) અને ૪૦ દિવસે આંતરખેડ અને હાથ નીંદામણ.** **અથવા** ➢ **વાવણી બાદ ૧૫ થી ૨૦ દિવસે ટોપ્રામેઝોન ૩૩૬ ગ્રામ/લિ. ૨૫.૨ ગ્રામ સક્રિય તત્વ/હે. + એટ્રાઝીન ૫૦% વેપા ૫૦૦ ગ્રામ સક્રિય તત્વ/હે. (૧.૫ મિ.લિ.+૨૦ ગ્રામ/૧૦ લિ. પાણી) (ટેન્ક મિક્ષ).** **અથવા**

Sr. No.	Title/ Suggestions/ Action
	➢ ટેમ્બોટ્રિઓન ૩૪.૪% ડબલ્યુ/ડબલ્યુ એસસી ૧૨૦ ગ્રામ સક્રિય તત્વ/હે. (૫.૭૨ મિ.લિ./૧૦ લિ. પાણી) અને ૪૦ દિવસે આંતરખેડ અને હાથ નીંદામણ/ અથવા ➢ ટેમ્બોટ્રિઓન ૩૪.૪% ડબલ્યુ/ડબલ્યુ એસસી ૧૨૦ ગ્રામ સક્રિય તત્વ/હે. + એટ્રાઝીન ૫૦% વેપા ૫૦૦ ગ્રામ સક્રિય તત્વ/હે. (૫.૭૨ મિ.લિ. + ૨૦ ગ્રામ/૧૦ લિ. પાણી) (ટેન્ક મિક્ષ). અથવા ➢ ૨૦ અને ૪૦ દિવસે આંતરખેડ તથા હાથ નીંદામણ. ***(Action:** Agronomist, AICRP on Weed Management, BACA, AAU, Anand**)***
18.2.1.19	**Chemical and non-chemical approaches for weed management in turmeric (15.2.3.102)** The farmers of Middle Gujarat Agro-climatic Zone growing turmeric are recommended to adopt any one of the following non-chemical weed management practices for effective weed management and obtaining higher turmeric yield and net return. ➢ IC + HW at 30 DAP *fb* paddy or wheat straw mulch 5 t/ha (30 DAP) *fb* HW at 75 DAP **OR** ➢ Paddy or wheat straw mulch 5 t/ha (0-3 DAP) *fb* HW at 30 and 75 DAP મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં હળદરની ખેતી કરતાં ખેડૂતોને અસરકારક નીંદણ વ્યવસ્થાપન, લીલી હળદરનું વધુ ઉત્પાદન અને વળતર મેળવવા માટે નીચેના પૈકી કોઈ એક બિન-રાસાયણિક નીંદણ વ્યવસ્થાપન અપનાવવા ભલામણ કરવામાં આવે છે. ➢ હળદરની રોપણી બાદ ૩૦ દિવસે આંતરખેડ અને હાથ નીંદામણ કર્યા પછી ડાંગર અથવા ઘઉંના પરાળનું ૫ ટન/હે. (૩૦ દિવસે) મુજબ આચ્છાદન કરવું અને રોપણી બાદ ૭૫ દિવસે હાથ નીંદામણ કરવું અથવા ➢ હળદરની રોપણી બાદ (૦-૩ દિવસે) ડાંગર અથવા ઘઉંના પરાળનું ૫ ટન/હે. મુજબ આચ્છાદન કરવું અને રોપણી બાદ ૩૦ અને ૭૫ દિવસે હાથ નીંદામણ કરવું. ***(Action:** Agronomist, AICRP on Weed Management, BACA, AAU, Anand**)***
18.2.1.20	**Screening of wheat genotypes/varieties for iron (Fe) efficiency (16.2.3.10)** The farmers of Gujarat state are recommended to sow wheat varieties either GW 496 or GW 451 or GW 366 and fertilize with recommended dose of fertilizer (120-60-0 NPK kg/ha) with 50 kg $FeSO_4$/ha *fb* foliar sprays of 0.5% $FeSO_4$ at 45-50 DAS and 75-80 DAS for higher grain yield as well as Fe content in grain. ગુજરાત રાજ્યના ખેડૂતોને ભલામણ કરવામાં આવે છે કે ઘઉંની વિવિધ જાતો પૈકી જીડબલ્યુ ૪૯૬ અથવા જીડબલ્યુ ૪૫૧ અથવા જીડબલ્યુ ૩૬૬ કોઇ એકની વાવણી કરવી અને ભલામણ કરેલ ખાતર (૧૨૦-૬૦-૦ નાફોપો કિ.ગ્રા./હે.) સાથે ફેરસ સલ્ફેટ ૫૦ કિ.ગ્રા./હે. પાયામાં તથા વાવણી બાદ ૪૫-૫૦ દિવસે અને ૭૫-૮૦ દિવસે ૦.૫% ફેરસ સલ્ફેટના દ્રાવણના છંટકાવ કરવાથી ઘઉંમાં લોહની વધુ માત્રા અને ઉત્પાદન મેળવી શકાય છે. ***(Action:** Associate Research Scientist, Micronutrient Res. Centre, AAU, Anand**)***
18.2.1.21	**Screening of wheat genotypes/varieties for manganese (Mn) efficiency (16.2.3.11)** The farmers of Gujarat state are recommended to sow wheat varieties either GW 496 or GW 451 and fertilize with recommended dose of fertilizer (120-60-0

Sr. No.	Title/ Suggestions/ Action
	NPK kg/ha) with 40 kg $MnSO_4$/ha *fb* two foliar sprays of 0.5% $MnSO_4$ at 45-50 DAS and 75-80 DAS for higher grain yield as well as Mn content in grain. ગુજરાત રાજ્યના ખેડૂતોને ભલામણ કરવામાં આવે છે કે ઘઉંની વિવિધ જાતો પૈકી જીડબલ્યુ ૪૯૬ અથવા જીડબલ્યુ ૪૫૧ કોઇ એકની વાવણી કરવી અને ભલામણ કરેલ ખાતર (૧૨૦-૬૦-૦ ના-ફો-પો કિ.ગ્રા./હે.) સાથે મેંગેનીઝ સલ્ફેટ ૪૦ કિ.ગ્રા./હે. પાયામાં તથા વાવણી બાદ ૪૫-૫૦ દિવસે અને ૭૫-૮૦ દિવસે ૦.૫% મેંગેનીઝ સલ્ફેટ દ્રાવણના છંટકાવ કરવાથી ઘઉંમાં મેંગેનીઝની વધુ માત્રા અને ઉત્પાદન મેળવી શકાય છે. ***(Action:** Associate Research Scientist, Micronutrient Research Centre, AAU, Anand**)***
18.2.1.22	**Response to nitrogen application by different varieties of marvel grass (14.2.3.7)** The farmers of Gujarat state are recommended to plant rooted slips of marvel grass varieties either GMG 1 or GAMG 2 during *kharif* season after receiving first effective rainfall and apply FYM 10 t/ha with 30 kg N/ha as basal and 30 kg N/ha after one month. Further, after each cut, apply 30 kg N/ha as side dressing and 30 kg N/ha at one month after side dressing for obtaining higher green fodder yield and net return ગુજરાત રાજ્યના ખેડૂતોએ ઝિંઝવાની જાત જીએમજી ૧ અથવા જીએએમજી ૨ ના જડિયાની રોપણી ચોમાસાની ઋતુમાં પ્રથમ વાવણીલાયક વરસાદ બાદ કરવી અને પાયામાં ૧૦ ટન/હે. પ્રમાણે છાણિયુ ખાતર તથા ૩૦ કિ.ગ્રા. નાઇટ્રોજન પાયામાં અને ૩૦ કિ.ગ્રા. નાઇટ્રોજન રોપણીના એક મહિના બાદ આપવાની ભલામણ કરવામાં આવે છે. વધુમાં, દરેક કાપણી બાદ તુરંત ૩૦ કિ.ગ્રા. નાઇટ્રોજન ચાસની બાજુમાં અને ૩૦ કિ.ગ્રા. નાઇટ્રોજન ચાસની બાજુમાં આપ્યાના એક મહિના બાદ આપવાથી લીલાચારાનુ વધુ ઉત્પાદન અને વળતર મેળવી શકાય છે. ***(Action:** Research Scientist (Forage), MFRS, AAU, Anand**)***
18.2.1.23	**Performance of dual purpose barley under different nitrogen levels and cutting management (14.2.3.8)** The farmers of Middle Gujarat Agro-climatic Zone growing dual purpose barley are recommended to apply 60 kg N/ha (30 kg N/ha as basal and 30 kg N/ha in two equal splits, 15 kg N/ha after cut (6 weeks after sowing *i.e.* 42 days) and remaining 15 kg N/ha at 20 days after first cut) for obtaining higher seed yield and net return. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં જવનુ વાવેતર કરતાં ખેડૂતોને લીલાચારાનુ તથા બીજનુ વધુ ઉત્પાદન અને વળતર મેળવવા માટે નાઇટ્રોજન ૬૦ કિ.ગ્રા./હે. આપવો જે પૈકીનો ૩૦ કિ.ગ્રા. નાઇટ્રોજન પાયામાં અને ૩૦ કિ.ગ્રા. નાઇટ્રોજન બે સરખા હપ્તામાં, ૧૫ કિ.ગ્રા. નાઇટ્રોજન જવ ઘાસની કાપણી બાદ તુરંત (વાવણીના ૬ અઠવાડીયા એટલે ૪૨ દિવસ બાદ) અને બાકીનો ૧૫ કિ.ગ્રા. નાઇટ્રોજન કાપણીના ૨૦ દિવસ બાદ આપવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestions:** 1. Input cost of organic manure should be included 2. Workout the green fodder equivalent yield ***(Action:** Research Scientist (Forage), MFRS, AAU, Anand**)***
18.2.1.24	**Effect of different organic manures and Bio NPK consortium on yield and quality of *Asalio* (*Lepidium sativum* L.) (14.2.3.12)** The farmers of Middle Gujarat Agro-climatic Zone growing *Asalio* are recommended to apply FYM 10 t/ha as basal application for obtaining higher yield and net return.

Sr. No.	Title/ Suggestions/ Action
	મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં અસાળિયાની ખેતી કરતા ખેડૂતોને વધુ ઉત્પાદન અને વળતર મેળવવા માટે છાણિયું ખાતર ૧૦ ટન/હે. પાયામાં આપવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestions:** 1. Include the information of cultural practices 2. Change the writing method of year like 2019-20 instead of 2019 in tables ***(Action:*** *Associate Research Scientist & Head (M&AP), AAU, Anand)*
18.2.1.25	**Effect of transplanting date on yield and insect-pest incidence in calcutti tobacco (*Nicotiana rustica* L.) varieties (14.2.3.11)** The farmers of Middle Gujarat Agro-climatic Zone growing calcutti tobacco are recommended to grow either GC 1 or GCT 3 variety and it should be transplanted during 5th to 25th November for getting higher tobacco yield and net return with minimum mosaic virus incidence in tobacco. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં કલકતી તમાકુની ખેતી કરતાં ખેડૂતોને વધુ ઉત્પાદન, વળતર તથા પંચરગીયા રોગનુ પ્રમાણ ઓછુ મેળવવા માટે ગુજરાત કલકતી ૧ અથવા ગુજરાત કલકતી તમાકુ ૩ જાતની ફેરરોપણી ૫ થી ૨૫ નવેમ્બર દરમ્યાન કરવાની ભલામણ કરવામાં આવે છે. ***(Action:*** *Associate Research Scientist & Head (Tobacco), BTRS, AAU, Anand)*
8.2.1.26	**Nursery management in summer rice (14.2.3.29)** The farmers of Middle Gujarat Agro-climatic Zone are recommended to adopt any of the following in 10 m^2 area of summer rice nursery to get higher number of transplantable seedlings at 45 to 55 DAS and net return. 20 kg FYM + gibberellic acid 10 mg/L + humic acid 1.66 g/L (foliar spray 15 DAS) + 2% urea & 0.2 % $FeSO_4$ foliar spray at 30 DAS. **OR** 20 kg FYM + top dressing 250 g AS 2 times at 15 DAS interval + 2% urea & 0.2% $FeSO_4$ foliar spray at 30 DAS. **OR** 10 kg FYM + 5 kg vermicompost + top dressing 250 g AS at 15 DAS + 2% urea & 0.2% $FeSO_4$ solution foliar spray at 30 DAS. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ઉનાળું ડાંગરનું ધરૂવાડિયુ કરતા ખેડૂતોને ૧૦ ચો.મી. ના ક્યારા દીઠ ૪૫ થી ૫૫ દિવસે રોપણી લાયક વધારે ધરૂ અને વળતર મેળવવા માટે નીચે દર્શાવેલ પૈકી કોઈપણ એકની ભલામણ કરવામાં આવે છે. ૨૦ કિ.ગ્રા. છાણિયું ખાતર + જીબ્રેલિક એસિડ ૧૦ મિ.લિ./લિ.+ હ્યુમિક એસિડ ૧.૬૬ ગ્રામ/લિ. નો છંટકાવ ૧૫ દિવસે અને ૨% યુરિયા અને ૦.૨% ફેરસ સલ્ફેટના દ્રાવણનો છંટકાવ 30 દિવસે કરવો. અથવા ૨૦ કિ.ગ્રા. છાણિયું ખાતર + ૧૫ દિવસના અંતરે બે વખત ૨૫૦ ગ્રામ એમોનિયમ સલ્ફેટ પૂર્તિ ખાતર અને ૨% યુરિયા અને ૦.૨% ફેરસ સલ્ફેટના દ્રાવણનો છંટકાવ 30 દિવસે કરવો. અથવા ૧૦ કિ.ગ્રા. છાણિયું ખાતર + ૫ કિ.ગ્રા. વર્મિકમ્પોસ્ટ + ૧૫ દિવસના અંતરે ૨૫૦ ગ્રામ એમોનિયમ સલ્ફેટ પૂર્તિ ખાતર અને ૨% યુરિયા અને ૦.૨% ફેરસ સલ્ફેટના દ્રાવણનો છંટકાવ

Sr. No.	Title/ Suggestions/ Action
	૩૦ દિવસે કરવો. *(Action: Research Scientist (Rice), MMRS, AAU, Nawagam)*
18.2.1.27	**Effect of nitrogen levels and seed rate on growth and yield of durum wheat (GADW-3) under Bhal region (14.2.3.14)** The farmers of Bhal and Coastal Agro-climatic Zone VIII growing durum wheat (GADW 3) are recommended to use 90 kg seed/ha and apply 60 kg nitrogen in three splits, 12 kg N/ha as basal, 24 kg N/ha at 21 DAS before first irrigation and 24 kg N/ha at 45 DAS before second irrigation to get higher yield and net return. In addition, 25 kg P_2O_5/ha is to be applied as basal. ભાલ અને દરિયાકાંઠા ખેત આબોહવાકીય ઝોન-૦૮ વિસ્તારના ભાલિયા ઘઉં (જીએડીડબલ્યુ ૩) ની વાવણી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે ઘઉંના વાવેતર માટે પ્રતિ હેકટરે ૯૦ કિ.ગ્રા. બીજનો ઉપયોગ કરવાથી અને ૬૦ કિ.ગ્રા. નાઇટ્રોજન ત્રણ ભાગમાં ૧૨ કિ.ગ્રા./હે. પાયામાં, ૨૪ કિ.ગ્રા./હે. વાવણીના ૨૧ દિવસ પછી પ્રથમ પિયત પહેલા અને ૨૪ કિ.ગ્રા./હે. વાવણીના ૪૫ દિવસ પછી બીજા પિયત પહેલાં આપવાથી વધુ ઉત્પાદન અને વળતર મળે છે. વધુમાં ફોસ્ફરસ ૨૫ કિ.ગ્રા./હે. પાયામાં આપવો. **Approved with following suggestion:** 1. Analyse the pooled data over locations *(Action: Assistant Research Scientist, ARS, AAU, Dhandhuka)*
18.2.1.28	**Integrated nutrient management in *kharif* black gram (*Vigna mungo* L.) (15.2.3.109)** The farmers of Middle Gujarat Agro-climatic Zone growing black gram during *kharif* season are recommended to apply either 20 kg N and 40 kg P_2O_5/ha as basal or FYM 2 t/ha, vermicompost 250 kg/ha and castor cake 120 kg/ha as basal to get higher yield and net return. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારના ચોમાસુ અડદની ખેતી કરતાં ખેડૂતોને વધારે ઉત્પાદન અને વળતર મેળવવા માટે ૨૦ કિ.ગ્રા. નાઇટ્રોજન અને ૪૦ કિ.ગ્રા. ફોસ્ફરસ પાયામાં આપવો અથવા છાણીયું ખાતર ૨ ટન/હે., અળસિયાનું ખાતર ૨૫૦ કિ.ગ્રા./હે. અને દિવેલી ખોળ ૧૨૦ કિ.ગ્રા./હે. પાયાના ખાતર તરીકે આપવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion:** 1. Write stover yield instead of straw in tables *(Action: Research Scientist (Agronomy), TRTC, AAU, Devgadh Baria)*
18.2.1.29	**Performance of *rabi* sweet corn (*Zea mays* L. *saccharata* Sturt.) under different levels of nitrogen, phosphorus and potash applied through drip system (16.2.3.15)** The farmers of Middle Gujarat Agro-climatic Zone growing *rabi* hybrid sweet corn through drip irrigation system (0.8 PEF) are recommended to fertilize the crop with 120 kg N/ha [(105 kg N through urea and 15 kg N through urea phosphate) (24 kg as basal and remaining 96 kg in four equal splits at 20, 30, 40 and 50 DAS)] and 40 kg P_2O_5/ha through urea phosphate (08 kg as basal and remaining 32 kg in four equal splits at 20, 30, 40 and 50 DAS) through fertigation to get higher green cob yield and net return. **System details:** • Lateral spacing: 90 cm • Dripper spacing: 45 cm • Dripper discharge: 4 litre per hour (lph) • Operating pressure: 1.2 kg/cm^2 • Operating frequency: Alternate day

Sr. No.	Title/ Suggestions/ Action
	• Operating time: 55 Minutes મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારના રવી સીઝનમાં ટપક પધ્ધતીથી સંકર સ્વીટ કોર્ન ઉગાડતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે સંકર સ્વીટ કોર્ન પાકને ટપક પધ્ધતી (૦.૮ પીઇએફ) થી પિયત આપવા અને નાઇટ્રોજન ૧૨૦ કિ.ગ્રા./હે. {(૧૦૫ કિ.ગ્રા. યુરિયાના રૂપમાં અને ૧૫ કિ.ગ્રા. યુરિયા ફોસ્ફેટના રૂપમાં) (૨૪ કિ.ગ્રા. પાયામાં અને બાકીનો ૯૬ કિ.ગ્રા. ચાર સરખા હપ્તામાં ૨૦, ૩૦, ૪૦ અને ૫૦ દિવસના અંતરે)} અને ફોસ્ફોરસ ૪૦ કિ.ગ્રા./હે. (૮ કિ.ગ્રા. પાયામાં અને બાકીનો ૩૨ કિ.ગ્રા. ચાર સરખા હપ્તામાં ૨૦, ૩૦, ૪૦ અને ૫૦ દિવસના અંતરે) યુરિયા ફોસ્ફેટના રૂપમાં ટપક પિયત દ્વારા આપવાથી વધુ ઉત્પાદન અને વળતર મેળવી શકાય છે. ટપક પધ્ધતીની વિગત: • બે ડ્રીપ લાઇન વચ્ચેનુ અંતર : ૯૦ સે.મી. • બે ડ્રીપર વચ્ચેનું અંતર : ૪૫ સે.મી. • ટપકની ક્ષમતા : ૪ લિ./કલાક • દબાણ : ૧.૨ કિ.ગ્રા/ચો.સે.મી. • પિયતનો ગાળો : એકાંતરા દિવસે • ટપક ચલાવવાનો સમય : ૫૫ મિનિટ **Approved with following suggestion:** 1. Mention unit of plant population (net plot) in table ***(Action:** Research Scientist (Agronomy), TRTC, AAU, Devgadh Baria)*
18.2.1.30	**Effect of time of sowing and spacing on semi *rabi* black gram (16.2.3.13)** The farmers of Middle Gujarat Agro-climatic Zone are recommended to grow semi *rabi* black gram during first three weeks of September for getting higher yield and net return. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં અર્ધ શિયાળુ અડદનું વધુ ઉત્પાદન અને વળતર મેળવવા માટે સપ્ટેમ્બર માસના પ્રથમ ત્રણ અઠવાડિયા દરમિયાન વાવેતર કરવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion:** 1. Delete approximate quantity of production ***(Action:** Principal, CoA, AAU, Jabugam)*
18.2.1.31	**Effect of nitrogen, phosphorus and bio-fertilizer on growth and yield of chickpea under restricted irrigation in Bhal region (14.2.3.25)** The farmers of Bhal and Coastal Agro-climatic Zone growing chickpea under restricted (one) irrigation at 30 DAS are recommended to apply 10 kg N and 40 kg P_2O_5/ha at the time of sowing and 10 kg N/ha at 30 DAS for getting higher yield and net return. In addition, FYM 2.5 t/ha is to be applied as basal. ભાલ અને દરિયાકાંઠા ખેત આબોહવાકીય વિસ્તારમાં ૩૦ દિવસે એક પિયતથી ચણાનું વાવેતર કરતાં ખેડૂતોને વધુ ઉત્પાદન અને વળતર મેળવવા માટે ૧૦ કિ.ગ્રા. નાઈટ્રોજન અને ૪૦ કિ.ગ્રા. ફોસ્ફરસ/હે. પાયામાં અને ૧૦ કિ.ગ્રા. નાઈટ્રોજન/હે. વાવણીના ૩૦ દિવસ બાદ પિયત પહેલાં આપવાની ભલામણ કરવામાં આવે છે. વધુમાં છાણીયુ ખાતર ૨.૫ ટન/હે. પાયામાં આપવું. **Approved with following suggestions:** 1. Write stover yield instead of haulm from the tables

Sr. No.	Title/ Suggestions/ Action
	2. Correct the year like 2019-20 and 2020-21 in the tables ***(Action:** Associate Research Scientist, ARS, AAU, Arnej)*
18.2.1.32	**Effect of foliar application of organic and inorganic nutrients sources on growth, yield and quality of green gram [*Vigna radiata* (L.) Wilczek] (14.2.3.26)** The farmers of Middle Gujarat Agro-climatic Zone growing green gram in summer season are recommended to apply, 50% RDF (10 kg N and 20 kg P_2O_5/ha) as basal *fb* foliar spray of 3% cow urine at pre-flowering stage, **OR** 50% RDF (10 kg N and 20 kg P_2O_5/ha) as basal *fb* foliar sprays of 10% vermiwash at pre-flowering and pod formation stage for getting higher yield and net return and for saving 50 % of nitrogen and phosphorus. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં મગનું ઉનાળુ ઋતુમાં વાવેતર કરતાં ખેડૂતોને વધુ ઉત્પાદન અને વળતર મેળવવા તથા ૫૦% નાઇટ્રોજન અને ફોસ્ફરસની બચત માટે મગના પાકને, ૧૦ કિ.ગ્રા. નાઇટ્રોજન અને ૨૦ કિ.ગ્રા. ફોસ્ફરસ/હે. પાયાના ખાતર તરીકે અને ૩% ગૌમૂત્રનો ફૂલબેસવાની અવસ્થાએ છંટકાવ કરવો, અથવા રાસાયણિક ખાતર ૧૦ કિ.ગ્રા. નાઇટ્રોજન અને ૨૦ કિ.ગ્રા. ફોસ્ફરસ/હે. પાયાના ખાતર તરીકે અને ૧૦% વર્મિવોશનો ફૂલ બેસવાની અવસ્થાએ અને દાણાં ભરાવવાની અવસ્થાએ છંટકાવ કરવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion:** 1. Write stover instead of haulm in the table ***(Action:** Associate Research Scientist, ARS, AAU, Derol)*
18.2.1.33	**Effect of foliar application of organic and inorganic nutrients sources on growth, yield and quality of black gram [*Vigna mungo* (L.) Hepper] (14.2.3.27)** The farmers of Middle Gujarat Agro-climatic Zone growing black gram in summer season are recommended to apply 50% RDF (10 kg N and 20 kg P_2O_5/ha) as basal *fb* foliar sprays of 10% vermiwash at pre-flowering and pod formation stage for getting higher yield, net return and saving of 50 % of nitrogen and phosphorus. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં અડદનું ઉનાળુ ઋતુમાં વાવેતર કરતાં ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા અડદના પાકને ૧૦ કિ.ગ્રા. નાઇટ્રોજન અને ૨૦ કિ.ગ્રા. ફોસ્ફરસ/હે. પાયાના ખાતર તરીકે અને ૧૦% વર્મિવોશનો ફૂલ બેસવાની અવસ્થાએ અને દાણા ભરાવવાની અવસ્થાએ છંટકાવ કરવાની ભલામણ કરવામાં આવે છે જેથી ૫૦% નાઇટ્રોજન અને ફોસ્ફરસની બચત થાય છે. **Approved with following suggestion:** 1. Write stover instead of haulm in the table ***(Action:** Associate Research Scientist, ARS, AAU, Derol)*
18.2.1.34	**Response of chickpea varieties to irrigation at critical growth stages (15.2.3.112)** The farmers of Middle Gujarat Agro-climatic Zone growing chickpea are recommended to apply three irrigations, first at the time of sowing and remaining two irrigations at branching or at flowering stage and pod development stage for obtaining higher yield and net return. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ચણાની ખેતી કરતાં ખેડૂતોને વધુ ઉત્પાદન

Sr. No.	Title/ Suggestions/ Action
	અને વળતર મેળવવા માટે ચણાના પાકને ત્રણ પિયત આપવા, પ્રથમ વાવણી સમયે તેમજ બાકીના બે પિયત ડાળી ફુટવાની અવસ્થાએ અથવા ફૂલ અવસ્થાએ અને દાણાં ભરાવવાની અવસ્થાએ આપવાની ભલામણ કરવામાં આવે છે. *(**Action**: Associate Research Scientist, ARS, AAU, Derol)*
18.2.1.35	**Effect of paired row sowing on yield and fibre quality of *desi* cotton under rainfed condition (13.2.3.16)** The farmers of North-West Agro-climatic Zone and Bhal & Coastal Agro-climatic Zone growing rainfed *desi* cotton are recommended to sow cotton in paired row of 30-180-30 cm and plant to plant distance 30 cm apart to get higher seed cotton yield and net return. ઉત્તર-પશ્ચિમ ખેત આબોહવાકીય વિસ્તાર તથા ભાલ અને દરિયાકાંઠા ખેત આબોહવાકીય વિસ્તારના બિનપિયત દેશી કપાસ ઉગાડતાં ખેડૂતોને કપાસનું વધુ ઉત્પાદન અને વળતર મેળવવા માટે જોડિયા હારમાં ૩૦-૧૮૦-૩૦ સે.મી. અંતરે અને બે છોડ વચ્ચે ૩૦ સે.મી. અંતરે વાવેતર કરવાથી વધુ ઉત્પાદન મેળવી શકાય છે. ***(Action:** Associate Research Scientist, RCRS, AAU, Viramgam**)***
18.2.1.36	**Effect of spacing and nipping on yield of chickpea (14.2.3.33)** The farmers of middle Gujarat agro climatic zone growing chickpea are recommended to sow at spacing of 45 cm x 20 cm and perform nipping at 25 to 35 days after sowing to get higher yield and net return. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ચણાની ખેતી કરતા ખેડૂતોને ભલામણ કરવામા આવે છે કે ચણાના પાકની વાવણી ૪૫ સે.મી. x ૨૦ સે.મી.ના અંતરે કરવી તેમજ વાવણી બાદ ૨૫ થી ૩૫ દિવસે ડુંખ તોડવાથી વધારે ઉત્પાદન અને વળતર મળે છે. **Approved with following suggestions:** 1. Workout factor wise economics with variable and fixed cost 2. Write stover instead of straw in table ***(Action:** Senior Scientist & Head, KVK, AAU, Dahod**)***

NAVSARI AGRICULTURAL UNIVERSITY

Sr. No.	Title/ Suggestions/ Action
18.2.1.37	**Fertigation study in cauliflower grow on clay soil of South Gujarat (14.2.3.64)** The farmers of South Gujarat growing cauliflower under drip irrigation system are recommended to apply 5 t/ha bio-compost as basal and recommended dose of fertilizer (100-50-50 kg N-P_2O_5-K_2O/ha). Apply 100% N in the form of urea (217 kg/ha) and K in the form of muriate of potash (83 kg/ha) through fertigation and 100 % P in the form of single super phosphate (320 kg/ha) as basal for getting higher yield and net income. **OR** Fertigate N, P and K through 100% water soluble fertilizers, 17:44:0 urea phosphate (114 kg/ha) for N and P and remaining N through urea (175 kg/ha) and K in the form of muriate of potash (83 kg/ha) **Fertigation schedule:**

Growth stage (Week)	No. of splits	% of total
		N & K/P
2 to 3 weeks	2	10 / 40
4 to 7 weeks	3	50 / 30
8 to 12 weeks	3	40 / 30

System details:

Sr. No.	Title/ Suggestions/ Action
	• Lateral spacing: 1.20 m • Dripper spacing: 0.60 m • Dripper discharge: 4 lph • Operating pressure: 1.20 kg/cm^2 • Operating time (alternate day): October- 70 -75 min., November- 80-85 min., December- 90-100 min. દક્ષિણ ગુજરાત વિસ્તારમાં ટપક પિયત પધ્ધતિથી ફ્લાવરનું વાવેતર કરતાં ખેડૂતોને ૫ ટન/હે. બાયો કમ્પોસ્ટ પાયામાં અને ભલામણ કરેલ ખાતરનો જથ્થો (૧૦૦-૫૦-૫૦ કિ.ગ્રા. ના-ફો-પો/હે.) આપવાની ભલામણ કરવામાં આવે છે. ૧૦૦ % ફોસ્ફરસ, સિંગલ સુપર ફોસ્ફેટના રૂપમાં (૩૨૦ કિ.ગ્રા./હે.) પાયામાં નાખીને ૧૦૦% નાઈટ્રોજન યુરિયાના રૂપમાં (૨૧૭ કિ.ગ્રા./હે.) અને પોટેશિયમ મ્યુરેટ ઓફ પોટાશના રૂપમાં (૮૩ કિ.ગ્રા./હે.) ફર્ટીગેશન દ્વારા આપવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મળે છે. અથવા પાણીમાં ૧૦૦% દ્રાવ્ય ખાતરો ફર્ટીગેશન દ્વારા આપવા જેમાં નાઈટ્રોજન અને ફોસ્ફરસ ૧૭:૪૪:૦૦ યુરિયા ફોસ્ફેટના રૂપમાં (૧૧૪ કિ.ગ્રા./હે.) અને બાકીનો નાઈટ્રોજન યુરિયાના રૂપમાં (૧૭૫ કિ.ગ્રા./હે.) અને પોટેશિયમ મ્યુરેટ ઓફ પોટાશના રૂપમાં (૮૩ કિ.ગ્રા./હે.) વાપરવા. ટપક પધ્ધતિ દ્વારા ખાતર આપવાનો કાર્યક્રમ: પાકનો વૃધ્ધિ ગાળો (અઠવાડીયા) | હપ્તાની સંખ્યા | કુલ નાઈટ્રોજન અને પોટેશિયમ / ફોસ્ફરસ (%) ૨ થી ૩ | ૨ | ૧૦ / ૪૦ ૪ થી ૭ | ૩ | ૫૦/ ૩૦ ૮ થી ૧૨ | ૩ | ૪૦/ ૩૦ ટપક પધ્ધતિની વિગત: • લેટરલ અંતર: ૧.૨૦ મી. • ડ્રીપર અંતર: ૦.૬૦ મી. • ડ્રીપર દર: ૪ લિ./કલાક • ચલાવવાનું દબાણ: ૧.૨૦ કિ.ગ્રા./ચો.સે.મી. • પધ્ધતિ ચલાવવાનો સમય (એકાંતરે દિવસે): ઓકટોબર- ૭૦-૭૫ મિનિટ, નવેમ્બર- ૮૦-૮૫ મિનિટ, ડીસેમ્બર- ૯૦-૧૦૦ મિનિટ **Approved with following suggestions:** 1. Mention year as 2018-19, 2019-20 and 2020-21 instead of 2018, 2019 and 2020 in tables. 2. Remove DAP and add SSP in Table No. 1.6 3. Remove Table 1.10 from the report. (***Action:*** *Research Scientist, SWMRU, NAU, Navsari*)
18.2.1.38	**Effect of different methods of irrigation and tillage practices on sweet corn after *kharif* rice (13.2.3.43)** The farmers of South Gujarat growing sweet corn during *rabi* season are recommended to adopt no (Zero) tillage practice with drip irrigation for getting higher yield and net profit along with improvement in soil physical properties. Further, no (Zero) tillage practices also be followed in *kharif* rice. **System details:** • Lateral spacing: 1.20 m

Sr. No.	Title/ Suggestions/ Action
	• Dripper spacing: 0.60 m • Dripper discharge: 4 lph • Operating pressure: 1.20 kg/cm^2 • Operating time (alternate day): December- 85-90 min., January- 80-85 min. February- 90-100 min. and March- 100-115 min. દક્ષિણ ગુજરાત વિસ્તારમાં રવિ ઋતુ દરમ્યાન મીઠી મકાઈનું વાવેતર કરતાં ખેડૂતોને વધારે ઉત્પાદન અને ચોખ્ખો નફો મેળવવાની સાથે જમીનની ભૌતિક ગુણવત્તા સુધારવા શૂન્ય ખેડ પધ્ધતિ સાથે ટપક પધ્ધતિ અપનાવવાની ભલામણ કરવામાં આવે છે. વધુમાં ચોમાસામાં ડાંગરની ખેતીમાં પણ શૂન્ય ખેડ પધ્ધતિ અપનાવવી. પધ્ધતિની વિગત: • લેટરલ અંતર: ૧.૨૦ મી. • ડ્રીપર અંતર: ૦.૬૦ મી. • ડ્રીપર દર: ૪ લિ./કલાક • ચલાવવાનું દબાણ: ૧.૨૦ કિ.ગ્રા./ચો.સે.મી. • ચલાવવાનો સમય (એકાંતરા દિવસે): ડીસે.- ૮૫-૯૦ મિનિટ, જાન્યુ.- ૮૦-૮૫ મિનિટ, ફેબ્રુ.- ૯૦-૧૦૦ મિનિટ, માર્ચ- ૧૦૦-૧૧૫ મિનિટ **Approved with following suggestions:** 1. Mention date of TP rice 2. Remove first year data of rice from the report 3. Add System productivity data in the report 4. Mention Date of LAI 5. Mention method of sowing in cultural operation 6. IWUE data add in the report (***Action:*** *Research Scientist, SWMRU, NAU, Navsari*)
18.2.1.39	**Response of brinjal to integrated nutrient management under coastal salt affected soils of South Gujarat (14.2.3.66)** The farmers of coastal areas of South Gujarat are recommended to transplant brinjal fllowing ridge and furrow method (90 cm x 60 cm) with application of bio-compost @ 10 t/ha + 125-50-37.5 kg NPK/ha (50% N and 100% P & K as basal and 50% N at 30 DAT) along with application of bio-fertilizers *Azospirillum* + PSB 10^8 cfu/ml each 1.25 L/ha in soil for achieving higher yield and net returns with improvement in availability of N and P_2O_5 of coastal salt affected soils. દક્ષિણ ગુજરાતના દરિયાકાંઠા વિસ્તારના ખેડૂતોને ભલામણ કરવામાં આવે છે કે રીંગણની ફેરરોપણી નિકપાળા પધ્ધતિથી (૯૦ સે.મી. x ૬૦ સે.મી.) કરવી સાથે ૧૦ ટન/હે. બાયોકમ્પોસ્ટ + ૧૨૫-૫૦-૩૭.૫ ના-ફો-પો કિ.ગ્રા./હે. (૫૦% નાઇટ્રોજન અને ૧૦૦% ફોસ્ફરસ અને પોટેશિયમ પાયામાં અને ૫૦% નાઇટ્રોજન ફેરરોપણીના ૩૦ દિવસ બાદ) આપવુ તેમજ જૈવિક ખાતરો એઝોસ્પારીલમ અને પી.એસ.બી ૧૦^{૮} સી.એફ.યુ./મિ.લિ., બન્ને ૧.૨૫ લિ./હે. પ્રમાણે જમીનમાં આપવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મળે છે સાથે દરિયાકાંઠાની ક્ષારગ્રસ્ત જમીનમાં નાઈટ્રોજન અને ફોસ્ફરસની લભ્યતામાં વધારો થાય છે. **Approved with following suggestions:** 1. Mention RBD (Factorial concept) instead of FRBD 2. No. of picking date mention in cultural operation 3. Verify N price 4. Verify the data of P_2O_5 in soil

Sr. No.	Title/ Suggestions/ Action
	(***Action:*** *Research Scientist, SWMRU, NAU, Navsari*)
18.2.1.40	**Response of different fodder grasses to gypsum application under coastal saline-sodic soil** (**14.2.3.65**) The farmers of coastal areas of South Gujarat are recommended to grow Hy. Napier grass or guinea grass and apply gypsum @ 75% of GR before sowing for getting higher green fodder yield, net returns and decrease soil sodicity. **દક્ષિણ ગુજરાતના દરિયાકાંઠા વિસ્તારના ખેડૂતોને ભલામણ કરવામાં આવે છે કે લીલા ઘાસચારા માટે હાઇબ્રીડ નેપીયર ઘાસ અથવા ગિની ઘાસનું વાવેતર કરી વાવણી પહેલા ૭૫% જી.આર. ના દરે જીપ્સમ આપવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મળે છે અને જમીનની ભાસ્મીક્તા ઘટે છે** **Approved with following suggestion:** 1. Mention varieties of different grasses in the report (***Action:*** *Research Scientist, SWMRU, NAU, Navsari*)
18.2.1.41	**Effect of integrated nutrient management on *rabi* vegetable crops in rice-based crop sequence in clay soils of South Gujarat** (**14.2.3.67**) The farmers of South Gujarat following *rabi* vegetable crops after *kharif* rice are recommended to adopt rice-radish cropping sequence. Apply bio compost @ 10 t/ha to radish crop as basal and foliar spray of enriched novel organic liquid nutrients 1% at 20 and 40 DAS for achieving higher yield and net realization. **દક્ષિણ ગુજરાત વિસ્તારના ખેડૂતોને ચોમાસું ડાંગર-રવી શાકભાજી પાક પધ્ધતિમાં ડાંગર-મૂળા પાક પધ્ધતિ અપનાવવા ભલામણ કરવામાં આવે છે. મૂળાના પાકની વાવણી પહેલાં બાયોકમ્પોસ્ટ ૧૦ ટન/હે. આપવાથી અને ૧% એનરીચ્ડ નોવેલ ઓર્ગેનિક લિક્વિડ ન્યુટ્રીયન્ટસનો વાવેતર બાદ ૨૦ અને ૪૦ દિવસે છંટકાવ કરવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે.** **Approved with following suggestions:** 1. Mention year wise inputs composition in the report. 2. Check CD value in the Table 1.7 (***Action:*** *Research Scientist, SWMRU, NAU, Navsari*)
18.2.1.42	**Effect of zinc on hybrid rice under South Gujarat** (**15.2.3.44**) The farmers of South Gujarat transplanting hybrid rice in *kharif* season are recommended to spray 0.05% Zn EDTA at tillering and panicle initiation stages for getting higher yield, net return and Zinc content. **દક્ષિણ ગુજરાત વિસ્તારમાં ચોમાસુ ઋતુમાં હાઈબ્રીડ ડાંગરની ફેરરોપણી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે ડાંગરમાં ૦.૦૫% ઝીંક ઇડીટીએ (Zn EDTA)નો છંટકાવ ફૂટ અને કંટી નિકળવાની અવસ્થાએ કરવાથી વધુ ઉત્પાદન ચોખ્ખો નફો અને ઝીંકનું પ્રમાણ વધે છે.** **Approved with following suggestions:** 1. Check data of Panicle weight in Table 2.1 2. Add Zn content data in the report 3. Mention quantity in T_2 and T_8 (***Action:*** *Research Scientist, SWMRU, NAU, Navsari*)
18.2.1.43	**Effect of different sulphur levels on yield and quality of Bt. cotton** (**14.2.3.74**) Farmers of South Gujarat growing Bt. cotton hybrid are recommended to apply sulphur 60 kg/ha through phospho-gypsum 250 kg/ha along with recommended dose of P_2O_5 (40 kg/ha) in form of single super phosphate (250 kg/ha) as basal dose and bio compost 5 t/ha at the time of land preparation and 240 kg nitrogen/ha in five equal splits (each of 48 kg N/ha) at 30, 60, 75, 90 and 105 days after sowing for achieving higher seed cotton yield and net income.

Sr. No.	Title/ Suggestions/ Action
	દક્ષિણ ગુજરાતના બીટી સંકર કપાસનુ વાવેતર કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે સલ્ફર તત્વ ૬૦ કિ.ગ્રા./હે. પ્રમાણે આપવા માટે ૨૫૦ કિ.ગ્રા. ફોસ્ફો-જીપ્સમ સાથે ભલામણ થયેલ ફોસ્ફરસ (૪૦ કિ.ગ્રા./હે.) માટે ૨૫૦ કિ.ગ્રા./હે. સિંગલ સુપર ફોસ્ફેટના રૂપમાં પાયાનાં ખાતર તરીકે તથા બાયોકંપોસ્ટ ૫ ટન/હે. જમીનની તૈયારી સમયે અને ૨૪૦ કિ.ગ્રા. નાઇટ્રોજન/હે. પાંચ સરખા હપ્તામાં (૪૮ કિ.ગ્રા. નાઇટ્રોજન/હે.) વાવણી બાદ ૩૦, ૬૦, ૭૫, ૯૦ અને ૧૦૫ દિવસે આપવાથી કપાસનુ વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે. (***Action:*** *Research Scientist, MCRS, NAU, Surat*)
18.2.1.44	**Studies on sowing dates and spacing on vegetable pigeonpea grown during pre-monsoon (13.2.3.58)** The farmers of South Gujarat growing vegetable pigeonpea during *kharif* season are recommended that pre-monsoon to onset of monsoon sowing (30 April to 17 June) of pigeonpea gives comparable yield. Further, they are recommended to sow the crop at 180 cm x 45 cm for achieving higher net return and easy cultural operations. દક્ષિણ ગુજરાતના ખરીફ ઋતુમાં શાકભાજી તુવેર ઉગાડતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે તુવેરની વાવણી ચોમાસા પહેલાં વહેલી કરવાથી ચોમાસુ વાવેતર (૩૦ એપ્રિલ થી ૧૭ જુન) જેટલું જ ઉત્પાદન મળે છે. વધુમાં, વધુ આવક તેમજ ખેતી કાર્યોમાં સરળતા માટે પાકનું વાવેતર ૧૮૦ સે.મી. x ૪૫ સે.મી.ના અંતરે કરવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestions:** 1. Add green pod equivalent yield data in the report 2. Verify the cost of cultivation in treatment S_2 (***Action:*** *Associate Research Scientist, CRSS, NAU, Achhalia*)
18.2.1.45	**Studies on intercropping of grain legumes in sorghum (14.2.3.76)** The farmers of South Gujarat growing sorghum during *kharif* season are recommended to sow the sorghum + black gram in 2:1 proportion at 30 cm apart with plant to plant spacing of 15 cm for sorghum and 10 cm for black gram to achieve higher yield and net return on system basis as well as efficient use of land. દક્ષિણ ગુજરાતમાં ચોમાસુ જુવાર ઉગાડતાં ખેડૂતોને વધુ ઉત્પાદન અને આવક મેળવવા તેમજ જમીનના કાર્યક્ષમ ઉપયોગ માટે ૩૦ સે.મીના અંતરે ૨:૧ના પ્રમાણમાં જુવાર + અડદ આંતરપાક લેવા અને જુવારનું બે છોડ વચ્ચે ૧૫ સે.મી. અને અડદનું બે છોડ વચ્ચે ૧૦ સે.મી. અંતરે વાવેતર કરવા ભલામણ કરવામાં આવે છે. **Approved with following suggestion:** 1. Verify data of Table 2.8 (***Action:*** *Associate Research Scientist, CRSS, NAU, Achhalia*)
18.2.1.46	**Effect of seed priming and irrigation on seed production of *rabi* sunnhemp under *kyari* land of south Gujarat (14.2.3.77)** The sunnhemp seed producing farmers of South Gujarat are recommended to prime the seeds with *Rhizobium* or PSB or *Rhizobium* + PSB (1 x 10^8 cfu/ml) each of 10 ml/kg seed in 2 L water for 2 hrs and irrigate the crop immediately after sowing and second irrigation at 30 DAS in *rabi* season for obtaining higher yield and net return. દક્ષિણ ગુજરાત વિસ્તારના શિયાળુ ઋતુમાં શણ બીજ ઉત્પાદન કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે રાયઝોબિયમ અથવા પી.એસ.બી. અથવા રાયઝોબિયમ + પી.એસ.બી. (૧ x $૧૦^૮$ સીએફયુ/ મિ.લિ.) દરેક કલ્ચર ૧૦ મિ.લિ. પ્રતિ કિ.ગ્રા બીજ ૨ લિ.

Sr. No.	Title/ Suggestions/ Action
	પાણીમાં ૨ કલાક સુધી બોળીને બીજનું વાવેતર કરવું અને પ્રથમ પિયત વાવણી બાદ તુરત જ અને બીજુ પિયત ૩૦ દિવસે આપવાથી વધારે ઉત્પાદન અને ચોખ્ખો નફો મળે છે. (*Action:* *Professor & Head, Department of Agronomy, NMCA, NAU, Navsari*)

18.2.1.47

Weed management with pre and post emergence herbicides in linseed (14.2.3.78)

The farmers of South Gujarat growing linseed are recommended to carry out interculturing followed by hand weeding at 20 and 40 days after sowing for effective weed management and obtaining economical yield.

દક્ષિણ ગુજરાત વિસ્તારના અળસીની ખેતી કરતાં ખેડૂતોને નીંદણના અસરકારક નિયંત્રણ કરવા અને અર્થક્ષમ ઉત્પાદન માટે ૨૦ અને ૪૦ દિવસે આંતરખેડ અને નીંદણ કરવાની ભલામણ કરવામાં આવે છે.

Approved with following suggestions:

1. Treatment T_2 recommend for farmers
2. This recommendation consider as scientific community
3. Add formulation of the products

(***Action:*** *Professor & Head, Department of Agronomy, NMCA, NAU, Navsari*)

18.2.1.48

Identification of cropping systems module for different farming systems (14.2.3.80)

The farmers of South Gujarat are recommended to adopt the following cropping systems for different purposes.

Cropping system	Purpose
Rice - Fenugreek (V) - Cluster bean (V) crop sequence	Yield and income enhancement
Rice – Green gram - Pearlmillet crop sequence	Improve soil health
Rice-Indian bean (V) - Sesamum crop sequence	Family nutrition
Rice - Lucerne (continue) crop sequence	Livestock nutrition

દક્ષિણ ગુજરાત વિસ્તારના ખેડૂતોને વિવિધ હેતુઓ માટે નીચે મુજબની પાક પધ્ધતિ અપનાવવાની ભલામણ કરવામાં આવે છે.

પાક પધ્ધતિ	હેતુ
ડાંગર - મેથી (શાકભાજી) – ગુવાર (શાકભાજી) પાક પધ્ધતિ	વધુ ઉત્પાદન અને આવક
ડાંગર - મગ - બાજરા પાક પધ્ધતિ	જમીનની ફળદ્રુપતા માટે
ડાંગર - પાપડી (શાકભાજી) - તલ પાક પધ્ધતિ	કુટુંબના પોષણ માટે
ડાંગર - રજકો પાક પધ્ધતિ	પશુઓના પોષણ માટે

(***Action:*** *Professor & Head, Department of Agronomy, NMCA, NAU, Navsari*)

18.2.1.49

Effect of spacing and organic manure on growth, yield and quality of organically grown banana cv. Grand naine (15.2.3.54)

The farmers of South Gujarat Agro-climatic Zone growing banana organically are recommended to apply 300 g N/plant through NADEP compost (26.5 kg/plant NADEP compost containing 1.13% N) in three equal splits at the time of planting, 30 and 60 days after planting either keep the spacing of 2.1 m x 1.5 m or 1.8 m x 1.5 m for achieving higher yield and net profit. Further, apply bio-fertilizers 5 L/ha (*Azotobacter*, PSB and KMB, 10^8 cfu/ml) at the time of planting. Also drench *Jivamrut* at monthly interval starting from planting in five equal splits (200 ml/plant/split).

દક્ષિણ ગુજરાત વિસ્તારમાં સેન્દ્રિય ખેતીથી કેળા ઉગાડતાં ખેડૂતોને વધુ ઉત્પાદન અને

Sr. No.	Title/ Suggestions/ Action
	ચોખ્ખું વળતર મેળવવા માટે ૨.૧ મી. x ૧.૫ મી. અથવા ૧.૮ મી. x ૧.૫ મી. નાં અંતરે રોપણી કરી ભલામણ કરેલ ૩૦૦ ગ્રામ નાઈટ્રોજન/છોડ નાડેપ કમ્પોસ્ટ (૧.૧૩% નાઈટ્રોજન ધરાવતું ૨૬.૫ કિ.ગ્રા./છોડ નાડેપ કમ્પોસ્ટ) દ્વારા ત્રણ સરખા હપ્તામાં રોપણી સમયે, રોપણીનાં ૩૦ અને ૬૦ દિવસ પછી આપવાની ભલામણ કરવામાં આવે છે. વધુમાં, રોપણી સમયે જૈવિક ખાતરો ૫ લિ./હે. (એઝેટોબેક્ટર, પીએસબી અને કેએમબી, દરેક ૧૦^{૮} જીવંત કોષ/મિ.લિ.) આપવા. રોપણીનાં એક મહિના બાદ જીવામૃત પણ પાંચ સરખા હપ્તામાં (૨૦૦ મિ.લિ./ છોડ/ હપ્તો) એક મહિનાનાં અંતરે રેડવું. (***Action:*** *Assoc. Prof., Dept. of Soil Sci. & Agril. Chem., ACHF, NAU, Navsari)*
18.2.1.50	**Suitability of various turmeric varieties under organic farming (15.2.3.55)** The farmers of South Gujarat Agro-climatic Zone growing turmeric (variety: Salem or Sugandhum) organically are recommended to apply 100% RDN through NADEP compost (5.5 t/ha NADEP compost containing 1.08% N) for achieving higher yield and net profit. They have to plant turmeric at 30 cm x 20 cm spacing on 90 cm raised bed having 15 cm height and keep spacing 50 cm between the beds. Further, apply bio-fertilizers 5 L/ha (*Azotobacter* and PSB, 10^8 cfu/ml) and sow dhaincha as a green manure at the time of planting. Also drench of *Jivamrut* 1500 L/ha in three equal splits at 45, 60 and 75 DAP. દક્ષિણ ગુજરાત વિસ્તારમાં સેન્દ્રિય ખેતીથી હળદર (જાત: સાલેમ અથવા સુગંધમ) ઉગાડતાં ખેડૂતોને વધુ ઉત્પાદન અને ચોખ્ખું વળતર મેળવવા માટે ભલામણ કરેલ ૧૦૦% નાઈટ્રોજનનો જથ્થો નાડેપ કમ્પોસ્ટ (૧.૦૮ % નાઈટ્રોજન ધરાવતું ૫.૫ ટન/હે. નાડેપ કમ્પોસ્ટ) દ્વારા રોપણી પહેલાં આપવાની ભલામણ કરવામાં આવે છે. તેઓએ ૧૫ સે.મી. ઉંચાઈનાં ૯૦ સે.મી. પહિળા ગાદીક્યારા પર હળદરની રોપણી ૩૦ સે.મી. x ૨૦સે.મી.નાં અંતરે કરવી અને બે ગાદીક્યારા વચ્ચે ૫૦ સે.મી. અંતર રાખવું. વધુમાં, રોપણી સમયે જૈવિક ખાતરો ૫ લિ./હે (એઝેટોબેકટર અને પીએસબી દરેક ૧૦૮ જીવંત કોષ/મિ.લિ.) આપવા અને ઇક્કડને રોપણી સમયે વાવી આવરણ તરીકે ઉપયોગ કરવો. જીવામૃત ૧૫૦૦ લિ./હે. પણ ત્રણ સરખા હપ્તામાં રોપણીનાં ૪૫, ૬૦ અને ૭૫ દિવસ બાદ રેડવું. (***Action:*** *Associate Prof., Dept. of Soil Sci. & Agril. Chem., ACHF, NAU, Navsari*)
18.2.1.51	**Weed management in cotton (14.2.3.85)** Farmers of South Gujarat growing cotton crop are recommended to manage the weeds by adopting stale seedbed techniques by removing first flush of weeds (either by application of glyphosate 41% SL 1.0 kg a.i./ha (49 ml/10 L) or through shallow tillage after 15 days of light irrigation) during off-season then application of pendimethalin 30% EC 0.9 kg a.i./ha (60 ml/10 L) PE *fb* quizalofop-ethyl 5% EC 50 g a.i./ha (20 ml/10 L)and pyrithiobac sodium 10 % EC 75 g a.i./ha (15 ml/10 L) (tank mix) at 50 DAS during crop season for producing higher and profitable yield of cotton crop. દક્ષિણ ગુજરાતમાં કપાસ ઉગાડતાં ખેડૂતોને નીંદણ વ્યવસ્થાપન માટે કપાસની વાવણીના ૨૦ થી ૨૫ દિવસ પહેલા હળવું પિયત આપી ૧૫ દિવસ બાદ નીંદણના પ્રથમ ઉગાવાનો નાશ કરી (જેના માટે ગ્લાયફોસેટ ૪૧% એસએલ ૧ કિ.ગ્રા. સ.ત./હે. (૪૯ મિ.લિ./૧૦ લિ.) પ્રમાણે છંટકાવ કરવો અથવા હળવી ખેડ કરવી) વાવણી બાદ તુરંત પેંડિમેથાલીન ૩૦% ઇસી ૦.૯ કિ.ગ્રા. સ.ત./હે. (૬૦ મિ.લિ./૧૦ લિ.) તથા ૫૦ દિવસે ક્વિઝાલોફોપ ઈથાઈલ ૫% ઇસી ૫૦ ગ્રામ સ.ત./હે. (૨૦ મિ.લિ./૧૦ લિ.) અને પાયરીથાયોબેક સોડિયમ ૧૦% ઇસી ૭૫

Sr. No.	Title/ Suggestions/ Action
	ગ્રામ સ.ત./હે. (૧૫ મિ.લિ./૧૦ લિ.) પ્રમાણે મિશ્રણ તૈયાર કરી છંટકાવ કરવાથી કપાસનું વધુ તેમજ નફાકારક ઉત્પાદન મેળવી શકાય છે. **Approved with following suggestion:** 1. Remove acknowledgement from the report (***Action:*** *Professor of Agronomy, CoA, NAU, Bharuch)*
18.2.1.52	**Response of cotton to tillage and different intercropping system under rainfed condition of south Gujarat (13.2.3.54)** The farmers of South Gujarat are recommended to carryout sub-soiling (30 cm) or deep ploughing (22.5 cm) followed by cultivation with cultivator for obtaining higher and profitable yield of cotton. Besides, intercropping of black gram or green gram (1:2) found remunerative. દક્ષિણ ગુજરાતમાં કપાસ ઉગાડતાં ખેડૂતોને વધુ તેમજ નફાકારક ઉત્પાદન મેળવવા માટે સબસોઇલિંગ (૩૦ સે.મી.) અથવા ઊંડી ખેડ (૨૨.૫ સે.મી.) કર્યા બાદ કલ્ટીવેટરથી ખેડ કરવાની ભલામણ કરવામાં આવે છે. વધુમાં અડદ અથવા મગનો આંતરપાક (૧:૨) ફાયદાકારક જણાયેલ છે. **Approved with following suggestion:** 1. Verify cost of cultivation data (***Action:*** *Professor of Agronomy, CoA, NAU, Bharuch)*
18.2.1.53	**Soil test based fertilizer recommendation for targeted yields of Indian bean (12.2.3.13)** **Suggestion: Concluded** (***Action:*** *Nodal Officer (Megaseed) & Unit Head, PCRS, NAU, Navsari)*
18.2.1.54	**Nutrient management in fodder cowpea-maize under south Gujarat condition (14.2.3.79)** **Suggestion: Concluded** (***Action:*** *Professor & Head, Department of Agronomy, NMCA, NAU, Navsari*)

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

Sr. No.	Title/ Suggestions/ Action
18.2.1.55	**Nitrogen management through organics on the basis of STV in sorghum (dry fodder)-lucerne cropping system (10.2.4.1)** The farmers of North Gujarat Agro-climatic Zone IV adopting forage sorghum-lucerne crop sequence under organic farming are recommended to apply 50% RDN through FYM (9615 kg/ha to sorghum and 2404 kg/ha to lucerne) and 50% RDN through vermicompost (3333 kg/ha to sorghum and 833 kg/ha to lucerne) or 50% RDN through FYM (9615 kg/ha to sorghum and 2404 kg/ha to lucerne) + 25% RDN through VC (1667 kg/ha to sorghum and 417 kg/ha to lucerne) + 25% RDN through castor cake (658 kg/ha to sorghum and 164 kg/ha to lucerne) or 33% RDN each through FYM (6410 kg/ha to sorghum and 1603 kg/ha to lucerne), vermicompost (2222 kg/ha to sorghum and 556 kg/ha to lucerne) and castor cake (877 kg/ha to sorghum and 219 kg/ha to lucerne) based on low STV to both the crops for obtaining higher sorghum dry fodder equivalent yield, fodder quality and improving soil fertility. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ ના સેન્દ્રિય ખેતીથી ઘાસચારા જુવાર-રજકા પાક પધ્ધતિનુ વાવેતર કરતાં ખેડૂતોને જુવારના સુકા ઘાસચારા સમકક્ષ વધુ ઉત્પાદન મેળવવા, ઘાસની ગુણવત્તા અને જમીનની ફળદ્રુપતા વધારવા માટે ઘાસચારાની જુવાર અને રજકાના પાકને ભલામણ કરેલ ખાતરના ૫૦% નાઇટ્રોજન છાણીયા ખાતરના રૂપે (હેક્ટર દીઠ

Sr. No.	Title/ Suggestions/ Action
	જુવારને ૯૬૧૫ કિ.ગ્રા. અને રજકાને ૨૪૦૪ કિ.ગ્રા.) અને ૫૦%નાઇટ્રોજન અળસીયાના ખાતરના રૂપે (હેક્ટર દીઠ જુવારને ૩૩૩૩ કિ.ગ્રા. અને રજકાને ૮૩૩ કિ.ગ્રા.) અથવા ૫૦% નાઇટ્રોજન છાણીયા ખાતરના રૂપે (હેક્ટર દીઠ જુવારને ૯૬૧૫ કિ.ગ્રા. અને રજકાને ૨૪૦૪ કિ.ગ્રા.), ૨૫% નાઇટ્રોજન અળસીયાના ખાતરના રૂપે (હેક્ટર દીઠ જુવારને ૧૬૬૭ કિ.ગ્રા. અને રજકાને ૪૧૭ કિ.ગ્રા.) અને ૨૫% નાઇટ્રોજન દિવેલી ખોળના રૂપે (હેક્ટર દીઠ જુવારને ૬૫૮ કિ.ગ્રા. અને રજકાને ૧૬૪ કિ.ગ્રા.) અથવા ૩૩% નાઇટ્રોજન છાણીયા ખાતરના રૂપે (હેક્ટર દીઠ જુવારને ૬૪૧૦ કિ.ગ્રા. અને રજકાને ૧૬૦૩ કિ.ગ્રા.), ૩૩% નાઇટ્રોજન અળસીયાના ખાતરના રૂપે (હેક્ટર દીઠ જુવારને ૨૨૨૨ કિ.ગ્રા. અને રજકાને ૫૫૬ કિ.ગ્રા.) અને ૩૩% નાઇટ્રોજન દિવેલી ખોળના રૂપે (હેક્ટર દીઠ જુવારને ૮૭૭ કિ.ગ્રા. અને રજકાને ૨૧૯ કિ.ગ્રા.) નાઇટ્રોજનની ઉણપ ધરાવતી જમીનમાં બંને પાકોમાં આપવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestions:** 1. Add the data of nutrient content (year wise) in different organic inputs used in the experiment. 2. Clarify the quantity of nitrogen applied on the basis of STV *i.e.* low, medium and high. *(**Action**: Research Scientist, IFS, SDAU, Sardarkrushinagar)*
18.2.1.56	**Efficiency of different incubating material for PROM in wheat (14.2.3.87)** The farmers of North Gujarat Agro-climatic Zone IV growing wheat are recommended to replace DAP (60 kg P_2O_5 /ha) with Udaipur Rock Phosphate (31% P_2O_5) @ 198 kg/ha incubated for 30 days with FYM (593 kg) or vermicompost (593 kg) or compost (593 kg) or vegetable waste (593 kg) or cow urine (593 L) (1:3 ratio) applied as basal along with 120 kg nitrogen/ha (60 kg N/ha as basal and 60 kg N/ha at 21 DAS) for obtaining higher yield and net returns. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ના ઘઉંનું વાવેતર કરતાં ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે ૬૦ કિ.ગ્રા. ફોસ્ફરસ/હે. ડીએપીના રૂપમાં આપવાના બદલે પાયામાં ૧૯૮ કિ.ગ્રા. ઉદેપુર રોક ફોસ્ફેટ (૩૧% ફોસ્ફરસ) ને ૧:૩ના પ્રમાણમાં છાણીયા ખાતર (૫૯૩ કિ.ગ્રા.) અથવા અળસીયાના ખાતર (૫૯૩ કિ.ગ્રા.) અથવા કહોવાયેલો કચરો (કમ્પોસ્ટ) (૫૯૩ કિ.ગ્રા.) અથવા શાકભાજીનો કચરો (૫૯૩ કિ.ગ્રા.) અથવા ગૌમૂત્ર (૫૯૩ લિ.) સાથે ૩૦ દિવસ સુધી ઇન્ક્યુબેટ કરવું આ ઉપરાંત ૧૨૦ કિ.ગ્રા. નાઇટ્રોજન/હે. (૬૦ કિ.ગ્રા./હે. પાયામાં અને ૬૦ કિ.ગ્રા./હે. વાવણી બાદ ૨૧ દિવસે) આપવાની ભલામણ કરવામાં આવે છે. *(**Action:** Research Scientist, IFS, SDAU, Sardarkrushinagar)*
18.2.1.57	**Effect of foliar spray of nutrients on pearlmillet under dryland condition (14.2.3.92)** The farmers of North Gujarat Agro-climatic Zone IV growing pearlmillet under rainfed conditions are recommended to apply two foliar sprays of water soluble complex fertilizer 19-19-19 N-P_2O_5-K_2O and minimum after three hours, spray $ZnSO_4.7H_2O$ (21% Zn) each @ 0.5% at tillering and flowering stages in addition to 75% RDF (60 kg N and 30 kg P_2O_5/ha) for obtaining higher yield and net returns. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪માં વરસાદ આધારિત બાજરી ઉગાડતાં ખેડૂતોને વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવવા માટે ભલામણ કરેલ રાસાયણિક ખાતરના ૭૫% (હેક્ટર દીઠ ૬૦ કિ.ગ્રા. નાઈટ્રોજન તેમજ ૩૦ કિ.ગ્રા. ફોસ્ફરસ) ઉપરાંત પાણીમાં દ્રાવ્ય ખાતર ૧૯:૧૯:૧૯ ના:ફો:પો અને ઓછામાં ઓછા ત્રણ કલાક પછી ઝીંક સલ્ફેટ (૨૧% જસત)

Sr. No.	Title/ Suggestions/ Action
	દરેકના ૦.૫% દ્રાવણનો (૫ ગ્રામ/લિ.) ફૂટ અને ફૂલ અવસ્થાએ છંટકાવ કરવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestions:** 1. Verify the data of economics (Put the data of variable cost) in the text. ***(Action:*** *Research Scientist, CNRM, SDAU, Sardarkrushinagar)*
18.2.1.58	**Integrated nitrogen management in castor-cluster bean crop rotation under rainfed condition (12.2.4.9)** The farmers of North Gujarat Agro-climatic Zone IV adopting castor-clusterbean crop rotation under rainfed conditions are recommended to apply 30 kg N/ha through chemical fertilizer and 30 kg N/ha through vermicompost (2500 kg/ha) to castor and 10 kg N/ha through chemical fertilizer and 10 kg N/ha through vermicompost (830 kg/ha) to cluster bean and 40 kg P_2O_5/ha as basal and *Azotobacter* (Azo 8) + PSB (each @ 5 ml/kg seed) as seed treatment to both the crops for obtaining higher castor equivalent yield and net returns. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ માં વરસાદ આધારિત દિવેલા અને ગુવારની પાક ફેરબદલી અપનાવતા ખેડૂતોને દિવેલા સમકક્ષ વધુ ઉત્પાદન અને નફો મેળવવા માટે દિવેલાને હેક્ટર દીઠ ૩૦ કિ.ગ્રા. નાઈટ્રોજન રાસાયણિક ખાતરના રૂપમાં અને ૩૦ કિ.ગ્રા. નાઈટ્રોજન અળસિયાના ખાતરના (૨૫૦૦ કિ.ગ્રા./હે.) રૂપમાં જ્યારે ગુવારને હેક્ટર દીઠ ૧૦ કિ.ગ્રા. નાઈટ્રોજન રાસાયણિક ખાતરના રૂપમાં અને ૧૦ કિ.ગ્રા. નાઈટ્રોજન અળસિયાના ખાતરના (૮૩૦ કિ.ગ્રા./હે.) રૂપમાં આપવો તદ્ઉપરાંત બંને પાકોને હેક્ટર દીઠ પાયામાં ૪૦ કિ.ગ્રા. ફોસ્ફરસ તેમજ એઝોટોબેકટર અને પી.એસ.બી. (દરેકના ૫ મિ.લી./કિ.ગ્રા. બીજ) ની બીજ માવજત આપવાની ભલામણ કરવામાં આવે છે. ***(Action:*** *Research Scientist, CNRM, SDAU, Sardarkrushinagar)*
18.2.1.59	**Evaluation of different cow-based bio-enhancers for organic cultivation of chickpea (14.2.3.93)** The farmers of North Gujarat Agro-climatic Zone IV growing chickpea under organic farming are recommended to apply vermicompost 1.5 t/ha or *Panchgavya* as foliar spray @ 3% at 30, 45, 60 DAS or FYM 5 t/ha or *Amrutpani* @ 500 L/ha with irrigation at sowing, 30, 45 DAS or banana sap as foliar spray @ 1% at 30, 45 and 60 DAS in addition to castor cake 400 kg/ha at the time of sowing for obtaining higher yield and net returns. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪માં સેંદ્રિય ખેતીથી ચણાનું વાવેતર કરતાં ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે હેક્ટર દીઠ અળસિયાનું ખાતર ૧.૫ ટન અથવા ૩% પંચગવ્ય દ્રાવણનો છંટકાવ વાવણી બાદ ૩૦, ૪૫ અને ૬૦ દિવસે અથવા છાણિયુ ખાતર ૫ ટન અથવા ૫૦૦ લિ. અમૃતપાણી વાવણી વખતે, ૩૦ અને ૪૫ દિવસે પિયત સાથે અથવા કેળના થડના રસનો ૧% દ્રાવણનો છંટકાવ ૩૦, ૪૫ અને ૬૦ દિવસે તદ્ઉપરાંત હેક્ટર દીઠ ૪૦૦ કિ.ગ્રા. દિવેલી ખોળ જમીન તૈયાર કરતી વખતે આપવાની ભલામણ કરવામાં આવે છે. ***(Action:*** *Research Scientist, CNRM, SDAU, Sardarkrushinagar)*
18.2.1.60	**Evaluation of different cow-based bio-enhancers for organic cultivation of fenugreek (14.2.3.95)** The farmers of North Gujarat Agro-climatic Zone IV growing fenugreek under organic farming are recommended to apply vermicompost 1.5 t/ha or *Panchgavya* as foliar spray @ 3% at 30, 45, 60 DAS or FYM 5 t/ha in addition to castor cake 400 kg/ha at the time of sowing for obtaining higher yield and net returns ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪માં સેંદ્રિય ખેતીથી મેથીનું વાવેતર કરતાં

Sr. No.	Title/ Suggestions/ Action
	ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે હેક્ટર દીઠ અળસિયાનું ખાતર ૧.૫ ટન અથવા ૩% પંચગવ્ય દ્રાવણનો છંટકાવ વાવણી બાદ ૩૦, ૪૫ અને ૬૦ દિવસે અથવા છાણિયુ ખાતર ૫ ટન તદઉપરાંત હેક્ટર દીઠ ૪૦૦ કિ.ગ્રા. દિવેલી ખોળ જમીન તૈયાર કરતી વખતે આપવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion:** 1. Add the data of nutrient content (year wise) in FYM and vermicompost in the text. ***(Action:** Research Scientist, CNRM, SDAU, Sardarkrushinagar)*
18.2.1.61	**Effect of date of sowing and spacing on summer *kalingada* for vegetable purpose (15.2.3.9)** The farmers of North Gujarat Agro-climatic Zone IV growing summer *kalingada* for vegetable purpose are recommended to sow the crop during second week of February at 1.0 m × 1.0 m spacing for obtaining higher yield and net returns. ઉતર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ના ઉનાળુ શાકભાજી માટે કાળીંગડા વાવતાં ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે પાકની વાવણી ફેબ્રુઆરી માસના બીજા અઠવાડિયા દરમ્યાન ૧ મી. x ૧ મી. ના અંતરે કરવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestions:** 1. Replace the word “leaf temperature” by “canopy temperature” in the title of Table-4. 2. Give the seed rate used for three different spacing treatments in point no 7.7 of the text. ***(Action:** Associate Research Scientist, Crop Improvement, SDAU, SKNagar)*
18.2.1.62	**Response of castor hybrid GCH 8 to spacing and date of sowing under drip irrigation (14.2.3.100)** The farmers of North Gujarat Agro-climatic Zone IV growing castor hybrid GCH 8 under drip irrigation (0.8 PEF) are recommended to sow the crop during third week of August to first week of September at 150 cm × 120 cm or third week of August at 180 cm × 150 cm spacing for getting higher yield and net returns. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ના ટપક પિયત (૦.૮ પી.ઇ.એફ.) હેઠળ દિવેલાની સંકર જાત જીસીએચ ૮ નું વાવેતર કરતાં ખેડૂતોએ વધુ ઉત્પાદન અને નફો મેળવવા માટે પાકને ઓગસ્ટ માસના ત્રીજા અઠવાડિયાથી સપ્ટેમ્બર માસના પ્રથમ અઠવાડિયા સુધી ૧૫૦ સે.મી. × ૧૨૦ સે.મી. અથવા ઓગસ્ટ માસના ત્રીજા અઠવાડિયા દરમ્યાન ૧૮૦ સે.મી. × ૧૫૦ સે.મી. અંતરે વાવણી કરવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestions:** 1. Give the seed rate used for three different spacing treatments in point no 7.7 of the text. ***(Action:** Research Scientist, Castor and Mustard Res. Station, SDAU, SKNagar)*
18.2.1.63	**Split application of nitrogen in castor under drip irrigation (14.2.3.101)** The farmers of North Gujarat Agro-climatic Zone IV growing castor under drip irrigation (0.8 PEF) are recommended to apply 135 kg N/ha, of which 25% (34 kg N/ha) RDN as basal and remaining 75% (101 kg N/ha) RDN in four equal splits at 30, 60, 90 and 120 DAS through fertigation for obtaining higher yield and net returns. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ના ટપક પિયત (૦.૮ પી.ઇ.એફ.) હેઠળ દિવેલા વાવતાં ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે ૧૩૫ કિ.ગ્રા નાઈટ્રોજન/હે. આપવો જે પૈકી ૨૫% (૩૪ કિ.ગ્રા. ના./હે.) પાયામાં અને ૭૫% (૧૦૧ કિ.ગ્રા. ના./હે.) વાવણી

Sr. No.	Title/ Suggestions/ Action
	બાદ ૩૦, ૬૦, ૯૦ અને ૧૨૦ દિવસે ફર્ટીગેશનથી ચાર સરખા હપ્તામાં આપવાની ભલામણ કરવામાં આવે છે. ***(Action:** Research Scientist, Castor and Mustard Res. Station, SDAU, SKNagar)*
18.2.1.64	**Response of mustard to split application of nitrogen (14.2.3.102)** The farmers of North Gujarat Agro-climatic Zone IV growing mustard are recommended to apply 37.5 kg N/ha, of which, 50 % as basal and remaining 50 % at 30 DAS along with recommended dose of phosphorus (50 kg/ha) and sulphur (40 kg/ha) as basal for obtaining higher yield. It also saves 25 % nitrogen. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર-૪ ના રાઇનું વાવેતર કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે, હેક્ટર દીઠ વધુ ઉત્પાદન મેળવવા માટે ૩૭.૫ કિ.ગ્રા. નાઇટ્રોજન/હે. જે પૈકી ૫૦ % જથ્થો પાયામાં અને બાકીનો ૫૦% વાવણી બાદ ૩૦ દિવસે પૂર્તિ ખાતર તરીકે આપવું. આ ઉપરાંત ૫૦ કિ.ગ્રા./હે. ફોસ્ફરસ અને ૪૦ કિ.ગ્રા./હે. સલ્ફર પાયામાં આપવું. જેનાથી ૨૫% નાઇટ્રોજનની બચત થાય છે. ***(Action:** Research Scientist, Castor and Mustard Res. Station, SDAU, SKNagar)*
18.2.1.65	**Nutrient management in napier (*Napier halipes* L.) grass under different fodder tree species (14.2.3.97)** The farmers of North Gujarat Agro-climatic Zone IV are recommended to grow bajara napier hybrid under anjan and *ardusa* based silvipasture system with the application of 50-30-30 kg N-P_2O_5-K_2O/ha as basal and 50 kg N/ha at 30 DAS. After each cut, apply 50 kg N/ha for obtaining higher forage equivalent yield and net returns. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ના ખેડૂતોને બાજરા નેપીઅર હાઇબ્રીડને અંજન અને અરડુસાના ઝાડ આધરિત સીલ્વીપાસ્ચ્યર પધ્ધતિમાં લીલા ઘાસચારા સમકક્ષ વધારે ઉત્પાદન અને નફો મેળવવા માટે ભલામણ મુજબ રાસાયણિક ખાતર ૫૦-૩૦-૩૦ કિ.ગ્રા. ના-ફો-પો./હે. પાયામાં અને ૫૦ કિ.ગ્રા. નાઇટ્રોજન/હે. વાવણી પછી ૩૦ દિવસે આપવું. આ ઉપરાંત ૫૦ કિ.ગ્રા. નાઇટ્રોજન/હે. દરેક કાપણી પછી આપવાની ભલામણ કરવામાં આવે છે ***(Action:** Research Scientist, Agroforestry Research Station, SDAU, SKNagar)*
18.2.1.66	**Nutrient management in lucerne (*Medicago sativa*) under *Melia dubia* based silvipasture system (14.2.3.98)** The farmers of North Gujarat Agro-climatic zone IV growing lucerne under *Melia dubia* based silvipasture system are recommended to fertilize the lucerne with 75% RDF (15-60 kg N-P_2O_5/ha) + FYM 5 t/ha + *Rhizobium* + PSB (each 5 ml/kg seed) for obtaining higher green fodder production of lucerne and net returns. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ના બકમ લીમડા સાથે રજકાની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે રજકાના પાકને છાણિયુ ખાતર ૫ ટન/હે. સાથે ૧૫ કિ.ગ્રા. નાઇટ્રોજન + ૬૦ કિ.ગ્રા. ફોસ્ફરસ + રાઇઝોબિયમ + પી.એસ.બી. (દરેકના ૫ મિ.લી./ કિ.ગ્રા. બીજ) ની બીજ માવજત આપી વાવણી કરવાથી લીલા ઘાસનું વધુ ઉત્પાદન અને નફો મળે છે. ***(Action:** Research Scientist., Agroforestry Research Station, SDAU, SKNagar)*
18.2.1.67	**Effect of potassium and iron on yield attributes, yield and quality of *kharif* groundnut (15.2.3.18)** The farmers of North Gujarat Agro-climatic Zone IV growing *kharif* groundnut are recommended to apply 20 kg K_2O/ha and 15 kg $FeSO_4.7H_2O$/ha as basal or foliar spray of $FeSO_4.7H_2O$ @ 0.5% at 30 and 45 DAS along with recommended dose of fertilizer (12.5-25 kg N-P_2O_5/ha) for obtaining higher yield

Sr. No.	Title/ Suggestions/ Action
	and net returns. Neutralize the 0.5% $FeSO_4.7H_2O$ solution with 0.25% lime solution. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ના ચોમાસું મગફળી વાવતાં ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે હેક્ટર દીઠ ૨૦ કિ.ગ્રા. પોટાશ અને ૧૫ કિ.ગ્રા. ફેરસ સલ્ફેટ (હેપ્ટા હાઇડ્રેટ) અથવા ૦.૫% ફેરસ સલ્ફેટ (હેપ્ટા હાઇડ્રેટ)ના દ્રાવણનો વાવણી બાદ ૩૦ અને ૪૫ દિવસે છંટકાવ કરવાની સાથે ભલામણ કરેલ ખાતર (૧૨.૫-૨૫ કિ.ગ્રા ના-ફો/.હે) આપવાની ભલામણ કરવામાં આવે છે. ફેરસ સલ્ફેટના ૦.૫% દ્રાવણને ૦.૨૫% ચુનાનાં નિતર્યા પાણી સાથે તટસ્થીકરણ કર્યા બાદ ઉપયોગ કરવો. **Approved with following suggestion:** 1. Delete “Table 15” from the text. ***(Action:*** *Head of Unit, BSRC, SDAU, Sardarkrushinagar)*
18.2.1.68	**Effect of potash and sulphur on yield and quality of cumin (13.2.3.71)** The farmers of North Gujarat Agro-climatic Zone IV growing cumin are recommended to apply 13.33-15 kg N-P_2O_5/ha along with 40 kg K_2O and 20 kg S/ha as basal and apply 26.67 kg N/ha in two equal splits at 8-10 and 30 DAS for obtaining higher seed yield and net returns. ઉત્તર ગુજરાત ખેત આબોહવાકિય વિસ્તાર ૪ના જીરૂનું વાવેતર કરતાં ખેડૂતોને વધારે ઉત્પાદન અને નફો મેળવવા માટે ૧૩.૩૩-૧૫ કિ.ગ્રા. ના.-ફો./હે. ની સાથે ૪૦ કિ.ગ્રા. પોટાશ અને ૨૦ કિ.ગ્રા. સલ્ફર પાયામાં અને ૨૬.૬૭ કિ.ગ્રા. નાઇટ્રોજન/હે. બે સરખા હપ્તામાં ૮ થી ૧૦ દિવસે અને ૩૦ દિવસે પૂર્તિ ખાતર તરીકે આપવાની ભલામણ કરવામાં આવે છે. ***(Action:*** *Research Scientist, Seed Spices Research Station, SDAU, Jagudan)*
18.2.1.69	**Effect of split application of nitrogen on yield and quality of isabgul (14.2.3.126)** The farmers of North Gujarat Agro climatic Zone IV growing isabgul are recommended to apply 45 kg N/ha, of which 50% as basal and remaining 50% in two equal splits at 30 and 45 DAS along with recommended dose of phosphorus (30 kg/ha) as basal for obtaining higher yield. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ના ઈસબગુલનું વાવેતર કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે વધુ ઉત્પાદન મેળવવા માટે હેક્ટર દીઠ ૪૫ કિ.ગ્રા. નાઇટ્રોજન જે પૈકી ૫૦% જથ્થો પાયામાં અને બાકીનો ૫૦% નાઇટ્રોજન બે સરખા હપ્તામાં વાવણી બાદ ૩૦ અને ૪૫ દિવસે પૂર્તિ ખાતર તરીકે આપવું. આ ઉપરાંત હેક્ટર દીઠ ૩૦ કિ.ગ્રા. ફોસ્ફરસ પાયામાં આપવું. **Approved with following suggestion:** 1. Analyse the “Seed yield “data using RBD design. ***(Action:*** *Research Scientist, Seed Spices Research Station, SDAU, Jagudan)*
18.2.1.70	**Effect of split application of nitrogen on wheat (14.2.3.111)** The farmers of North Gujarat Agro-climatic Zone IV growing wheat are recommended to apply 90 kg N/ha, of which 50% nitrogen (45 kg N/ha) as basal and remaining 50% nitrogen (45 kg N/ha) at CRI stage (18-21 DAS) along with 60 kg P_2O_5/ha as basal for getting higher yield. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર-૪ ના ઘઉંનું વાવેતર કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે, વધુ ઉત્પાદન મેળવવા માટે હેક્ટર દીઠ ૯૦ કિ.ગ્રા. નાઇટ્રોજન જે પૈકી ૫૦% જથ્થો (૪૫ કિ.ગ્રા./હે.) પાયામાં અને બાકીનો ૫૦ % નાઇટ્રોજન (૪૫ કિ.ગ્રા./હે.) મુકુટ મૂળ અવસ્થાએ (વાવણી બાદ ૧૮-૨૧ દિવસે) પૂર્તિ ખાતર તરીકે આપવું. આ ઉપરાંત હેક્ટર દીઠ ૬૦ કિ.ગ્રા. ફોસ્ફરસ પાયામાં આપવું.

Sr. No.	Title/ Suggestions/ Action
	Approved with following suggestion: 1. Provide the data on initial status of available N, P and K in soil in the text. ***(Action:** Research Scientist, Wheat Research Station, SDAU, Vijapur)*
18.2.1.71	**Response of processing potato varieties to sources of fertilizers and spacing under drip fertigation (14.2.3.114)** The farmers of North Gujarat Agro-climatic Zone IV growing processing potato varieties under drip irrigation are recommended to grow potato in paired row of 55-20-20 cm and apply 110 kg P_2O_5/ha as basal and 220 kg N/ha and 220 kg K_2O/ha in 8 equal splits at 7 days interval starting from 9th days after planting for obtaining higher yield and net returns with better quality. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ના ટપક પિયત પધ્ધતિ હેઠળ બટાટાની પ્રોસેસિંગ જાતોનુ વાવેતર કરતાં ખેડૂતોને ગુણવત્તાયુક્ત વધુ ઉત્પાદન અને નફો મેળવવા માટે ૫૫-૨૦-૨૦ સે.મી. જોડિયા હારમાં વાવણી કરવી અને હેક્ટર દીઠ ૧૧૦ કિ.ગ્રા. ફોસ્ફરસ પાયામાં અને ૨૨૦ કિ.ગ્રા. નાઇટ્રોજન અને ૨૨૦ કિ.ગ્રા. પોટાશ વાવણી બાદ નવમા દિવસથી શરૂઆત કરી ૭ દિવસના સમયાંતરે ૮ સરખા હપ્તામાં આપવાની ભલામણ કરવામાં આવે છે. ***(Action:** Associate Research Scientist, Potato Research Station, SDAU, Deesa)*
18.2.1.72	**Response of sunnhemp seed production to sowing time and topping (14.2.3.117)** The farmers of North Gujarat Agro-climatic Zone IV growing sunnhemp for seed production are recommended to sow the crop during 4th week of July to 2nd week of August for obtaining higher seed yield and net returns. Topping is not advisable for sunnhemp seed production. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર-૪ ના બીજ ઉત્પાદન માટે શણ ઉગાડતાં ખેડૂતોને વધુ બીજ ઉત્પાદન અને નફો મેળવવા માટે જુલાઇના ચોથા અઠવાડીયાથી ઓગસ્ટના બીજા અઠવાડીયા સુધીમાં વાવેતર કરવાની ભલામણ કરવામાં આવે છે. શણના બીજ ઉત્પાદન માટે ટૂંખ કાપવી હિતાવહ નથી. ***(Action:** Associate Research Scientist, Agril. Research Station , SDAU, Ladol)*
18.2.1.73	**Response of Bt. cotton to split application of nitrogen (14.2.3.120)** The farmers of North Gujarat Agro-climatic Zone IV growing Bt. cotton are recommended to apply RDN (320 kg N/ha) in five equal splits at 30, 45, 60, 75 and 90 DAS along with recommended dose of potash (120 kg K_2O/ha) as basal, for obtaining higher seed cotton yield and net returns. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ના બી.ટી. કપાસ વાવતાં ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે ભલામણ કરેલ નાઈટ્રોજન (૩૨૦ કિ.ગ્રા./હે.) પાંચ સરખા ભાગમાં વાવણી બાદ ૩૦, ૪૫, ૬૦, ૭૫ અને ૯૦ દિવસે આપવો. આ ઉપરાંત હેક્ટર દીઠ ૧૨૦ કિ.ગ્રા. પોટાશ પાયામાં આપવાની ભલામણ કરવામા આવે છે. ***(Action:** Associate Research Scientist, Cotton Research Station , SDAU, Talod)*
18.2.1.74	**Effect of nitrogen and phosphorus levels on yield of marvel grass (*Dichanthium annulatum*) in irrigated condition under North-West Agro-climatic Zone (13.2.3.77)** The farmers of North-West Agro-climatic Zone V of Gujarat growing marvel grass (*Zinzavo*) under irrigated condition are recommended to apply FYM 5 t/ha at the time of land preparation and 30 kg N/ha after each cut for obtaining higher forage yield and net returns. ઉત્તર-પશ્ચિમ ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૫ના પિયત હેઠળ ઝિંઝવો ઘાસ ઉગાડતાં ખેડૂતોને લીલા ઘાસનું વધુ ઉત્પાદન અને નફો મેળવવા માટે જમીન તૈયાર કરતી

Sr. No.	Title/ Suggestions/ Action
	વખતે હેક્ટર દીઠ ૫ ટન છાણીયુ ખાતર પાયામાં અને દરેક કાપણી બાદ પ્રતિ હેક્ટરે ૩૦ કિ.ગ્રા. નાઇટ્રોજન આપવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion:** 1. Carry out statistical analysis of "Total green forage yield" and present the result. ***(Action:** Associate Research Scientist, Agril. Research Station, SDAU, Kothara)*
18.2.1.75	**Nitrogen and phosphorus management in mothbean (*Vigna aconitifolia* L.) under light textured soil of Kachchh (13.2.3.79)** The farmers of North-West Agro-climatic Zone V of Gujarat growing rainfed mothbean are recommended to apply FYM 2.5 t/ha along with 20 kg N/ha and 40 kg P_2O_5/ha (in the form of PROM) as basal for obtaining higher yield and net returns. ઉત્તર-પશ્ચિમ ગુજરાત ખેત આબોહવાકીય વિસ્તાર-૫ ના વરસાદ આધારીત મઠ ઉગાડતાં ખેડૂતોને વધારે ઉત્પાદન અને નફો મેળવવા માટે હેક્ટર દીઠ ૨.૫ ટન છાણીયુ ખાતર, ૨૦ કિ.ગ્રા. નાઇટ્રોજન અને ૪૦ કિ.ગ્રા. ફોસ્ફોરસ (પ્રોમના રૂપમાં) વાવેતર સમયે પાયામાં આપવાની ભલામણ કરવામાં આવે છે. ***(Action:** Associate Research Scientist, Regional Research Station , SDAU, Bhachau)*
18.2.1.76	**Response of forage oat to sowing time and cutting management (14.2.3.107)** The farmers of North Gujarat Agro-climatic Zone IV are recommended to sow the oat crop during November for getting higher grain yield and net returns. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ના ઓટનું વાવેતર કરતાં ખેડૂતોને દાણાંનું વધુ ઉત્પાદન અને નફો મેળવવા માટે નવેમ્બર માસમાં વાવણી કરવાની ભલામણ કરવામાં આવે છે. ***(Action:** Research Scientist, Seed Technology, SDAU, Sardarkrushinagar)*
18.2.1.77	**Integrated nutrient management in summer okra (14.2.3.127)** The farmers of North Gujarat Agro-climatic Zone IV growing summer okra are recommended to apply 50% RDN (50 kg N/ha) through fertilizer + 50% RDN from neem cake (962 kg/ha) or 50% RDN through fertilizer + 25% RDN from vermicompost (2.5 t/ha) + *Azotobacter* and PSB culture (each 10 kg/ha) as soil application for obtaining higher pod yield with better quality and net returns. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ના ઉનાળુ ભીંડા ઉગાડતાં ખેડૂતોને સારી ગુણવત્તાવાળા ભીંડાનું વધારે ઉત્પાદન અને નફો મેળવવા માટે ભલામણ કરેલ નાઈટ્રોજનના ૫૦% રાસાયણિક ખાતરના રૂપમાં + ૫૦% લીંબોળીનો ખોળ (૯૬૨ કિ.ગ્રા./હે.) મારફતે અથવા નાઈટ્રોજનના ૫૦% રાસાયણિક ખાતરના રૂપમાં + ૨૫% અળસિયાના ખાતર (૨.૫ ટન/હે.) મારફતે + એઝોટોબેકટર અને પીએસબી કલ્ચરને (દરેકના ૧૦ કિ.ગ્રા./હે.) જમીનમાં આપવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestions:** 1. Add data regarding nutrient content in FYM, vermicompost and neem cake in the text. 2. Calculate cost of cultivation by considering the "cost of biofertilizer" and correct in text accordingly. ***(Action:** Principal, CoH, SDAU, Jagudan)*
18.2.1.78	**Effect of sources of nutrients through foliar spray on growth and yield of summer pearlmillet (14.2.3.129)** The farmers of North Gujarat Agro-climatic Zone IV growing summer pearlmillet are recommended to apply RDF (120-60 kg N-P_2O_5/ha) or 75% RDF (90-45 kg N-P_2O_5/ha) along with two foliar spray of 4% *Jivamrut* or 4% *Panchagavya* or 2% 19:19:19 at 30 and 45 DAS for obtaining higher yield and net returns.

Sr. No.	Title/ Suggestions/ Action
	ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ના ઉનાળુ બાજરી વાવતાં ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે હેક્ટર દીઠ ૧૨૦ કિ.ગ્રા. નાઇટ્રોજન અને ૬૦ કિ.ગ્રા. ફોસ્ફરસ અથવા ૯૦ કિ.ગ્રા. નાઇટ્રોજન અને ૪૫ કિ.ગ્રા. ફોસ્ફરસની સાથે ૪% જીવામૃત અથવા ૪% પંચગવ્ય અથવા ૨% ૧૯-૧૯-૧૯ ના બે છંટકાવ વાવણી બાદ ૩૦ અને ૪૫ દિવસે કરવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestions:** 1. Add methodology of *Panchagavya* preparation in the text. 2. Add data regarding nutrient content in *Panchagavya*, *Jivamrut*, vermiwash and cow urine in the text. ***(Action:** Senior Scientist & Head, KVK, SDAU, Deesa)*
18.2.1.79	**Efficacy of herbicides against complex weed flora in *kharif* maize (15.2.3.27)** The farmers of Gujarat growing *kharif* maize are recommended to apply atrazine (50% WP) @ 750 g a.i./ha (30 g/10 L of water) as PE *fb* either tembotrione (34.4% SC w/w) @ 125 g a.i./ha (5.95 ml/10 L of water) or topramezone (33.6% SC w/v) @ 25 g a.i./ha (1.50 ml/10 L of water) as PoE at 20 DAS for effective weed control, higher yield and net returns. No phytotoxic effect of the herbicides was observed on the succeeding wheat and green gram. ગુજરાતના ચોમાસુ મકાઇ ઉગાડતાં ખેડૂતોને અસરકારક નીંદણ નિયંત્રણ, વધુ ઉત્પાદન અને નફો મેળવવા માટે એટ્રાઝીન (૫૦% વેપા) ૭૫૦ ગ્રામ સક્રિય તત્વ/હે. (૩૦ ગ્રામ/૧૦ લિ. પાણી) પાકના ઉગાવા પહેલાં ત્યારબાદ ટેમ્બોટ્રીઓન (૩૪.૪% એસસી ડબલ્યુ/ડબલ્યુ) ૧૨૫ ગ્રામ સક્રિય તત્વ/હે. (૫.૯૫ મિ.લિ./૧૦ લિ. પાણી) અથવા ટોપ્રામેઝોન (૩૩.૬% એસસી ડબલ્યુ/વી) ૨૫ ગ્રામ સક્રિય તત્વ/હે. (૧.૫૦ મિ.લિ./૧૦ લિ. પાણી) વાવણીના ૨૦ દિવસે નીંદણનાશક દવાનો છંટકાવ કરવાની ભલામણ કરવામાં આવે છે. નીંદણનાશક દવાની મકાઇ પછીના ઘઉં અને મગના પાક ઉપર આડ અસર જોવા મળેલ નથી. ***(Action:** Associate Research Scientist, Agril. Research Station , SDAU, Ladol)*
18.2.1.80	**Weed management in summer sesame (15.2.3.15)** The farmers of Gujarat growing summer sesame are recommended to carry out interculturing followed by hand weeding at 20 and 40 days after sowing for effective weed control and obtaining higher yield and net returns. ગુજરાતમાં ઉનાળુ તલનું વાવેતર કરતાં ખેડૂતોને અસરકારક નીંદણ નિયંત્રણ, વધુ ઉત્પાદન અને નફો મેળવવા માટે પાકની વાવણી બાદ ૨૦ તથા ૪૦ દિવસે આંતરખેડ કર્યા બાદ હાથ વડે નિંદામણ કરવાની ભલામણ કરવામાં આવે છે. ***(Action:** Research Scientist, Seed Technology, SDAU, Sardarkrushinagar)*
18.2.1.81	**Effect of zinc and bio NPK on growth, yield and quality of summer pearl millet (14.2.3.108)** **Suggestion: Concluded** ***(Action:** Head of Unit, BSRC, SDAU, Sardarkrushinagar)*
18.2.1.82	**Response of Bt. cotton to foliar application of nutrients (14.2.3.119)** **Suggestion: Concluded** (**Action**: *Associate Research Scientist, Cotton Research Station , SDAU, Talod)*

18.2.2 INFORMATION FOR SCIENTIFIC COMMUNITY

JUNAGADH AGRICULTURAL UNIVERSITY

Sr. No.	Title/ Suggestions/ Action
18.2.2.1	**Evaluation of cowpea varieties for salinity tolerance (16.2.3.48)**

Sr. No.	Title/ Suggestions/ Action

It is informed to the scientific community especially plant breeders that cowpea variety GC 1 recorded superior values of different salt tolerance criteria like higher mean salinity index (81.07 %), higher mean seed yield (15.81 g/plant), minimum yield decline (29.1 %) at 8.0 dS/m and for 50 % yield reduction at EC 7.68 dS/m as well as lower Na/K ratio in seed and stalk. Cowpea variety GC 1 was found more salt tolerance as compared to AVC 1, Pusa Falguni and GC 2 on the basis of salinity indices.

Approved with following suggestion:

1. Specify Control = Water spray

*(**Action:** Professor & Head, Dept. of Soil Sci. & Agril. Chem., CoA, JAU, Junagadh)*

18.2.2.2 Effect of saline irrigation water on pearl millet (16.2.3.49)

It is informed to the scientific community especially plant breeder that pearlmillet hybrid GHB 1129 recorded superior values of different salt tolerance criteria like higher mean salinity index (79.25%), higher mean grain yield (504.0 g/plot), minimum yield decline (32.49%) at 8.0 dS/m and for 50% yield reduction at 11.21 dS/m, as well as lower Na/K ratio in grain and fodder. Pearlmillet hybrid GHB 1129 was found more salt tolerant as compared to GHB 538, GHB 732 and GHB 558 on the basis of salinity indices.

*(**Action:** Professor & Head, Dept. of Soil Sci. & Agril. Chem., CoA, JAU, Junagadh)*

18.2.2.3 Periodical evaluation of soil fertility status of Saurashtra region (16.2.3.46)

It is informed to scientific community that, in periodical soil survey of third decade started from 1990, the range and mean value of physico-chemical properties of Saurashtra soil survey (2020) are as below;

Year	pH	EC (dS/m)	$CaCO_3$ (g/kg)	CEC [cmol (P+)/kg]	Clay (%)	ESP (%)
1990	7.5-8.9 (8.4)	0.10-1.65 (0.42)	2.0-50.0 (15.86)	15.9-84.4 (40.12)	9.76-67.91 (36.20)	1.64-47.62 (8.25)
2020	6.95-8.90 (7.92)	0.12-2.82 (0.60)	9.6-181.8 (38.8)	7.17-47.10 (24.56)	12.25-65.36 (37.63)	1.31-19.65 (7.36)

Year	OC (%)	Avail. N (kg/ha)	Avail. P_2O_5 (kg/ha)	Avail. K_2O (kg/ha)	Heat soluble S (ppm)	Avail. Fe (ppm)	Avail. Mn (ppm)	Avail. Zn (ppm)	Avail. Cu (ppm)
1990	0.17-1.20 (0.52)	109.8-376.30 (195)	7. 68-184.32 (40.1)	67-1321 (595)	4.7-159.0 (25.6)	0.02-20.14 (3.93)	1.50-33.03 (6.13)	0.01-10.53 (1.29)	0.29-4.50 (1.22)
2020	0.21-0.86 (0.46)	97-442 (260)	4.6-74.9 (32.5)	142-597 (341)	4.3-46.3 (17.7)	0.75-19.9 (5.1)	3.3-33.2 (14.3)	0.20-2.01 (0.78)	0.47-5.50 (1.94)

Nutrient index values for available N, P_2O_5, K_2O and S were 1.50, 1.68, 2.68 and 2.19, respectively. While, nutrient index values for DTPA extractable micronutrients were 1.47, 2.70, 2.07 and 3.00 for Fe, Mn, Zn and Cu, respectively. Based on nutrient index values, the soils of Saurashtra region categorized in low in available N and Fe, medium in available P_2O_5, S and Zn whereas, high in available K_2O, Mn and Cu.

*(**Action:** Professor & Head, Dept. of Soil Sci. & Agril. Chem., CoA, JAU, Junagadh)*

18.2.2.4 Establishment of critical limit of zinc for soybean crop in medium black calcareous soils (17.2.3.33)

While recommending Zn application to *kharif* soybean crop grown in medium black calcareous soils of Saurashtra, STL and government officials of Gujarat should consider the critical limit of Zn 0.55 ppm in soil and 42.44 ppm in soybean plant at 45 DAS.

*(**Action:** Professor & Head, Dept. of Soil Sci. & Agril. Chem., CoA, JAU, Junagadh)*

18.2.2.5 Evaluation of nano fertilizer in Bt. cotton (*Gossypium hirsutum* L.) under rainfed condition (13.7.3.27) (for confirmation only)

In the North Saurashtra Agro-climatic Zone (AES-IV), Bt. cotton fertilized

Sr. No.	Title/ Suggestions/ Action
	with 80-40 N-P_2O_5 kg/ha (Nitrogen in three splits *i.e.* 25 % as basal at the time of sowing and 50 and 25 % as top dressing at 35-40 and 60-65 days after sowing) recorded higher yield and net realization as well as sustained soil fertility under rainfed condition. Application of nano nitrogen fertilizer as developed by JAU save 60 % fertilizer dose, but not found economical. **Approved with following suggestion:** 1. Correct nutrient content (kg/ha) as (%) in Table-1.10. 2. Approved in Basic Science Subcommittee. ***(Action:** Research Scientist, Main Dry Farming Research Station, JAU, Targhadia and Professor & Head, Department. of Biotechnology, JAU, Junagadh)*
18.2.2.6	**Role of *Rajyoga* meditation on *kharif* groundnut under organic management system (15.2.3.68)** **Suggestion: Concluded** ***(Action:** Professor & Head, Department of Agronomy, CoA, JAU, Junagadh and Professor & Head, Department of Soil Sci.& Agril. Chem., CoA, JAU, Junagadh)*

ANAND AGRICULTURAL UNIVERSITY

Sr. No.	Title/ Suggestions/ Action
18.2.2.7	**Composting of cereal crop waste residues through bacterial consortium (15.2.3.94)** For making good quality compost from crop residues *viz*., paddy, wheat, maize and pearlmillet, farmers are recommended to mix Anubhav Bacterial Biodecomposer Consortium II (ABBC II) 1.0 L/t shredded crop residues and 200 kg cow dung slurry/t (Cow dung and water in 1:2 ratio) of shredded crop residues in the pit (as per required size) to obtain the compost having optimum C:N (<20:1) from maize and pearlmillet residues in 75 days, from paddy residues in 100 days and from wheat residues in 150 days, which is relatively 5 to 10 days earlier than the compost prepared without mixing of ABBC II. Further, mixing of ABBC II with crop residue provides better decomposition of the residues, and there by concentrate the nutrients content in final product. **Composition of ABBC II**: *Pseudomonas stutzeri* BDCT 1; *Bacillus velezensis* BDCT 2; *Lactobacillus plantarum; Pseudomonas* spp.; *Bacillus subtilis; Cellulomonas* spp. ***(Action:** Professor & Head, Department of Agronomy, BACA, AAU, Anand)*
18.2.2.8	**Chemical and non-chemical approaches for weed management in turmeric (15.2.3.102)** Application of atrazine 50% WP 500 g a.i./ha + pendimethalin 30% EC 500 g a.i./ha (tank mix) PE *fb* paddy straw mulch 5 t/ha (0-3 DAP) *fb* HW at 75 DAP or metribuzin 70% WP 500 g a.i./ha PE *fb* paddy straw mulch 5 t/ha (0-3 DAP) *fb* HW at 75 DAP provide effective and economical management of complex weed flora in turmeric. ***(Action**: Agronomist, AICRP on Weed management, BACA, AAU, Anand)*
18.2.2.9	**Screening of wheat genotypes/varieties for iron (Fe) efficiency (16.2.3.10)** The genotypes/varieties were classified into four groups using Fe efficiency and average yield of genotypes/varieties under Fe deficient conditions and summary of the classified groups are given below:

Group I	Group II	Group III	Group IV
Efficient and Responsive (ER)	**Efficient and Non Responsive (ENR)**	**Inefficient and Responsive (IER)**	**Inefficient and Non Responsive (IENR)**
GW 496, GW 451, GW 366, GAW 16-	HI 1544, GW 513, LOK 1, GW 322,	GW 514, GAW 16-07, GAW 16-	GW 495, GAW 16-10, MP 3288,

Sr. No.	Title/ Suggestions/ Action			
	03, GW 16-14, GAW 16-16	GAW 16-21	12, GAW 16-04	GAW 16-15, GAW 16-13
	Genotypes/varieties under ER group would be most suitable for cultivation under Fe deficient soil as they would yield higher and respond well to Fe application.	Genotypes/varieties under the ENR group can be sown to Fe deficient soil where further fertilisers would not be applied. Such genotypes/ varieties would yield well even under Fe deficient soil and further they would not respond better to Fe application.	The prime concern of a farmer is the yield of genotypes / varieties so under the IER would be of no interest for farmers as they have low yield potential but for plant breeders the Fe-responsive characteristics of these genotypes /varieties would be of prime interest as they could be used in breeding programs	The most undesirable genotypes/ varieties are the IENR type as they yield least as well as did not respond to applied Fe.
	*(**Action**: Associate Research Scientist, Micronutrient Research Centre, AAU, Anand)*			
18.2.2.10	**Screening of wheat genotypes/varieties for manganese (Mn) efficiency (16.2.3.11)** The genotypes/varieties were classified into four groups using Mn efficiency and average yield of genotypes/varieties under Mn deficient condition and summary of the classified groups are given below:			
	Group I	**Group II**	**Group III**	**Group IV**
	Efficient and Responsive (ER)	**Efficient and Non Responsive (ENR)**	**Inefficient and Responsive (IER)**	**Inefficient and Non Responsive (IENR)**
	GW 496, GW 451, GAW 16-03, GAW 16-04, GAW 16-13 GAW 16-14	GW 322, MP 3288, GW 366	GAW 16-10, GAW 16-12, GW 513	GAW 16-07, GAW 16-16, GAW 16-15, GAW 16-21, LOK 1, HI 1544 GW 495, GW 514
	Genotypes/ varieties under ER group would be most suitable for cultivation under Mn deficient soil as they would yield higher and respond well to Mn application.	Genotypes/ varieties under the ENR group can be sown to Mn deficient soil where further fertilisers would not be applied. Such genotypes / varieties would yield well even under Mn deficient soil and further they would not respond better to Mn application.	The prime concern of a farmer is the yield of genotypes / varieties so under the IER would be of no interest for farmers as they have low yield potential but for plant breeders the Mn-responsive characteristics of these	The most undesirable genotypes/ varieties are the IENR type as they yield least as well as did not respond to applied Mn.

Sr. No.	Title/ Suggestions/ Action
	(continued table) | | | genotypes / varieties would be of prime interest as they could be used in breeding programs | | *(**Action:** Associate Research Scientist, Micronutrient Research Centre, AAU, Anand)*
18.2.2.11	**Feasibilities of use of reverse osmosis (RO) waste water in agriculture (15.2.3.96)** Reverse osmosis (RO) waste water can be used as irrigation water along with 3% sand (30 g/kg soil) and FYM 10 t/ha (4.5 g/kg soil) or dilution of RO waste water with normal irrigation water 1:2 to get more growth of fodder sorghum as compared to normal irrigation water. The salt deposition in soil after irrigation should be monitored periodically to avoid the salt accumulation. **Approved with following suggestion:** 1. Correct the name of crop sorghum instead of maize in the objective *(**Action:** Professor & Head, Dept. of Soil Sci. & Agril. Chem., BACA, AAU, Anand)*
18.2.2.12	**Biodegradation of weed biomass through native microbial biodegrader consortium (15.2.3.99)** Good quality compost can be obtained from weed biomass *viz*., *Trianthema monogyna* (Carpet weed), *Digera arvensis* (False amaranth), *Amaranthus spinosus* (Spiny pig weed) and *Parthenium hysterophorus* (Carrot grass), by mixing Anubhav Microbial Biodecomposer Consortium I (AMBC I) 1.0 L/t and 200 kg cow dung slurry/t (cow dung and water in 1:2 ratio) with maintaining optimum moisture (~ 60%) in the pit. Finished compost with higher nutrient content can be obtained within 65-70 days from *Parthenium hysterophorus* and 70-80 days from *Trianthema monogyna*, *Digera arvensis* and *Amaranthus spinosus*, which is 10-20 days earlier in comparison to decomposition with cow dung slurry alone. Further, under weed seed bank studies, viable weed seeds were observed in finished compost of all weed biomass. ***** Composition of AMBC I: *Pseudomonas stutzeri* BDCT 1; *Bacillus velezensis* BDCT 2; *Streptomyces rochei* AAUBDM 10 and *Streptomyces chartreusis* AAUBDM 16. *(Action: Professor & Head, Department of Agril. Microbiology, BACA, AAU, Anand)*
18.2.2.13	**Feasibility of wheat intensification system in Middle Gujarat Agro-Climatic condition (14.2.3.32)** Adoption of dibbling method for sowing two seeds of wheat at each hill keeping 20 cm x 10 cm recorded higher grain yield. *(**Action:** Senior Scientist & Head, KVK, AAU, Dahod)*
18.2.2.14	**Parameterization and evaluation of Weather Research and Forecasting (WRF) modeling system for Anand region (16.2.3.4)** Hourly weather simulations for Anand region were achieved by Weather Research and Forecasting (WRF; v.3.8) system initialized using observed weather parameters in dynamical downscaling of 6 hourly meteorological data of NCEP GFS 0.25 Degree Global Forecast Grids (ds084.1). Out of about 8000 physics parameter combination sets, following sets are best validated for different seasons. The sets are recommended to researchers for weather forecasting and weather research using WRF for Anand region.

Domain specific parameters (fixed)	
Dynamics	Non-Hydrostatic
Horizontal Resolution	3 km
No. of grids	2 × 2

Sr. No.	Title/ Suggestions/ Action
	Forecast Length | 72 hours Geo data resolution | 30 sec Dynamical Core | Advanced Research WRF (ARW) Domain Details | Single domain Vertical levels | 34 levels Integration time-step | 21600 secs Model Top | 50 hPa Map Projection | Mercator Model static Fields | USGS (United States Geological Survey) Horizontal grid distribution | Arakawa C-grid Time Integration | 3rd order Runge-Kutta Spatial differencing scheme | 6th order centered differencing

Parameter	Value
Forecast Length	72 hours
Geo data resolution	30 sec
Dynamical Core	Advanced Research WRF (ARW)
Domain Details	Single domain
Vertical levels	34 levels
Integration time-step	21600 secs
Model Top	50 hPa
Map Projection	Mercator
Model static Fields	USGS (United States Geological Survey)
Horizontal grid distribution	Arakawa C-grid
Time Integration	3rd order Runge-Kutta
Spatial differencing scheme	6th order centered differencing

Season wise parameter scheme sets	
Post monsoon and winter season	
Micro Physics Scheme	Lin *et al*
Long Wave Radiation Scheme	Rapid Radiative Transfer Model (RRTM)
Short Wave Radiation Scheme	Dudhia scheme
Land Surface Option	Noah Land Surface Model (4 layers)
Surface-layer option	Monin-Obukhov Similarity (MM5)
PBL Scheme	Yonsei University (YSU) Scheme
Cumulus Scheme	Kain-Fritsch (new Eta)
Summer season	
Micro Physics Scheme	Kessler scheme
Long Wave Radiation Scheme	Rapid Radiative Transfer Model (RRTM)
Short Wave Radiation Scheme	Dudhia scheme
Land Surface Option	Noah Land Surface Model (4 layers)
Surface-layer option	Monin-Obukhov Similarity (MM5)
PBL Scheme	Quasi-Normal Scale Elimination (QNSE) scheme
Cumulus Scheme	Betts-Miller-Janjic (BMJ)
Monsoon season	
Micro Physics Scheme	Kessler scheme
Long Wave Radiation Scheme	Rapid Radiative Transfer Model (RRTM) scheme
Short Wave Radiation Scheme	Dudhia scheme
Land Surface Option	Noah Land Surface Model (4 layers)
Surface-layer option	Monin-Obukhov Similarity (MM5)
PBL Scheme	Medium Range Forecast (MRF)
Cumulus Scheme	New Simplified Arakawa-Schubert (SAS)

***(Action:** Associate Professor & Head, Dept. of Agril. Meteorology, BACA, Anand)*

Sr. No.	Title/ Suggestions/ Action
18.2.2.15	**Field performance of promising *Rhizobium* cultures on pigeon pea (14.2.3.6)** **Suggestion: Concluded** ***(Action:** Professor & Head, Dept. of Agril. Microbiology, BACA, AAU, Anand)*

NAVSARI AGRICULTURAL UNIVERSITY

Sr. No.	Title/ Suggestions/ Action
18.2.2.16	**Evaluation of ground water suitability for irrigation in Navsari taluka (15.2.3.47)** • The Navsari taluka's groundwater was neutral to alkaline. The high salinity could be attributable to a stronger water-rock interaction, such as mineral dissolution

Sr. No.	Title/ Suggestions/ Action
	and evaporation concentration functions. • Among cations, strong alkalies predominate over alkaline earth metals, exhibiting a pattern of $Na^+ > Mg^{++} > Ca^{++} > K^+$. While anions are dominated by bicarbonates > chlorides > sulphates > nitrate > boron ≈ fluoride > bromide. The groundwater was found to be of the Na-HCO_3 type. • Prior to the monsoon, the bulk of groundwater was classified as moderately or severely restricted for agricultural purposes. However, following the monsoon, a large amount of groundwater was limited to a low to moderate degree. As a result, seasonal changes have had a major impact on groundwater composition, as irrigation water quality indicators improved during the post-monsoon period (November 2019) compared to the pre-monsoon period (May 2019). ***(Action:*** *Research Scientist, Soil Science, NAU, Navsari*)
18.2.2.17	**Weed management with pre and post emergence herbicides in linseed (14.2.3.78)** Application of pendimethalin 1.0 kg/ha as pre-emergence *fb* hand weeding at 40 days after sowing for was found effective for weed management and obtaining economical yield of linseed. **Approved with following suggestions:** 1. Treatment T_2 recommend for farmers 2. This recommendation consider as scientific community 3. Add formulation of the products (***Action****: Professor & Head, Department of Agronomy, NMCA, NAU, Navsari*)

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

Sr. No.	Title/ Suggestions/ Action
18.2.2.18	**Response of sources and levels of nitrogen on potato tuber yield through drip fertigation (14.2.3.95)** **Suggestion: Concluded** ***(Action:*** *Assistant Research Scientist, Agril. Research Station , SDAU, Aseda)*
18.2.2.19	**Weed management in summer sesame (15.2.3.15)** **Suggestion: Concluded** *(**Action:** Research Scientist, Seed Technology, SDAU, Sardarkrushinagar)*

18.2.3 NEW TECHNICAL PROGRAMMES

Summary

Name of University	Proposed	Approved	Dropped/ Not approved
JAU	14	13	1
AAU	30	30 (29+1#)	0
NAU	22	22 (20+2#)	0
SDAU	33	29	4 (3+1$)
Total	**99**	**94**	**10**

* Considered as AICRP trial only $ Approved as feeler trial

Modification in previously approved NTP

JUNAGADH AGRICULTURAL UNIVERSITY

Sr. No.	Title of Experiment	Suggestion/s
18.2.4.1	**Effect of levels and schedules of nitrogen fertigation on growth and yield of summer sesame**	**Approved with following suggestions:** 1. Check and correct the seed rate of sesame. 2. Correct net plot size. 3. Mention fertigation will be started one week after sowing. *(**Action:** Professor & Head, Department of*

Sr. No.	Title of Experiment	Suggestion/s
		Agronomy, CoA, JAU, Junagadh)
18.2.4.2	**Effect of NPK levels on growth, yield and nutrient uptake by *kharif* soybean**	**Approved with following suggestions:** 1. Add protein content in observations. 2. Remove P_3 (75 kg P_2O_5/ha) and add Sulphur levels 0 and 30 kg/ha in the treatments. 3. Add common application of FYM 5 t/ha in all the plots. *(**Action:** Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)*
18.2.4.3	**Long term evaluation of natural farming, organic farming, conventional farming and integrated crop management under groundnut-wheat cropping sequence**	**Approved with following suggestions:** 1. Write FYM instead of organic manures 5 t/ha in the treatments. 2. Remove FYM 500 kg/ha from natural farming treatments. 3. Add physical and biological properties in observations. 4. Add observation of maize and mustard equivalent yields. 5. Analyse inputs for N, P, K, micronutrients and heavy metals every year. 6. Check seed rate of chickpea. *(**Action:** Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)*
18.2.4.4	**Weed management in *rabi* onion**	**Approved with following suggestions:** 1. Write formulations of the herbicides in the treatments. 2. Add weed control efficiency and percentage of doubles, number of bolting and also add group wise weed count at 7 and 14 days after herbicide application in the observations. 3. Remove stover yield of onion from observations. 4. Verify the dose of Oxyfluorfen as CIB. *(**Action:** Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)*
18.2.4.5	**Response of pigeonpea to subsoiling and furrow irrigation**	**Approved with following suggestions:** 1. Mention depth of subsoiling in treatments. 2. Keep 4 replications *(**Action:** Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)*
18.2.4.6	**Effect of nano urea (liquid) on yield and various agronomic traits of summer groundnut**	**Approved with following suggestions:** 1. Keep 30 cm spacing instead of 30 cm x 10 cm in the treatments. 2. Add FUE in observations. 3. Include spray of 2 % and 4 % urea in the treatments and keep total 12 treatments. *(**Action:** Research Scientist, Main Oilseeds Research Station, JAU, Junagadh)*
18.2.4.7	**Effect of nano urea (liquid) on yield and various agronomic traits of castor**	**Approved with following suggestions:** 1. Add FUE in observations. 2. Add common application of P_2O_5 and K_2O each 50 kg/ha in note. 3. Remove economics from objectives.

Sr. No.	Title of Experiment	Suggestion/s
		4. Include spray of 2 % and 4 % urea in the treatments and keep total 12 treatments. *(**Action:** Research Scientist, Main Oilseeds Research Station, JAU, Junagadh)*
18.2.4.8	**Soil test based fertilizer recommendation for targeted yields of coriander**	**Approved** *(**Action:** Professor & Head, Department of Soil Sci. & Agril. Chem., CoA, JAU, Junagadh)*
18.2.4.9	**Effect of N, P and K fertilizer on yield and nutrients uptake by Indian bean**	**Approved** *(**Action:** Professor & Head, Department of Soil Sci. & Agril. Chem., CoA, JAU, Junagadh)*
18.2.4.10	**Study on relative salinity tolerance of leafy vegetables**	**Approved with following suggestions:** 1. Recast the title as "Effect of saline irrigation water on leafy vegetables". 2. Conduct the experiment in mini plot. 3. Mention S_1 as well water in the treatments. *(**Action:** Professor & Head, Department of Soil Sci. & Agril. Chem., CoA, JAU, Junagadh)*
18.2.4.11	**Effect of N, P and K fertilizer on yield and nutrients uptake by summer soybean**	**Approved with following suggestions:** 1. Remove P_1 level (30 kg/ha) and add two levels of Sulphur 0 and 20 kg/ha in the treatments. 2. Keep spacing 30 cm instead of 30 cm x 10 cm. *(**Action:** Professor & Head, Department of Soil Sci. & Agril. Chem., CoA, JAU, Junagadh)*
18.2.4.12	**Evaluation of soil textural classes in the soils of different talukas of Junagadh district**	**Approved with following suggestion:** 1. Take at least 25 samples from each Taluka *(**Action:** Professor & Head, Department of Soil Sci. & Agril. Chem., CoA, JAU, Junagadh)*
18.2.4.13	**Effect of high density planting for sympodial Bt. cotton with chemical fertilizer**	**Approved with following suggestions:** 1. Delete observations on monopodia. 2. Take Bt. cotton variety of Talod centre recommended for HDP. *(**Action:** Research Scientist, Cotton Research Station, JAU, Junagadh)*
18.2.4.14	**Management of nutsedge (*Cyperus* spp.) in sugarcane and residual effects of herbicides on succeeding crops**	**Dropped** and suggested to formulate same with revised treatments for next year. *(**Action:** Research Scientist, Main Sugarcane Research Station, JAU, Kodinar)*

ANAND AGRICULTURAL UNIVERSITY

Sr. No.	Title of Experiment	Suggestion/s
18.2.4.15	**Response of irrigated wheat to potassium application**	**Approved with following suggestions:** 1. Delete objective no. 2. 2. Add observation: No. of grains/spike. *(**Action**: Professor & Head, Department of Agronomy, BACA, AAU, Anand)*
18.2.4.16	**Effect of nano nitrogen on irrigated wheat** **(Other location: Jabugam)**	**Approved with following suggestion:** 1. Add observation: No. of grains/spike. *(**Action**: Professor & Head, Dept. of Agronomy, BACA, AAU, Anand and Principal, CoA, AAU, Jabugam)*

Sr. No.	Title of Experiment	Suggestion/s
18.2.4.17	**Evaluation of soybean-wheat cropping sequence under natural farming**	**Approved with following suggestions:** 1. Add observations: Equivalent yield, Gluten content in wheat grain, Oil content in soybean seed. 2. Correct in D observation: Physico-chemical properties instead of chemical analysis. 3. Jivamrut will be applied as soil drenching. *(**Action**: Professor & Head, Department of Agronomy, BACA, AAU, Anand)*
18.2.4.18	**Long term effect of fertilizer with and without FYM and micronutrient on maize-wheat-fodder cowpea cropping sequence**	**Approved with following suggestions:** 1. RDF maize: add FYM 5 t/ha. 2. Add micronutrient analysis. 3. Initial and every five year analyse soil for the WHC, bulk density, porosity and total microbes. *(**Action**: Professor & Head, Department of Agronomy, BACA, AAU, Anand)*
18.2.4.19	**Evaluation of phosphate and potash rich organic manure on *rabi* maize and their residual effect on succeeding green gram**	**Approved with following suggestions:** 1. Correct the dose of nitrogen 160 kg N instead of 150 kg N. 2. Include the method of analysis. 3. Total microbes analyse at the end of sequence 4. Write straw instead of haulm. *(**Action**: Professor & Head, Department of Agril. Microbiology, BACA, AAU, Anand)*
18.2.4.20	**Screening of different rice varieties for methane emission**	**Approved** *(**Action**: Professor & Head, Department of Agril. Microbiology, BACA, AAU, Anand)*
18.2.4.21	**Development of nano-biofertilizers and its efficiency on wheat**	**Approved with following suggestions:** 1. Change the Title: Study the efficacy of nano-biofertilizer in wheat. 2. Delete the objective no. 1. *(**Action**: Professor & Head, Department of Agril. Microbiology, BACA, AAU, Anand)*
18.2.4.22	**Integrated weed management in *kharif* groundnut (*Arachis hypogaea* L.)**	**Approved** *(**Action**: Agronomist, AICRP on Weed Management, BACA, AAU, Anand)*
18.2.4.23	**Screening of wheat genotypes and varieties for zinc efficiency based on yield and uptake efficiency**	**Approved with following suggestions:** 1. Apply $ZnSO_4 7H_2O$ as basal. 2. Delete the word genotypes from the title. 3. Correct spacing 22.5 cm instead of 20 cm. *(**Action**: Associate Research Scientist, Micronutrient Research Centre, AAU, Anand)*
18.2.4.24	**Persistence of metribuzin and its premix herbicide in irrigated wheat under field condition**	**Approved with following suggestions:** 1. Add one more period *i.e.* 60 days in plant sample analysis after herbicide application. *(**Action**: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*
18.2.4.25	**Green fodder yield and quality of lucerne as influenced by seed rate, method of sowing and time of cutting**	**Approved with following suggestions:** 1. Change the Title: Effect of seed rate, method of sowing and time of cutting on green fodder yield and quality of lucerne. 2. Add observation of ADF and NDF.

Sr. No.	Title of Experiment	Suggestion/s
		*(**Action**: Research Sci., MFRS, AAU, Anand)*
18.2.4.26	**Effect of seed priming on green fodder yield and quality of fodder maize**	**Approved with following suggestion:** 1. Treatment T_6: Write *Azotobacter* 10 ml/L *(**Action:** Research Sci., MFRS, AAU, Anand)*
18.2.4.27	**Effect of date of transplanting and spacing on herbage yield and quality of black tulsi (*Ocimum sanctum* L.)**	**Approved with following suggestions:** 1. Delete the name of SRF 2. Write time of transplanting instead of date of transplanting from title and treatment 3. Add quality word in objective *(**Action**: Associate Research Scientist & Head, M&AP Research Station, AAU, Anand)*
18.2.4.28	**Effect of long term manuring on yield and quality of bidi tobacco and soil productivity (Joint study by Agronomy and Chemistry sections)**	**Approved with following suggestion:** 1. Add physico chemical properties: WHC, porosity and BD as well as total microbes initial and after five years. *(**Action**: Research Scientist (Tobacco), Bidi Tobacco Research Station, AAU, Anand)*
18.2.4.29	**Effect of nano nitrogen particle on yield, quality and nutrient content of bidi tobacco**	**Approved with following suggestions:** 1. Delete particle word from the title. 2. Write nano instead of NANO in all treatment. *(**Action**: Research Scientist (Tobacco), Bidi Tobacco Research Station, AAU, Anand)*
18.2.4.30	**Evaluation of maize–chickpea cropping sequence under natural farming**	**Approved with following suggestions:** 1. Add observation: Equivalent yield. 2. Correct in D observation: Physico-chemical properties instead of chemical analysis. 3. *Jivamrut* will be applied as soil drenching. *(**Action**: Research Scientist, RRS, AAU, Anand)*
18.2.4.31	**Nutrient management through organic sources in black gram**	**Approved with following suggestions:** 1. Correct the title: Nutrient management through organic sources in black gram in semi *rabi* and their residual effect on summer sesamum 2. Write straw instead of haulm in observation 3. Add objective: To study the residual effect on organic manure applied in black gram on succeeding summer sesamum 4. Add observation of sesamum: • Plant population (no/net plot) • Plant height (cm) at 30 DAS and at harvest • No. of branches/plant at 60 DAS • No. of capsules/plant • Seed yield (kg/ha) • Stalk yield (kg/ha) 5. Apply 75 % RDN as common dose in the form of organic manure in succeeding summer sesamum *(**Action**: Unit Officer, Agriculture and Horticulture Res. Station, AAU, Khambholaj)*
18.2.4.32	**Performance of transplanted rice varieties under direct seeded**	**Approved with following suggestions:** 1. Write time of sowing instead of date of

Sr. No.	Title of Experiment	Suggestion/s
	method (Other location: Thasra and Vaso)	sowing in objective and treatment. 2. Write objective as: To study the performance of rice varieties in DSR. *(**Action**: Research Sci. (Rice), MMRS, AAU, Nawagam, Associate Research Sci., ARSIC, AAU, Thasra and Principal, CoA, AAU, Vaso)*
18.2.4.33	**Effect of soil conditioners on growth, yield and nutrients content in rice-wheat cropping sequence**	**Approved with following suggestions:** 1. Observation: Add equivalent yield 2. All conditioners will be applied as basal 3. Add physico-chemical properties: porosity, BD and WHC 4. Correct in T_{10}: NADEP Compost T_{11}: NADEP Compost *(**Action**: Research Scientist (Rice), MMRS, AAU, Nawagam)*
18.2.4.34	**Effect of sowing time and polysheet cover on seedling growth in summer rice nursery**	**Approved with following suggestion:** 1. Write sowing time instead of date of sowing in objective and treatment *(**Action**: Research Sci. (Rice), MMRS, AAU, Nawagam, Associate Research Sci., ARSIC, AAU, Thasra and Res. Sci., RRS, AAU, Anand)*
18.2.4.35	**Effect of multi-micronutrients mixture grades application on growth, yield and quality of soybean**	**Approved** *(**Action**: Research Scientist, TRTC, AAU, Devgadh Baria)*
18.2.4.36	**Feasibility of transplanting in Indian mustard**	**Approved** *(**Action**: Principal, CoA, AAU, Vaso)*
18.2.4.37	**Effect of sowing time and irrigation scheduling on pigeon pea in *rabi* season**	**Approved with following suggestions:** 1. Delete the word flowering from the treatment 2. Correct the spacing: 90 cm x 15 cm instead of 100 cm x 15 cm 3. Correct the treatment i.e. S_2: 15 days after S_1 S_3: 15 days after S_2 S_4: 15 days after S_3 *(**Action**: Principal, CoA, AAU, Jabugam)*
18.2.4.38	**Integrated nutrient management in soybean and its residual effect on chickpea**	**Approved with following suggestions:** 1. Add in the foot note: Bio NP seed treatment (5 ml/kg seed) 2. Chickpea variety: GJG 3/GG 14 3. Add observations: Oil content of soybean seed and dry weight of root nodule (mg/plant) at 45 DAS *(**Action**: Principal, CoA, AAU, Jabugam)*
18.2.4.39	**Effect of multi-micronutrients mixture grades application on growth, yield and quality of *durum* wheat under restricted irrigation condition in Bhal region (Other location: Dhandhuka)**	**Approved with following suggestions:** 1. Delete physical word from the observation no. 10 2. Add observation: Protein content and gluten content from wheat grain *(**Action**: Associate Research Scientist, Agril. Research Station, AAU, Arnej and Assistant Research Scientist, ARS, AAU, Dhandhuka)*
18.2.4.40	**Integrated nutrient management**	**Approved with following suggestion:**

Sr. No.	Title of Experiment	Suggestion/s
	in *kharif* maize and its residual effect on succeeding chickpea	1. Add observation: Equivalent yield *(**Action**: Associate Res. Sci., ARS, AAU, Dahod)*
18.2.4.41	**Agro-economic feasibility of groundnut + castor relay cropping system under irrigated condition**	**Approved with following suggestion:** Correct the title: Feasibility of groundnut + castor cropping system under irrigated condition *(**Action**: Associate Research Scientist, Agril. Research Station, AAU, Sansoli)*
18.2.4.42	**Assessment of spatial variability in soil and crop (wheat) parameters with the perspective of precision agriculture**	**Approved with following suggestion:** 1. Add observation: Soil moisture content *(**Action**: Professor & Head, Department of Basic Science, BACA, AAU, Anand)*
18.2.4.43	**Study on rainfall climatology and its association with productivity of major crops of Gujarat**	**Approved with following suggestion:** 1. Add crops: sesamum, cotton, castor, rice, pigeon pea, groundnut, pearl millet, maize. *(**Action**: Professor & Head, Department of Agril. Meteorology, BACA, AAU, Anand)*
Modification in previously approved technical programme		
18.2.4.44	**Response of nutrient management on sweet corn-amaranthus-cluster bean cropping sequence under organic farming**	**Modifications suggested:** 1. Grow Amaranthus variety "GA 5' instead of "GA 3". 2. Further, grow summer green gram (GAM 5) instead vegetable cluster bean. *(**Action**: Professor & Head, Department of Agronomy, BACA, AAU, Anand)*

NAVSARI AGRICULTURAL UNIVERSITY

Sr. No.	Title of Experiment	Suggestion/s
18.2.4.45	**Standardization of soil moisture sensor for drip irrigation management in banana**	**Approved with following suggestions:** 1. Correct year of commencement. 2. Replace with "To standardize" instead of standardized in the title. (***Action:*** *Res. Scientist, SWMRU, NAU, Navsari*)
18.2.4.46	**Effect of tillage practices and sowing methods on *kharif* aerobic rice**	**Approved with following suggestions:** 1. Change the title of experiment as "Effect of sowing method and tillage practices on *kharif* aerobic rice" (***Action:*** *Res. Scientist, SWMRU, NAU, Navsari*)
18.2.4.47	**Evaluation of appropriate crop sequence after different duration rice varieties**	**Approved with following suggestions:** 1. Add the observation of stalk yield in mustard 2. Add 20 kg S/ha in fertilizer dose of mustard 3. Delete "Test weight" of mustard (***Action:*** *Research Sci., SWMRU, NAU, Navsari*)
18.2.4.48	**Effect of different levels of saline water and mulching on drip irrigated summer okra under coastal saline soil**	**Approved with following suggestions:** 1. Add common dose of bio-compost 10 t/ha 2. Mention sample area 3. Add picking wise pod length in observation (***Action:*** *Research Sci., SWMRU, NAU, Navsari*)
18.2.4.49	**Effect of salinity levels of irrigation water on rice varieties (micro-plot)**	**Approved with following suggestions:** 1. Change the year of commencement as summer 2023. 2. Change the seed rate as 30 kg/ha 3. Take replication "Three" instead of Four

Sr. No.	Title of Experiment	Suggestion/s
		(*Action: Research Sci., SWMRU, NAU, Navsari*)
18.2.4.50	**Effect of cutting in Indian bean**	**Approved with following suggestions:** 1. Add “No cutting” in T_1 instead of cutting 2. Add green pod equivalent yield in observation (***Action:*** *Nodal Officer (Megaseed) & Unit Head, PCRS, NAU, Navsari*)
18.2.4.51	**Production potential of rainfed niger with intercropping system**	**Approved with following suggestions:** 1. Change the title as “Production potential of niger based intercropping system under rained condition 2. Add stover yield of intercrop in observation 3. Take seed rate and fertilizer as per area base 4. Correct net plot size (***Action:*** *Assoc. Res. Sci., NRS, NAU, Varansi)*
18.2.4.52	**Effect of different N and P levels in *rabi* niger (*Guizotia abyssinica* L.)**	**Approved with following suggestions:** 1. Add second objective as “Interaction effect of N and P” 2. Add stalk yield in observation 3. Add content and uptake of N and P from seed as well as stalk of niger 4. Mention experimental design as RBD with factorial concept (***Action:*** *Assoc. Res. Sci., NRS, NAU, Varansi)*
18.2.4.53	**Effect of integrated nutrient management on cotton under high density plantation system**	**Approved with following suggestions:** 1. Take bio-fertilizer dose 2 L/ha instead of 5 L/ha 2. Add the observations of number of bolls/plant, boll weight at each picking, stalk yield, quality parameters and microbial count 3. Remove economics from observation (***Action:*** *Research Scientist, MCRS, NAU, Surat)*
18.2.4.54	**Effect of nitrogen scheduling and cultivars on *kharif* grain sorghum**	**Approved with following suggestions:** 1. Change the objectives 2. Delete “at sowing” in the treatments 3. Mention RDF as 80-40-0 kg NPK/ha 4. Add observations of content and uptake of nutrients 5. Mention experimental design as RBD with factorial concept 6. Mention “straw” instead of stover yield (***Action:*** *Research Scientist, MSRS, NAU, Surat)*
18.2.4.55	**Tillage and irrigation management in black gram-chickpea cropping system**	**Approved with following suggestions:** 1. Experiment should be taken at fix site at least for three years 2. Record the depth of irrigation 3. Add observations of physico-chemical properties like BD, WHC, infiltration rate, porosity *etc*. (***Action:*** *Assoc. Res. Sci., CRSS, NAU, Achhalia)*
18.2.4.56	**Effect of land configuration and irrigation on summer green gram (*Vigna radiata* L.) under south Gujarat condition**	**Approved with following suggestions:** 1. Record depth of irrigation 2. In observation replace grain yield with seed yield

Sr. No.	Title of Experiment	Suggestion/s
		(***Action:*** *Professor & Head, Department of Agronomy, NMCA, NAU, Navsari)*
18.2.4.57	**Response of *kharif* rice to foliar spray of liquid nano nitrogen urea**	**Approved with following suggestions:** 1. Add treatments: T_6: 40% RDN through urea + 2% urea spray at tillering and panicle initiation stage T_7: 40% RDN through urea + 4% urea spray at tillering and panicle initiation stage T_8: 40% RDN through urea + 2% urea spray at tillering, panicle initiation and grain filling stage T_9: 40% RDN through urea + 4% urea spray at tillering, panicle initiation and grain filling stage 2. Mention RDF as 100-30-0 kg N-P_2O_5-K_2O/ha 3. Delete economics from the observation (***Action:*** *Professor & Head, Department of Agronomy, NMCA, NAU, Navsari)*
18.2.4.58	**Integrated weed management in grain amaranth**	**Approved with following suggestions:** 1. Change the treatments as under: T_1: Unweeded control T_2: Weed free (weeding at 20, 40 and 60 DAS) T_3: Interculturing *fb* HW at 20 and 40 DAS T_4: Sugarcane trash mulch 5 t/ha at 10 DAS T_5: Stale seedbed (Pre-sowing irrigation before 15 days) *fb* paraquat 0.5 kg/ha before sowing T_6: Stale seedbed (Pre-sowing irrigation before 15 days) *fb* HW 40 DAS T_7: Pendimethalin 0.5 kg/ha as pre-emergence T_8: Pendimethalin 0.5 kg/ha as pre-emergence + HW at 30 DAS T_9: Pendimethalin 0.75 kg/ha as pre-emergence T_{10}: Pendimethalin 0.75 kg/ha as pre-emergence + HW at 30 DAS (***Action:*** *Professor & Head, Department of Agronomy, NMCA, NAU, Navsari)*
18.2.4.59	**Study on heavy metal content in organically and conventionally managed soils and crops**	**Approved with following suggestions:** 1. Take 30 samples from organic farm and 30 samples from cultivated crop area 2. Add observations of OC, EC, pH, N, P, K, S and heavy metals (***Action:*** *Professor & Head, Department of Soil Sci. & Agril. Chem., NMCA, NAU, Navsari)*
18.2.4.60	**Dissipation kinetics and residues of pyroxasulfone in wheat field ecosystem**	**Approved with following suggestions:** 1. Add observations of OC and pH (***Action:*** *Professor & Head, FQTL, NMCA, NAU, Navsari)*
18.2.4.61	**Study of emission of nitrous oxide and methane from soils under different crops by**	**Approved with following suggestions:** 1. Delete treatments T_1, T_5, T_6, T_7, T_8, T_9, T_{10}, T_{11}

Sr. No.	Title of Experiment	Suggestion/s
	laboratory incubation.	2. Change methodology as "Emission will be measured by closed chamber method from each crop at 10-12 hrs in morning and 15 days interval during growing season (***Action:*** *Professor & Head, NRM, CoF, NAU, Navsari)*
18.2.4.62	**Effect of foliar spray of organic liquids in chickpea (*Cicer arietinum* L.) under south Gujarat condition**	**Approved with following suggestions:** 1. Change the treatments as under: T_1: 1% NOVEL organic nutrients spray at 30, 45 and 60 DAS T_2: 2% NOVEL organic nutrients spray at 30, 45 and 60 DAS T_3: 2% Vermibed wash spray at 30, 45 and 60 DAS T_4: 4% Vermibed wash spray at 30, 45 and 60 DAS T_5: 3% *Panchgavya* spray at 30, 45 and 60 DAS T_6: 6% *Panchgavya* spray at 30, 45 and 60 DAS T_7: 3% *Jeevamrut* spray at 30, 45 and 60 DAS T_8: 6% *Jeevamrut* spray at 30, 45 and 60 DAS T_9: Water spray at 30, 45 and 60 DAS T_{10}: Control 2. Delete KMB 3. Bio fertilizer application 10 ml/kg seed (***Action:*** *Professor, Department of Agronomy, CoA, NAU, Waghai)*
18.2.4.63	**Response of pigeon pea to foliar spray of nano nitrogen**	**Approved with following suggestions:** 1. Change the treatments as under: **N_1:** 10 kg N/ha + nano nitrogen 2 ml/L **N_2:** 10 kg N/ha + nano nitrogen 4 ml/L **N_3:** 20 kg N/ha + nano nitrogen 2 ml/L **N_4:** 20 kg N/ha + nano nitrogen 4 ml/L **N_6:** 10 kg N/ha + FYM 2.5 t/ha + nano nitrogen 4 ml/L **N_7:** 20 kg N/ha + FYM 2.5 t/ha + nano nitrogen 2 ml/L **N_8:** 20 kg N/ha + FYM 2.5 t/ha + nano nitrogen 4 ml/L **N_9:** 10 kg N/ha + FYM 5 t/ha + nano nitrogen 2 ml/L **N_{10}:** 10 kg N/ha + FYM 5 t/ha + nano nitrogen 4 ml/L **N_{11}:** 20 kg N/ha + FYM 5 t/ha + nano nitrogen 2 ml/L **N_{12}:** 20 kg N/ha + FYM 5 t/ha + nano nitrogen 4 ml/L **N_{13}:** 100% RDF (20-40 N-P_2O_5 kg/ha) + FYM 5 t/ha + 19:19:19 (branching + flowering + pod development) **Note:** 1. Common application of 40 kg P_2O_5/ha. 2. Spraying of nano nitrogen urea at branching

Sr. No.	Title of Experiment	Suggestion/s
		and flowering stage. (**Action:** *Professor, Department of Agronomy, CoA, NAU, Bharuch*)
18.2.4.64	**Effect of age of seedling and crop covers on growth, yield and quality of water melon *(Citrullus lanatus)* under South Gujarat condition**	**Approved** (**Action:** *Principal, Polytechnics in Horticulture, NAU, Paria*)
Modification in previously approved technical programme		
18.2.4.65	**Response of sugarcane to different row spacing and drip irrigation level under south Gujarat condition (17.2.3.43)**	**Suggestion:** 1. If possible, keep approved treatments along with new proposed (AICRP), otherwise drop the experiment (Approved NTP in 17.2.3.43) (**Action:** *Res. Scientist, SWMRU, NAU, Navsari*)
18.2.4.66	**Integrated weed management in sugarcane planted through single eye budded settling under south Gujarat condition (17.2.3.52)**	**Modification suggested:** 1. Treatment T_5: Sugarcane *Dhaincha* as smothering crop (Cut down at 50 % flowering and mulch) 2. Treatment T_9 and T_{10}: Dropped (**Action:** *Res. Scientist, MSRS, NAU, Navsari*)

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

Sr. No.	Title of Experiment	Suggestion/s
18.2.4.67	**Response of castor (*Ricinus communis*) to nano urea**	**Approved with following suggestions:** 1. Recast treatments as under: T_1: 100% RDN as per recommendation T_2: 100% RDN as per recommendation + water spray at 30, 60 and 90 DAS T_3: 100% dose of basal N + foliar spray of 2% urea at 30, 60 and 90 DAS T_4: 100% dose of basal N + foliar spray of 4% urea at 30, 60 and 90 DAS T_5: 75% dose of basal N + foliar spray of 2% urea at 30, 60 and 90 DAS T_6: 75 % dose of basal N + foliar spray of 4% urea at 30, 60 and 90 DAS T_7: 100% dose of basal N + foliar spray of nano urea @ 2 ml/L at 30, 60 and 90 DAS T_8: 100% dose of basal N + foliar spray of nano urea @ 4 ml/L at 30, 60 and 90 DAS T_9: 75% dose of basal N + foliar spray of nano urea @ 2 ml/L at 30, 60 and 90 DAS T_{10}: 75% dose of basal N + foliar spray of nano urea @ 4 ml/L at 30, 60 and 90 DAS 2. Water spray volume to be used for foliar spray will be fixed for each spray and to be given as foot note below treatments. 3. Flat fan nozzle shall be used for foliar spray of nano urea. 4. Soil to be analysed initially for available nutrients and apply all the recommended nutrients for that particular crop except target

Sr. No.	Title of Experiment	Suggestion/s
		nutrient. 5. Apply FYM 10 t/ha for high nutrient requiring crop *i.e.* cereals and FYM 5 t/ha for low nutrient requiring crops *i.e.* pulses in all nano urea experiments. Apply FYM once in a year. ***(Action:** Research Scientist, Castor and Mustard Research Station, SDAU, Sardarkrushinagar)*
18.2.4.68	**Response of mustard (*Brassica juncea*) to nano urea**	**Approved with following suggestions:** 1. Recast the treatments as under: T_1: 100% RDN as per recommendation T_2: 100% RDN as per recommendation + water spray at 30 and 50 DAS T_3: 100% dose of basal N + foliar spray of 2% urea at 30 and 50 DAS T_4: 100% dose of basal N + foliar spray of 4% urea at 30 and 50 DAS T_5: 75% dose of basal N + foliar spray of 2% urea at 30 and 50 DAS T_6: 75% dose of basal N + foliar spray of 4% urea at 30 and 50 DAS T_7: 100% dose of basal N + foliar spray of nano urea @ 2 ml/L at 30 and 50 DAS T_8: 100% dose of basal N + foliar spray of nano urea @ 4 ml/L at 30 and 50 DAS T_9: 75% dose of basal N + foliar spray of nano urea @ 2 ml/L at 30 and 50 DAS T_{10}: 75% dose of basal N + foliar spray of nano urea @ 4 ml/L at 30 and 50 DAS 2. Other suggestions as per Sr. No. 18.2.4.72 (Sr. No. 2 to 5). ***(Action:** Research Scientist, Castor and Mustard Research Station, SDAU, Sardarkrushinagar)*
18.2.4.69	**Evaluation of different components of natural farming for green gram-mustard-pearl millet cropping sequence**	**Approved with following suggestions:** 1. Experiment will be conducted on fix plot. 2. Physical properties of soil will be measured initially and after completion of the experiment. 3. Content (nutrients and microbes) in the inputs (*Bijamrut, Ghanjivamrut, Jivamrut etc*.) to be used as per treatments shall be estimated for each season. 4. Mulch should be applied immediately after germination of the crop in treatments M_1 and M_2. 5. Dose of NPK consortium will be 5 ml/kg seed. 6. Cost of “mulch” should be included in calculation of economics. 7. Experiment will be conducted for 3 years and then the results to be presented in the house for review. 8. Correct days in treatments G_1 and G_2: Apply *Jivamrut* @ 500 L/ha at sowing and 30 DAS +

Sr. No.	Title of Experiment	Suggestion/s
		Jivamrut spray at 45 DAS in green gram. In mustard, apply *Jivamrut* spray at 45 and 60 DAS instead of 60 and 75 DAS. ***(Action:** Research Scientist, Castor and Mustard Research Station, SDAU, Sardarkrushinagar)*
18.2.4.70	**Response of pearl millet (*Pennisetum glaucum* L.) to nano urea under rainfed condition**	**Approved with following suggestions:** 1. Recast the treatments as under: T_1: 100% RDN as per recommendation T_2: 100% RDN as per recommendation + water spray at 25 and 45 DAS T_3: 100% dose of basal N + foliar spray of 2% urea at 25 and 45 DAS T_4: 100% dose of basal N + foliar spray of 4% urea at 25 and 45 DAS T_5: 75% dose of basal N + foliar spray of 2% urea at 25 and 45 DAS T_6: 75% dose of basal N + foliar spray of 4% urea at 25 and 45 DAS T_7: 100% dose of basal N + foliar spray of nano urea @ 2 ml/L at 25 and 45 DAS T_8: 100% dose of basal N + foliar spray of nano urea @ 4 ml/L at 25 and 45 DAS T_9: 75% dose of basal N + foliar spray of nano urea @ 2 ml/L at 25 and 45 DAS T_{10}: 75% dose of basal N + foliar spray of nano urea @ 4 ml/L at 25 and 45 DAS 2. Other suggestions as per Sr. No. 18.2.4.72 (Sr. No. 2 to 5). *(**Action**: Res. Sci., CNRM, SDAU, SKNagar)*
18.2.4.71	**Evaluation of different components of natural farming for groundnut-wheat + lucerne cropping sequence**	**Approved with following suggestions:** 1. As per Sr. No. 18.2.4.74 (Sr. No. 1 to 7). *(**Action**: Research Scientist, CNRM, SDAU, Sardarkrushinagar)*
18.2.4.72	**Contingent crop planning in castor under dryland condition in relation to climate change**	**Approved with following suggestions:** 1. Delete variety from the treatments and take only GCH 8 variety in the experiment. 2. Replication: 4 (Four) *(**Action**: Res. Sci., CNRM, SDAU, SKNagar)*
18.2.4.73	**Effect of weed management practices on growth and yield of turmeric (*Curcuma longa* L.) under organic farming**	**Approved with following suggestions:** 1. Keep spacing: 20-55 cm x 15 cm 2. Weed count (species wise) will be at 25, 50, 75 DAP and at harvest. 3. Weed dry weight at 120 DAS and at harvest. 4. Mulching at "30 DAS" instead of "60 DAS" and hand weeding at 60, 90 and 120 DAS in treatments T_6, T_7 and T_8. *(**Action**: Res. Sci., CNRM, SDAU, SKNagar)*
18.2.4.74	**Response of grain amaranth (*Amaranthus hypochondriacus* L.) to nano urea**	**Approved with following suggestions:** 1. Remove the word "quality" from the objective. 2. Add observation on stem girth (cm) 3. Recast the treatments as under: T_1: 100% RDN as per recommendation

Sr. No.	Title of Experiment	Suggestion/s
		T_2: 100% RDN as per recommendation + water spray at 30 and 50 DAS T_3: 100% dose of basal N + foliar spray of 2% urea at 30 and 50 DAS T_4: 100% dose of basal N + foliar spray of 4% urea at 30 and 50 DAS T_5: 75% dose of basal N + foliar spray of 2% urea at 30 and 50 DAS T_6: 75% dose of basal N + foliar spray of 4% urea at 30 and 50 DAS T_7: 100% dose of basal N + foliar spray of nano urea @ 2 ml/L at 30 and 50 DAS T_8: 100% dose of basal N + foliar spray of nano urea @ 4 ml/L at 30 and 50 DAS T_9: 75% dose of basal N + foliar spray of nano urea @ 2 ml/L at 30 and 50 DAS T_{10}: 75% dose of basal N + foliar spray of nano urea @ 4 ml/L at 30 and 50 DAS 3. Other suggestions as per Sr. No. 18.2.4.72 (Sr. No. 2 to 5). ***(Action:** Associate Research Scientist, Crop Improvement, SDAU, Sardarkrushinagar)*
18.2.4.75	**Evaluation of different components of natural farming for cowpea (veg.)-grain amaranth-vegetable *kalingada* cropping sequence**	**Approved with following suggestions:** 1. Record plant population per metre row length at 30 DAS and at harvest. 2. Add observation on "Average fruit weight at each picking" in Kalingada. 3. Other suggestions as per Sr. No. 18.2.4.74 (Sr. No. 1 to 7). 4. Delete soil application of *Jivamrut* "at 60 DAS" from G_1 and G_2 treatments of vegetable cowpea. 5. Delete soil application of *Jivamrut* "at 60 DAS" and delete 75 DAS from foliar spray of *Jivamrut* of G_1 and G_2 treatments of grain amaranth. 6. Replace "60 DAS" from soil application of *Jivamrut* with "45 DAS" and replace "45 DAS" from foliar spray of *Jivamrut* with "60 DAS" of G_1 and G_2 treatments of vegetable kalingada. ***(Action:** Associate Research Scientist, Crop Improvement, SDAU, Sardarkrushinagar)*
18.2.4.76	**Effect of time of sowing and spacing on spine gourd**	**Approved with following suggestions:** 1. Mention seed rate (kg/ha) for each spacing treatment in the text. 2. Dibble 3 seeds per hill. 3. Gross and net plot size is same. ***(Action:** Associate Research Scientist, Crop Improvement, SDAU, Sardarkrushinagar)*
18.2.4.77	**Response of oat (*Avena sativa* L.) to nano urea**	**Approved with following suggestions:** 1. Title of experiment: Response of oat to nitrogen, phosphorus and potash

Sr. No.	Title of Experiment	Suggestion/s
		2. Treatments are as under: A. N levels: 80, 100 and 120 kg/ha B. P levels: 20, 40 and 60 kg/ha C. K levels: 00 and 40 kg/ha 3. Design: RBD with factorial concept 4. Recast objectives accordingly 5. Take observation on i. N, P and K content (%) and uptake (kg/ha) by oat and ii. Available N, P and K (kg/ha) in soil (before and after harvest of crop). ***(Action:** Research Scientist, Agroforestry Research Station, SDAU, Sardarkrushinagar**)***
18.2.4.78	**Response of summer groundnut (*Arachis hypogaea*) to nano urea**	**Not Approved** ***(Action:** Asstt. Res. Sci., DOR, SDAU, SKNagar**)***
18.2.4.79	**Response of forage sorghum (*Sorghum bicolor*) to nano urea**	**Approved with following suggestions:** 1. Recast treatments as under: T_1: 100% RDN as per recommendation T_2: 100% RDN as per recommendation + water spray at 30 and 55 DAS T_3: 100% dose of basal N + foliar spray of 2% urea at 30 and 55 DAS T_4: 100% dose of basal N + foliar spray of 4% urea at 30 and 55 DAS T_5: 75% dose of basal N + foliar spray of 2% urea at 30 and 55 DAS T_6: 75% dose of basal N + foliar spray of 4% urea at 30 and 55 DAS T_7: 100% dose of basal N + foliar spray of nano urea @ 2 ml/L at 30 and 55 DAS T_8: 100% dose of basal N + foliar spray of nano urea @ 4 ml/L at 30 and 55 DAS T_9: 75% dose of basal N + foliar spray of nano urea @ 2 ml/L at 30 and 55 DAS T_{10}: 75% dose of basal N + foliar spray of nano urea @ 4 ml/L at 30 and 55 DAS 2. Add observations on i. Crude protein content (%) ii. Dry matter content (%) 3. Keep unit of green and dry forage yield "q/ha" instead of "t/ha". 4. Delete observation of "Economics" 5. Other suggestions as per Sr. No. 18.2.4.72 (Sr. No. 2 to 5). ***(Action:** Professor & Head, Department of Soil Science, CPCA, SDAU, Sardarkrushinagar**)***
18.2.4.80	**Response of *rabi* fennel (*Foeniculum vulgare* Mill.) to nano urea**	**Approved with following suggestions:** 1. Recast treatments as under: T_1: 100% RDN as per recommendation T_2: 100% RDN as per recommendation + water spray at 30, 60 and 90 DAS T_3: 100% dose of basal N + foliar spray of 2% urea at 30, 60 and 90 DAS T_4: 100% dose of basal N + foliar spray of 4%

Sr. No.	Title of Experiment	Suggestion/s
		urea at 30, 60 and 90 DAS T_5: 75% dose of basal N + foliar spray of 2% urea at 30, 60 and 90 DAS T_6: 75% dose of basal N + foliar spray of 4% urea at 30, 60 and 90 DAS T_7: 100% dose of basal N + foliar spray of nano urea @ 2 ml/L at 30, 60 and 90 DAS T_8: 100% dose of basal N + foliar spray of nano urea @ 4 ml/L at 30, 60 and 90 DAS T_9: 75% dose of basal N + foliar spray of nano urea @ 2 ml/L at 30, 60 and 90 DAS T_{10}: 75% dose of basal N + foliar spray of nano urea @ 4 ml/L at 30, 60 and 90 DAS 2. Delete observation of "Economics" 3. Other suggestions as per Sr. No. 18.2.4.72 (Sr. No. 2 to 5). ***(Action:** Research Scientist, Seed Spices Research Station, SDAU, Jagudan**)***
18.2.4.81	**Evaluation of different components of natural farming for green gram-*rabi* fennel + leafy coriander-vegetable cowpea cropping sequence**	**Approved with following suggestions:** 1. As per Sr. No. 18.2.4.74 (Sr. No. 1 to 7). ***(Action:** Research Scientist, Seed Spices Research Station, SDAU, Jagudan**)***
18.2.4.82	**Response of wheat (*Triticum aestivum* L.) to nano urea**	**Approved with following suggestions:** 1. Recast treatments as under: T_1: 100% RDN as per recommendation T_2: 100% RDN as per recommendation + water spray at 35 and 65 DAS T_3: 100% dose of basal N + foliar spray of 2% urea at 35 and 65 DAS T_4: 100% dose of basal N + foliar spray of 4% urea at 35 and 65 DAS T_5: 75% dose of basal N + foliar spray of 2% urea at 35 and 65 DAS T_6: 75% dose of basal N + foliar spray of 4% urea at 35 and 65 DAS T_7: 100% dose of basal N + foliar spray of nano urea @ 2 ml/L at 35 and 65 DAS T_8: 100% dose of basal N + foliar spray of nano urea @ 4 ml/L at 35 and 65 DAS T_9: 75% dose of basal N + foliar spray of nano urea @ 2 ml/L at 35 and 65 DAS T_{10}: 75% dose of basal N + foliar spray of nano urea @ 4 ml/L at 35 and 65 DAS 2. Other suggestions as per Sr. No. 18.2.4.72 (Sr. No. 2 to 5). ***(Action:** Research Scientist, Wheat Research Station, SDAU, Vijapur**)***
18.2.4.83	**Evaluation of different components of natural farming for black gram-wheat-green gram cropping sequence**	**Approved with following suggestions:** 1. As per Sr. No. 18.2.4.74 (Sr. No. 1 to 7). ***(Action:** Research Scientist, Wheat Research Station, SDAU, Vijapur**)***
18.2.4.84	**Response of potato (*Solanum***	**Approved with following suggestions:**

Sr. No.	Title of Experiment	Suggestion/s
	***tuberosum* L.) to nano urea**	1. Recast treatments as under: T_1: 100 % RDN as per recommendation T_2: 100 % RDN as per recommendation + water spray at 30 and 50 DAP T_3: 100 % dose of basal N + foliar spray of 2 % urea at 30 and 50 DAP T_4: 100 % dose of basal N + foliar spray of 4 % urea at 30 and 50 DAP T_5: 75 % dose of basal N + foliar spray of 2 % urea at 30 and 50 DAP T_6: 75 % dose of basal N + foliar spray of 4 % urea at 30 and 50 DAP T_7: 100 % dose of basal N + foliar spray of nano urea @ 2 ml/L at 30 and 50 DAP T_8: 100 % dose of basal N + foliar spray of nano urea @ 4 ml/L at 30 and 50 DAP T_9: 75 % dose of basal N + foliar spray of nano urea @ 2 ml/L at 30 and 50 DAP T_{10}: 75 % dose of basal N + foliar spray of nano urea @ 4 ml/L at 30 and 50 DAP 2. Keep old RDF of potato *i.e.* 275-138-275 kg N-P_2O_5-K_2O/ha. 3. Other suggestions as per Sr. No. 18.2.4.72 (Sr. No. 2 to 5). ***(Action:** Associate Research Scientist, Potato Research Station, SDAU, Deesa)*
18.2.4.85	**Evaluation of different components of natural farming for groundnut-potato-pearl millet cropping sequence**	**Approved with following suggestions:** 1. Use 'mustard straw" for mulch instead of "cumin straw". 2. Other Suggestions as per Sr. No. 18.2.4.74 (Sr. No. 1 to 7). ***(Action:** Associate Research Scientist, Potato Research Station, SDAU, Deesa)*
18.2.4.86	**Response of mustard (*Brassica juncea*) to nano urea under salt affected soils**	**Approved with following suggestions:** 1. Recast treatments as under: T_1: 100% RDN as per recommendation T_2: 100% RDN as per recommendation + water spray at 30 and 50 DAS T_3: 100% dose of basal N + foliar spray of 2% urea at 30 and 50 DAS T_4: 100% dose of basal N + foliar spray of 4% urea at 30 and 50 DAS T_5: 75% dose of basal N + foliar spray of 2% urea at 30 and 50 DAS T_6: 75% dose of basal N + foliar spray of 4% urea at 30 and 50 DAS T_7: 100% dose of basal N + foliar spray of nano urea @ 2 ml/L at 30 and 50 DAS T_8: 100% dose of basal N + foliar spray of nano urea @ 4 ml/L at 30 and 50 DAS T_9: 75% dose of basal N + foliar spray of nano urea @ 2 ml/L at 30 and 50 DAS T_{10}: 75% dose of basal N + foliar spray of nano

Sr. No.	Title of Experiment	Suggestion/s
		urea @ 4 ml/L at 30 and 50 DAS 2. Soil parameters of saline soil *viz*., EC (dS/m), pH and ESP should be recorded. 3. Other suggestions as per Sr. No. 18.2.4.72 (Sr. No. 2 to 5). ***(Action:** Assistant Research Scientist, Agril. Research Station, SDAU, Adiya)*
18.2.4.87	**Response of cotton (*Gossypium hirsutum*) to nano urea**	**Approved with following suggestions:** 1. Recast treatments as under: T_1: 100% RDN as per recommendation T_2: 100% RDN as per recommendation + water spray at 30, 60 and 90 DAS T_3: 100% dose of basal N + foliar spray of 2% urea at 30, 60 and 90 DAS T_4: 100% dose of basal N + foliar spray of 4% urea at 30, 60 and 90 DAS T_5: 75% dose of basal N + foliar spray of 2% urea at 30, 60 and 90 DAS T_6: 75% dose of basal N + foliar spray of 4% urea at 30, 60 and 90 DAS T_7: 100% dose of basal N + foliar spray of nano urea @ 2 ml/L at 30, 60 and 90 DAS T_8: 100% dose of basal N + foliar spray of nano urea @ 4 ml/L at 30, 60 and 90 DAS T_9: 75% dose of basal N + foliar spray of nano urea @ 2 ml/L at 30, 60 and 90 DAS T_{10}: 75% dose of basal N + foliar spray of nano urea @ 4 ml/L at 30, 60 and 90 DAS 2. Add observation of "lint yield (kg/ha)" 3. Delete observations of "economics". 4. Other suggestions as per Sr. No. 18.2.4.72 (Sr. No. 2 to 5). ***(Action:** Associate Research Scientist, Cotton Research Station, SDAU, Talod)*
18.2.4.88	**Evaluation of different components of natural farming for cotton- sesame cropping sequence**	**Approved with following suggestions:** 1. "Shredded cotton stalk mulch" should be used instead of "cotton stalk mulch". 2. Other Suggestions as per Sr. No. 18.2.4.74 (Sr. No. 1 to 7). ***(Action:** Associate Research Scientist, Cotton Research Station, SDAU, Talod)*
18.2.4.89	**Response of pearl millet (*Pennisetum glaucum* L.) to nano urea under rainfed condition**	**Not Approved** ***(Action:** Associate Research Scientist, Regional Research Station, SDAU, Bhachau)*
18.2.4.90	**Effect of phosphorus, sulphur and PSB on growth and yield of black gram (*Vigna mungo* L.)**	**Approved with following suggestions:** 1. Write design as "RBD with factorial concept". 2. The dose of biofertilizer should be 5 ml/kg seed. 3. Recast treatment of phosphorus through PROM as P_0: 20 kg/ha, P_1: 40 kg/ha, P_2: 60 kg/ha. ***(Action:** Assoc. Research Scientist, Regional*

Sr. No.	Title of Experiment	Suggestion/s
		Research Station, SDAU, Bhachau)
18.2.4.91	**Response of pearlmillet *Pennisetum glaucum* L.) to nano urea under rainfed condition**	**Approved with following suggestions:** 1. Recast treatments as under: T_1: 100% RDN as per recommendation T_2: 100% RDN as per recommendation + water spray at 25 and 45 DAS T_3: 100% dose of basal N + foliar spray of 2% urea at 25 and 45 DAS T_4: 100% dose of basal N + foliar spray of 4% urea at 25 and 45 DAS T_5: 75% dose of basal N + foliar spray of 2% urea at 25 and 45 DAS T_6: 75% dose of basal N + foliar spray of 4% urea at 25 and 45 DAS T_7: 100% dose of basal N + foliar spray of nano urea @ 2 ml/L at 25 and 45 DAS T_8: 100% dose of basal N + foliar spray of nano urea @ 4 ml/L at 25 and 45 DAS T_9: 75% dose of basal N + foliar spray of nano urea @ 2 ml/L at 25 and 45 DAS T_{10}: 75% dose of basal N + foliar spray of nano urea @ 4 ml/L at 25 and 45 DAS 2. Other suggestions as per Sr. No. 18.2.4.72 (Sr. No. 2 to 5). ***(Action:** Associate Research Scientist, Agril. Research Station, SDAU, Kothara)*
18.2.4.92	**Response of maize (*Zea mays*) to nano urea**	**Approved with following suggestions:** 1. Recast treatments as under: T_1: 100% RDN as per recommendation T_2: 100% RDN as per recommendation + water spray at 30 and 65 DAS T_3: 100% dose of basal N + foliar spray of 2% urea at 30 and 65 DAS T_4: 100% dose of basal N + foliar spray of 4% urea at 30 and 65 DAS T_5: 75% dose of basal N + foliar spray of 2% urea at 30 and 65 DAS T_6: 75% dose of basal N + foliar spray of 4% urea at 30 and 65 DAS T_7: 100% dose of basal N + foliar spray of nano urea @ 2 ml/L at 30 and 65 DAS T_8: 100% dose of basal N + foliar spray of nano urea @ 4 ml/L at 30 and 65 DAS T_9: 75% dose of basal N + foliar spray of nano urea @ 2 ml/L at 30 and 65 DAS T_{10}: 75% dose of basal N + foliar spray of nano urea @ 4 ml/L at 30 and 65 DAS 2. Other suggestions as per Sr. No. 18.2.4.72 (Sr. No. 2 to 5). ***(Action:** Senior Scientist & Head, KVK, Khedbrahma)*
18.2.4.93	**Response of isabgul (*Plantago ovata* Forsk.) to nano urea**	**Approved with following suggestions:** 1. Recast treatments as under:

Sr. No.	Title of Experiment	Suggestion/s
		T_1: 100% RDN as per recommendation T_2: 100% RDN as per recommendation + water spray at 30 and 50 DAS T_3: 100% dose of basal N + foliar spray of 2% urea at 30 and 50 DAS T_4: 100% dose of basal N + foliar spray of 4% urea at 30 and 50 DAS T_5: 75% dose of basal N + foliar spray of 2% urea at 30 and 50 DAS T_6: 75% dose of basal N + foliar spray of 4% urea at 30 and 50 DAS T_7: 100% dose of basal N + foliar spray of nano urea @ 2 ml/L at 30 and 50 DAS T_8: 100% dose of basal N + foliar spray of nano urea @ 4 ml/L at 30 and 50 DAS T_9: 75% dose of basal N + foliar spray of nano urea @ 2 ml/L at 30 and 50 DAS T_{10}: 75% dose of basal N + foliar spray of nano urea @ 4 ml/L at 30 and 50 DAS 2. Other suggestions as per Sr. No. 18.2.4.72 (Sr. No. 2 to 5). ***(Action:** Assistant Research Scientist, Agril. Research Station, SDAU, Kholwada)*
18.2.4.94	**Response of cumin (*Cuminum cyminum*) to nano urea**	**Not Approved.** ***(Action:** Assistant Research Scientist, Agril. Research Station, SDAU, Aseda)*
18.2.4.95	**Response of coriander (*Coriandrum sativum* L.) to nano urea**	**Approved as feeler trial** 1. Recast treatments as under: T_1: 100 % RDN as per recommendation T_2: 100 % RDN as per recommendation + water spray at 30 and 50 DAS T_3: 100 % dose of basal N + foliar spray of 2 % urea at 30 and 50 DAS T_4: 100 % dose of basal N + foliar spray of 4 % urea at 30 and 50 DAS T_5: 75 % dose of basal N + foliar spray of 2 % urea at 30 and 50 DAS T_6: 75 % dose of basal N + foliar spray of 4 % urea at 30 and 50 DAS T_7: 100 % dose of basal N + foliar spray of nano urea @ 2 ml/L at 30 and 50 DAS T_8: 100 % dose of basal N + foliar spray of nano urea @ 4 ml/L at 30 and 50 DAS T_9: 75 % dose of basal N + foliar spray of nano urea @ 2 ml/L at 30 and 50 DAS T_{10}: 75 % dose of basal N + foliar spray of nano urea @ 4 ml/L at 30 and 50 DAS 2. Other suggestions as per Sr. No. 18.2.4.72 (Sr. No. 2 to 5). ***(Action:** Senior Scientist and Head, KVK, SDAU, Deesa)*
18.2.4.96	**Evaluation of different components of natural farming**	**Approved with following suggestions:** 1. As per Sr. No. 18.2.4.74 (Sr. No. 1 to 7).

Sr. No.	Title of Experiment	Suggestion/s
	for mungbean-mustard-cowpea cropping sequence	***(Action:*** *Research Scientist, Pulses Research Station, SDAU, Sardarkrushinagar****)***
18.2.4.97	**Phosphors management in *kharif* groundnut (*Arachis hypogaea* L.)**	**Approved with following suggestion:** 1. Add observation on "Pod yield (kg/ha)" ***(Action:*** *Head of Unit, BSRC, SDAU, SKNagar****)***
18.2.4.98	**Response of mustard to iron and zinc enriched organics**	**Approved with following suggestions:** 1. Estimate nutrients content (N, P, K, Fe and Zn) in enriched FYM and castor shell compost as well as normal FYM and castor shell compost. 2. Microbial count before and after enrichment of different organic manures used should be recorded. 3. Use RDF: 37.5-50-0 kg N-P_2O_5-K_2O/ha 4. Mention methodology of enrichment in the text. 5. Mention source of Zn and Fe. 6. Conduct experiment in Fe and Zn deficient soil. ***(Action:*** *Head of Unit, BSRC, SDAU, SKNagar****)***
18.2.4.99	**Enhancing water productivity of summer pearlmillet through water management practices**	**Approved with following suggestions:** 1. Take mustard straw mulch 5 t/ha instead of 4 t/ha. *(**Action**: Res. Sci., CNRM, SDAU, SKNagar)*

Following trials of JAU, Junagadh were not presented in the house and considered as AICRP trial only

Sr. No.	Title of Experiment	Suggestion/s
1	**Integrated weed management in *kharif* groundnut with diclosulam (AICRP)**	**Considered as AICRP trial** *(**Action:** Research Scientist, Main Oilseeds Research Station, JAU, Junagadh)*
2	**Sustainable groundnut production through crop diversification and tillage systems (AICRP)**	**Considered as AICRP trial** *(**Action:** Research Scientist, Main Oilseeds Research Station, JAU, Junagadh)*
3	**Enhancing biofortified and non-biofortified pearl millet hybrids productivity and quality through nutrients**	**Considered as AICRP trial** *(**Action:** Research Scientist, Main Pearl millet Research Station, JAU, Jamnagar)*
4	**Contribution of production factors to the yield and economics of pearl millet**	**Considered as AICRP trial** *(**Action:** Research Scientist, Main Pearl millet Research Station, JAU, Jamnagar)*
5	**Response of pearl millet to split application of nitrogen at different growth stages**	**Considered as AICRP trial** *(**Action:** Research Scientist, Main Pearl millet Research Station, JAU, Jamnagar)*

Chairman's Remarks:

The chairman of the 18th meeting of AGRESCO of CPSC Dr. D. R. Mehta, Director of Research, JAU, Junagadh appreciated the efforts made by all the scientists of the CPSC group in research for the farming community. He also congratulated all the scientists for coming up with very good technologies for the farming community. He pointed out that more sincere efforts should be made to increase the adoption rates of the recommendations of this group by the farmers through various extension wings.

General Points Discussed:

- AICRP experiments which were conducted/ undertaken during previous season/year will be presented only in AGRESCO meeting of respective University and need not to bring in Combined AGRESCO of SAUs.
- The scientists who are involved in organic farming research should standardize and fix the preparation methods and ingredients of natural farming components in common for all the SAUs.

The meeting was ended with vote of thanks proposed by Dr. R. M. Solanki, Associate Professor, Department of Agronomy, CoA, JAU, Junagadh.

18.3 PLANT PROTECTION

DATE: May 11-13, 2022 and May 10, 2022

Chairman	:	Dr. Z. P. Patel, Hon. Vice Chancellor, NAU, Navsari
Co-Chairman	:	Dr. P. V. Patel, Professor & Head (Ento.), JAU, Junagadh
	:	Dr. R. L. Meena (Patho), Dean, CoA, SDAU, Tharad
Rapporteurs	:	Dr. M. K. Ghelani, JAU
	:	Dr. N. B. Patel, AAU
	:	Dr. Hemant Sharma, NAU
	:	Dr. R.S. Jaiman, SDAU
Statistician		Dr. G. K. Chaudhari, Assoc. Professor, SDAU

At the outset Dr. Z. P. Patel Hon'ble Vice Chancellor, NAU, Navsari and Chairman of the Combined Joint AGRESCO meeting of Plant Protection Sub-committee welcomed Dr. R. M. Chauhan, Hon'ble Vice Chancellor, SDAU, Sardarkrushinagar; Dr. K. B. Kathiria, Hon'ble Vice Chancellor, AAU, Anand; Prof. (Dr.) N. K. Gontia, Hon'ble Vice Chancellor, JAU, Junagadh, both the Co-Chairman's of the sub-committee meeting, the Rapporteurs, Statistician, the conveners of sub-committee of the respective SAUs and other senior scientists who have attended the virtual meeting. The chairman in his introductory remarks requested all the conveners and members for their active participation in fruitful discussion on the recommendations and new technical programmes to get sustainable technology for the farmers of Gujarat. The chairman pointed out that plant protection has a very important role in successful crop production and this group of all the SAU's is always dedicated to solving the problem of farmers. He also explained the devastating role of invasive insect pests and diseases in our state and to act upon urgently for proper strategies to guide the farmers in time. He further emphasized that this is a very important group as farmers have to completely rely upon the scientist or the University for proper guidance to manage the crop pests and diseases. In recent years, the scientists of this group have faced the problem of black thrips in chili, spiralling whitefly in coconut, fall armyworm in maize and South American pinworm in tomato and under such a challenging situation our role is very crucial as the entire farming community looking towards us. Plant protection scientists need to critically explore the new areas to manage invasive pests and diseases in effective and economic ways. The chairman urged all the scientists to transform today's challenges into opportunities by developing cost effective, easily adaptable, and farmer-oriented technologies. Further, the chairman suggested that this group will work to minimize the problems of hazardous pesticides by adopting some eco-friendly approaches and work on some other alternative ways of pest management. He emphasized that our recommendations must be easy to understand and crystal-clear in the language without any ambiguity. University has to guide the farmers properly and make them realize and sensitize about the losses caused by various insect pests and diseases. We must guide our farmers so that they will implement the plant protection measures in time thereby losses can be minimized. Lastly, the chairman also gives emphasis to strengthen new technical programmes by giving scientific and valid suggestions instead of asking undue questions. This was followed by the presentation of recommendations and new technical programmes by conveners of SAUs.

Presentation of the recommendations and new technical programmes by Conveners of SAUs

SN	Name	Designation & University
1	Dr. M. F. Acharya	Associate Professor, Dept. of Entomology, CoA, JAU, Junagadh
2	Dr. R. G. Parmar	Associate Professor & Head, Dept. of Plant Pathology, BACA, AAU, Anand
3	Dr. Abhishek Shukla	Assoc. Prof. & Head, Dept. of Entomology, NMCA, NAU, Navsari
4	Dr. P.S. Patel	Professor & Head, Dept. of Entomology, CPCA, SDAU, SKNagar

Summary of the Recommendations

Name of Uni.	Proposed				Approved			
	Farmer		Scientific		Farmer		Scientific	
	Ento.	Patho.	Ento.	Patho.	Ento.	Patho.	Ento.	Patho.
JAU	03	01	04	01	03	01	04	01
AAU	09+02*	06	20	04	06 (9-3$^{\#}$) + 02*	06	23 (20+3$^{\#}$)	04
NAU	04	02	04	08	03 (4-1**)	01 (2-1$^{\$}$)	03 (4-1**)	05 (8-3**)
SDAU	09	03	06	01	08 (9-1$^{\#}$)	02 (3-1**)	07 (6+1$^{\#}$)	01
Total	**25+02***	**12**	**34**	**14**	**20+02***	**10**	**37**	**11**
	37+02*=39		**48**		**30+02*=32**		**48**	

Note:

*** Adhoc recommendation**

 # Shifted from 'farming community' to 'information to scientific community'

**** Not approved**

$ Continue for one more year

18.3.1. RECOMMENDATIONS FOR FARMING COMMUNITY

JUNAGADH AGRICULTURAL UNIVERSITY

ENTOMOLOGY	
18.3.1.1	**Bio-efficacy of different biocides against aphid in coriander**

The farmers of Gujarat growing coriander are recommended to spray *Beauveria bassiana* 1.15 WP (Min. 1 x 10^8 cfu/g) 0.007 % (60 g/10 l of water) or *Lecanicillium lecanii* 1.15 WP (Min. 1 x 10^8 cfu/g) 0.009 % (80 g/10 l of water), first at ETL and subsequent three sprays at 10 days interval for effective and economical management of aphid.

As per CIB RC Format

Year	Crop	Pest	Pesticides with formulation	Dosage				Total Quantity of Chemical suspension required/ ha	Application schedule	Waiting period/ PHI (days)
				a.i./ ha	Quantity of formulation Kg or ml/ha	Conc. (%)	Dilution in water (10 lit.)			
2021-22	Coriander	Aphid	*Beauveria bassiana* 1.15 WP	35	3 kg	0.007 %	60 g	500 litre	First spray at ETL and subsequent three sprays at 10 days interval after first spray	-
			Lecanicillium lecanii 1.15 WP	46	4 kg	0.009 %	80 g			-

ગુજરાતના ધાણાની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, મોલો ના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે બ્યુવેરીયા બાસીયાના ૧.૧૫ % વે.પા. (ન્યુનતમ ૧ x ૧૦^{૮} સી.એફ.યુ./ગ્રા) ૦.૦૦૭ % (૬૦ ગ્રા/૧૦ લી. પાણીમાં) અથવા લેકાનીસીલીયમ લેકાની ૧.૧૫ વે.પા. (ન્યુનતમ ૧ x ૧૦^{૮} સી.એફ.યુ./ગ્રા) ૦.૦૦૯ % (૮૦ ગ્રા/૧૦ લી. પાણીમાં), પ્રથમ છંટકાવ જીવાત આર્થિક ક્ષમ્યમાત્રા વટાવે ત્યારે અને ત્યારબાદ બીજા ત્રણ છંટકાવ, પ્રથમ છંટકાવના ૧૦ દિવસના અંતરે કરવા.

સીઆઈબી આરસી પ્રફોર્મા પ્રમાણે

વર્ષ	પાક	જીવાત	જંતુનાશક દવા અને તેનું ફોર્મ્યુલેશન	પ્રમાણ				જંતુનાશક દવા અને પાણી નાં દ્રાવણની કુલ જરૂરીયાત પ્રતિ હેક્ટર	વાપરવાની પધ્ધતિ	વેઈટીંગ પીરીયડ/ પી. એચ. આઈ. (દિવસ)
				સક્રિય તત્વ પ્રતિ હેક્ટર (ગ્રામ/ હેક્ટર)	ફોમ્યુલેશન ની માત્રા મીલી, કિલો પ્રતિ હેક્ટર	સાંદ્રતા (%)	પાણી સાથે ડાયલ્યુશન (૧૦ લીટર)			
૨૦૨૧-૨૨	ગુવાર	મોલો	બ્યુવેરિયા બાસીયાના ૧.૧૫ વે.પા.	૩૫	૩ કિગ્રા	૦.૦૦૭ %	૬૦ ગ્રા.	૫૦૦ લીટર	પ્રથમ છંટકાવ જીવાત આર્થિક ક્ષમ્યમાત્રા વટાવે ત્યારે અને ત્યારબાદ બીજા ત્રણ છંટકાવ, પ્રથમ છંટકાવના ૧૦ દિવસના અંતરે	--
			લેકાનીસીલીયમ લેકાની ૧.૧૫ વે.પા.	૪૬	૪ કિગ્રા	૦.૦૦૯ %	૮૦ ગ્રા.			--

Approved with following suggestions:
1. Recommendation to be made for entire Gujarat region
2. Recommend lower dose of *B. bassiana* as it is at par in efficacy with higher dose.
3. Remove JAU isolate from reco. para.
4. Mention first spray at ETL instead of pest appearance in reco. para.

(Action: Professor & Head, Department of Entomology, JAU, Junagadh)

18.3.1.2 Bio-efficacy of *Beauveria bassiana* and different insecticides against insect pests of groundnut

The farmers of Gujarat growing *kharif* groundnut are recommended to apply five sprays of bio-pesticide, *Beauveria bassiana* 1.15 WP (Min. 1 x 10^8 cfu/g), 0.007 % (60 g/10 l of water) at 15 days interval after initiation of any pest infestation for effective and economical management of sucking pests (jassid, aphid and thrips) and leaf eating caterpillars (*H. armigera* and *S. litura*).

As per CIB RC Format

Year	Crop	Pest	Pesticides with formulation	Dosage				Total Quantity of Chemical suspension required/ ha	Application schedule	Waiting period/ PHI (days)
				a.i./ ha	Quantity of formula-tion kg or ml/ha	Conc. (%)	Dilution in water (10 lit.)			
2022	Groundnut	Sucking pests (Jassid, aphid and thrips) and leaf eating caterpillars (*H. armigera* and *S. litura*)	*Beauveria bassiana* 1.15 WP	35	3.0 kg	0.007 %	60 g	500 litre	First spray at initiation of any pest infestation, subsequent four sprays at 15 day interval after first spray	-

ગુજરાતના ચોમાસું મગફળીની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ચુસીયા પ્રકારની જીવાતો (તડતડીયા, મોલો અને થ્રિપ્સ) અને પાન ખાનારી જીવાતો (લીલી ઇયળ અને લશ્કરી ઇયળ) ના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે જૈવિક જંતુનાશક, બ્યુવેરીયા બાસીયાના ૧.૧૫ % વે.પા. (ન્યુનતમ ૧ x $૧૦^{૮}$ સી.એફ.યુ./ગ્રા), ૦.૦૦૭% (૬૦ ગ્રા/૧૦ લી. પાણીમાં) નો પ્રથમ છંટકાવ કોઇપણ જીવાત દેખાય ત્યારે અને ત્યારબાદ બીજા ચાર છંટકાવ, પ્રથમ છંટકાવના ૧૫ દિવસના અંતરે કરવા.

સીઆઈબી આરસી પ્રફોર્મા પ્રમાણે

વર્ષ	પાક	જીવાત	જંતુનાશક દવા અને તેનું ફોર્મ્યુલેશન	પ્રમાણ				જંતુનાશક દવા અને પાણી નાં દ્રાવણની કુલ જરૂરીયાત	વાપરવાની પધ્ધતિ	વેઈટીંગ પીરીયડ/ પી. એચ. આઈ. (દિવસ)
				સક્રિય તત્વ પ્રતિ હેક્ટર (ગ્રામ/ હેક્ટર)	ફોમ્યુલેશન ની માત્રા મીલી, કિલો પ્રતિ હેક્ટર	સાંદ્રતા (%)	પાણી સાથે ડાયલ્યુશન (૧૦ લીટર)			

								પ્રતિ હેક્ટર		
૨૦૨૨	મગફળી	ચુસીયા (તડતડીયા, મોલો અને થ્રીપ્સ) અને પાન ખાનાર (લીલી અને લશ્કરી ઈયળ) જીવાતો	બ્યુવેરીયા બાસીયાના ૧.૧૫ વે.પા.	૩૫	૩.૦ કી.ગ્રા.	૦.૦૦૭%	૬૦ ગ્રા.	૫૦૦ લીટર	પ્રથમ છંટકાવ કોઇપણ જીવાત દેખાય ત્યારે અને ત્યારબાદ બીજા ચાર છંટકાવ, પ્રથમ છંટકાવના ૧૫ દિવસના અંતરે	--

Approved with following suggestions:

1. Remove JAU isolate from reco. para.
2. Reccomended lower dose as it is at par in efficacy with higher dose
3. Add name of pest in Gujarati text
4. Mention initiation of 'any pest' for spraying in reco. para
5. Recommendation to be made for entire Gujarat region

(Action: Professor & Head, Department of Entomology, JAU, Junagadh)

18.3.1.3 Management of shoot fly and stem borer infesting pearl millet crop

The farmers of Gujarat growing pearl millet in *kharif* season are recommended to treat seed with imidacloprid 600 FS (8.75 ml/kg) followed by two sprays at 20 and 40 DAG either *Beauveria bassiana* 1.15 WP (Min. 1 x 10^8 cfu/g), 0.007 % (60 g/10 l of water) or *Panchgavya* 3 % (300 ml/10 l of water) for effective and economical management of shoot fly and stem borer.

As per CIB RC Format

Year	Crop	Pest	Pesticides with formulation	Dosage				Total qty. of chemical suspension required /ha	Application schedule	Waiting period / PHI (days)
				g. a.i./ ha	Qty. of formulation g, ml, kg or l/ha	Conc. (%)	Dilution in water (10 lit.)			
2021-2022	Pearl millet (Bajra)	Shoot fly and stem borer	Imidacloprid 600 FS	16.8	35 ml	Seed trt.	--	--	Seed treatment	-
			B. bassiana 1.15 WP @ 1 x 10^8cfu/g	34.5	3.0 kg	0.007 %	60 g	500 L	Two sprays, 20 & 40 DAG	-
			Panchgavya	--	15.0 L	3.0%	300 ml	500 L		-

ગુજરાતના ચોમાસુ બાજરી ઉગાડતા ખેડુતોને ભલામણ કરવામાં આવે છે કે, સાંઠાની માખી તેમજ ગાભમારાની ઈયળના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે બાજરાના બીજને ઈમિડાક્લોપ્રિડ ૬૦૦ એફ.એસ. (૮.૭૫ મિલી/કિ.ગ્રા.) નો પટ આપવો તેમજ પાકના ઉગાવા પછી ૨૦ અને ૪૦ દિવસે બ્યુવેરીયા બાસીયાના ૧.૧૫ % વે.પા. (ન્યુનતમ ૧ x ૧૦^{૮} સી.એફ.યુ./ગ્રા), ૦.૦૦૭ % (૬૦ ગ્રા/૧૦ લી. પાણીમાં) અથવા પંચગવ્ય 3 % (૩૦૦ મીલી/૧૦ લી. પાણીમાં) ના બે છંટકાવ કરવા.

સીઆઈબી આરસી પ્રફોર્મા પ્રમાણે

વર્ષ	પાક	જીવાત	જંતુનાશક દવાઓનું ફોર્મુલેશન	પ્રમાણ				જંતુનાશક દવા અને પાણી ના દ્રાવણ ની કુલ જરૂરીયાત પ્રતિ હેકટર	વાપરવા ની પધ્ધતિ	વેઈટીંગ પીરીયડ /પી. એચ. આઈ. (દિવસ)
				સક્રિય તત્વ ગ્રામ પ્રતિ હેકટર	ફોર્મુલેશનની માત્રા ગ્રામ/ મિલી/ કિલો/ લી પ્રતિ હેકટર	સાંદ્રતા (%)	પાણીમાં ડાયલ્યુશન (૧૦ લી.)			
૨૦૨૧-૨૦૨૨	બાજરી	સાંઠાની માખી અને ગાભમારાની ઇયળ	ઈમીડાક્લોપ્રીડ ૬૦૦ એફ. અસ.	૧૬.૮	૩૫ મિલી.	બીજ માવજત	--	--	બીજ માવજત	-
			બ્યુવેરીયા બાસીયાના ૧.૧૫ વે.પા. @ ૧ x ૧૦^{૮} સી. એફ. યુ./ગ્રામ	૩૪.૫	૩.૦ કિ.ગ્રા.	૦.૦૦૭ %	૬૦ ગ્રામ	૫૦૦ લી.	બે છંટકાવ, પાક ઉગ્યાના ૨૦ અને ૪૦	-

			પંચગવ્ય	-	૧૫.૦ લી.	૩.૦ %	૩૦૦ મિલી.	૫૦૦ લી.	દિવસે	-

Approved with following suggestions:

1. Recommendation to be made for entire Gujarat region
2. Recast reco. para
3. Remove JAU isolate from reco. para
4. Add annexure with procedure of *panchgavya* along with recommendation

(Action: Research Sci. (Pearl millet), Pearl millet Res. Station, JAU, Jamnagar)

PLANT PATHOLOGY

18.3.1.4 Integrated management of root rot (*macrophomina phaseolina*) of castor

The farmers of Gujarat growing castor are recommended to apply 5 kg *Trichoderma harzianum* 1 % WP (Min. 2 x 10^6 cfu/g) enriched before one week in 500 kg FYM/ha at the time of sowing for effective and economical management of root rot.

As per CIB &RC Format

Year	Crop	Disease	Pesticides with formulation	Dosage: g.a.i./ ha	Dosage: Quantity of formulation g, ml, kg or l/ha	Dosage: Conc. (%)	Dosage: Dilution in water (10 lit)	Total* Quantity of Chemical suspension required /ha	Application schedule	Waiting Period / PHI (days)	Remark (s)
2022	Castor	Root rot	*Trichoderma harzianum* 1 % WP	-	5 kg	2 x 10^6 cfu/g	-	-	As soil application with 500 kg FYM at the time sowing	--	In Castor crop this bioagent is not registered

ગુજરાતના દિવેલા ઉગાડતા ખેડૂતભાઈઓને મૂળખાઈ રોગના અસરકારક અને અર્થક્ષમ વ્યવસ્થાપન માટે એક હેક્ટર વિસ્તારમાં ૫ કિલો ટ્રાયકોડરમા હારજીયાનમ ૧ % વે.પા. (ન્યુનતમ ૨ x ૧૦^{૬} સી.એફ.યુ./ગ્રામ) ૫૦૦ કિલો છાણીયા ખાતરમાં એક અઠવાડિયા પહેલા સંવર્ધિત કરી વાવણી સમયે જમીનમાં આપવાની ભલામણ કરવામાં આવે છે.

સીઆઈબી આરસી પ્રફોર્મા પ્રમાણે

વર્ષ	પાક	રોગ	ફૂગનાશક દવાઓનુ ફોર્મ્યુલેશન	પ્રમાણ: સક્રીય તત્વ ગ્રામ/હે.	પ્રમાણ: ફોર્મ્યુલેશન ની માત્રા ગ્રામ/મીલી/ કિલો/લી પ્રતિ હેકટર	પ્રમાણ: સાંદ્રતા (%)	પ્રમાણ: પાણીમાં ડાયલ્યુશન ૧૦ લી.	જંતુનાશક દવા અને પાણીના દ્રાવણની કુલ જરુરીયાત પ્રતિ હેકટર	વાપરવાની પધ્ધતિ	વેઈટીંગ પીરીયડ/ પી.એચ.આઈ. (દિવસ)	રીમાર્કસ
૨૦૨૨	દિવેલા	મૂળખાઈ ના રોગ માટે	ટ્રાયકોડરમા હારજીયાનમ ૧ %વે. પા.	--	૫ કિ. ગ્રા.	૨ x૧૦^{૬} જીવંત કોષો	--	-	૫૦૦ કિ.ગ્રા. છાણીયા ખાતરમાં મિશ્ર કરીને વાવણી સમયે જમીનમાં આપવું	--	જૈવિક નિયંત્રકો દિવેલા પાકમા નોધયેલ નથી

Approved with following suggestions:

1. Remove JAU isolate from reco.para
2. Recommendation to be made for entire Gujarat region
3. Mention time for enrichment to be one week in reco. para.

(Action: Research Scientist (G'nut), Main Oilseeds Res. Station, JAU, Junagadh)

ANAND AGRICULTURAL UNIVERSITY

ENTOMOLOGY

18.3.1.5 Effect of date of sowing on incidence of fall armyworm, *spodoptera frugiperda* (J. E. Smith) infesting maize (PP/Entomology (BACA)/2019/01)

Sweet corn growers of Gujarat are recommended to sow the crop during 3rd

week of November (*rabi* season) as the infestation of fall armyworm, *Spodoptera frugiperda* (J. E. Smith) is relatively low and higher green cob as well as fodder yield.

ગુજરાતના શિયાળુ ઋતુમાં સ્વીટ કોર્નની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે મકાઇની વાવણી નવેમ્બરના ત્રીજા અઠવાડિયા દરમ્યાન કરવાથી ટપકાંવાળી લશ્કરી ઇયળનો ઉપદ્રવ પ્રમાણમાં ઓછો રહે છે તથા લીલા ડોડા તેમજ ચારાનું ઉત્પાદન વધુ મેળવી શકાય છે.

Approved with following suggestions:

1. The data of interaction effect must be included in the table
2. Remove word “can be obtained”

(Action: Professor & Head, Department of Entomology, BACA, AAU, Anand)

18.3.1.6 Evaluation of attractants on foraging activity of honey bee in mustard (PP/Entomology(BACA)/2019/02)

Mustard growers of Gujarat are recommended to apply first spray of 10% sugar solution (1 kg/ 10 litre water) as attractant at 10% flowering stage and second spray after 10 days of the first spray to enhance foraging activity of honeybees and thereby increasing seed yield.

ગુજરાતમાં રાઇની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ખાંડના ૧૦% દ્રાવણ (૧ કિ.ગ્રા./ ૧૦ લિટર પાણી) નો પ્રથમ છંટકાવ ૧૦% ફૂલ અવસ્થાએ અને બીજો છંટકાવ પ્રથમ છંટકાવના ૧૦ દિવસ બાદ કરવાથી મધમાખીની પ્રવૃતિમાં વધારો થતાં ઉત્પાદન વધે છે.

Suggestion: Approved

(Action: Professor & Head, Department of Entomology, BACA, AAU, Anand)

18.3.1.7 Management of aphid in coriander through insecticidal seed treatments and bio-pesticides (PP/CoH (Ento.)/2019/01)

Farmers of Gujarat growing coriander are recommended to treat seeds with imidacloprid 600 FS, 7.5 ml/kg seeds using equal quantity of water and foliar spray of *Lecanicillium lecanii* 1.15 % WP (40 g/ 10 litres water) first at initiation of aphid infestation and second after 10 days of first spray for effective management of aphid.

Recommendation for PHI as per CIB guidelines

Year	Crop	Pest	Botanical formulation	Dosage				Application schedule	Waiting period / PHI (Days)
				g. a.i./ ha	Quantity of formu-lation/ ha	Conc. (%)	Dilution in water (10 litre)		
2022	Coriander	Aphid	Imidacloprid 600 FS (Seed treatment)	-	7.5	150 ml	-	Seed treatment before sowing first at initiation of pest and second at 10 days interval	-
			Lecanicillium lecanii 1.15 % WP	--	40	3.2 kg	400 litre		-

ગુજરાતમાં ધાણાની ખેતી કરતાં ખેડૂતોને મોલોના અસરકારક વ્યવસ્થાપન માટે બીજને ઈમીડાક્લોપ્રીડ ૬૦૦ એફ એસ, ૭.૫ મિ.લિ./કિ.ગ્રા. બીજ પ્રમાણે સપ્રમાણમાં પાણી ભેળવી બીજ માવજત આપવી અને લેકાનીસીલીયમ લેકાની ૧.૧૫% વે. પા. (૪૦ ગ્રામ/ ૧૦ લિટર પાણીમાં) નો પ્રથમ છંટકાવ મોલોના ઉપદ્રવની શરૂઆત થાય ત્યારે અને બીજો છંટકાવ પ્રથમ છંટકાવના ૧૦ દિવસ બાદ કરવાની ભલામણ કરવામાં આવે છે.

સીઆઈબી આરસી પ્રફોર્મા પ્રમાણે

વર્ષ	પાક	જીવાત	વનસ્પતિજન્ય કીટનાશક	પ્રમાણ				છંટકાવ	છેલ્લો છંટકાવ અને ઉતાર વચ્ચેનો સમયગાળો (દિવસ)
				સ.ત. /હે.	વનસ્પતિજન્ય કીટનાશક/હે.	સાંદ્રતા (%)	જથ્થો /૧૦ લિટર પાણી		
૨૦૨૨	ધાણા	મોલો	ઈમીડાક્લોપ્રીડ ૬૦૦ એફ એસ (બીજ માવજત)	--	૭.૫	૧૫૦ મિલિ	--	વાવણી પહેલા બીજ માવજત આપવી જીવાતના ઉપદ્રવની	-

			લેકાનીસીલીયમ લેકાની	--	૪૦	૩.૨ કિ.ગ્રા.	૪૦૦ લિટર	શરૂઆત થાય ત્યારે પ્રથમ છંટકાવ અને બીજો છંટકાવ પ્રથમ છંટકાવના ૧૦ દિવસ બાદ કરવો	-

Approved with following Suggestions:

1. Mention the value of interaction effect in tables
2. Add the data of Y value in yield table

(Action: Assistant Prof. & Head, Dept. of Plant Protection, CoH, AAU, Anand)

18.3.1.8 Evaluation of insecticides against sucking pests of chilli at nursery stage (PP/ MVRS (Ento.) & Pesticide Residues/2019/01)

The chilli growers of Gujarat are recommended to treat the seeds with imidacloprid 600 FS 9 ml or thiamethoxam 30 FS 7 ml per kg seed before seeding in nursery and dipping the roots of seedlings in fipronil 5 SC 2 ml per liter water for two hours before transplanting for effective management of thrips in early stages of crop.

Recommendation for PHI as per CIB guidelines

Year	Crop	Pest	Formulation	Dosage		Application schedule (10 litre)	Waiting period /PHI (Days)
				Quantity of formulation/ ha	Dilution in water (10 lit)		
2022	Chilli	Thrips	Imidacloprid 600 FS	9.0 ml/kg seed	--	Seed treatment	-
			Thiamethoxam 30 FS	7 ml/kg seed	--	Seed treatment	-
			Fipronil 5 % SC	20 ml	20 ml	Dipping roots of chilli seedlings for two hours before transplanting	-

ગુજરાતમાં મરચીની ખેતી કરતા ખેડૂતોને પાકની શરૂઆતની અવસ્થામાં ધરૂવાડિયામાં થ્રિપ્સના અસરકારક વ્યવસ્થાપન માટે ઇમીડાક્લોપ્રીડ ૬૦૦ એફ એસ (૯ મિ.લિ./કિ.ગ્રા. બીજ) અથવા થાયામીથોક્ઝામ ૩૦ એફ એસ (૭ મિ.લિ./ કિ.ગ્રા. બીજ) બિયારણને પટ આપવાની તેમજ ફેરરોપણી સમયે ધરૂના મૂળને ફીપ્રોનીલ ૫ એસ સી ૨ મિ.લિ. પ્રતિ ૧ લિટર પાણી પ્રમાણે દ્રાવણમાં બે ક્લાક બોળી રાખ્યા બાદ રોપવાની ભલામણ કરવામાં આવે છે.

સીઆઈબી આરસી પ્રફોર્મા પ્રમાણે

વર્ષ	પાક	જીવાત	કીટનાશક	પ્રમાણ		વપરાશની રીત	છેલ્લા છંટકાવ અને ઉતાર વચ્ચેનો સમયગાળો
				કીટનાશક નું પ્રમાણ	જરૂરિયાત (૧૦ લિટર પાણીમાં)		
૨૦૨૨	મરચી	થ્રિપ્સ	ઇમીડાક્લોપ્રીડ ૬૦૦ એફ એસ	૯ મિ.લિ./ કિ.ગ્રા. બીજ	---	બીજ માવજત	૦
			થાયોમીથોકઝામ ૩૦ એફ એસ	૭ મિ.લિ./ કિ.ગ્રા. બીજ	---	બીજ માવજત	૦
			ફીપ્રોનીલ	૨૦	૨૦ મિ.લિ.	ધરૂના મૂળને બે કલાક માટે બોળી રાખીને ફેર રોપણી કરવી	૦

Approved with following suggestions:

1. Mention the value of interaction effect in tables
2. Check the yield data of interaction effect

(Action: Research Scientist (Veg.), Main Vegetable Res. Station, AAU, Anand)

18.3.1.9 Evaluation of insecticides as seed treatment against fall armyworm, *spodoptera frugiperda* (j. E. Smith) in maize (PP/MMRS (Ento.), Godhra/2020/01)

Maize growers of Gujarat are recommended to treat maize seeds with ready-mix

insecticide cyantraniliprole 19.8% + thiamethoxam FS 19.8%, 6 ml/ kg using equal quantity of water found effective against fall armyworm up to 40 days. The treated seeds should be dried under shade before sowing.

Recommendation for PHI as per CIB guidelines

Year	Crop	Pest	Formulation	Dosage				Application schedule	Waiting period /PHI (Days)
				g. a.i./ ha	Quantity of formulation/ ha	Conc. (%)	Dilution in water (10 litre)		
2022	Maize	Fall army worm	Cyantraniliprole 19.8 % + Thiamethoxam FS 19.8 %	2.38	120 ml	--	--	As seed treatment	Being a seed treatment, it is not required

ગુજરાતના મકાઈની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે મકાઇના બીજને કીટનાશકના તૈયાર મિશ્રણ સાયન્ટ્રાનીલીપ્રોલ ૧૯.૮ % + થાયામેથોક્ઝામ ૧૯.૮% એફએસ, ૬ મિ.લિ./ કિ.ગ્રા. પ્રમાણે સપ્રમાણ પાણી ભેળવી બીજ માવજત આપી છાંયડે સૂકવી વાવેતર કરવાથી ટપકાંવાળી લશ્કરી ઇયળ સામે ૪૦ દિવસ સુધી રક્ષણ મેળવી શકાય છે.

સીઆઈબી આરસી પ્રફોર્મા પ્રમાણે

વર્ષ	પાક	જીવાત	જંતુનાશક દવાઓનુ સ્વરુપ	પ્રમાણ				વાપરવાની પધ્ધતિ	પ્રતિક્ષા સમય (દિવસ)	રીમાર્ક્સ
				સક્રિય તત્વ ગ્રામ/ હેકટર	ફોર્મ્યુલેશનની માત્રા પ્રતિ હેકટર	માત્રા	પાણી			
૨૦૨૨	મકાઇ	ટપકાંવાળી લશ્કરી ઇયળ	સાયન્ટ્રાનીલીપ્રોલ 19.8% + થાયામેથોક્ઝામ એફએસ 19.8%	૨.૩૮	૧૨૦ મિ.લિ.	--	--	બીજ માવજત તરીકે	બીજ માવજત આપવાની હોવાથી જરૂરિયાત નથી.	---

Approved with following suggestion:

1. Write “found effective against fall army worm up to 40 days” in English and “ટપકાંવાળી લશ્કરી ઇયળ સામે ૪૦ દિવસ સુધી રક્ષણ મેળવી શકાય છે” in Gujarati language in recommendation text

(Action: Research Scientist (Maize), Main Maize Res. Station, AAU, Godhra)

18.3.1.10 Integrated pest management in soybean (PP/TRTC, Devagadhbaria (Ento.)/ 2018/01)

Farmers of Gujarat growing soybean are recommended to adopt Integrated Pest Management module consisting of seed treatment with imidacloprid 600 FS, 9.0 ml/ kg seeds, spraying of chlorantraniliprole 18.5 SC 0.006%, 3 ml/10 liters of water at 40 days after sowing and neem oil 40 ml/ 10 liters of water at 60 days after sowing for effective management of jassid, whitefly and girdle beetle.

સોયાબીનની ખેતી કરતા ગુજરાતના ખેડૂતોને લીલા તડતડીયા, સફેદમાખી અને ગર્ડલ બીટલનાં અસરકારક વ્યવસ્થાપન માટે સંકલિત જીવાત વ્યવસ્થાપન મોડ્યુલ તરીકે સોયાબીનના બિયારણને ઇમીડાક્લોપ્રિડ ૬૦૦ એફ.એસ. ૯ મિ.લિ./કિ.ગ્રા. બીજ પ્રમાણે પટ આપવો + ક્લોરાન્ટ્રાનિલિપ્રોલ ૧૮.૫ એસસી ૦.૦૦૬%, ૩મિ.લિ./૧૦ લિટર પાણીમાં વવાણીના ૪૦ દિવસે અને લીંબોળીનું તેલ ૪૦ મિ.લિ./ ૧૦ લિટર પાણીમાં વવાણીના ૬૦ દિવસે છંટકાવ કરવાની ભલામણ કરવામાં આવે છે.

Approved with following suggestion:

1. Remove “Growing of castor as a trap crop around the field” in English and “ખેતરની ફરતે પિંજર પાક તરીકે દીવેલાનો ઉછેર કરવો” in Gujarati from the recommendation text.
2. Add CIBRC format

(Action: Research Sci., Tribal Res.-cum-Training Centre, AAU, Devgadhbaria)

AD-HOC RECOMMENDATIONS

18.3.1.11 Bio-efficacy of insecticides against thrips, *thrips parvispinus* (karny) infesting chilli

Chilli growers of Gujarat are recommended to spray spinetoram 11.7 SC, 0.012

% (10 ml/ 10 litre of water) or tolfenpyrad 15 EC, 0.03 % (20 ml/10 litre of water) at the time of infestation in flowering for effective management of black thrips, *Thrips parvispinus* (Karny). PHI should be kept minimum of 7 days.

Recommendation for PHI as per CIB guidelines

Year	Crop	Pest	Formulation	Dosage				Application schedule	Waiting period /PHI (Days)
				g. a.i./ ha	Quantity of formulation / ha	Conc. (%)	Dilution in water (10 litre)		
2022	Chilli	Thrips	Spinetoram 11.7 SC	58.50	500	0.012	10 ml	Appearance of pest	07
			Tolfenpyrad 15 EC	150.00	1000	0.03	20 ml		07

ગુજરાતના મરચીની ખેતી કરતા ખેડૂતોને કાળી થ્રિપ્સના નિયંત્રણ માટે મરચીના ફૂલમાં ઉપદ્રવ સમયે સ્પીનેટોરામ ૧૧.૭ એસસી, ૦.૦૧૨% (૧૦ મિ.લિ./૧૦ લિટર પાણી) અથવા ટોલ્ફેનપાયરાડ ૧૫ ઇસી, ૦.03% (૨૦ મિ.લિ./૧૦ લિટર પાણી)નો ફૂલ અવસ્થાએ છંટકાવ કરવાની ભલામણ કરવામાં આવે છે. છેલ્લા છંટકાવ અને ઉતાર વચ્ચેનો સમયગાળો ઓછામાં ઓછો ૭ દિવસ રાખવો.

સીઆઈબી આરસી પ્રફોર્માં પ્રમાણે

વર્ષ	પાક	જીવાત	કીટનાશક	પ્રમાણ				માવજતનો સમય	પ્રતિક્ષા સમય/ દિવસ
				સ. ત. (ગ્રામ) /હે.	કીટનાશક નું પ્રમાણ (લિ./હે.)	સાંદ્રતા (%)	પાણીનું પ્રમાણ (૧૦ લિ.)		
૨૦૨૨	મરચી	કાળી થ્રિપ્સ	સ્પીનેટોરામ ૧૧.૭ એસસી	૫૮.૫૦	૫૦૦	૦.૦૧૨	૧૦ મિ.લિ.	જીવાત દેખાવાની શરૂઆત થાય ત્યારે	૭
			ટોલ્ફેનપાયરાડ ૧૫ ઇસી	૧૫૦.૦૦	૧૦૦૦	૦.03	૨૦ મિ.લિ.		૭

Approved with following suggestions:

1. Approved as Adhoc recommendation for entire Gujarat state
2. Write "**ફૂલ અવસ્થાએ છંટકાવ કરવાની ભલામણ**" in gujarati recommendation text

(Action: Professor & Head, Department of Entomology, BACA, AAU, Anand)

18.3.1.12 Evaluation of bio-pesticides against thrips, *thrips parvispinus* (Karny) infesting chilli

Chilli growers of Gujarat are recommended to spray azadirachtin 10000 ppm, 0.003% (30 ml/ 10 litre of water) or *Pseudomonas fluorescens* 1% WP, 2 x 10^8 cfu/g (40 g/ 10 litre of water) at the time of infestation in flowering for management of black thrips, *Thrips parvispinus* (Karny).

ગુજરાતમાં મરચીની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે મરચીના ફૂલમાં ઉપદ્રવ સમયે એઝાડીરેકટીન ૧૦૦૦૦ પીપીએમ, ૦.૦૦૩% (૩૦ મિ.લિ./ ૧૦ લિટર પાણી) અથવા સ્યુડોમોનાસ ફ્લૂરોસેન્સ ૧% વે.પા., ૨ x ૧૦^{૮} સીએફયુ/ગ્રામ (૪૦ ગ્રામ/ ૧૦ લિટર પાણી) નો છંટકાવ કરવાથી કાળી થ્રિપ્સની વસ્તીનો ઘટાડો થાય છે.

Approved with following suggestion:

1. Approved as Adhoc recommendation
2. Write "વસ્તીમાં ઘટાડો થાય છે" in gujarati recommendation text instead of "વસ્તી કાબુમાં રહે છે"

(Action: Professor & Head, Department of Entomology, BACA, AAU, Anand)

Special remarks

Point No. 18.3.1.17 and 18.3.1.18 are passed as an Adhoc recommendation by considering the following situations:

1. Due to invasive nature of thrips, *Thrips parvispinus* (Karny) in chilli, in this context, establishment of *T. parvispinus* in different states of India demanded a special attention as a major pest inflicting severe crop losses. Therefore, it was imperative that the domestic quarantine mechanisms should to be strengthened further to check the spread of this notorious pest to the rest of India. (Rachana,

R.R., Scientist & Shylesha, A. N., Director In-charge; ICAR-National Bureau of Agricultural Insect Resources, Bengaluru, Karnataka, India.).

2. Advisory on incidence of invasive thrips infesting chilli was published by Plant Protection Advisor, DPPQS, Faridabad Dtd.10-12-2021
3. Trial for evaluation of *Bacillus* formulation as well as surveillance for this pest was directed by Principal Scientist, ICAR-NBAIR Dtd. 14-12-2021.
4. First report of new invasive thrips, *Thrips parvispinus* (Karny) (Thripidae: Thysanoptera) in chilli fields of Umreth in Anand district of Gujarat was carried out by N. B. Patel, J. K. Bhagora, B. L. Raghunandan and N. M. Patel AICRP on Biological Control of Crop Pests, Anand Agricultural University, Anand, Gujarat 388 110, India.
5. Status of invasive species of thrips, *Thrips parvispinus* (Karny) infesting chilli grown in middle Gujarat was published by Lodaya *et. al.* (2022) in *The Pharma Innovation Journal*; 11(3): 1298-1302.
6. By considering the above facts and urgent need for management of this pest, the house suggested to approved two ad-hoc recommendations for the benefit of farmers of Gujarat.

(Action: All Conveners (PPSC), SAUs of Gujarat)

PLANT PATHOLOGY

18.3.1.13 Field evaluation of ready-mix fungicides against cumin blight (PP/Pathology/2019/01)

The farmers of Gujarat cultivating cumin are recommended to spray ready-mix fungicide, metiram 55% + pyraclostrobin 5% WG 0.18%, 30 g/ 10 litre of water along with commercially available sticker 0.1%, 10 ml/ 10 litre of water first at the initiation of the disease and subsequent two sprays at 15 days interval for effective management of blight disease. PHI should be kept minimum of 20 days.

Recommendation for PHI as per CIB guidelines

Year	Crop	Disease	Fungicide	Dosage				Application schedule	Waiting period/ PHI (days)
				g a.i./ ha	Conc. (%)	Quantity of formulation / ha	Dilution in water litre/ha)		
2022	Cumin	Blight	Metiram 55% + pyraclostrobin 5% WG and commercially available sticker	900	0.18 0.1	1500 500 ml	500	First spray at the initiation of the disease and subsequent two sprays at 15 days interval	20

ગુજરાતમાં જીરૂની ખેતી કરતાં ખેડૂતોને ચરમી/કાળિયા રોગના અસરકારક વ્યવસ્થાપન માટે ફૂગનાશકના તૈયાર મિશ્રણ મેટીરામ ૫૫% + પાયરાક્લોસ્ટ્રોબિન ૫% ડબલ્યુજી ૦.૧૮%, ૩૦ ગ્રામ/૧૦ લિટર પાણીના દ્રાવણમાં વ્યાપારી ધોરણે ઉપલબ્ધ સ્ટીકર ૦.૧%, ૧૦ મિ.લિ./૧૦ લિટર પાણી પ્રમાણે ભેળવી, પ્રથમ છંટકાવ રોગની શરૂઆત થયે અને ત્યાર બાદ બીજા બે છંટકાવ ૧૫ દિવસના આંતરે કરવાની ભલામણ કરવામાં આવે છે. છેલ્લા છંટકાવ અને કાપણી વચ્ચેનો સમયગાળો ઓછામાં ઓછો દિવસ ૨૦ રાખવો.

સીઆઈબી આરસી પ્રફોર્મા પ્રમાણે

વર્ષ	પાક	રોગ	ફૂગનાશક	પ્રમાણ				છંટકાવનો સમય	પ્રતીક્ષા સમય / પી.એચ.આઈ (દિવસ)
				સ.ત. ગ્રામ/હે.	સાંદ્રતા (%)	ફૂગનાશકનું પ્રમાણ/હે.	પાણી સાથે ડાયલ્યુશન (લિટર/હે.)		
૨૦૨૨	જીરૂ	ચરમી/ કાળિયો	મેટીરામ ૫૫% + પાયરાક્લોસ્ટ્રોબિન ૫% ડબલ્યુજી અને વ્યાપારી ધોરણે ઉપલબ્ધ સ્ટીકર	૯૦૦	૦.૧૮ ૦.૧	૧૫૦૦ ગ્રામ ૫૦૦ મિ.લિ.	૫૦૦	પ્રથમ છંટકાવ રોગની શરૂઆત થયે અને ત્યાર બાદ બીજા બે છંટકાવ ૧૫ દિવસના આંતરે કરવા	૨૦

Approved with following suggestion:

1. Remove the range from g a.i./ha and formulation/ha and write only 900 g a.i./ha and 1500 g required quantity of formulation per ha in CIB table

(Action: Professor & Head, Department of Plant Pathology, BACA, Anand)

18.3.1.14 Evaluation of organic inputs against major diseases of turmeric (PP/CoH (Patho.)/2020/01)

The farmers of Gujarat cultivating turmeric are recommended to dip the rhizomes in *Beejamrit*, 50 litre/100 kg rhizomes for 2 hrs followed by five sprays of liquid *Jivamrit* 10%, 1 litre in 10 litre of water OR cow urine 10%, 1 litre in 10 litre of water for leaf blotch. whereas, for leaf spot cow urine 10%, 1 litre in 10 litre of water along with sticker 0.1%, 10 ml in 10 litre of water first at initiation of disease and subsequent four sprays at 10 days interval.

Recommendation for PHI as per CIB guidelines

Year	Crop	Disease	Organic input	Dosage				Application schedule	Waiting period/ PHI (days)
				Conc. (%)	Dose/100kg of rhizome or 10 lit (g/ml)	Quantity of formulation / ha	Dilution in water/ha		
2022	Tur-meric	Leaf blotch/ Leaf spot	*Bijamrit*	--	50 liter	1500 liter	--	Rhizome dip treatment for two hours	--
		Leaf blotch	*Jivamrit/* Cow urine	10	1000 ml	--	500 lit	First spray at the initiation of disease and remaining four sprays at 10 days interval of first spray	---
		Leaf spot (Anthracnose)	Cow urine	10	1000 ml	--	500 lit		

Preparation and composition of various organic inputs:

(A) *Beejamrit* (for 10 kg seed treatment)

Cow dung: 500 g	Fresh cow urine: 500 ml
Lime: 10 g	Soil from underneath of banyan tree: 100 g
Water: 2 litre	

Method of preparation: All the ingredients will be added in 2 liter of water in bucket. After stirring, cover the bucket with gunny bag and keep it for 24 hours.

(B) *Jeevamrit*

Fresh cow dung: 10 kg	Cow urine: 10 litre
Desi gud (Jaggery): 2 kg	Pulse flour: 1 kg
Soil from underneath of banyan tree: 500 g	Water: 180 litre

Method of preparation: Take 200 litres of water in a barrel mix all the ingredients and keep the mixture for 7 days by regular mixing twice a day.

ગુજરાતમાં હળદરની ખેતી કરતાં ખેડૂતોને પાનનો બ્લોચ અને પાનનાં ટપકાં/કાલવ્રણના અસરકારક વ્યવસ્થાપન માટે હળદરની ગાંઠોને બીજામૃત (૫૦ લિટર/૧૦૦ કિ.ગ્રા. ગાંઠો) ના દ્રાવણમાં બે કલાક બોળીને સુકવ્યા બાદ વાવણી કરવી તથા પાનનાં બ્લોચ માટે પ્રવાહી જીવામૃત ૧૦%, ૧ લિટર/૧૦ લિટર પાણી અથવા ગૌમુત્ર ૧૦ %, ૧ લિટર/૧૦ લિટર પાણીમાં છંટકાવ કરવો. પાનનાં ટપકાં/કાલવ્રણ માટે ગૌમુત્ર ૧૦%, ૧ લિટર/૧૦ લિટર પાણીના દ્રાવણમાં સ્ટીકર ૦.૧%, ૧૦ ગ્રામ/૧૦ લિટર પાણીનો, પ્રથમ છંટકાવ રોગની શરૂઆત થયે અને ત્યાર બાદ બીજા ચાર છંટકાવ ૧૦ દિવસના આંતરે કરવાની ભલામણ કરવામાં આવે છે.

સીઆઈબી આરસી પ્રફોર્મા પ્રમાણે

વર્ષ	પાક	રોગ	બીન	પ્રમાણ	છંટકાવનો સમય	પ્રતીક્ષા

			રાસાયણિક સંયોજનો	માત્રા(%)	માત્રા/૧૦૦ કિ.ગ્રા. ગાંઠો અથવા ૧૦ લિ. /મિ.લિ.	બીન રાસાયણિક સંયોજનો /હે.	પાણી		સમય/ દીવસ
૨૦૨૨	ભીંડા	પાનનો બ્લોચ/ પાનનાં ટપકાં/ કાલવ્રણ	બીજામૃત	--	૧૫૦ લિટર	૧૫૦૦ લિટર	--	ગાંઠોને દ્રાવણમાં બે કલાક ડુબાડવા	--
		પાનનો બ્લોચ	જીવામૃત / ગૌમુત્ર	૧૦	૧ લિટર	૫૦ લિટર	૫૦૦ લિટર	પ્રથમ છંટકાવ રોગની શરૂઆત થયે અને બાકીના ચાર છંટકાવ પ્રથમ છંટકાવના ૧૦ દિવસના આતરે કરવા	--
		પાનનાં ટપકાં/ કાલવ્રણ	ગૌમુત્ર	૧૦	૧ લિટર	૫૦ લિટર	૫૦૦ લિટર		--

બીજમૃત અને જીવામૃત બનાવવાની પધ્ધતિ:

(અ) બીજામૃત (૧૦ કિ.ગ્રા. બીજ માવજત માટે)

ગાયનું છાણ: ૫૦૦ ગ્રામ	તાજુ ગૌમુત્ર: ૫૦૦ મિ.લિ.
ચૂનો: ૧૦ ગ્રામ	વડના ઝાડ નીચેની માટી: ૧૦૦ ગ્રામ
પાણી: ૨ લિટર	

પધ્ધતિ: સૌ પ્રથમ ઉપર જણાવેલ બધા પદાર્થોને પાણીની ડોલમાં મિશ્ર કરીને ૨ લિટર પાણી ઉમેરો. ત્યારબાદ તેને લાકડીથી હલાવવાનું છે. ત્યાર પછી ડોલને કંતાન વડે ઢાંકીને તેને ૨૪ કલાક માટે રહેવા દો.

(બ) જીવામૃત:

ગાયનું તાજુ છાણ: ૧૦ કિ.ગ્રા.	ગૌમુત્ર: ૧૦ લિટર
દેશી ગોળ: ૨ કિ.ગ્રા.	કઠોળનો લોટ: ૧ કિ.ગ્રા.
વડના ઝાડ નીચેની માટી: ૫૦૦ ગ્રામ	પાણી: ૧૮૦ લિટર

પધ્ધતિ: સૌ પ્રથમ ઉપર જણાવેલ બધા પદાર્થોને એક મોટા પીપમાં મિશ્ર કરીને આ મિશ્રણને ૭ દિવસ સુધી મૂકી રાખવું. આ દ્રાવણને દિવસમાં બે વખત લાકડી વડે હલાવતા રહેવું.

Approved with following suggestions:

1. Correct the dose of the treatment in CIB table
2. Add the composition of organic inputs in recommendation text.

(Action: Assistant Prof. & Head, Dept. of Plant Protection, CoH, AAU, Anand)

18.3.1.15 Effects of biofumigation for management of root-knot nematode in bidi tobacco nursery (PP/BTRS (Nemato.)/2019/01)

Farmers raising tobacco nursery are recommended to grow mustard (25 kg seed/ha) in rabi OR sunnhemp (100 kg seed/ha) in summer season as biofumigant crops and incorporate in soil at 50% flowering stage to manage root-knot disease and thereby increase number of healthy transplantable seedlings.

બીડી તમાકુનું ધરૂવાડિયું ઉછેરતા ખેડૂતોને શિયાળુ ઋતુમાં રાઈ (૨૫ કિ.ગ્રા. બીજ/હે.) અથવા ઉનાળામાં શણ (૧૦૦ કિ.ગ્રા. બીજ/હે.) ને જૈવધુમકર પાક તરીકે ૫૦% ફૂલ અવસ્થાએ જમીનમાં દબાવવાથી, ગંઠવા કૃમિના રોગનું વ્યવસ્થાપન થવાથી રોપવાલાયક તંદુરસ્ત ધરૂની સંખ્યા વધારે મળે છે.

Approved with following suggestion:

1. Remove word “Biofumigant”from gujarati recommendation text

(Action: Research Scientist, Bidi Tobacco Research Station, AAU, Anand)

18.7.1.16 Evaluation of organic inputs against major foliar diseases of okra (PP/CoA (Patho.), Jabugam & CoA (Patho.), Vaso/2020/01)

Okra growers of Gujarat are recommended to soak the seeds in *Beejamrit* 200

	ml/ kg for 30 minutes and dry in shade before sowing followed by three foliar sprays of *Panchagavya* 10%, 1 litre/10 litre water first at initiation of disease and subsequent two sprays at 15 days interval for effective management of Cercospora leaf spot disease.

Method of preparation of *Panchagavya*:

Fresh cow dung: 7 kg	Fresh cow urine: 10 lit	Cow milk: 3 lit
Cow curd: 2 lit	Cow ghee: 1 kg	Coconut water: 3 lit
Jaggery: 3 kg	Ripened banana: 12 no.	Water: 10 lit

Mix the **c**ow dung 7.0 kg and ghee 1.0 kg in a barrel and keep it for 3 days by regular mixing twice a day. On Fourth day add cow urine 10 litre and water 10 litre to the mixture and keep it for 15 days by regular mixing twice a day. After 15 days mix the remaining items *viz.*, cow milk 3.0 litre, cow ghee 1.0 kg, coconut water 3.0 litre, jaggery 3.0 kg and ripened banana 12 number and keep it for 30 days by regular mixing twice a day.

Recommendation for PHI as per CIB guidelines

Year	Crop	Disease	Organic inputs	Dosage				Application schedule	Waiting period/ PHI (days)
				Conc. (%)	Dose/kg of seed or 10 lit	Quantity of formulation/ ha	Dilution in water/ha		
2022	Okra	Cercospora leaf spot	*Beejamrit*	-	200 ml	2 litre	-	Seed treatment for 30 minutes	-
			Panchagavya	10	1000 ml	50 litre	500 litre	First spray at the initiation of the disease and remaining two sprays at 15 days interval	-

ગુજરાતના ભીંડાની ખેતી કરતા ખેડૂતોને પાનના ટપકાં (સરકોસ્પોરા) રોગના અસરકારક વ્યવસ્થાપન માટે બિયારણને બીજામૃત ૨૦૦ મિ.લી./ કિ.ગ્રા. બીજ પ્રમાણે દ્રાવણમાં ૩૦ મિનીટ બોળી, છાયે સૂકવી અને ત્યારબાદ પંચગવ્ય ૧૦%, ૧ લિટર/૧૦ લિટર પાણીના ત્રણ છંટકાવ, પ્રથમ રોગની શરૂઆત થાય ત્યારે અને બીજા બે છંટકાવ પ્રથમ છંટકાવના ૧૫ દિવસના આતરે કરવાની ભલામણ કરવામાં આવે છે.

<u>પંચગવ્ય બનાવવાની રીત :-</u>

<u>સામગ્રી:-</u>

ગાયનું તાજું છાણ	૭ કિ.ગ્રા.	નારીયેળનું પાણી	૩ લિટર
ગાયનું તાજુ ગૌમૂત્ર	૧૦ લિટર	ગોળ	૩ કિ.ગ્રા.
ગાયનું દૂધ	૩ લિટર	પાકા કેળા	૧૨ નંગ
ગાયનું દહીં	૨ લિટર	પાણી	૧૦ લિટર
ગાયનું ઘી	૧ કિ.ગ્રા.		

<u>પધ્ધતિ:</u>

એક મોટા પીપમાં ૭ કિ.ગ્રા. ગાયના છાણમાં ૧ કિ.ગ્રા. ઘી મિક્ષ કરો અને તેને ૩ દિવસ સુધી દિવસમાં બે વખત હલાવતા રહો. ચોથા દિવસે તેમાં ગૌમૂત્ર ૧૦ લિટર અને પાણી ૧૦ લિટર ભેળવીને તેને ૧૫ દિવસ સુધી દિવસમાં બે વખત હલાવતા રહો. પંદર દિવસ પછી ઉપર જણાવેલ બાકીની સામગ્રી જેવી કે ગાયનું દૂધ ૩ લિટર, ગાયનું ઘી ૧ કિ.ગ્રા., નારીયેળનું પાણી ૩ લિટર, ગોળ ૩ કિ.ગ્રા. અને પાકા કેળા ૧૨ નંગ પીપમાં દ્રાવણમાં મિક્ષ કરીને તેને ૩૦ દિવસ સુધી દિવસમાં બે વખત હલાવતા રહો. આમ ૩૦ દિવસે પંચગવ્ય તૈયાર થશે.

સીઆઈબી આરસી પ્રફોર્મા પ્રમાણે

વર્ષ	પાક	રોગ	બિન રસાયણિક સંયોજનો	પ્રમાણ				છંટકાવનો સમય	પ્રતીક્ષા સમય/ પી.ચેચ.આઈ.
				માત્રા (%)	માત્રા/કિ.ગ્રા બીજ અથવા મિ.લિ./૧૦	બિન રસાયણિક	પાણી		

					લિટર	સંયોજનો/હે.			(દિવસ)
૨૦૨૨	ભીંડા	પાનનાં ટપકાં (સરકોસ્પોરા)	બીજામૃત	-	૨૦૦ મિ. લિ.	૨ લિટર	-	બીજ માવજત	-
			પંચગવ્ય	૧૦	૧૦૦૦ મિ. લિ.	૫૦ લિટર	૫૦૦ લિટર	પ્રથમ છંટકાવ રોગની શરૂઆત થયે અને બાકી બે છંટકાવ પ્રથમ છંટકાવના ૧૫ દિવસના આતરે કરવા	-

Approved with following suggestion:

1. Correct the composition of organic inputs in gujarati recommendation text

(Action: Assistant Prof. & Head, Dept. of Plant Pathology, CoA, AAU, Vaso & Assistant Prof. & Head, Dept. of Plant Pathology, CoA, AAU, Jabugam)

18.3.1.17 Re-evaluation of ready-mix fungicides for the management of blast disease of rice (PP/MRRS, Nawagam (Patho.)/2019/01)

Rice growers of Gujarat are recommended to apply two sprays of any of the following ready-mix fungicides, propiconazole 10.7% + tricyclazole 34.2% SE, 0.045% (10 ml/ 10 litre of water) (PHI 46 days) OR tebuconazole 50% + trifloxystrobin 25% WG, 0.030% (4 g/ 10 litre of water) (PHI 21 days), first at the appearance of the disease and second after 15 days of the first spray for effective management of blast disease.

Recommendation for PHI as per CIB guidelines

Year	Crop	Disease	Fungicide with formulation	Dosage				Time of spray	Waiting period (Days)
				g a.i./ha	Conc. (%)	Quantity of formulation (g or ml/ ha)	Water (litre/ha)		
2022	Rice	Blast	Propiconazole 10.7% + tricyclazole 34.2% SE	224.50	0.045	500	500	First spray at the appearance of disease and Second after 15 days of the first spray	--
			Tebuconazole 50% + trifloxystrobin 25% WG	150	0.030	200	500		--

ગુજરાતમાં ડાંગરની ખેતી કરતાં ખેડૂતોને કરમોડી રોગના અસરકારક વ્યવસ્થાપન માટે જણાવેલ કોઈપણ એક ફૂગનાશકોના તૈયાર મિશ્રણ, પ્રોપીકોનાઝોલ ૧૦.૭% + ટ્રાયસાયક્લાઝોલ ૩૪.૨% એસઈ 0.0૪૫%, ૧૦ મિ.લિ./૧૦ લિટર પાણી (છેલ્લા છંટકાવ અને કાપણી વચ્ચેનો સમયગાળો ૪૬ દિવસ) અથવા ટેબુકોનાઝોલ ૫0% + ટ્રાઇફ્લોક્સિસ્ટ્રોબિન ૨૫% ડબલ્યુજી 0.030%, ૪ ગ્રામ/૧૦ લિટર પાણી (છેલ્લા છંટકાવ અને કાપણી વચ્ચેનો સમયગાળો ૨૧ દિવસ) નાં બે છંટકાવ, પ્રથમ રોગ જોવા મળે ત્યારે અને બીજો છંટકાવ તેના ૧૫ દિવસ બાદ કરવાની ભલામણ કરવામાં આવે છે.

સીઆઈબી આરસી પ્રફોર્મા પ્રમાણે

વર્ષ	પાક	રોગ	ફૂગનાશક	પ્રમાણ				છંટકાવનો સમય	પ્રતિક્ષા સમય (દિવસ)
				ગ્રામ સ.તત્વ./ હે.	માત્રા (%)	ફૂગનાશકનું પ્રમાણ (ગ્રા./ હે).	પાણી (લિટર/ હે)		
૨૦૨૨	ડાંગર	કરમોડી	પ્રોપીકોનાઝોલ ૧૦.૭ + ટ્રાયસાયક્લાઝોલ ૩૪.૨% એસઈ	૨૨૪.૫૦	0.0૪૫	૫૦૦	૫૦૦	પ્રથમ કરમોડીનો રોગ જોવા મળે ત્યારે અને બીજો છંટકાવ તેના ૧૫ દિવસ બાદ કરવો	--
			ટેબુકોનાઝોલ ૫0% + ટ્રાઇફ્લોક્સિસ્ટ્રોબિન ૨૫ % ડબલ્યુજી	૧૫૦	0.030	૨૦૦	૫૦૦		--

Approved with following suggestions:

1. Check the interaction effect in tables
2. Remove PHI from CIB table

(Action: Research Scientist (Rice), Main Rice Res. Station, AAU, Nawagam)

18.3.1.18 Evaluation of different modules for effective management of banded leaf and sheath blight (*rhizoctonia solani*) of maize

The farmers of Gujarat cultivating maize are recommended to adopt following IDM module for the effective management of banded leaf and sheath blight disease.

- Soil application of *Trichoderma viride* (2 x10^8 cfu/g), 10 kg/ton FYM/ha
- Seed treatment with *T. viride* (2 x10^8 cfu/g) 10 g/kg seeds and thiram 75 WS, 3 g/kg seeds
- One foliar spray of azadirachtin 1500 ppm @ 40 ml/10 litre of water at 35 days after sowing
- One foliar spray of azoxystrobin 18.2% + difenoconazole 11.4% SC @ 10 ml/ 10 litre of water at 50 days after sowing.

Recommendation for PHI as per CIB guidelines

Year	Crop	Disease	Pesticide with formulation	Dosage				Application schedule	Waiting period /PHI (days)
				g. a.i/ ha	Quantity of formulation / ha	Conc. (%)	Dilution in water/ ha		
2022	Maize	Banded leaf and sheath blight	*Trichoderma viride*	2 x10^8 cfu/g	*T. viride* 10 kg/ton FYM	1	-	Soil application of *T. viride* 10 kg/ ton FYM / ha.	-
			T. viride	2 x10^8 cfu/g	200 g	-	-	Seed treatment with *T. viride* 10 g/ kg seeds and thiram 75 WS, 3 g/ kg seeds	
			Thiram 75 WS	-	60 g	-	-		
			Azadirachtin 1500 ppm	-	2 litre	0.0006	500 litre	Foliar spray at 35 DAS	-
			Azoxystrobin 18.2% + Difenoconazole 11.4%	150	500 ml	0.03	500 litre	Foliar spray at 50 DAS	26

ગુજરાતમાં મકાઈની ખેતી કરતાં ખેડૂતોને પાન અને પર્ણચ્છેદના સૂકારા રોગના અસરકારક વ્યવસ્થાપન માટે નીચે મુજબનું સંકલિત રોગ વ્યવસ્થાપન મોડ્યુલ અનુસરવા ભલામણ કરવામાં આવે છે.

- વાવણી પહેલાં ટ્રાયકોડર્મા વીરીડી (૨ x ૧૦^{૮} સીએફયુ/ગ્રામ) ૧૦ કિ.ગ્રા./ ટન છાણિયુ ખાતર/હે. જમીનમાં આપવું
- ત્યારબાદ બીજને ટ્રાયકોડર્મા વીરીડી (૨ x ૧૦^{૮} સીએફયુ/ગ્રામ) ૧૦ ગ્રામ/કિ.ગ્રા. બીજ અને થાયરમ ૭૫ ડબલ્યુએસ ૩ ગ્રામ/કિ.ગ્રા. બીજની માવજત આપવી
- એઝાડીરેક્ટીન ૧૫૦૦ પીપીએમ, ૪૦ મિ.લિ./ ૧૦ લિટર પાણી પ્રમાણે ૩૫ દિવસે છંટકાવ કરવો
- એઝોક્સીસ્ટ્રોબીન ૧૮.૨% + ડાયફેનાકોનઝોલ ૧૧.૪% એસસી, ૧૦ મિ.લિ. પ્રતિ ૧૦ લિટર પાણી પ્રમાણે ૫૦ દિવસે છંટકાવ કરવો.

સીઆઈબી આરસી પ્રફોર્મા પ્રમાણે

વર્ષ	પાક	રોગ	સંયોજનો	પ્રમાણ				છંટકાવનો સમય	પ્રતીક્ષા સમય (દિવસ)
				સક્રિય તત્વ પ્રતિ હેક્ટર	ફોર્મ્યુલેશનની માત્રા પ્રતિ હેક્ટર	માત્રા (%)	પાણી		
૨૦૨૨	મકાઇ	પાન અને પર્ણચ્છેદના સૂકારો	ટ્રાયકોડર્મા વીરીડી	૨ x ૧૦^{૮} સીએફયુ/ ગ્રામ	૧૦ કિ.ગ્રા. ટ્રાયકોડર્મા વીરીડી /ટન છાણિયું ખાતર	૧.૦	-	૧૦ કિ.ગ્રા. ટ્રાયકોડર્મા વીરીડી /ટન છણિયુ ખાતર /હે. જમીનમાં આપવું	-
			ટ્રાયકોડર્મા વીરીડી	૨ x ૧૦^{૮} સીએફયુ/ ગ્રામ	૨૦૦ ગ્રામ		-	વાવણી પહેલાં ટ્રાયકોડર્મા વીરીડી ૧૦ ગ્રામ અને થાયરમ ૩ ગ્રામ પ્રતિ કિ.ગ્રા. બીજની માવજત આપવી	-
			થાયરમ ૭૫ ડબલ્યુ એસ	--	૬૦ ગ્રામ	--	--		-

			એઝાડીરેક્ટીન ૧૫૦૦ પીપીએમ	-	૨ લિટર	0.000૬	૫૦૦ લિટર	વાવણીના ૩૫ દિવસે છંટકાવ	-
			એઝોક્સીસ્ટ્રોબીન ૧૮.૨% + ડાયફેનોકોનઝોલ ૧૧.૪ % એસસી	૧૫૦	૫૦૦ મિ.લિ.	0.0૩	૫૦૦ લિટર	વાવણીના ૫૦ દિવસે છંટકાવ	૨૬

Approved with following suggestion:

1. Write cfu/g of *Trichoderma viride* in recommendation text

(Action: Research Scientist (Maize), Main Maize Res. Station, AAU, Godhra)

NAVSARI AGRICULTURAL UNIVERSITY

AGRICULTURAL ENTOMOLOGY

18.3.1.19 Effect of pollination by stingless bees on yield and quality of musk melon fruits

The muskmelon growers of Gujarat are recommended to keep a stingless bee hive (2500-3000 stingless bees/hive/70 m^2) in a polyhouse for pollination.

ગુજરાતમાં સક્કરટેટીની રક્ષિત ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે પોલીહાઉસમાં પરાગનયન માટે કુચી મધમાખીનો મધપૂડો (૨૫૦૦-૩૦૦૦ કુચીમાખી/મધપૂડો/૭૦ ચો.મી.) રાખવો.

Suggestions: Approved with following suggestions

1. Replace the word ‘advised’ with ‘recommended’’ in reco. para
2. Recast the wordings both in English and Gujarati in reco. para
3. Mention name of variety in methodology.

***(Action:** Professor & Head, Department of Entomology, NMCA, NAU, Navsari)*

18.3.1.20 Efficacy of biorational insecticides against rice yellow stem borer, *Scirpophaga* spp and leaf folder, *Cnaphalocrosis* spp

The paddy growers of south Gujarat are advised to apply soil application of chlorantraniliprole 0.4% GR @ 10 kg/ha or two foliar sprays of chlorantraniliprole 18.5% SC @ 3 ml/10 litre for effective management of rice stem borer as well as leaf folder of rice and to harvest higher grain and straw yield. The first spray should be given when pest cross economic threshold level and the remaining one spray at 15 days after first spray.

* (ETL: 5% damage for Stem borer and 2 Damaged Leaves/hill for Leaf folder)

As per CIB-RC Format

Year	Crop	Pest	Pesticide with Formulation	Doses			Waiting period (days)	Remark Residue
				Quantity of Formulation per ha	Conc. (%)	Dilution in water		
2021	Rice	Stem borer, Leaf folder	Chlorantraniliprole 0.4 % GR	10 kg	40 gm *a.i*/ha	-	53 As per CIB	BQL
			Chlorantraniliprole 18.5 % SC	150 ml	0.006 %	500 L	47 As per CIB	BQL

BQL: - Below Quantification Limit.

દક્ષિણ ગુજરાતમાં ડાંગર ઉગાડતા ખેડૂતોને ડાંગરની ગાભમારાની ઈયળ અને પાન વાળનારી ઈયળના અસરકારક નિયંત્રણ અને વધુ ઉત્પાદન મેળવવા માટે ક્લોરન્ટ્રાનીલીપ્રોલ 0.૪% દાણાદાર દવા (૧૦ કિલોગ્રામ પ્રતિ હેક્ટર) જમીનમાં આપવી અથવા ક્લોરન્ટ્રાનીલીપ્રોલ ૧૮.૫% એસ.સી. દવાના (૩.0 મી.લી. પ્રતિ ૧૦ લિટર પાણીમાં) બે છંટકાવ કરવા. પહેલો છંટકાવ ગાભમારાની ઈયળ અને પાન વાળનારી ઈયળ આર્થિક ક્ષમ્યમાત્રા વટાવે ત્યારે અને બીજો છંટકાવ પછી ૧૫ દિવસ બાદ કરવાની ભલામણ કરવામાં આવે છે.

* આર્થિક ક્ષમ્યમાત્રા : ૫ % ડેડ હાર્ટ ગાભમારાની ઈયળ માટે અને ૨ નુકશાન વાળા પાન/થુંમડ઼ પાન વાળનાર ઈયળ માટે

સી આઈ બી આર સી ફોર્મેટ પ્રમાણે

વર્ષ	પાક	જીવાત	જંતુનાશક	માત્રા			વેઈટીગ પીરીયડ (દિવસ)	રીમાર્ક્સ (દવાના અવશેષ)
				માત્રા / હેક્ટર	સાંદ્રતા %	પાણીમા મિશ્રણ		
૨૦૨૧	ડાંગર	ગાભમારાની ઈયળ, પાન વાળનારી ઈયળ	ક્લોરન્ટ્રાનીલીપ્રોલ 0.૪% દાણાદાર	૧૦ કિગ્રા	૪૦ ગ્રામ સક્રિય તત્વ / હેક્ટર	-	૫૩	ક્વોન્ટીફીકેશન મર્યાદા ની નીચે
			ક્લોરન્ટ્રાનીલીપ્રોલ ૧૮.૫% એસ.સી.	૧૫૦ મીલી	0.00૬ ટકા	૫૦૦ લી.	૪૭	

Suggestions: Not Approved

1. Recast and present in next year.

(Action: Associate Research Scientist (Ento.)MRRC, NAU, Navsari)

18.3.1.21 Effect on augmentation of pollination by bees (*Apis cerana* F.) on yield of bitter gourd

The bitter gourd growing farmers of Gujarat are recommended to augment honey bee, *Apis cerana* @ 4 hives/ha in addition to natural pollination at 10% flowering for getting higher yield and profit.

ગુજરાતમા કારેલાની ખેતી કરતા ખેડૂતોને કારેલાનું વધુ ઉત્પાદન અને નફો મેળવવા ૧૦ ટકા ફૂલ આવે ત્યારે કુદરતી પરાગનયનની સાથે ભારતીય/મહુવર માખીની હેક્ટર દીઠ ચાર પેટી મુકવાની ભલામણ કરવામાં આવે છે.

Suggestions: Approved with following suggestion

1. Recommendation to be made for entire Gujarat region

(Action: Principal, College of Agriculture, NAU, Waghai)

18.3.1.22 EFFICACY OF BIO PESTICIDES AGAINST TEA MOSQUITO BUG (TMB), *Helopeltis antonii* Signoret IN CASHEW

The cashew growing farmers in South Gujarat are recommended to apply *Beauveria bassiana* 1.15% WP (1 x 10^8 cfu/g) @ 0.007% (60 g/10 l water) at flushing, flowering and fruiting stages to manage tea mosquito bug and increasing nut yield.

As per CIBRC format

Year	Crop	Pest	Pesticides with formulation	Dosage/Ha				Total Quantity of Chemical suspension required/ha	Application schedule	Waiting period/ PHI (days)
				a.i./ ha	Quantity of formulation Kg or ml/ha	Con. (%)	Dilution in water (10 lit.)			
2021	Cashew	Tea mosquito bug	*Beauveria bassiana* 1.15 WP (1x 10^8 cfu/g))	138	12 kg	0.007 %	60 g	2000 litre	Spray at flushing, flowering and fruiting stages	NA

દક્ષિણ ગુજરાતમાં કાજુની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે નવી ફુટ, ફુલો (મોર) અને ફળ અવસ્થાએ બ્યુવેરીયા બેસીયાના ૧.૧૫% વે.પા.(૧ x ૧૦^{૮} સીએફયુ/ગ્રામ) 0.00૭% (૬0 ગ્રામ/૧0 લી.પાણી) પ્રમાણે છંટકાવ કરવાથી ટી મોસ્કીટો બગનું અસરકારક નિયંત્રણ કરી કાજુનું વધુ ઉત્પાદન મેળવી શકાય છે.

સી આઈ બી આર સી ફોર્મેટ પ્રમાણે

વર્ષ	પા	જીવાત	જંતુનાશક દવા	માત્રા/હે.	જંતુનાશક	વાપરવા	વેઈટીંગ

	ક		અને તેનું ફોર્મ્યુલેશન	સક્રિય તત્વ પ્રતિ હેક્ટર (ગ્રામ/ હેક્ટર)	ફોર્મ્યુલેશન ની માત્રા મીલી, કિલો પ્રતિ હેક્ટર	સાંદ્રતા (%)	પાણી સાથે ડાયલ્યુશન (૧૦ લીટર)	દવા અને પાણી નાં દ્રાવણની કુલ જરૂરીયાત પ્રતિ હેક્ટર	ની પધ્ધતિ	પીરીયડ/ પી.એચ એચ .આઈ. (દિવસ)
૨૦૨૧	કાજુ	ટી મોસ્કીટો બગ	બ્યુવેરિયા બાસીયાના ૧.૧૫ વે.પા. @ ૧ x ૧૦^{૮} સીએફયુ/ ગ્રામ	૧૩૮	૧૨ કિગ્રા	૦.૦૦૭ %	૬૦ ગ્રા.	૨૦૦૦ લીટર	છંટકાવ નવી ફુટ, ફુલો (મોર) અને ફળ અવસ્થાએ	--

Suggestions: Approved with following suggestions

1. Include the number of leader shoot in methodology.
2. Add interaction Table.
3. Incorporate the source of strains in methodology.
4. Remove words "raw" and "કાચા"from reco. para

(Action: Assistant Research Scientist (Ento.), AES, Paria)

PLANT PATHOLOGY

18.3.1.23 Management of collar rot disease of groundnut caused by *Aspergillus niger*

Farmers of Gujarat growing *Kharif* groundnut are recommended to treat seeds with fungicide, Thiophanate Methyl 450g/l + Pyraclostrobin 50g/l w/v FS@ 1.5ml/kg seeds for the management of collar rot disease and getting higher yield.

દક્ષિણ ગુજરાતમાં ચોમાસામાં મગફળીની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે મગફળીના ઉગસુકરોગના નિયંત્રણ અને વધુ ઉત્પાદન માટે બીજને થિયોફેનેટ મિથાઈલ ૪૫૦ ગ્રામ/લી. + પાયરાક્લોસ્ટ્રોબિન ૫૦ગ્રામ/લી. ડબ્લયુ/વી એફએસ, ૧.૫મીલી/કિ.ગ્રા. બીજ માવજત આપીને વાવેતર કરવું.

OR

Recommendation for organic groundnut growers:

Farmers of Gujarat growing organic *kharif* groundnut are recommended to treat seeds with *Trichoderma viride* (2 x10^6cfu/g) @10 g /kg + soil application of *Trichoderma viride* (2 x10^6cfu/g) @ 2.5 kg, mixed in 250 kg FYM/ ha at the time of sowing for management of collar rot disease and getting higher yield.

મગફળીની સેન્દ્રિય ખેતી કરતા ખેડૂત માટે ઉપયોગી ભલામણ

દક્ષિણ ગુજરાતમાં ચોમાસામાં સેન્દ્રિય ખેતી પદ્ધતિથી મગફળીની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે મગફળીના ઉગસુક રોગના નિયંત્રણ અને વધુ ઉત્પાદન માટે બીજને ટ્રાયકોડર્મા વીરીડી (૨×૧૦^{૬} સીએફયુ/ગ્રામ) થી ૧૦ ગ્રામ પ્રતિ કિલો બીજ માવજત આપી અને જમીનમાં ટ્રાયકોડર્મા વીરીડી (૨×૧૦^{૬} સીએફયુ/ગ્રામ) ૨.૫ કિ.ગ્રા./હે.૨૫૦ કિલો છાણીયા ખાતરમાં ભેળવીને વાવેતર કરવું.

Suggestions: Not Approved with following suggestions

1. Experiment is extended for more one year
2. Recast the recommendation as per DNMRT.
3. Calculate the economics *i.e.* ICBR.
4. Delete the word South Gujarat from the recommendation

(Action: Assistant Research Scientist (Pl. Path.) RRRS, Vyara)

18.3.1.24 MANAGEMENT OF MANGO MALFORMATION

The mango growers of Gujarat are recommended that after pruning of infected shoots spray of copper oxychloride 50% WP 0.15% @ 3 g/l water at the time of vegetative flush, subsequent spray carbendazim 50% WP 0.05% @ 1 g/l water at 20 days after first spray + spray propargite 57EC 0.11% @ 2.0 ml/l water at 20 days

	after second spray + spraying 200 ppm NAA@ 0.2 g/l water in second week of December followed by spraying of 500 ppm ethrel @ 0.5 g/l water at bud inception stage for the management of malformation in mango.

As Per CBRC format

Year	Crop	Name of Disease	Pesticides with formulation	a.i. (g)	Formulation (g/ml)%	Dilution in Water	Waiting period
2022	Mango	Mango malformation Powdery mildew Anthracnose	Carbendazim 46.27 SC	46 g/100	1gm/ lit	0.1%o r100 ml/100l water	30
			Copper oxychloride 50	0.12%or120 g/100Ltr. water	0.24% or 240g	100Ltr. water	10
			Alpha Naphthyl Acetic Acid 4.5% SL (Na salt) To control Mango malformulation- Before fruit bud differentiations approx. months before flowering	200ppm	-	20 ml in 4.5 ltrs	-
			Ethephon 39 % SL	770-1025 200 ppm	1500-2000	26 ml in 10 lit of water	-

ગુજરાતમાં આંબાની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે આંબામાં નવી પીલવણી નિકળતી વખતે વિકૃત ડાળી કાપી નાખ્યા બાદ કોપર ઓક્સિક્લોરાઇડ ૫૦ % વે.પા ૦.૧૫ % @ 3 ગ્રામ/લી પાણી, ત્યારબાદ ૨૦ દિવસના આંતરે કાર્બેડાઝિમ ૫૦% વે.પા. ૦.૦૫ % @ ૧ ગ્રામ/લી પાણી અને પ્રોપરગાઇટ ૫૭ % ઇ.સી.૦.૧૧ % @ ૨.૦ મીલી/લી પાણી સાથે છંટકાવ કરવો તથા ડિસેમ્બરના બીજા અઠવાડીયામાં એન.એ.એ. ૨૦૦ પીપીએમ @ ૦.૨ ગ્રામ/લી પાણી અને ફુલની કળી નિક્ળવાની અવસ્થાએ ઇથરેલ ૫૦૦ પી.પી.એમ. @ ૦.૫ ગ્રામ/લી પાણીમાં ભેળવીને છંટકાવ કરવાથી આંબાની વિક્રુતી રોગનું અસરકારક નિયંત્રણ કરી શકાય છે.

સી આઈ બી આર સી ફોર્મેટ પ્રમાણે

વર્ષ	પાક	રોગ	ફુગનાશક	માત્રા			વેઈટીંગ પીરીયડ (દિવસ)
				સ.ત/ગ્રા	સાંદ્રતા %	પાણીમાં મિશ્રણ	
૨૦૨૨	આંબા	આંબાની વિકૃતી ભૂકી છારા કાલવ્રણ	કાર્બેન્ડાઝીમ ૪૬.૨૭ એસ.કો.	૪૬ ગ્રામ/ ૧૦૦ લિ.	૧ ગ્રામ/ લિ.	૦.૧ ટકા અથવા ૧૦૦ મી.લી./ ૧૦૦ લિ.	૩૦
			કોપર ઓક્સીક્લોરાઇડ ૫૦ વે.પા.	૦.૧૨ ટકા ૧૨૦ ગ્રામ/ ૧૦૦ લિ.	૦.૨૪ ટકા ૨૪૦ ગ્રામ/લિ.	૧૦૦ લિ. પાણીમાં	૧૦
			આલ્ફા નેપ્થાઇલ એસિટિક એસિડ ૪.૫ ટકા એસ એલ આંબાની વિકૃતી નિયંત્રિત કરવા માટે-	૨૦૦ PPM	-	૨૦ મી.લી./ ૪.૫ લિ.	-
			ઇથેફોન ૩૯ ટકા એસ. એલ.	૭૭૦-૧૦૨૫ ૨૦૦ PPM	૧૫૦૦- ૨૦૦૦	૨૬ મી.લી./૧૦ લિ.	-

Suggestions: Approved with following suggestions

1. Write unit in Tables
2. Write length of pruned twigs
3. Write the name of variety in Gujarati draft.
4. Write full title of Table-4
5. Add CIBRC info. in English and Gujarati as per format
6. Approved in special case
7. Remove name of variety from reco. para

(Action: Assistant Research Scientist (Pl. Path.) AES, Paria)

AGRICULTURAL ENTOMOLOGY

18.3.1.25 Integrated pest management of eggplant shoot and fruit borer

The farmers of Gujarat growing eggplant (brinjal) are recommended to implement the following IPM module for management of shoot and fruit borer.

1. Clipping and destruction of infested twigs twice at weekly interval starting from the initiation of the infestation.
2. Installation of pheromone traps 40/ha at 20 days after transplanting. Change the lure at 25 days interval.
3. Spraying of azadirachtin 10000 ppm, 0.003 % (30 ml/ 10 L water) at 5% shoot/fruit infestation. Spraying of emamectin benzoate 5 SG,0.025% (5 g/ 10 L water) at 10 days after azadirachtin spray
4. Pre harvest interval of minimum 24 days should be kept for emamectin benzoate 5 SG

As per CIB-RC format:

Year	Crop	Pest	Pesticide with formulation	Dosage				Dilution in water (L/ha)	Application schedule	Waiting period / PHI (days)	Remarks
				g a.i./ ha	Conc. (%)	Quantity of Formulation L/ ha)	Dose/10 L				
2021-22	Egg plant / brinjal	Shoot and fruit borer	Azadirachtin 10000 ppm	15	0.003	1500 ml	30 ml	500	At 5% shoot/ fruit infestation	-	-
			Emamectin benzoate 5 SG	12.5	0.025	250 g	5 g	500	10 days after azadirachtin spray	24	BDL *

*BDL- Below Detection Limit

ગુજરાતમા રીંગણની ખેતી કરતા ખેડૂતોને ડુંખ અને ફળ કોરી ખાનાર ઈયળના અસરકારક વ્યવસ્થાપન માટે નીચે મુજબની સંકલિત જીવાત નિયંત્રણ પદ્ધતિની ભલામણ કરવામા આવે છે.

૧. ઉપદ્રવ શરુ થયે નુકશાન પામેલી ડૂંખોને દર અઠવાડીયાના આંતરે તોડીને નાશ કરવો.

૨. ફેર રોપણીના ૨૦ દિવસ પછી ફેરોમોન ટ્રેપ ૪૦ નંગ/ હેકટરે ગોઠવવા.લ્યુરને ૨૫ દિવસના અંતરાલે બદલવી.

૩. પાંચ ટકા નુકશાનની અવસ્થાએ એઝાડીરેકટીન ૧૦૦૦૦ પી.પી.એમ, ૦.૦૦૩% (૩૦ મીલી/૧૦ લી. પાણીમા) ભેળવી છંટકાવ કરવો. એઝાડીરેકટીનના છંટકાવના ૧૦ દિવસ પછી એમામેકટીન બેન્ઝોએટ ૫એસ. જી., ૦.૦૨૫%(૫ ગ્રામ/૧૦ લી. પાણીમાં) ભેળવીને છંટકાવ કરવો અને છંટકાવના ૨૪ દિવસ પછી વીણી કરવી.

સી આઈ બી આર સી ફોર્મેટ પ્રમાણે

વર્ષ	પાક	જીવાત	જંતુનાશક દવા અને તેનું ફોર્મ્યુલેશન	પ્રમાણ				દવા અને પાણીના દ્રાવણ ની કુલ જરુરીયાત પ્રતિ હેકટર	વાપરવાની પદ્ધતિ	વેઈટીંગ પીરીયડ (દિવસ)	રીમાર્કસ
				સક્રિય તત્વ પ્રતિ હેક્ટર (ગ્રામ/ હેક્ટર)	ફોર્મ્યુલેશન ની માત્રા મીલી, કિલો પ્રતિ હેક્ટર	સાંદ્રતા (%)	પાણી સાથે ડાયલ્યુશન (૧૦ લીટર)				
૨૦૨૧-૨૨	રીંગણ	ડુંખ અને ફળ કોરી ખાનારી ઈયળ	એઝાડીરેકટીન ૧૦૦૦૦ પી.પી.એમ	૧૫	૦.૦૦૩	૧૫૦૦ મીલી	૩૦ મીલી	૫૦૦	જીવાતના ૫ % નુકશાનની અવસ્થા	--	--
			એમામેકટીન બેન્ઝોએટ ૫ એસ .જી.	૧૨.૫	૦.૦૨૫	૨૫૦ ગ્રામ	૫ ગ્રામ	૫૦૦	એઝાડીરેકટીનના પ્રથમ છંટકાવના ૧૦ દિવસ	૨૪	BDL *

									બાદ		

Suggestions : Approved with following suggestions

1. Mention “clipping and destruction” and “twice” in recommendation text
2. Add “minimum” before days in PHI
3. In Gujarati text, correct as “ડૂંખોને દર અઠવાડીયાના આંતરે”

(Action: Professor & Head, Dept. of Entomology, CPCA, SDAU, SKNagar)

18.3.1.26 Ecofriendly management of pod borer, *Helicoverpa armigera* in chickpea

The farmers of Gujarat growing chickpea by organic approach are recommended to apply three sprays of Neem seed kernel powder 5%+ cow urine 10% (500g + 1L / 10 L of water) or garlic clove 2 % + cow urine 10% (200 g+ 1L/ 10 L of water), first on appearance of *Helicoverpa armigera* and subsequent two sprays at 10 days interval for effective management of gram pod borer.

Method of preparation :

Grind 500 g of Neem seed kernel in pestle and mortarto powder it. Soak it overnight in 1L of cow urine. Stir with wooden plank till solution becomes milky white. Filter through muslin cloth before using as a spray for 10 L of water.

Take 200 g of garlic clove and grind in pestle and mortarto make a paste. Mix it properly in 1 L of cow urine andkeep it overnight.Filter through muslin cloth before using as a spray for 10 L of water.

As per CIBRC format

Year	Crop	Pest	Pesticide	Dosage				Application schedule	Waiting period/ PHI (days)
				Conc. (%)	Dose/ 10 L	Qun. of Formulat -ionl/ha)	Dilution in water (L./ha)		
2020-21	Chickpea	*Helicoverpa armigera*	Neem seed kernel powder 5%+ cow urine 10%	5+10	500g + 1 L	25 kg+ 50 L	500	First on appearance of gram pod borer and subsequent sprays at 10 days interval	-
			Garlic clove 2 %+ cow urine 10%	2+10	200 g + 1 L	10 kg + 50 L			-

ગુજરાતના સજીવ ખેતીમા રસધરાવતા ખેડૂતોએ ચણાની પોપટા કોરી ખાનાર ઈયળના અસરકારક નિયંત્રણ માટે લીંબોળીના મીંજનુ પાવડર ૫ % + ગૌમુત્ર ૧૦% (૫૦૦ ગ્રામ + ૧લિટર/૧૦ લિટર પાણી) અથવા લસણની કળીનુ અર્ક ૨% + ગૌમુત્ર ૧૦% (૨૦૦ ગ્રામ + ૧લિટર/ ૧૦લિટર પાણી) ના દ્રાવણનો છંટકાવ કરવો. પ્રથમ છંટકાવ જીવાતની શરુઆત થાય ત્યારે અને બીજા બે છંટકાવ ૧૦ દિવસના અંતરાલે કરવાની ભલામણ કરવામાં આવે છે.

બનાવવાની રીત

૫૦૦ ગ્રામ લીમડાના બીજના દાણાને ખાંડણી વડે ખાંડી તેનો પાવડર કરવો. ત્યારબાદ તેને ૧ લિટર ગૌમૂત્રમાં ભેળવી આખી રાત પલાળી રાખવો. જ્યાં સુધી દ્રાવણ દૂધિયું સફેદ ન થાય ત્યાં સુધી લાકડી વડે હલાવવું. છંટકાવ કરતા પહેલા ચોખ્ખા કપડાથી ગાળી અને નીચોડી લેવું. આ અર્કનુ ૧૦ લિટર પાણીમા ભેળવીને છંટકાવ કરવો.

૨૦૦ ગ્રામ લસણની કળીને ખાંડણી વડે ખાંડી તેની લુગદી બનાવવી. ત્યારબાદ તેને ૧ લિટર ગૌમૂત્રમાં ભેળવી આખી રાત પલાળી રાખવો. છંટકાવ કરતા પહેલા ચોખ્ખા કપડાથી ગાળી લેવું .આ અર્કનુ ૧૦ લિટર પાણીમા ભેળવીને છંટકાવ કરવો.

સી આઈ બી આર સી ફોર્મેટ પ્રમાણે

વર્ષ	પાક	જીવાત	કીટનાશક	પ્રમાણ				છંટકાવનો સમય	વેઈટીંગ પીરીયડ (દિવસ)
				સાંદ્રતા (%)	માત્રા / ૧૦ લિટર પાણી	જૈવિક કીટનાશકનું પ્રમાણ/ હે.	પાણી સાથે મિશ્રણ (લીટર/હે.)		

૨૦૨૦-૨૧	ચણા	પોપટા કોરી ખાનાર ઈયળ	લીંબોળીના મીંજનુ પાવડર +ગૌમુત્ર અર્ક	૫+૧૦	૫૦૦ ગ્રામ + ૧૦૦૦ મિલી	૨૫ કિલો + ૫૦ લીટર	૫૦૦	પ્રથમ છંટકાવ જીવાત ઉપદ્રવ ની શરૂઆતે અને ત્યારબાદ બે છંટકાવ ૧૦ દિવસના ગાળે કરવા	-
			લસણની કળી + ગૌમુત્ર	૨+૧૦	૨૦૦ ગ્રામ + ૧૦૦૦મિ લી	૧૦ કિલો +૫૦ લીટર			-

Suggestions: Approved with following suggestions

1. In Gujarati version, write"પોપટા કોરી ખાનાર ઈયળના"instead of "શીંગ કોરી ખાનાર ઈયળના"
2. Add method of preparation in brief in recommendation

(Action: Research Scientist, Pulses Res. Station, SDAU, Sardarkrushinagar)

18.3.1.27 Bio-efficacy of insecticides against pest complex of pomegranate

The farmers of Gujarat growing pomegranate are recommended to apply two foliar sprays of cyantraniliprole 10.26% OD, 0.003% (3.0 ml/10 L of water), first at appearance of the pest and second at 15 days after first spray for effective control of thrips on pomegranate.

As per CIB-RC format

Year	Crop	Pest	Pesticide with formulation	Dosage				Dilution in water (L./ha)	Application schedule	Waiting period/ PHI (days)
				g a.i./ ha	Conc. (%)	Quntity of Formul -ation/ ha)	Dose /10 L.			
2021-22	Pomegranate	Thrips	Cyantraniliprole 10.26% OD	30	0.003 %	300ml	3.0ml	1000	First spray at appearance of pest and second at 15 days after first spray	5

ગુજરાતમા દાડમ ઉગાડતા ખેડૂતોને થ્રીપ્સના અસરકારક નિયંત્રણ માટે સાયેન્ટ્રાનીલીપ્રોલ ૧૦.૨૬ % ઓ.ડી, 0.003% (૩.૦ મીલી/૧૦ લિટર) ના બે છંટકાવ કરવા ભલામણ કરવામાં આવે છે જે પૈકી પ્રથમ છંટકાવ ઉપદ્રવની શરૂઆત જોવા મળે ત્યારે અને બીજો છંટકાવ પ્રથમ છંટકાવ બાદ ૧૫ દિવસે કરવો.

સી આઈ બી આર સી ફોર્મેટ પ્રમાણે

વર્ષ	પાક	જીવાત	કિટનાશક	પ્રમાણ				પાણી સાથે મિશ્રણ) લીટર/હેક્ટર	છંટકાવનો સમય	વેઈટીંગ પીરીયડ (દિવસ)
				સક્રિય તત્વ/હે.	સાંદ્રતા	કિટનાશકનું પ્રમાણ/હે.	પ્રમાણ/૧૦ લી. પાણી			
૨૦૨૧-૨	દાડમ	થ્રીપ્સ	સાયેન્ટ્રાનીલીપ્રોલ ૧૦.૨૬ % ઓ.ડી.	૩૦	0.003 %	૩૦૦ મીલી	૩.૦ મીલી	૧૦૦૦	પ્રથમ છંટકાવ જીવાતનો ઉપદ્રવ જોવા મળે ત્યારે અને બીજો છંટકાવ પ્રથમ છંટકાવના ૧૫ દિવસ બાદ	૫

Suggestion: Approved

(Action: Research Scientist, Agroforestry Res. Station, SDAU, SKNagar)

18.3.1.28 Eco-friendly management of thrips (*Scirtothrips dorsalis*) on pomegranate

The farmers of Gujarat growing pomegranate are recommended to apply two foliar sprays of Azadirachtin 1500 ppm @ 40 ml/10L of water, first at appearance of thrips and second at 15 days after first spray for effective and eco-friendly management.

As per CIB-RC Format

Year	Crop	Pest	Bio-pesticide with formulation	Dosage				Dilution in water (L./ha)	Application schedule	Waiting period/ PHI (days)
				g a.i./ha	Conc. (%)	Quantity of Formulation/	Dose /10 L.			

						ha)				
2022	Pomegranate	Thrips	Azadirachtin 1500 ppm	--	--	4000 ml	40ml	1000	First spray at appearance of thrips and second at 15 days after first spray	--

ગુજરાતમા દાડમ ઉગાડતા ખેડૂતોને થ્રીપ્સના અસરકારક અને પર્યાવરણીય અનુકુળ નિયંત્રણ માટે એઝાડીરેકટીન ૧૫૦૦ પી.પી.એમ. (૪૦ મીલી/૧૦ લી. પાણી) ના બે છંટકાવ કરવા ભલામણ કરવામા આવે છે જે પૈકી પ્રથમ છંટકાવ ઉપદ્રવની શરૂઆત જોવા મળે ત્યારે અને બીજો છંટકાવ પ્રથમ છંટકાવ બાદ ૧૫ દિવસે કરવો.

સી આઈ બી આર સી ફોર્મેટ પ્રમાણે

વર્ષ	પાક	જીવાત	જૈવિક કિટનાશક	પ્રમાણ				પાણી સાથે મિશ્રણ લીટર/ હેક્ટર	છંટકાવનો સમય	વેઈટીંગ પીરીયડ (દિવસ)
				સક્રિય તત્વ/હે.	સાંદ્રતા (%)	જૈવિક કિટનાશકનું પ્રમાણ/હે.	પ્રમાણ/ ૧૦ લી. પાણી			
૨૦૨૨	દાડમ	થ્રીપ્સ	એઝાડીરેકટીન ૧૫૦૦ પી.એમ.પી.	--	--	૪૦૦૦ મીલી	૪૦ મીલી	૧૦૦૦	પ્રથમ છંટકાવ જીવાતનો ઉપદ્રવ જોવા મળે ત્યારે અને બીજો છંટકાવ પ્રથમ છંટકાવના ૧૫ દિવસ બાદ	--

Suggestions: Approved with following suggestions

1. Write “appearance of thrips” instead of “pest appearance” In recommendation text.
2. Delete “of thrips” from last line recommendation text.

(Action: Research Scientist, Agroforestry Res. Station, SDAU, SKNagar)

18.3.1.29 **Evaluation of biorationals for the management of sucking pests infesting fenugreek**

The farmers of Gujarat growing fenugreek are recommended to apply two foliar sprays of *Beauveria bassiana* 1.15WP(1x10^8cfu/g), 0.0046% (40g/10 L water) followed by Azadirachtin 10000 ppm 0.003% (30 ml/10 L water) for effective and economical management of aphid and leaf hopper. First foliar spray should be made at initiation of aphid or leaf hopper and second at 10 days after first spray.

As per CIBRC Format

Year	Crop	Pest	Biopesticide	Dosage				Applica-tion schedule	Waiting period PHI (Days)
				Conc. (%)	Dose/ 10 L	Quantity of formulation / ha	Dilution in water (L/ha)		
2020-21	Fenugreek	Sucking pests (Aphid and Leaf hopper)	*Beauveria bassiana 1.*15WP (1 x 10^8cfu/g)	0.0046	40 g	2.0 kg	500	First spray at initiation of aphid or leaf hopper infestation and second at 10 days after first spray	-
			Azadirachtin 10000 ppm	0.003	30 ml	1.5 L	500		-

ગુજરાતના મેથીની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે મોલો અને લીલા તડતડિયાના અર્થક્ષમ અને અસરકારક જૈવિક નિયંત્રણ માટે બ્યુવેરીયા બેસીયાના ૧.૧૫ વેપા (૧ x ૧૦૮ સીએફયુ/ગ્રામ) ૦.૦૦૪૬ % (૪૦ ગ્રામ / ૧૦ લીટર પાણીમા) તેમજ એઝાડીરેક્ટીન ૧૦૦૦૦ પીપીએમ, ૦.૦૦૩ % (૩૦ મિલિ/૧૦ લીટર પાણીમા) ભેળવી છંટકાવ કરવો. જે પૈકી પ્રથમ છંટકાવ મોલો અથવા લીલા તડતડિયાંના ઉપદ્રવ શરુ થાય ત્યારે તથા બીજો છંટકાવ પ્રથમ છંટકાવ બાદ ૧૦ દિવસે કરવો.

સી આઈ બી આર સી ફોર્મેટ પ્રમાણે

[illegible]	[illegible]	જીવાત	જૈવિક કીટનાશક	પ્રમાણ	છંટકાવનો સમય	વેઈટીંગ

				સાંદ્રતા (%)	માત્રા ૧૦ / લીટર પાણી	જૈવિક કીટનાશકનું પ્રમાણ/હે	પાણી સાથે મિશ્રણ (હે/લી)		પીરીયડ (દિવસ)
૨૦૨૦૨૧-	મેથી	ચૂસિયા જીવાતો (મોલો અને લીલા તડતડિયાં)	બ્યુવેરીયા બાસીયાના ૧.૧૫ વેપા (૧x૧૦^{૮} સીએફ્યુ/ગ્રામ)	0.00૪૬	૪૦ ગ્રામ	૨.૦ કિ.ગ્રા.	૫૦૦	પ્રથમ છંટકાવ મોલો અથવા લીલા તડતડિયાં નો ઉપદ્રવ શરુ થાય ત્યારે અને બીજો છંટકાવ તેના ૧૦ દિવસ પછી કરવો.	-
			એઝાડીરેક્ટીન ૧૦૦૦૦ પીપીએમ	0.00૩	૩૦ મિલી	૧.૫ લીટર	૫૦૦		-

Suggestions: Approved with following suggestions

1. Write full form of *Beauveria*

2. Write "લીલા તડતડિયાં" instead of "પાનના ચુસીયા"

3. Recommendation to be made for entire Gujarat region

(Action: Asso. Res. Sci. (Ento.), Seed Spices Res. Station, SDAU, Jagudan)

18.3.1.30 Evaluation of insecticides against fall army worm (*Spodoptera frugiperda* J. E. Smith) in maize

The farmers of Gujarat growing maize are recommended to apply two sprays of emamectin benzoate 5 SG@ 0.0031% (6.25 g/ 10 L water) or chlorantraniliprole 18.5 SC @ 0.0069% (3.75 ml /10 L water) first at initiation of pest and second at 15 days after the first spray for effective management of fall armyworm.

As per CIB-RC Format

Year	Crop	Pest	Pesticide with formulation	Dose/ha a.i. g/ha	Dose/ha Conc. (%)	Dose/ha Formulation (g or ml/ha)	Dose/ha Water requirement litre	Formu-lation in 10 lit. water	Application schedule	Waiting period/ PHI (days)	Remarks-Toxicity level*
2021-22	Maize	Fall armyworm (*Spodoptera frugiperda*)	Emamectin benzoate 5 SG or	15.62	0.0031 %	312.5 gm	500	6.25 g	1st foliar spray at initiation of pest and second spray at 15 days after 1st spray	80	Govt. of India vide office memorandum No. 42/2019 dated-27th November, 2019
			Chlorantraniliprole 18.5 SC	34.68	0.0069 %	187.5 ml	500	3.75 ml			

ગુજરાતમા મકાઈની ખેતી કરતા ખેડૂતોને પૂંછડે ચાર ટપકા વાળી લશ્કરી ઈયળના અસરકારક નિયંત્રણ માટે એમામેક્ટીન બેન્ઝોએટ ૫ એસ.જી.,0.00૩૧% (૬.૨૫ ગ્રામ/૧૦ લી પાણી) અથવા ક્લોરાન્ટ્રાનીલીપ્રોલ ૧૮.૫ એસ.સી., 0.00૬૯% (૩.૭૫ મીલી/૧૦ લી પાણી) ના બે છંટકાવ કરવા ભલામણ કરવામાં આવે છે. જે પૈકી પ્રથમ છંટકાવ જયારે ઈયળના ઉપદ્રવની શરૂઆત જોવા મળે ત્યારે અને બીજો, પ્રથમ છંટકાવ બાદ ૧૫ દિવસે કરવો.

વર્ષ	પાક	જીવાત	જંતુનાશક/ જૈવિક જંતુનાશક દવાઓ અને સ્વરૂપ	પ્રમાણ સક્રિય તત્વ (ગ્રામ/ હે)	પ્રમાણ દવાનો જથ્થો (ગ્રા . અથવા મીલી./હે)	પ્રમાણ સાંદ્રતા (%)	પ્રમાણ ૧૦ લીટર પાણીમાં જરૂરી દવાનો જથ્થો (લી./હે)	પાણી/ (લી/.હે)	વાપરવાની રીત અને સમય	છેલ્લી માવજત અને કાપણી વચ્ચેનો સમયગાળો/ વૈઈટીંગ પિરિયડ / પી.એચ.આઈ દિવસ
૨૦૨૧-૨૨	મકાઈ	પૂંછડે ચાર ટપકાવાળી	એમામેક્ટીન બેન્ઝોએટ ૫ એસ.જી. અથવા	૧૫.૬૨	૩૧૨.૫ ગ્રામ	0.00૩૧ %	૬.૨૫ ગ્રામ	૫૦૦	પ્રથમ છંટકાવ જયારે ઈયળના ઉપદ્રવની	૮૦

સી આઈ બી આર સી ફોર્મેટ પ્રમાણે

		લશ્કરીઈ યળ	ક્લોરાન્ટ્રાનીલી પ્રોલ૧૮.૫એસ. સી.	૩૪.૬૮	૧૮૭.૫ મીલી	૦.૦૦૬૯ %	૩.૭૫ મીલી	૫૦૦	શરૂઆત જોવા મળે ત્યારે અને બીજો, પ્રથમ છંટકાવ બાદ ૧૫ દિવસે	

Suggestion: Approved

(Action: Principal, Polytechnic in Agriculture, SDAU, Khedbrahma)

18.3.1.31 Eco-friendly management of fall army worm (*Spodoptera frugiperda* (J.E. Smith) in maize

The farmers of Gujarat growing maize are recommended to apply three sprays of *Beauveria bassiana* 1.15 WP 1 X10^8 cfu/g, 0.0046 % (40 g /10 L water) or Azadirachtin 1500ppm, 0.0006% (40 ml /10 L water) for eco-friendly management of fall armyworm, first at initiation of pest and subsequent two sprays at 10 day interval after the first spray.

As per CIBRC Format

Year	Crop	Pest	Pesticide with formulation	Dose/ha			Formu-lation in 10 lit. water	Application schedule	Waiting period/ PHI (days)
				a.i. (g)	Formulation (Kg or L/ha)	Water requirement litre (l/ha.)			
2021-22	Maize	Fall armyworm (*Spodoptera frugiperda)*	*Beauveria bassiana* 1.15 WP 1× 10^8 cfu/g	-	2.0 kg	500	40.0 g	1st foliar spray at initiation of pest and subsequent two sprays at 10 days interval after 1st spray	-
			Azadirachtin 1500ppm	-	2.0L	500	40.0 ml		-

ગુજરાતના મકાઈની ખેતી કરતા ખેડૂતોને પૂંછડે ચાર ટપકા વાળી લશ્કરી ઈયળના અસરકારક નિયંત્રણ માટે બ્યુવેરીયા બાસીયાના ૧.૧૫ વે.પા. ૧ x $૧૦^૮$ સી.એફ.યુ., ૦.૦૦૪૬ % (૪૦ ગ્રામ /૧૦ લી.) અથવા એઝાડીરેકટીન ૧૫૦૦ પી.પી.એમ.,૦.૦૦૦૬ % (૪૦ મીલી/૧૦ લી.)ના ત્રણ છંટકાવ કરવા ભલામણ કરવામાં આવે છે. જે પૈકી પ્રથમ છંટકાવ જયારે ઈયળના ઉપદ્રવની શરૂઆત જોવા મળે ત્યારે અને બીજા બે છંટકાવ પ્રથમ છંટકાવ બાદ ૧૦ દિવસ ના આંતરે કરવા.

વર્ષ	પાક	જીવાત	જૈવિક જંતુનાશક દવાઓ અને સ્વરૂપ	પ્રમાણ				પાણીનો જથ્થો (.લી/.હે)	વાપરવાની રીત અને સમય	છેલ્લી માવજત અને કાપણી વચ્ચેનો સમયગાળો /વેઈટીંગ પિરિયડ / પી.એચ.આઈ (દિવસ)
				સક્રિય તત્વ (ગ્રા. /હે.)	દવાનો જથ્થો કિગ્રાઅ થવા લી/હે	સાંદ્રતા (%)	૧૦ લીટર પાણીમાં જરૂરી દવાનો જથ્થો			
૨૦૨૧-૨૨	મકાઈ	પૂંછડે ચાર ટપકા વાળી લશ્કરી ઈયળ	બ્યુવેરીયા બાસીયાના ૧.૧૫ વેપા (૧x $૧૦^૮$ સી.એફ.યુ.)	-	૨.૦ કિગ્રા.	૦.૦૦૪ ૬%	૪૦ગ્રામ	૫૦૦	પ્રથમ છંટકાવ જયારે ઈયળના ઉપદ્રવની શરૂઆત જોવા મળે ત્યારે અને બીજા બે છંટકાવ પ્રથમ છંટકાવ બાદ ૧૦ દિવસના અંતરે કરવા.	-
			એઝાડીરેકટીન ૧૫૦૦ પી.પી.એમ.	-	૨.૦ લી	૦.૦૦૦ ૬%	૪૦મીલી	૫૦૦		

Suggestion: **Approved**

(Action: Principal, Polytechnic in Agriculture, SDAU, Khedbrahma)

18.3.1.32 Management of mustard aphid (*Lipaphis erysimi*) through botanicals

The farmers of Gujarat growing mustard are recommended to apply two sprays

of Neem leaf extract 5% (500 ml/10 L of water) for effective management of aphid, first at initiation of pest and second at 15 days after the first spray.

As per CIBRC Format

Year	Crop	Pest	Pesticide with formulation	Dose/ha			Formu-lation in 10 lit. water	Application schedule	Waiting period/ PHI (days)
				a.i. g/ha	Formulation (Kg or l/ha)	Water require ment litre			
2021-22	Mustard	Aphid	Neem leaf extract 5%	-	25.0L	500	500 ml	1st foliar spray at initiation of pest and second at 15 days after the first spray	-

ગુજરાતના રાઈની ખેતી કરતા ખેડૂતોને મોલોના નિયંત્રણ માટે લીમડાના પાનનો અર્ક ૫ % (૫૦૦ગ્રામ/૧૦લી.પાણી) ના બે છંટકાવ કરવા ભલામણ કરવામા આવે છે. જે પૈકી પ્રથમ છંટકાવ ઉપદ્રવની શરૂઆત જોવા મળે ત્યારે અને બીજો, પ્રથમ છંટકાવ બાદ ૧૫ દિવસે કરવો.

સી આઈ બી આર સી ફોર્મેટ પ્રમાણે

વર્ષ	પાક	જીવાત	જંતુનાશક દવાઓ અને સ્વરૂપ	પ્રમાણ				પાણી જથ્થો લી/.હે	વાપરવાની રીત અને સમય	છેલ્લી માવજત અને કાપણી વચ્ચેનો સમયગાળો/ વૈઈટીંગ પિરિયડ / પી.એચ.આઈ (દિવસ)
				સક્રિય તત્વ (ગ્રામ/ હે)	દવા નો જથ્થો લી/.હે	સાંદ્રતા (%)	૧૦ લીટર પાણીમાં જરૂરી દવાનો જથ્થો			
૨૦૨૧-૨૨	રાઈ	મોલો	લીમડાના પાનનો અર્ક ૫ %	-	૨૫.૦ લી.	૫ %	૫૦૦ મીલી	૫૦૦	પ્રથમ છંટકાવ જયારે મોલોના ઉપદ્રવની શરૂઆત જોવા મળે ત્યારે અને બીજો ,પ્રથમ છંટકાવ બાદ ૧૫ દિવસે કરવો	-

Suggestions: Approved with following suggestions

1. Correct name of variety in experimental details
2. Yield should be in round figure
3. Instead of ‘control’ write ‘management’

(Action: Principal, Polytechnic in Agriculture, SDAU, Khedbrahma)

PLANT PATHOLOGY

18.3.1.33 Management of wilt and root rot in cumin

The farmers of Gujarat growing cumin are recommended to apply 1 ton /ha enriched FYM with *Trichoderma viride*1.15 WP (2 x 10^6cfu/g) @ 2.5 kg/ha and *Pseudomonas fluorescens* 1.15 WP (2 x 10^6cfu/g) @ 2.5 kg/ha or *Trichoderma harzianum* 1.15 WP (2 x 10^6cfu/g) @ 2.5 kg/ha and *Pseudomonas fluorescens* (2 x 10^6cfu/g) 1.15 WP @ 2.5 kg/ha at the time of sowing for effective biocontrol of wilt and root rot. FYM enriched with bio agents 15 days prior to sowing.

As per CIBRC Format

Year	Crop	Disease	Bioagents	Dosage				Applica-tion schedule	Waiti period PHI (Days)
				Conc. (%)	Dose/ 10 L	Quantity of formulation/ ha	Dilution in water (L/ha)		
2020-21	cumin	Wilt and Root rot	*Trichoderma viride or Trichoderma harzianum* 1.15 WP (2x10^6 cfu/g)	-	-	2.5 kg/ha	-	One ton FYM should be enriched with bio agents 15 days prior	-
			Pseudomonas	-	-	2.5			

			fluorescens 1.15 WP (2x10^6 cfu/g)			kg/ha		to sowing and applied in furrows at time of sowing	

ગુજરાતના ખેડૂતોને જીરૂમા સૂકારો અને મૂળનો કહોવારો રોગોના અસરકારક જૈવિક નિયંત્રણ માટે ટ્રાઈકોડર્મા વિરીડી ૧.૧૫ વેપા (૨ x ૧૦^{૬} સીએફ્યુ/ગ્રામ) ૨.૫ કિગ્રા/હે અને સુડોમોનાસ ફ્લોરેસેન્સ ૧.૧૫ વેપા (૨ x૧૦^{૬} સીએફ્યુ/ગ્રામ) ૨.૫ કિગ્રા/હે અથવા ટ્રાઈકોડર્મા હરજીએનમ ૧.૧૫ વેપા (૨ x ૧૦^{૬} સીએફ્યુ/ગ્રામ) ૨.૫ કિગ્રા/હે અને સુડોમોનાસ ફ્લોરોસેન્સ ૧.૧૫ વેપા (૨ x ૧૦^{૬} સીએફ્યુ/ગ્રામ) ૨.૫ કિગ્રા/હે ને વાવણી સમયે ચાસમા એક ટન છાણીયા ખાતર સાથે આપવાની ભલામણ કરવામાં આવે છે. છાણિયા ખાતરને વાવણીના પંદર દિવસ પહેલા જૈવિક નિયંત્રકો સાથે સંવર્ધિત કરવુ.

સી આઈ બી આર સી ફોર્મેટ પ્રમાણે

વર્ષ	પાક	જીવાત	જૈવિક નિયંત્રક	પ્રમાણ				માવજત નો સમય	વેઈટીંગ પિરિયડ / પી.એચ. આઈ (દિવસ)
				સાંદ્રતા (%)	માત્રા/ ૧૦ લીટર પાણી	જૈવિક નિયંત્રક નું પ્રમાણ/હે	પાણી સાથે મિશ્રણ (લી./હે.)		
૨૦૨૦-૨૧	જીરૂ	સુકારો અને મૂળનો કહોવારો	ટ્રાઈકોડર્માવિરીડી અથવા ટ્રાઈકોડર્મા હારજીએનમ૧.૧૫ વેપા (૨x૧૦^{૬} સીએફ્યુ/ગ્રામ)	-	-	૨.૫ કિ.ગ્રા.	-	એક ટન છાણિયા ખાતર ને જૈવિક નિયંત્રકો સાથે વાવણીના પંદર દિવસ પહેલા સંવર્ધિતકરવુ અને વાવણી સમયે ચાસમાં આપવુ	-
			સુડોમોનાસ ફ્લોરોસેન્સ ૧.૧૫વેપા (૨x૧૦^{૬} સીએફ્યુ/ગ્રામ)	-	-	૨.૫ કિ.ગ્રા.			-

Suggestions: Approved with following suggestions

1.Write "સંવર્ધિત" instead of "સમૃધ્ધ" in Gujarati version

2. Recommendation to be made for entire Gujarat region

(Action: Assoc. Res. Sci. (Pl. Path.), Seed Spices Res. Station, SDAU, Jagudan)

18.3.1.34 Management of collar rot (*Aspergilus niger*) and stem rot (*Sclerotium rolfsii*) in groundnut (*Arachis hypogea* L.) through bio-agents

The farmers of Gujarat growing groundnut are recommended to apply soil application of Farm Yard Manure @ 500kg/ha enriched with 2 kg of *Trichoderma viride* 1.15 WP (2x10^6 cfu/g) or *Trichoderma harzianum*1.15 WP (2x10^6 cfu/g) followed by seed treatment with talc based formulation of *Trichoderma viride* 1.15 WP (2x10^6 cfu/g) or *Trichoderma harzianum* 1.15 WP (2x10^6 cfu/g) @ 10 g/kg seed for effective management of collar rot and stem rot. FYM enriched with the bioagent 15 days prior to sowing.

As per CIB-RC format

Year	**Crop**	**Disease**	**Biocontrol agents**	**Dosage**				**Application schedule**	**Waiting period PHI (days)**
				cfu	**Conc. (%)**	**Quantity of formulation**	**Dilution in water**		
2022	Groundnut	Stem rot and collar rot	*Trichoderma viride*	2x10^6 cfu/g	-	ST 10 g/kg seed and SA 2.0 Kg/ha	-	Seed treatment with talc based formulation of *Trichoderma viride*1.15 % WP (2x10^6 cfu/g) *or Trichoderma harzianum*1.15 % WP (2x10^6 cfu/g) @ 10 gm/kg seeds and Farm Yard Manure @ 500kg/ha enriched	-

			Trichoderma harzianum	2x10^{6} cfu/g	-	ST 10 g/kg seed and SA 2.0 Kg/ha	-	with *Trichoderma viride*1.15 % WP *(*2x10^{6} cfu/g) or *Trichoderma harzianum* 1.15 % WP *(*2x10^{6} cfu/g) @ 2 kg/ha prior to 15 days and apply in soil at the time of sowing.	

ગુજરાતમા મગફળીની ખેતી કરતા ખેડૂતોને ઉગસૂક તથા કહોવારો (સફેદ ફૂગ) રોગના અસરકારક વ્યવસ્થાપન માટે ટ્રાયકોડર્મા વીરીડી ૧.૧૫ વેટેબલ પાવડર (૨ X ૧૦^{૬} સીએફયુ/ગ્રામ) અથવા ટ્રાયકોડર્મા હરર્જીયાનમ ૧.૧૫ વેટેબલ પાવડર (૨ X ૧૦^{૬} સીએફયુ/ગ્રામ) ૨ કિલોગ્રામ પ્રતિ હેકટર ને છાણિયું ખાતર ૫૦૦ કિલોગ્રામ/હેક્ટર સાથે વાવણીના ૧૫ દિવસ પહેલા સંવર્ધિત કરી વાવણી સમયે જમીનમાં આપવું અને વાવણી પહેલા ટ્રાયકોડર્મા વીરીડી ૧.૧૫ વેટેબલ પાવડર (૨ X ૧૦^{૬} સીએફયુ/ગ્રામ) અથવા ટ્રાયકોડર્મા હર્જીયેનમ ૧.૧૫ વેટેબલ પાવડર (૨ X ૧૦^{૬} સીએફયુ/ગ્રામ) ૧૦ ગ્રામ પ્રતિ કિલોગ્રામ બીજ મુજબ માવજત આપી વાવણી કરવાની ભલામણ કરવામાં આવે છે.

સી આઈ બી આર સી ફોર્મેટ પ્રમાણે

વર્ષ	પાક	રોગ	જૈવિક નિયંત્રક	પ્રમાણ				છંટકાવનો સમય	વેઈટીંગ પિરિયડ / પી.એચ. આઈ (દિવસ)
				સીએફયુ	સાંદ્રતા (%)	જૈવિક નિયંત્રકનું પ્રમાણ	પાણી સાથે ડાયલ્યુશન (લિ/હેક્ટર)		
૨૦૨૨	મગફળી	ઉગસૂક તથા કહોવારો (સફેદ ફૂગ)	ટ્રાયકોડર્મા વીરીડી	૨ x ૧૦^{૬} સીએફયુ/ ગ્રામ		બીજ માવજત ૧૦ ગ્રામ/ કિગ્રા અને ૨.૦ કિગ્રા જમીનમાં આપવુ.	-	ટ્રાયકોડર્મા વીરીડી ૧.૧૫% વેટેબલ પાવડર (૨ x ૧૦^{૬} સીએફયુ/ગ્રામ) અથવા ટ્રાયકોડર્મા હાર્જીયેનમ ૧. ૧૫% વેટેબલ પાવડર (૨x ૧૦^{૬} સીએફયુ/ગ્રામ) ૧૦ ગ્રામ પ્રતિ કિલોગ્રામ બીજ પ્રમાણે બીજ માવજત આપવી તથા છાણિયું ખાતર ૫૦૦ કિલોગ્રામ/ હેક્ટર સાથે વાવણીના ૧૫ દિવસ પહેલા ટ્રાયકોડર્મા વીરીડી ૧.૧૫% વેટેબલ પાવડર (૨x૧૦^{૬} સીએફયુ/ગ્રામ) અથવા ટ્રાયકોડર્મા હર્જીયેનમ ૧.૧૫% વેટેબલ પાવડર (૨ x ૧૦^{૬} સીએફયુ/ગ્રામ) ૨ કિલોગ્રામ પ્રતિ હેકટર મુજબ સંવર્ધિત કરી અને પછી જમીનમાં આપીને મગફળીની વાવણી કરવી.	-
			ટ્રાયકોડર્મા હાર્જીયેનમ	૨ x ૧૦^{૬} સીએફયુ/ ગ્રામ		બીજ માવજત ૧૦ ગ્રામ/ કિગ્રા અને ૨.૦ કિગ્રા જમીનમાં આપવુ.	-		

Suggestions: Approved with following suggestions

1. Mention soil application first then seed treatment in both English and Gujarati version

2.Write “stem rot” instead of “Steam rot”

(Action: Asstt. Res. Sci. (Pl. Path.), Agroforestry Res. Stat., SDAU, SKNagar)

18.3.1.35	**Management of Graphiola leaf spot disease of date palm through fungicides in field and nurseries**

Date palm growers of Gujarat are recommended, not to apply fungicides, after appearance of sign/symptoms of the Graphiola leaf spot disease as it found ineffective in controlling the disease.

ગુજરાતના ખારેક ઉગાડતા ખેડૂતોને ભલામણ કરવામા આવે છે કે ગ્રાફિઓલા રોગના ચિન્હો/ લક્ષણો દેખાયા પછી ફૂગનાશકોનો છંટકાવ કરવાથી રોગનુ નિયંત્રણ થતુ નથી.

Suggestion : **Not approved**

(Action: Research Scientist (Ento.), Date Palm Res. Station, SDAU, Mundra)

18.3.2 INFORMATION FOR SCIENTIFIC COMMUNITY

JUNAGADH AGRICULTURAL UNIVERSITY

ENTOMOLOGY	
18.3.2.1	**Evaluation of ready mix insecticides against groundnut defoliators**
	Two sprays of chlorantraniliprole 10 % + lambda cyhalothrin 5 %, 15 % ZC @ 0.006 % (4 ml/10 l of water) or novaluron 5.25 % + emamectin benzoate 0.9 %, 6.15 % SC @ 0.009 % (15 ml/10 l of water), at 15 days interval starting from pest infestation, found effective for the management of groundnut defoliators (*Helicoverpa* & *Spodoptera*).
	Suggestions: Approved with following suggestions 1. Recast reco. para 2. Incorporate results of residue analysis in conclusion ***(Action: Research Scientist (G'nut), Main Oilseeds Res. Station, JAU, Junagadh)***
18.3.2.2	**Determination of economic threshold level of bajra stem borer, *Chilo partellus* (Swinhoe)**
	The 5 % plant damage by stem borer is considered as economic threshold level (ETL) in *kharif* pearl millet.
	Suggestion: Approved ***(Action: Research Sci. (Pearl millet), Pearl millet Res. Station, JAU, Jamnagar)***
18.3.2.3	**Integrated management of insect pests and diseases of green gram crop under rainfed condition**
	Application of two sprays of cartap hydrochloride 50 SP 0.075 % (15 g /10 l water) and hexaconazole 5 SC 0.0075 % (15 ml /10 l water) should be carried out, mixed in spray tank, first at initiation of flowering and second at pod setting for the effective management of pod borer and leaf spot disease of green gram under rainfed condition.
	Suggestions: Approved with following suggestion 1. Remove word economic from reco. para ***(Action: Res. Sci. (Dry Farming), Main Dry Farming Res. Stat., JAU, Targhadia)***
18.3.2.4	**Estimation of yield loss due to semilooper, *Achaea janata* Linnaeus in castor under rainfed condition**
	The avoidable average yield loss in castor is recorded up to 44 per cent (20 % to 95 %) by semilooper under rainfed condition.
	Suggestions: Approved with following suggestions 1.Correct name of design as 'non replicated large plot technique' 2. Remove name of insecticide from reco. para ***(Action: Res. Sci. (Dry Farming), Main Dry Farming Res. Stat., JAU, Targhadia)***
PLANT PATHOLOGY	
18.3.2.5	**Viability of *trichoderma* under different storage conditions in nitrogen packing and commercial packing**
	The JAU- isolate *Trichoderma harzianum* remains viable up to 18 months from date of packaging at ambient temperature, at 28°C and in refrigerator at 10°C.
	Suggestions: Approved with following suggestions 1. Remove "storage conditions, commercial as well as in nitrogen packings" from reco. text 2. Mention species of bioagent in reco. para ***(Action: Professor & Head, Department of Plant Pathology, JAU, Junagadh)***

ANAND AGRICULTURAL UNIVERSITY

AGRICULTURAL ENTOMOLOGY	
18.3.2.6	**Biological suppression of fall armyworm, *Spodoptera frugiperda* (J. E. Smith) (Lepidoptera: Noctuidae) in maize (PP/Biological Control/2020/01)**
	Three releases of *Trichogramma pretiosum* (50,000 eggs per ha) at weekly

	interval and spray of *Bacillus thuringiensis* NBAIR *Bt*G4 1 % WP @ 50 g/ 10 lit. of water for three times at ten days interval with the initiation of pest found effective for the management of fall armyworm, *Spodoptera frugiperda* (J. E. Smith) in maize. **Suggestion: Approved** ***(Action: Principal Res. Sci., AICRP on Biological Control of Crop Pests, AAU, Anand)***
18.3.2.7	**Estimation of damage caused by rose ringed parakeet, *Psittacula krameri* (Scopoli) in pomegranate (PP/Ornithology/2019/03)**
	Rose-ringed parakeet, *Psittacula krameria* (Scopoli) cause 6.38 per cent loss in production of pomegranate orchard. Fruit damage and number of parakeet bird was higher in morning hours than evening hours. **Suggestion: Approved with following suggestion:** 1. Write "Rose- ringed parakeet, *Psittacula krameria* (Scopoli) cause 6.38 per cent loss in production of pomegranate orchard" in recommendation text ***(Action: Ornithologist, AINP on Vertebrate Pest Management, AAU, Anand)***
18.3.2.8	**Role of birds in the natural regulation of pod borer, *Helicoverpa armigera* (Hubner) in pigeon pea (PP/Ornithology/2019/01)**
	Major insectivorous birds *viz.*, Black Drongo (*Dicrurus macrocercus*), Jungle babbler (*Turdoides striatus*), Common Myna (*Acridotheres tristis*), Rosy starling (*Sturnus roseus*) and Red vented bulbul (*Pycnonotus cafer*) have been recorded in pigeon pea. All birds were found potent predators of pigeon pea pod borer, *Helicoverpa armigera* (Hubner) by suppression of 61.16 per cent larval population. **Suggestion: Approved** ***(Action: Ornithologist, AINP on Vertebrate Pest Management, AAU, Anand)***
18.3.2.9	**Residue and persistence of tetraniliprole 240 g/L + fipronil 240 g/L SC in maize (PP/Pesticide Residues/2021/01)**
	Seed treatment of a ready-mix insecticide tetraniliprole 240 g/L + fipronil 240 g/L FS in maize @ 7.2 + 7.2 g a.i. /kg seeds did not result in their residues in maize leaves at 30 days after sowing, immature cob as well as mature grains and soil at harvest. **Suggestion:** Approved ***(Action: Residue Analyst, AINP on Pesticide Residue, AAU, Anand)***
18.3.2.10	**Residue and persistence of fluxapyroxad 167 g/L + pyraclostrobin 333 g/L 500 SC in cumin (PP/Pesticide Residues/2021/02)**
	Foliar application of ready-mix fungicide fluxapyroxad 167 g/L + pyraclostrobin 333 g/L - 500 SC in cumin at flowering stage @ 150 g a.i. /ha resulted in 3.38 and 3.12 mg/kg of fluxapyroxad and pyraclostrobin residues, respectively in cumin seeds at harvest i.e., 28 days after last application. **Suggestion: Approved** ***(Action: Residue Analyst, AINP on Pesticide Residue, AAU, Anand)***
18.3.2.11	**Residue and persistence of beta-cyfluthrin 90 g/L + imidacloprid 210 g/L OD in maize (PP/Pesticide Residues/2021/06)**
	Three foliar applications of ready-mix insecticide beta-cyfluthrin 90 g/L + imidacloprid 210 SC g/L OD in maize at 7-day interval @ 45 + 105 g a.i./ha at cob formation stage, resulted residue below the limit of quantitation of 0.05 mg /kg for beta-cyfluthrin and 0.01 mg/kg for imidacloprid in green cob and mature grains if harvested from 1 day after last spray. Therefore, PHI of 1-day can be suggested, if beta-cyfluthrin 90 g/L + imidacloprid 210 SC g/L OD is recommend in maize. **Suggestion: Approved** ***(Action: Residue Analyst, AINP on Pesticide Residue, AAU, Anand)***
18.3.2.12	**Residue and persistence of tetraniliprole 200 g/L SC in chilli (PP/Pesticide Residues/2021/07)**
	Three foliar applications of tetraniliprole 200 SC g/L in chilli at 7-day interval @ 50 g a.i./ha at fruiting stage resulted in tetraniliprole residues 3.61 mg/kg in green

	chilli fruits if harvested from 3-day after the last application. **Suggestion: Approved** ***(Action: Residue Analyst, AINP on Pesticide Residue, AAU, Anand)***
18.3.2.13	**Development and validation of quick multi-class method for the various antibiotics and veterinary drugs in milk by LC-MS/MS (PP/Pesticide Residues/2021/09)**
	An in-house multi-residues method has been developed to estimate chloramphenicol, albendazole, fenbendazole, metronidazole, ronidazole, phenylbutazone, chlortetracycline and oxytetracycline from different classes of phenicols, flukicides, nitroimidazoles, anti-inflammatories and tetracyclines from milk. The method was performed as per the EU guideline and followed SANTE 2019 criteria. The limit of quantitation ranged from 0.18 - 5.20 µg/L on whole milk basis. **Suggestion: Approved** ***(Action: Residue Analyst, AINP on Pesticide Residue, AAU, Anand)***
18.3.2.14	**Residue and persistence of fluoxapiprolin 20 g/L SC in tomato (PP/Pesticide Residues/2021/13)**
	Three foliar applications of fluoxapiprolin 20 SC g/L @ 25 g a.i./ha in tomato at 7-day interval starting from fruit development stage resulted in residues below the limit of quantification of 0.01 mg/kg in tomato fruits on 14 days after the last application. Therefore, PHI of 14 days can be suggested, if fluoxapiprolin 20 SC g/L use as recommended dose in tomato. **Suggestion: Approved** ***(Action: Residue Analyst, AINP on Pesticide Residue, AAU, Anand)***
18.3.2.15	**Residue and persistence of tetraniliprole 200 g/L SC in red gram (PP/Pesticide Residues/2021/14)**
	Three foliar applications of tetraniliprole 200 SC g/L @ 50 g a.i./ha at 7-day interval starting from pod formation stage in pigeon pea having no residues of tetraniliprole at or higher the limit of determination of 0.01 mg/kg in mature pods with seed, mature seeds (dry) and soil at harvest. **Suggestion: Approved** ***(Action: Residue Analyst, AINP on Pesticide Residue, AAU, Anand)***
18.3.2.16	**Residue and persistence of spirotetramet 120 g/L + imidacloprid 120 g/L SC in cucumber (PP/Pesticide Residues/2021/15)**
	Three foliar applications of a ready-mix insecticide spirotetramat 120 g/L + imidacloprid 120 g/L SC @ 90 + 90 g a.i. /ha at 7-day interval starting from fruiting stage in cucumber having no residues of either insecticides detected at or higher the limit of determination of 0.01 mg/kg in cucumber fruits immediately after last application. **Suggestion: Approved** ***(Action: Residue Analyst, AINP on Pesticide Residue, AAU, Anand)***
18.3.2.17	**Residue and persistence of fluoxapiprolin 20 SC g/L in cucumber (PP/Pesticide Residues/2021/19)**
	Three foliar applications of fluoxapiprolin 20 SC g/L in cucumber @ 25 g a.i./ha at 7-day interval starting from fruit development stage resulted residues below the limit of quantification of 0.01 mg/kg in cucumber fruits at 5 days after last application. Therefore, PHI of 5 days can be suggested, if fluoxapiprolin 20 SC g/L is recommended in cucumber. **Suggestion: Approved** ***(Action: Residue Analyst, AINP on Pesticide Residue, AAU, Anand)***
18.3.2.18	**Residue and persistence of cyantraniliprole 7.3 % + diafenthiuron 36.4 % SC in tomato (PP/Pesticide Residues/2020/06)**
	Two foliar applications of ready-mix insecticide cyantraniliprole 7.3 % + diafenthiuron 36.4 % w/w - 480 SC in tomato at 10 days interval @ 60 + 300 g a.i./ha at fruiting stage in tomato fruits having cyantraniliprole residues below the

	MRL of FSSAI 0.5 mg/kg on 3 days. However, diafenthiuron MRL can be worked out by considering the 3 days results for the risk assessment. **Suggestion: Approved** ***(Action: Residue Analyst, AINP on Pesticide Residue, AAU, Anand)***
18.3.2.19	**Residue and persistence of cyantraniliprole 7.3% + diafenthiuron 36.4% SC in brinjal (PP/Pesticide Residues/2020/07)**
	Two foliar applications of ready-mix insecticide cyantraniliprole 7.3% + diafenthiuron 36.4% w/w - 480 SC in brinjal at 15-day interval @ 60 + 300 g a.i./ha at fruiting stage having residue below cyantraniliprole and diafenthiuron MRLs of FSSAI 0.06 and 1.0 mg/kg, respectively in brinjal fruits on the day of last application. Therefore, PHI of 1 day can be suggested, if cyantraniliprole 7.3% + diafenthiuron 36.4% w/w - 480 SC is recommended in brinjal. **Suggestion: Approved** ***(Action: Residue Analyst, AINP on Pesticide Residue, AAU, Anand)***
18.3.2.20	**Residue and persistence of fluopyram 400 SC g/L in brinjal (PP/Pesticide Residues/2021/28)**
	One application of fluopyram 400 SC g/L as soil drenching @ 500 g a.i./ha in brinjal at 3-day after transplanting and two applications of the fluopyram 400 SC g/L @ 250 g a.i./ha, first at 3-day after transplanting followed by second at 21 days after first application, having residues below the CODEX MRL of 0.5 mg/kg in brinjal fruits throughout the picking. Therefore, PHI of 59 days can be suggested, if fluopyram 400 SC is recommended in brinjal. **Suggestion: Approved** ***(Action: Residue Analyst, AINP on Pesticide Residue, AAU, Anand)***
18.3.2.21	**Residue and persistence of tetraniliprole 120 g/L + spirotetramet 240 SC g/L in brinjal (PP/Pesticide Residues/2021/30)**
	Three foliar applications of a ready-mix insecticide tetraniliprole 120 g/L + spirotetramat 240 g/L SC at 7-day interval @ 45 + 90 g a.i. /ha at fruiting stage in brinjal having 0.03 and 0.46 mg/kg residues for tetraniliprole and spirotetramat, respectively along with metabolites (spirotetramat-enol, spirotetramat- ketohydroxy, spirotetramat- monohydroxy and spirotetramat- enol glucoside) in brinjal fruits on the 3rd days after last application. **Suggestions: Approved with following suggestion** 1. Add the name of metabolites in recommendation text ***(Action: Residue Analyst, AINP on Pesticide Residue, AAU, Anand)***
18.3.2.22	**Residue of trinexapac ethyl 25% EC in rice and soil (PP/Pesticide Residues/2020/27)**
	One application of trinexapac ethyl 25 EC @ 40 g a.i. /ha in paddy at 50 % panicle initiation stage resulted in residue below determination level of 0.01 mg/kg in grains, straw and soil at harvest. **Suggestion: Approved** ***(Action: Residue Analyst, AINP on Pesticide Residue, AAU, Anand)***
18.3.2.23	**Bio-efficacy of ready-mix insecticides against spotted pod borer, *Maruca vitrata* (Fabricius) in cowpea (PP/Poly. Anand (Ento.)/2020/01)**
	Chlorantraniliprole 9.30 % + Lambda-cyhalothrin 4.60 % ZC (30 g.a.i/ha) found effective in reducing the larval population of spotted pod borer, *Maruca vitrata* (Fab.) infesting cowpea which also recorded higher yield. **Suggestion: Approved** ***(Action: Assistant Professor, SMC Polytechnic in Agriculture, AAU, Anand)***
18.3.2.24	**Population dynamics of major insect pests of castor (PP/ARS, Sansoli/2016/02)**
	Leaf hopper, whitefly and thrips on castor leaves remained active throughout the crop season with their peak activity during 3rd week of November (45th SMW), 5th week of October (44th SMW) and 3rd week of November (45th SMW), respectively, whereas thrips on spike remained active from flowering stage till harvesting of crop

	with their peak activity during 4th week of January (5th SMW) and capsule borer remained active from spike formation stage till harvesting of crop with their peak incidence during 3rd week of January (4th SMW). The population of leaf hopper shown highly significant negative correlation with minimum temperature, morning relative humidity and rainfall; population of thrips on leaves shown highly significant negative correlation with minimum temperature, morning relative humidity, evening relative humidity and rainfall whereas thrips on spike and capsule borer incidence shown highly significant negative correlation with minimum temperature and maximum temperature. **Suggestions: Approved with following suggestion** 1. Mention standard meteorological week (SMW) in case of thrips activity ***(Action: Assistant Res. Scientist (Ento), Agriculture Res. Station, AAU, Sansoli)***
18.3.2.25	**Surveillance programme of *Helicoverpa armigera* (Hubner)in pigeonpea**
	The larval population of *Helicoverpa armigera* (Hubner) in pigeonpea had a positive significant correlation with minimum temperature. Seed damage due to pod fly, *Melanagromyza obtusa* had a highly significant negative correlation with minimum temperature and sunshine hours, but it has highly significant positive correlation with morning and evening relative humidity. The peak activity of *H. armigera* was observed during 47th to 51st SMW, while in case of pod fly, it was 52nd to 3rd week. **Suggestions: Approved with following suggestion** 1. Mention the peak activity duration of insect-pest 2. Write n value in the table of correlation ***(Action: Research Scientist, Agriculture Research Station, AAU, Derol)***
18.3.2.26	**Residue and persistence of zineb 75 WP in chilli (PP/Pesticide Residues/2021/04)**
	Three foliar applications of zineb 75 WP in chilli, at 7-day interval @ 1500 g a.i./ha at fruiting stage resulted in residue of zineb below its MRL of 1.0 mg CS2 /kg, if harvested on 7 days after last application. Therefore, minimum 7-day PHI is recommended for zineb 75 WP for green chilli. Red chilli (dry) having residues of zineb 75 WP at below determination level when harvested on 69 days after the last application. Therefore, minimum 69 days PHI is recommended for zineb 75 WP in red chilli. **Suggestions: Approved with following suggestion** 1. Shifted from 'Farming community' to 'Information for Scientific community' ***(Action: Residue Analyst, AINP on Pesticide Residue, AAU, Anand)***
18.3.2.27	**Residue and persistence of mancozeb 75 WP in paddy** **(PP/Pesticide Residues/2021/10)**
	Two foliar applications of mancozeb 75 WP in paddy as per the recommendation, at 7-day interval @ 1500 g a.i. /ha at panicle initiation stage resulted residue below the limit of quantification of 0.05 mg CS2 /kg in unpolished rice, grain, husk, straw and soil when harvested on 56 days after the last application. Therefore, minimum 56 days PHI is recommended for mancozeb 75 WP in paddy. **Suggestions: Approved with following suggestion** 1. Shifted from 'Farming community' to 'Information for Scientific community' ***(Action: Residue Analyst, AINP on Pesticide Residue, AAU, Anand)***
18.3.2.28	**Residue and persistence of zineb 75 WP in potato** **(PP/Pesticide Residues/2021/33)**
	Three foliar applications of zineb 75 WP in potato, at 7-day interval @ 1500 g a.i. /ha at tuber formation stage resulted in residue of zineb below its FSSAI MRL of 0.2 mg CS2 /kg, if harvested on 21 days after last application. Therefore, minimum 21 days PHI is recommended for zineb 75 WP in potato. **Suggestions: Approved with following suggestion** 1. Shifted from 'Farming community' to 'Information for Scientific community' ***(Action: Residue Analyst, AINP on Pesticide Residue, AAU, Anand)***

PLANT PATHOLOGY	
18.3.2.29	**Evaluation of fungicides for the management of anthracnose of green gram (PP/Pathology/2018/01)**
	Foliar spray of ready-mix fungicide, carbendazim 12 % + mancozeb 63 % WP, 0.133 % (18 g/10 litre of water) first at the initiation of the disease and second after 15 days of first spray was found effective for management of anthracnose disease in green gram. **Suggestion: Approved** ***(Action: Prof. & Head, Department of Plant Pathology, BACA, AAU, Anand)***
18.3.2.30	**Field evaluation of ready-mix fungicides against cumin blight (PP/Pathology/2019/01)**
	Seed treatment with thiram 75 WS, 3 g/kg seeds followed by foliar spray of ready-mix fungicide, fluxapyroxad 25 % + pyraclostrobin 25 % SC, 0.031 % (6 ml/ 10 litre of water) along with commercially available sticker, 0.1 % (10 ml/ 10 litre of water) first at the initiation of the disease and subsequent two sprays at 15 days interval were found effective for the management of blight in cumin. **Suggestion: Approved** ***(Action: Prof. & Head, Department of Plant Pathology, BACA, AAU, Anand)***
18.3.2.31	**Management of root-knot nematodes in chickpea by bacterial bioagents (PP/Nematology/2019/02)**
	Soil application of *Bacillus subtilis* 1 % WP (CFU $2x10^8$) 2.5 kg/ha enriched with FYM (1 kg/ton FYM), prior to sowing followed by seed treatment with *B. subtilis*, 10 g/kg seeds was found effective in management of root-knot disease in chickpea. **Suggestion: Approved** ***(Action: Prof. & Head, Department of Nematology, BACA, AAU, Anand)***
18.3.2.32	**Bio-efficacy of botanicals against powdery mildew of fenugreek (PP/CoH (Patho.)/2018/01)**
	Application of 5 % methanol-based extract of ginger, first at appearance of the disease and second at 10 days after first spray was found effective against powdery mildew of fenugreek. **Suggestion: Approved** ***(Action: Assistant Prof. & Head, Dept. of Plant Protection, CoH, AAU, Anand)***

NAVSARI AGRICULTURAL UNIVERSITY

AGRICULTURAL ENTOMOLOGY	
18.3.2.33	**Screening of promising genotypes for multiple resistance against stem borer, leaf folder and sheath mites of rice**
	Rice genotypes *viz.*, NVSR-331, NVSR-405, NVSR-438 and NVSR-476 were found to have multiple resistant reaction against rice yellow stem borer, *Scirpophaga incertulas* Walker, rice leaf folder, *Cnaphalocrocis medinalis* Guenee and rice sheath mite, *Steneotarsonemus spinki* Smiley under natural field conditions. **Suggestions: Not Approved** ***(Action: Associate Research Scientist (Ento.), Main Rice Research Station and Soil & Water Management Unit, NAU, Navsari)***
18.3.2.34	**Screening of sapota germplasm against seed borer, *Trymalitis margarias* Meyrick**
	The sapota varieties/hybrids *viz.*, Kalipatti, Kirthibarthi, DHS-2, CO-2 and Cricket ball were found more susceptible to seed borer, *Trymalitis margarias* Meyrick; while Chala collection-1, Chala collection-2, Chala collection-3, Zumakhiya, CO-1 and CO-3 were showed less susceptible to seed borer. The fruit infestation was found higher from December to February. **Suggestions: Approved with following suggestions** 1. Remove the AICRP code No. 2. Add word less susceptible instead of tolerance.

	(Action: Assistant Research Scientist (Ent.), Fruit Res. Station, NAU, Gandevi)
18.3.2.35	**Evaluation of different novel plus formulations against pest complex of okra**
	Spray of NOVEL PLUS at 1.5 per cent @ 150 ml/10 l, six times from 30 days after germination at every 10 days interval to manage sucking pests (Aphid, Jassid, whitefly and Mite) in okra. **Suggestions: Approved with following suggestions** 1. Add the phytotoxicity table. 2. Mention the name of sucking pests 3. Recast reco. para *(Action: Asstt. Res. Sci. (Ent.), Soil & Water Management Unit, NAU, Navsari)*
18.3.2.36	**Evaluation of different novel plus formulations against pest complex of mango crop**
	Spray NOVEL PLUS 1.5 per cent (150ml /10 lit water) three times at Inflorescence initiation, Pea stage and Marble stage to manage sucking pests (Hoppers, Thrips and Mite) in mango. **Suggestions: Approved with following suggestions** 1. Add the phytotoxicity table. 2. Include unit in Tables. 3. Mention the name of sucking pests 4. Recast reco. para *(Action: Asstt. Res. Sci. (Ent.), Soil & Water Management Unit, NAU, Navsari)*
PLANT PATHOLOGY	
18.3.2.37	**Evaluation of different spore harvesting methods of *Trichoderma viride* Pers. Ex.fr.**
	Tween 20 @ 0.01% (v/v) in sterile saline solution (1M) can be used for maximum spore harvest of *Trichoderma viride*. **Suggestions: Approved with following suggestions** 1. Remove the word method in saline method 2. Recast the reco. para *(Action: Prof., and Head, Dept. of Plant Pathology, NMCA, NAU, Navsari)*
18.3.2.38	**Evaluation of zonal sugarcane varieties/entries for resistance to red rot (*Colletotrichum falcatum* L)**
	Sugarcane varieties *viz.* Co 13003, Co 13004, CoN 13072 (G.N.S-11), CoSnk 13101, MS 13081, Co13006, Co 13009, Co 13013, CoN 13073 (G.N.S.-10) and CoSnk 13103 were found moderately resistant against red rot disease when tested by plug method. **Suggestions: Not Approved** *(Action: Assist. Res. Sci. (Pl. Path.), Main Sugarcane Res. Stat., NAU, Navsari)*
18.3.2.39	**Screening of zonal sugarcane varieties/genotypes for resistance to whip smut (*Sporisorium scitamineum* L (Syn. *Ustilago scitaminae*)).**
	Sugarcane varieties *viz.*, Co 13002, Co 13003, MS 13081, Co 13008, Co 13009, Co 13013, Co 13018 and CoN 13073 (G.N.S-10) were found resistant whereas Co 13004, CoN 13072 (G.N.S-11) and Co 13020 were found moderately resistant against whip smut disease in artificial inoculation method. **Suggestions: Not Approved** *(Action: Asstt. Res. Sci. (Pl. Path.), Main Sugarcane Res. Stat., NAU, Navsari)*
18.3.2.40	**Screening of genotypes for bacterial leaf blight disease of rice**
	Rice genotypes *viz*., IRBB-51, IRBB-60, IRBB-66, NVSR-335, NVSR- 706 and Improved Samba Masuri were found moderately resistant against bacterial blight disease by artificial inoculation under field condition. **Suggestions: Not Approved** *(Action: Assist. Res. Sci. (Pl. Path.), MRRC, NAU, Navsari)*
18.3.2.41	**Evaluation of bio-inoculants against anthracnose of banana**
	The banana fruit dipping in *Bacillus subtilis* (5 ml/lit) 10^8 cells/ml for 5 minutes

	found effective to reduce the fruit rot severity in both *i.e.* pre and post inoculation method. **Suggestions: Approved with following suggestions** 1. Mention the causal organism of disease 2. Remove Carbendazim (0.05 %) 3. Recast reco. para ***(Action: Assist. Res. Sci. (Pl. Path.), College of Agriculture, NAU, Bharuch)***
18.3.2.42	**Screening of rice promising genotypes against blast disease caused by *Pyricularia oryzae***
	Rice genotypes *viz*., NVSR-591, NVSR 3065, IR-64 and NVSR 3110 were found highly resistant against leaf blast disease while, Lalkada (LS), HR-12 (NS), NVSR-557, NVSR-592 and GNR-4 genotypes showed highly susceptible reactions under artificial inoculation field conditions. **Suggestions: Approved with following suggestions** 1. Mention the word highly before resistant in scientific information 2. Include highly susceptible varieties ***(Action: Assist. Res. Sci. (Pl. Path.), Regional Rice Res. Station, NAU, Vyara)***
18.3.2.43	**Evaluation of rice genotypes against sheath blight caused by *Rhizoctonia solani***
	Rice Genotypes *viz*., Mandakini Lambayeque and Aditya were found moderately resistant against sheath blight disease in artificial inoculation field conditions. **Suggestion: Approved with following suggestion** 1. Mention the word moderately resistant instead of resistance ***(Action: Assist. Res. Sci. (Pl. Path.), Regional Rice Res. Station, NAU, Vyara)***
18.3.2.44	**Effect of biofilms formation in *Trichoderma-Azotobacter* interaction against *Macrophomina phaseolina***
	Biofilm formed by *Azotobacter chroococcum* (1x10^7 CFU) and *Trichoderma viride* (1x10^6 CFU) leads to production of Extrapolymeric substances (EPS) which at equal proportion can help to extract EPS after 20 days incubation by ethanol precipitation. The extracted EPS @ 2g/Kg seeds of blackgram provide better colonization, increase plant growth and reduce root rot caused by *Macrophomina phaseolina* over microbial combination. **Suggestions: Approved with following suggestions** 1. Remove Arcsine transformation from Table -2 (Root, Shoot length & plant height) 2. Replace the word prevent with reduce in reco. paara ***(Action: Prof., and Head, Dept. of Plant Pathology, NMCA, NAU, Navsari)***

SARDAR KRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

AGRICULTURAL ENTOMOLOGY	
18.3.2.45	**Bioefficacy of insecticides against leaf webber / capsule borer, *Antigastra catalaunalis* (Duponchel) in sesame**
	Two foliar sprays of chlorantraniliprole 18.5 SC, 0.0069 per cent (3.75 ml/ 10 L water), first at appearance of pest and second at 15 days after first spray found effective against leaf webber / capsule borer in sesame. Minimum PHI of 22 days should be kept. **Suggestions: Approved with following suggestions** 1. Start recommendation text as "Two foliar sprays ....…… 2. Add "minimum" before PHI ***(Action: Prof. & Head, Dept. of Entomology, CPCA, SDAU, SSKNagar)***
18.3.2.46	**Damage status of fruit sucking moth in pomegranate in Banaskantha district**
	Damage of fruit sucking moth was ranged between 1.59 to 10.40 per cent during the year 2016-17 to 2021-22 in pomegranate with an average of 5.61, 5.13 and 6.04 per cent in Lakhni, Deesa and Dhanera taluka of Banaskantha district, respectively

	with an overall damage of 5.59 per cent. **Suggestion** :**Approved** ***(Action: Prof. & Head, Dept. of Entomology, CPCA, SDAU, SKNagar)***
18.3.2.47	**Integrated pest and disease management in cumin**
	Three sprays of kresoxym methyl 44.3SC, 0.044% (10 ml/ 10 Lwater), first spray at initiation of the blight disease and subsequent sprays at an interval of 15 days after first spray and two sprays of thiamethoxam 25WG, 0.0084% (3.36 g/10 Lwater), first spray at initiation of aphid infestation and the second spray after 10 days of the first spray found effective for control of blight and aphid infestation in cumin. **Suggestion**: **Approved** ***(Action: Asso. Res. Sci. (Pl. Path.), Seed Spices Res. Station, SDAU, Jagudan)***
18.3.2.48	**Integrated pest and disease management in coriander**
	Two sprays of propiconazole 25 EC @ 0.025 % (10 ml/ 10 Lwater), first at initiation of powdery mildew disease and second at 15 days after first spray and two foliar sprays of acetamiprid 20 SP @ 0.004% (2 g /10 Lwater), first at initiation of aphid infestation and second after 10 days of first spray found effective for the control of powdery mildew and aphid infestation in coriander. **Suggestion**:**Approved** ***(Action: Asso. Res. Sci. (Pl. Path.), Seed Spices Res. Station, SDAU, Jagudan)***
18.3.2.49	**Management of potato aphid (*Myzus persicae*) through chemicals**
	Three foliar sprays of flonicamid 50 WG, 0.015% (3 g/ 10 L water), first at appearance of pest and subsequent two sprays at 15 days interval after first spray found effective against potato aphid. Minimum PHI of 22 days should be kept. **Suggestions: Approved with following suggestions** 1. Remove "Application of" from recommendation text 2. Add PHI ***(Action: Asstt. Res. Sci. (Pl. Path.), Potato Research Station, SDAU, Deesa)***
18.3.2.50	**Chemical control of date palm scale, *Parlatoria blanchardii***
	Two sprays of profenophos 0.05% (10 ml/ 10 L water) or acetamiprid 0.004% (2 g/10 L water), first at appearance of the pest and second at 15 days after first spray found effective in reducing the scale population on date palm. **Suggestion: Approved** ***(Action: Research Scientist (Ento.), Date Palm Res. Station, SDAU, Mundra)***
18.3.2.51	**Evaluation of cow urine enriched botanicals against fruit fly infesting muskmelon**
	Three sprays of cow urine + neem leaf extract or cow urine + jatropha leaf extract or cow urine + custard apple leaf extract @ 10 % + 10 % (1L + 1 L per 10 L water), first at appearance of pest and subsequent two sprays at 10 days interval found effective for fruit fly. **Suggestions: Approved with following suggestions** 1. Shifted from farmers recommendation to scientific information 2. Further study is required and submit for farmers recommendation next time ***(Action: Professor & Head, Dept. of Entomology, CPCA, SDAU, SKNagar)***
PLANT PATHOLOGY	
18.3.2.52	**Studies on prevalence of pomegranate root rot-wilt complex and its etiology in pomegranate growing area of Tharad taluka**
	The problem of root rot-wilt complex was increasing over the time with recorded incidence of 4.31 to 9.42% from 2018-19 to 2021-22. The disease was progressed over the years at rate of 22.78% per year in whole locality. The highest disease progress was recorded in Lodnor village with average rate of 128.97 percent per year, while the lowest disease progress was evident in Kumbhara and Bhimpura with the 0.7 percent and 0.87 percent growth rate, respectively. The disease incidence was found to increase with the age of the plant. The disease was found to initiate about 4-5 year onwards and reaches maximum at 10 years.

	The etiology of this disease complex was deciphered as *Fusarium* spp. **Suggestions: Approved with following suggestion** 1. Recast recommendation. ***(Action: Professor & Head, Department of Pl. Path, CPCA, SDAU, SKNagar)***

18.3.3 NEW TECHNICAL PROGRAMMES

Summary

Name of University	Proposed		Approved		
	Entomology	Pathology/ Nematology	Entomology	Pathology/ Nematology	Total
JAU	08	09	08	07 (9-2*)	**15**
AAU	41	14	39 (41-2*)	12 (14-2*)	**51**
NAU	08	04	05 (8-2*-1#)	04	**09**
SDAU	05	10	05	8 (10-1*-1#)	**13**
Total	**62**	**37**	**57**	**31**	**88**

Note: *Not approved, # Feeler trial

JUNAGADH AGRICULTURAL UNIVERSITY

ENTOMOLOGY		
Sr. No.	**Title**	**Suggestion/s**
18.3.3.1	Standardization of number of pheromone traps for shoot and fruit borer, *Leucinodes orbonalis* (Guenée) in brinjal	**Accepted with following suggestions:** 1. Mention distance between two traps. 2. Check attraction of insects from distance i.e. 2, 4, 6 and 8 m in observation. *(Action: Professor & Head, Department of Entomology, JAU, Junagadh)*
18.3.3.2	Effect of different sequence based insecticidal spray against shoot and fruit borer, *Leucinodes orbonalis* (Guenée) in brinjal	**Accepted with following suggestion:** 1. Check dose as per CIB. *(Action: Professor & Head, Department of Entomology, JAU, Junagadh)*
18.3.3.3	Morphological and molecular identification of honey bee species in seed spices of Junagadh district	**Accepted with following suggestions:** 1. Recast objective as "To find out the genetic diversity of honey bee species in seed spices flora of Junagadh district". 2. Add molecular identification method in details of methodology. *(Action: Professor & Head, Department of Entomology, JAU, Junagadh)*
18.3.3.4	Standardization of number of pheromone traps for pink bollworm, *Pectinophora gossypiella* (Saunders) in cotton	**Accepted with following suggestions:** 1. Mention distance between two traps. 2. Check attraction of insects from distance i.e. 2, 4, 6 and 8 m in observation. *(Action: Professor & Head, Department of Entomology, JAU, Junagadh)*
18.3.3.5	Standardization of number of pheromone traps for banana fruit fly	**Accepted with following suggestions:** 1. Recast title as "Standardization of number of pheromone traps for fruit fly infesting banana". 2. Mention distance between two traps. 3. Check attraction of insects from distance i.e. 2, 4, 6 and 8 m in observation. 4. Take banana to lab. and keep it for 15 days and take observation afterwards in methodology.

		5. Remove word "mango" from objective. *(Action: Professor & Head, Department of Entomology, JAU, Junagadh)*
18.3.3.6	Extraction of active components from different botanical plants	**Approved.** *(Action: Professor & Head, Department of Entomology, JAU, Junagadh)*
18.3.3.7	Evaluation of different ready mix insecticides against sucking insect pest in groundnut	**Approved.** *(Action: Research Scientist (G'nut), Main Oilseeds Research Station, JAU, Junagadh)*
18.3.3.8	Evaluation of insecticides against aphid, *Lipaphis erysimi* (Kalt.) infesting mustard	**Accepted with following suggestions:** 1. Take the variety GDM-4. 2. Check net plot size. 3. Check dose as per CIB. *(Action: Research Scientist (G'nut), Main Oilseeds Research Station, JAU, Junagadh)*
PLANT PATHOLOGY		
18.3.3.9	Management of root rot disease of castor by fungicides	**Not approved** *(Action: Research Scientist (G'nut), Main Oilseeds Research Station, JAU, Junagadh)*
18.3.3.10	Testing of newer fungicides as a seed treatment against soil borne diseases of groundnut	**Accepted with following suggestions:** 1. Recast title as "Evaluation of ready-mix fungicides as a seed treatment against soil borne diseases of groundnut". 2. Recast objective as per title. 3. First inoculate the seed with aspergillus and afterwards give seed treatment of fungicides in each treatment. *(Action: Research Scientist (G'nut), Main Oilseeds Research Station, JAU, Junagadh)*
18.3.3.11	Assessment of yield losses caused by fungal foliar diseases of cotton	**Accepted with following suggestions:** 1. Recast title as "Effect of fungicidal spray on yield losses caused by fungal foliar diseases of cotton" 2. Recast objective as per title. 3. Take variety of *Bt* cotton instead of non Bt cotton. *(Action: Research Scientist (Cotton), Cotton Research Station, JAU, Junagadh)*
18.3.3.12	Eco-friendly management of pearl millet blast	**Suggestions: Not approved.** 1. First carried out *in vitro* filler study. 2. Take any effective chemical in treatment. *(Action: Research Scientist (Pearl millet), Pearl millet Research Station, JAU, Jamnagar)*
18.3.3.13	Management of leaf and fruit spot diseases of pomegranate	**Accepted with following suggestions:** 1. Mention disease intensity of leaf and fruit. 2. Take observation of bacterial leaf blight. 3. Replace the treatment T2 with Kasugamycin 5 % + Copper Oxychloride 45 % WP. 4. Take design CRD with three repetitions. *(Action: Professor & Head, Department of Plant Pathology, JAU, Junagadh)*
18.3.3.14	Bio-control of root knot nematode (*Meloidogyne* sp.) infesting pomegranate	**Accepted with following suggestions:** 1. Recast title as "Bio-control of root knot nematode (*Meloidogyne* sp.) infesting pomegranate under

		nursery condition". 2. Replace the treatment T2 with *Trichoderma viride.* 3. Mention quantity of FYM and soil per pot in methodology. *(Action: Professor & Head, Department of Plant Pathology, JAU, Junagadh)*
18.3.3.15	Management of root knot nematode (*Meloidogyne* sp.) infesting pomegranate using different nematicides	**Accepted with following suggestions:** 1. Recast title as "Management of root knot nematode (*Meloidogyne* sp.) infesting pomegranate using different nematicides under nursery condition". 2. Recalculate the doses of chemicals. 3. Replace the treatment T7 with chlorantraniliprole 4 G. 4. Check Fluopyram 500 SC or 480 SC. 5. Record the nematode population up to 90 days, if possible. *(Action: Professor & Head, Department of Plant Pathology, JAU, Junagadh)*
18.3.3.16	Management of twister disease complex in onion	**Accepted with following suggestions:** 1. Replace carbofuran 3 G with chlorantraniliprole 4 G. 2. Add observation of nematode population at harvest. *(Action: Professor & Head, Department of Plant Pathology, JAU, Junagadh)*
18.3.3.17	Eco-friendly management of soil borne diseases of chickpea	**Accepted with following suggestions:** 1.Recast title as "Eco-friendly management of soil borne disease complex of chickpea". 2. Recast objective as per title. 3. Mention in methodology, give irrigation after second application of bio agent. *(Action: Professor & Head, Department of Plant Pathology, JAU, Junagadh)*

ANAND AGRICULTURAL UNIVERSITY

ENTOMOLOGY		
Sr. No.	**Title**	**Suggestions**
18.3.3.18	Bio-efficacy of insecticides against thrips, *Thrips parvispinus* (Karny) infesting chilli	**Accepted with following suggestions:** 1. Write 'invasive thrips' instead of thrips 2. Mention the lengh of twig to record observation of thrips *(Action: Professor and Head, Dept. of Agril. Entomology, BACA, AAU, Anand; Res. Sci. (Veg.), MVRS, AAU, Anand; Asst. Res. Scientist (Ento.), ARS, AAU, Sansoli)*
18.3.3.19	Evaluation of bio-pesticides against thrips, *Thrips parvispinus* (Karny) infesting chilli	**Accepted with following suggestions:** 1. Write 'invasive thrips' instead of thrips 2. Remove the treatment no. T6 (Neem oil 0.5%) 3. Blanket application of neem oil 0.5% should be done, if mite observed 4. Mention the lengh of twig to record observation of thrips

		(Action: Professor and Head, Dept. of Agril. Entomology, BACA, AAU, Anand; Res. Sci. (Veg.), MVRS, AAU, Anand; Asst. Res. Scientist (Ento.), ARS, AAU, Sansoli)
18.3.3.20	Evaluation of various insecticides as lure toxicants for fruit fly in bittergourd	**Accepted with following suggestions:** 1.Take the ancillary observation of instant mortality of fruit fly in trap 2.Mention isolation distance of 5 km in methodology *(Action: Professor and Head, Department of Agril. Entomology, BACA, AAU, Anand)*
18.3.3.21	Impact of pollinators on the seed yield of onion	**Approved** (Action: Professor and Head, Department of Agril. Entomology, BACA, AAU, Anand)
18.3.3.22	Evaluation of biointensive modules against invasive thrips, *Thrips parvispinus* (Karny) in chilli	**Accepted with following suggestions:** 1.Mention the lengh of twig to record observation of thrips 2.Write cfu/g in module 1 *(Action: Principal Res. Sci., AICRP on Biological Control of Crop Pests, AAU,Anand; Res. Sci. (Veg.), MVRS, AAU, Anand; Asstt. Res. Sci. (Ento.,), AAU, Sansoli), Assoc. Res. Sci., AHRS, AAU, Khambholaj)*
18.3.3.23	Effectiveness of various repellants against Blue bull, *Boselaphus tragocamelus* (Pallas)	**Accepted with following suggestions:** 1.Conduct the experiment with 'Non Replicated Large Plot'design instead of RBD *(Action: Ornithologist, AINPVPM on Agricultural Ornithology, AAU, Anand)*
18.3.3.24	Effectiveness of tree cover on Rose-Ringed Parakeet *Psittacula krameri* (Scopoli) damage in pomegranate	**Approved** *(Action: Ornithologist, AINPVPM on Agricultural Ornithology, AAU, Anand)*
18.3.3.25	Effectiveness of physical barrier to prevent birds in row crop field	**Accepted with following suggestion:** 1.Conduct the experiment with 'Non Replicated Large Plot'design instead of RBD *(Action: Ornithologist, AINPVPM on Agricultural Ornithology, AAU, Anand)*
18.3.3.26	Evaluation of insecticides against capsule borer, *Helicoverpa armigera* (Hubner) in tobacco	**Accepted with following suggestions:** 1.Ancillary observation of other insect pests should be taken 2.Record the phytotoxicity data of each insecticides 3.Write Chlorantraniliprole 18.5 SC instead of 18.5 EC *(Action: Asstt. Res. Sci. (Ento.), BTRS, AAU, Anand)*
18.3.3.27	Residue and persistence of isocycloseram 9.2 w/w DC in tomato	**Accepted with following suggestions:** 1.Linearity, LOD, LOQ and recovery should be carried out 2.Remove MRL from the objective 3.Add microbial observation *(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*

18.3.3.28	Residues and persistence of fluopyram 250 g/L + trifloxystrobin 250 g/L SC in mango Approved	**Accepted with following suggestions:** 1.Linearity, LOD, LOQ and recovery should be carried out 2.Remove MRL from the objective 3.Add microbial observation *(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*
18.3.3.29	Residues and persistence of flonicamid 20% + fipronil 8% SC in okra	**Accepted with following suggestions:** 1.Linearity, LOD, LOQ and recovery should be carried out 2.Remove MRL from the objective 3.Add microbial observation *(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*
18.3.3.30	Residues and persistence of tolfenpyrad 18.75% + emamectin benzoate 0.94% w/w SC in cauliflower	**Accepted with following suggestions:** 1.Linearity, LOD, LOQ and recovery should be carried out 2.Remove MRL from the objective 3.Add microbial observation *(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*
18.3.3.31	Residue and persistence of tetraniliprole 480% g/L FS in maize	**Accepted with following suggestions:** 1.Linearity, LOD, LOQ and recovery should be carried out 2.Remove MRL from the objective 3.Add microbial observation *(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*
18.3.3.32	Residues and persistence of isoxaflutole 225% g/L + thiencarbazone-methyl 90% g/L SC in maize	**Accepted with following suggestions:** 1.Linearity, LOD, LOQ and recovery should be carried out 2.Remove MRL from the objective 3.Add microbial observation *(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*
18.3.3.33	Residues and persistence of fluopyram 250% g/L + trifloxystrobin 250% g/L in banana	**Accepted with following suggestions:** 1.Linearity, LOD, LOQ and recovery should be carried out 2.Remove MRL from the objective 3.Add microbial observation *(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*
18.3.3.34	Residues and persistence of tebuconazole 50% + trifloxystrobin 25% WG in chickpea	**Accepted with following suggestions:** 1.Linearity, LOD, LOQ and recovery should be carried out 2.Remove MRL from the objective 3.Add microbial observation *(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*
18.3.3.35	Residues and persistence of tetraniliprole 120% g/L + spirotetramat 240%g/L SC in okra	**Accepted with following suggestions:** 1.Linearity, LOD, LOQ and recovery should be carried out 2.Remove MRL from the objective 3.Add microbial observation

		(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
18.3.3.36	Residue and persistence of flupyradifurone 200% g/L SL in tomato	**Accepted with following suggestions:** 1.Linearity, LOD, LOQ and recovery should be carried out 2.Remove MRL from the objective 3.Add microbial observation *(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*
18.3.3.37	Residue and persistence of glyphosate IPA Salt 41% w/w SL in pomegranate	**Accepted with following suggestions:** 1.Linearity, LOD, LOQ and recovery should be carried out 2.Remove MRL from the objective 3.Add microbial observation *(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*
18.3.3.38	Residues and persistence of tolfenpyrad 18.75% + emamectin benzoate 0.94% w/w SC in brinjal	**Accepted with following suggestions:** 1.Linearity, LOD, LOQ and recovery should be carried out 2.Remove MRL from the objective 3.Add microbial observation *(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*
18.3.3.39	Residues and persistence of pyrithiobac sodium 12.5%+ bispyribac sodium 5% SC in paddy	**Accepted with following suggestions:** 1.Linearity, LOD, LOQ and recovery should be carried out 2.Remove MRL from the objective 3.Add microbial observation *(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*
18.3.3.40	Residues and persistence of fluopyram 200% g/L + tebuconazole 200% g/LSC in tomato	**Accepted with following suggestions:** 1.Linearity, LOD, LOQ and recovery should be carried out 2.Remove MRL from the objective 3.Add microbial observation *(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*
18.3.3.41	Residue and persistence of tebuconazole 430% g/L SC in mango	**Accepted with following suggestions:** 1.Linearity, LOD, LOQ and recovery should be carried out 2.Remove MRL from the objective 3.Add microbial observation *(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*
18.3.3.42	Residues and persistence of fluopyram 250% g/L + trifloxystrobin 250% g/L SC in okra	**Accepted with following suggestions:** 1.Linearity, LOD, LOQ and recovery should be carried out 2.Remove MRL from the objective 3.Add microbial observation *(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*
18.3.3.43	Residues and persistence of tebuconazole 50% + trifloxystrobin 25% WG in	**Accepted with following suggestions:** 1.Linearity, LOD, LOQ and recovery should be carried out

	turmeric	2.Remove MRL from the objective 3.Add microbial observation *(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*
18.3.3.44	Residue and persistence of flupyradifurone 200% g/L SL in chilli	**Accepted with following suggestions:** 1.Linearity, LOD, LOQ and recovery should be carried out 2.Remove MRL from the objective 3.Add microbial observation *(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*
18.3.3.45	Residue and persistence of glyphosate IPA salt 41% w/w SL in chilli	**Accepted with following suggestions:** 1.Linearity, LOD, LOQ and recovery should be carried out 2.Remove MRL from the objective 3.Add microbial observation *(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*
18.3.3.46	Residues and persistence of fluopyram 250% g/L + trifloxystrobin 250% g/L in tomato	**Accepted with following suggestions:** 1.Linearity, LOD, LOQ and recovery should be carried out 2.Remove MRL from the objective 3.Add microbial observation *(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*
18.3.3.47	Residues and persistence of fluopyram 200% g/L + tebuconazole 200% g/L SC in okra	**Accepted with following suggestions:** 1.Linearity, LOD, LOQ and recovery should be carried out 2.Remove MRL from the objective 3.Add microbial observation *(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*
18.3.3.48	Residues and persistence of isotianil 7% + fosetyl Al 70% WG in pomegranate	**Accepted with following suggestions:** 1.Linearity, LOD, LOQ and recovery should be carried out 2.Remove MRL from the objective 3.Add microbial observation *(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*
18.3.3.49	Residues and persistence of beta-cyfluthrin 90% g/L + imidacloprid 210% g/L OD in rice	**Accepted with following suggestions:** 1.Linearity, LOD, LOQ and recovery should be carried out 2.Remove MRL from the objective 3.Add microbial observation *(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*
18.3.3.50	Residue and persistence study of fipronil 0.6% GR in chilli	**Accepted with following suggestions:** 1.Linearity, LOD, LOQ and recovery should be carried out 2.Remove MRL from the objective 3.Add microbial observation *(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*
18.3.3.51	Residues and persistence of	**Accepted with following suggestions:**

	fluopyram 250% g/L + trifloxystrobin 250% g/L in cucumber	1.Linearity, LOD, LOQ and recovery should be carried out 2.Remove MRL from the objective 3.Add microbial observation *(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)*
18.3.3.52	Effect of different seed priming techniques with insecticides on insect-pests and seed vigour of mungbean	**Approved** *(Action: Research Scientist (Seed), RRS, AAU, Anand)*
18.3.3.53	Evaluation of natural inputs against major insect-pests infesting musk melon	**Suggestions: Not approved** 1. First carried out *in vitro* filler study. 2.Take any effective chemical in treatment. *(Action: Research Scientist, Main Vegetable Research Station, AAU, Anand)*
18.3.3.54	Screening of promising genotypes of rice selected from advance generation breeding material for multiple insect-pest resistant	**Not Approved** *(Action: Asstt. Res. Sci. (Ento.), MRRS, AAU, Nawagam)*
18.3.3.55	Evaluation of different modules against fall armyworm, *Spodoptera frugiperda* infesting maize	**Accepted with following suggestions:** 1.In Module-4 include NSKE 5 % instead of Brahmastra 2.In Module-3 application of insecticide should be done at 5 % infestation of FAW 3.Take 7 quadrates in each modules *(Action: Asstt. Res. Sci. (Ento.), MMRS, AAU, Godhra)*
18.3.3.56	Bio-efficacy of insecticides against diamondback moth, *Plutella xylostella* L. on cauliflower	**Accepted with following suggestions:** 1.Take the observation of per cent parasitism from the larvae of DBM *(Action: Asstt. Prof. (Ento.), CoA, AAU, Vaso)*
18.3.3.57	Efficacy of different insecticides against pod borer complex of pigeonpea	**Approved** *(Action: Asstt. Res. Sci. (Ento.), ARS, AAU, Derol)*
18.3.3.58	Evaluation of insecticides for the control of castor capsule borer, *Dichocrosis punctiferalis Guenee*	**Approved** *(Action: Asstt. Res. Sci. (Ento.), ARS, AAU, Sansoli)*
PLANT PATHOLOGY		
18.3.3.59	Effect of different supplementations on growth and yield of oyster mushroom	**Accepted with following suggestions:** 1.Mention the spawn quantity required 2.Add treatment of grountnut and chickpea haulm 3.Take the observation of moisture content 4.Take the observation of fruit weight *(Action: Professor and Head, Department of Plant Pathology, BACA, AAU, Anand)*
18.3.3.60	Biomanagement of root-knot nematodes (*Meloidogyne* spp.) and bacterial wilt (*Ralstonia solanacearum*) complex in brinjal	**Accepted with following suggestions:** 1.Take the observation of wilt complex 2.Add treatment of *T. viride* and *Pochonia chlamydosporia* 3.Remove word bacterial from title and objective and write wilt complex 4.Mention the dose of FYM @ 500 kg in the

		treatments of *T. viride* and *Pochonia chlamydosporia* *(Action: Professor and Head, Department of Nematology, BACA, AAU, Anand)*
18.3.3.61	Eco-friendly management of root knot nematode infecting tomato in nursery	**Approved** (Action: Professor and Head, Department of Nematology, BACA, AAU, Anand)
18.3.3.62	Evaluation of chemical molecules against *Meloidogyne* spp. in cucumber	**Accepted with following suggestions:** 1.Add the treatment of Chlorantraniliprole 0.4 GR 2.Mentioned the quantity of water in treatment T3 *(Action: Professor and Head, Department of Nematology, BACA, AAU, Anand)*
18.3.3.63	Evaluation of chemical molecules against *Meloidogyne* spp. infecting guava	**Accepted with following suggestions:** 1.Mention the dose of treatment T5 2.Add the dose of nematicide required in formulation in treatment T1 and T2 *(Action: Professor and Head, Department of Nematology, BACA, AAU, Anand)*
18.3.3.64	Evaluation of chemical molecules against *Meloidogyne* spp. infecting pomegranate	**Accepted with following suggestions:** 1.Mention the dose of treatment T5 2.Add the dose of nematicide required in formulation in treatment T1 and T2 (Action: Professor and Head, Department of Nematology, BACA, AAU, Anand)
18.3.3.65	Management of *Meloidogyne incognita* infecting cucumber under protected cultivation	**Accepted with following suggestions:** 1.Recast title as "Eco-friendly management of *Meloidogyne incognita* infecting cucumber under protected cultivation" *(Action: Professor and Head, Department of Nematology, BACA, AAU, Anand)*
18.3.3.66	Efficacy of mycorrhiza in the management of *Meloidogyne* spp. in capsicum under protected cultivation	**Accepted with following suggestions:** 1.Write cfu of *Pochonia chlamydosporia* 2.Mention IP of mycorrhiza *(Action: Professor and Head, Department of Nematology, BACA, AAU, Anand)*
18.3.3.67	Bio-efficacy of readymix fungicides against powdery mildew of coriander	**Accepted with following suggestions:** 1.Add the treatment of control (water spray) 2.Write g a.i./ha of each treatments 3.Take the data of phytotoxicity of each insecticides *(Action: Assistant Professor & Head (Pl. Prot.), CoH, AAU, Anand)*
18.3.3.68	Evaluation of fungicides against brown spot caused by *Alternaria alternata* (Fr.) Keissl in bidi tobacco	**Accepted with following suggestions:** 1.Recast title as "Evaluation of fungicides against frog eye leaf spot and Alternaria leaf spot in bidi tobacco" 2.Change the treatment of T7 to T9 as Zineb 68% + Hexaconazole 4% with three doses 3.Add Zineb as a CIB check 4.Mention the index of brown spot disease (0-5) *(Action: Associate Research Scientist (Pl. Path.), BTRS, AAU, Anand)*
18.3.3.69	Bio-efficacy of fungicides against powdery mildew	**Accepted with following suggestions:** 1.Add the treatment of control (water spray)

	disease of clusterbean	2.Residue analysis of the effective treatment should be carrie out *(Action: Assistant Professor (Patho.), CoA, Vaso)*
18.3.3.70	Screening of soybean germplasm to yellow mosaic diseases under field condition	**Not Approved** *(Action: Training Associate (PP), TRTC, AAU, Devgadhbaria)*
18.3.3.71	Effect of organic inputs and bio-control agent on rhizome rot of ginger	**Accepted with following suggestions:** 1.Recast title as "Evaluation of biocontrol agents against rhizome rot in ginger" 2.Recast objective as per title 3.Write cfu/g of biocontrol agents 4.Revise the treatments of the experiment *(Action: Training Associate (PP), TRTC, AAU, Devgadhbaria)*
18.3.3.72	Evaluation of natural inputs against major foliar diseases of greengram	**Not Approved** *(Action: Assistant Professor (Patho.), CoA, AAU, Jabugam)*

NAVSARI AGRICULTURAL UNIVERSITY

ENTOMOLOGY		
Sr. No.	**Title**	**Suggestions**
18.3.3.73	Survey of flower visitors in sapota in South Gujarat	**Suggestions: Not approved** 1. Only campus survey should be done 2. Take filler Trial for one year 3 In observations mention No. of trees *(Action**:** Prof., and Head, Dept. of Entomology, NMCA, NAU, Navsari)*
18.3.3.74	Survey of pests and diseases of honey bees	***Accepted with following suggestions:*** *1. Take observation for all pests and diseases* *2. Add roving survey in methodology* *3. take the observation at three months interval* *4. Take observation of Apis cerena* *(Action**:** Prof., and Head, Dept. of Entomology, NMCA, NAU, Navsari)*
18.3.3.75	Efficacy of insecticides against rice bloodworm, *Chironomus temperi* Skuse	**Accepted with following suggestions:** 1. Add blanket spray for the management of other pests 2. Check dose of Chloropyriphos 3. Remove fipronil from treatment 4. Add Triocyclam hydrogen oxalate 4 GR *(**Action:** Associate Research Scientist (Ent.) MRRC, NAU, Navsari)*
18.3.3.76	Screening of pigeonpea entries against pod borer, *Helicoverpa armigera* (Hubner) and pod fly, *Melanogromyza obtusa* (Malloch)	**Not approved** *(Action**:** Assistant Research Scientist (Ent.), Pulse and Castor Research Station, NAU, Navsari)*
18.3.3.77	Screening of chickpea entries against pod borer, *Helicoverpa armigera* (Hubner)	**Not approved** *(Action**:** Assistant Research Scientist (Ent.), Pulse and Castor Research Station, NAU, Navsari*)
18.3.3.78	Exploring native	**Accepted with following suggestions:**

	Entomopathogenic Nematode (EPN) from the Dangs	1. Add no. of Site for sampling 2. Take the observation of infected soil borne insect, if any *(Action: Principal, CoA, NAU, Waghai)*
18.3.3.79	Slow release pheromone formulation for the management of fruit fly in mango	**Accepted with following suggestions:** 1. Keep minimum isolation distance at least one km 2. Compare with other conventional methyl eugenol traps also *(Action: Assistant Research Scientist (Ent.) AES, NAU, Paria)*
18.3.3.80	Slow-release pheromone formulation for the management of fruit fly in sapota	**Accepted with following suggestions:** 1. Keep minimum isolation distance at least one km 2. Compare with other conventional methyl eugenol traps also *(Action: Assistant Research Scientist (Ent.) FRS, NAU, Gandevi)*
PLANT PATHOLOGY		
18.3.3.81	Persistence and dissipation pattern of azoxystrobin and difenconazole in turmeric (*Curcuma longa* L.)	**Accepted with following suggestions:** 1. Add the name of variety "Kesar" *(Action: Assistant Professor (Residue Chemistr), FQTL, NAU, Navsar)i*
18.3.3.82	Survey, etiology and current status of dragon fruit diseases in South Gujarat	**Accepted with following suggestions:** 1. Remove current status from title and renamed as "Survey and etiology of dragon fruit diseases in South Gujarat" 2. Take the observation throughout year 3. Take ancillary observation of fruit flies and other insect pests (*Action: Professor and Head, Dept. of Plant Protection, ACHF, NAU, Navsari*)
18.3.3.83	Evaluation of fungicides against the sheath rot of rice	**Accepted with following suggestions:** 1. Remove word "new and commercially available" from objective 2. Add treatment 'Hexaconazole 75 WG' 3. Record disease incidence and disease intensity *(Action: Assistant Research Scientist (Pl. Path.), MRRC, NAU, Navsari)*
18.3.3.84	Survey and management of mothbean wilt	**Accepted with following suggestions:** 1. Remove the word survey from title 2. Remove bio control treatments from all treatments 3. Take the granular form of Hexaconazole instead of EC formulation 4. Insert the concentration in column in table 5. Add seed treatment with Carboxin 37.5 % + Thiram 3 g per Kg seed as common in all treatments 6. Double the dose of all the fungicides 7. Take control and absolute control (without seed treatment) *(Action: Assistant Professor (Pl. Path.), CoA, NAU, Bharuch)*

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

AGRICULTURAL ENTOMOLOGY		
Sr. No.	**Title**	**Suggestions**
18.3.3.85	Management of pomegranate thrips through botanical pesticides	**Accepted with following suggestions:** 1. Recast title as "Management of pomegranate thrips through botanicals" 2. Mention Noni ripe fruit extract with 2, 4, 6 % 3. In observation, add no. of damage and healthy plant instead of damage % 4. Take Azadirachtin 1500 ppm as recommended check 5. Reduce no. of replication to 3 *(Action: Asstt. Prof. (Ento.), C. P. College of Agriculture, SDAU, S.K.Nagar)*
18.3.3.86	Bioefficacy of insecticides against leaf miner (*Aproaerema modicella*) in *kharif* groundnut	**Accepted with following suggestions:** 1. Add jaggery 400 g/10 L water in each treatment 2. Add observation of *Spodoptera* 3. Reduce no. of replication to 3 4. Add active ingredient per ha in treatment details *(Action: Asstt. Prof. (Ento.), C. P. College of Agriculture, SDAU, S.K.Nagar)*
18.3.3.87	Eco-friendly management of thrips, *Thrips tabaci* (Lindeman) in onion	**Accepted with following suggestions:** 1. Mention Ripe Noni fruit with 2, 4, 6 % 2. Take observation on thrips/plant instead of per 3 leaves 3. Add observation on purple blotch as ancillary observation 4. Add sticker in treatments 5. Add Neem leaf extract as a treatment *(Action: Asstt. Prof. (Ento.), C. P. College of Agriculture, SDAU, S.K.Nagar)*
18.3.3.88	Screening of wild accessions of *Vigna spp.* for bruchid resistance	**Accepted with following suggestions:** 1. Add free choice test 2. Record data of diseases if any as ancillary observation *(Action: Asstt. Res. Sci. (Ento.), Pulse Research Station, SDAU, Sardarkrushinagar)*
18.3.3.89	Efficacy of newer insecticide for the control of mustard aphid	**Accepted with following suggestions:** 1.Recast title as "Efficacy of insecticide for management of mustard aphid" 2.Mention first application at ETL 1.5 index in methodology 3. Add a.i. g/ha in treatment details 4. Add standard check in treatment 5. Add Sulfoxaflor in treatment 6. Check dose of T_2 *(Action: Principal, Polytechnic in Agriculture, SDAU, Khedbrahma)*
PLANT PATHOLOGY		
18.3.3.90	Management of mango malformation	**Accepted with following suggestions:** 1.Remove mite observation 2.Delete cow urine from all treatments 3.Delete buttermilk 4.Take recommended check in treatment

		5.Take 5 sprays at 10 days interval 6.Take observation from 4 direction of plant *(Action: Asstt. Prof. (Patho.), Department of Plant Pathology, C.P.C.A., S.K.Nagar)*
18.3.3.91	Eco-friendly management of Alternaria leaf spot of broccoli (*Brassica oleracea* var. *italica*)	**Suggestions: Feeler Trial** 1. Take as feeler trial with first five treatments and control 2. Take observation on aphid as ancillary observation *(Action: Asstt. Prof. (Patho.), Department of Plant Pathology, C.P.C.A., S.K.Nagar)*
18.3.3.92	Survey of major diseases of date palm in Tharad Taluka	**Accepted with following suggestions:** 1.Explain methodology in detail 2. Mention disease rating scale 3. Adopt rapid roving survey 4. Add survey location through GPS *(Action: Asstt. Prof. (Patho.), College of Agriculture, SDAU, Tharad)*
18.3.3.93	Survey of major diseases of pomegranate in Lakhni Taluka	**Accepted with following suggestions:** 1.Explain methodology in details 2. Mention disease rating scale 3. Adopt rapid roving survey 4. Add survey location through GPS 5. Add nematode observation *(Action: Asso. Prof. (Patho.), College of Agriculture, SDAU, Tharad)*
18.3.3.94	Evaluation of field inoculation methods for wilt pathogen	**Not Approved** *(Action: Asstt. Res. Sci. (Pl. Path.), Oilseed Research Station, SDAU, Sardarkrushinagar)*
18.3.3.95	Effect of planting time on *Fusarium* wilt disease of castor	**Accepted with following suggestions:** 1. Recast title as "Impact of sowing periods on Fusarium wilt of castor" 2. Take yield data 3.Take trial with only highly susceptible genotype, JI 35 4. Add "2nd fortnight of July" in treatment 5.Record germination % (15 DAS) and yield 6.Mention disease incidence formula *(Action: Asstt. Res. Sci. (Pl. Path.), Oilseed Research Station, SDAU, Sardarkrushinagar)*
18.3.3.96	Determination of genetic diversity in begomoviruses associated with yellow mosaic disease complex in mungbean and urdbean	**Approved** *(Action: Asstt. Res. Sci. (Pl. Path.), Pulse Research Station, SDAU, Sardarkrushinagar)*
18.3.3.97	Chemical control of Graphiola leaf spot disease in date palm nurseries	**Accepted with following suggestions:** 1. Recast title as "Prophylactic management of Graphiola leaf spot disease in date palm nurseries" 2. Recast objective as per title *(Action: Res. Sci. Date palm Research Station, SDAU, Mundra)*
18.3.3.98	Management of root rot (*Macrophomina phaseolina*)	**Accepted with following suggestions:** 1. Delete T3, T4, T6, T9

	of cowpea under rainfed condition	2.Mention cfu in bioagents 3. T7 & T8 enrich with 250 kg FYM *(Action: Asstt. Professor (Pl. Path., Vanbandhu Agriculture Polytechnic, SDAU, Amirgadh)*
NEMATOLOGY		
18.3.3.99	Evaluation of cow urine for management of root-knot nematode (*Meloidogyne incognita)* in tomato	**Accepted with following suggestions:** 1.Recast title as 'Evaluation of organic inputs against root-knot nematode (*Meloidogyne incognita)* in tomato under pot condition' 2.Correct as '*P. lilacinum'* in T_2 3.Delete jatropha cake and add *Pochonia chlamydosporia* 4.Add variety 5.Add repetition 6. Add root knot index *(Action: Asstt. Professor, Dept. of Nematology, CPCA, SDAU, Sardarkrushinagar)*

Change in treatment of experiment approved in 17th Combined AGRESCO (NAU, Navsari)

17.3.3.103	Evaluation of various insecticides as lure toxicant against fruit fly in mango orchard	**Approved** It is proposed to change the treatment T2; Spinetoram 11.7 SC instead of Spinosad 45 SC

General Suggestions:

Dr. Z. P. Patel, Chairman and Hon'ble Vice Chancellor, Navsari Agricultural University, Navsari congratulated the scientists for their recommendations and new technical programmes. Further, Chairman emphasized on initiating the focused work on the problem faced by the farmers especially with the new emerging invasive pest and diseases. Young scientists should work honestly, creatively and learn new things in the favour of the farmers of the region and state. He also highlighted the need for multi-disciplinary research work to provide technical solution for the farmer's problems. He made some remarkable suggestions for improvement of the recommendations and technical programmes as under:

1. As climatic condition differs hence recommendations related with biopesticides should be done zone wise.
2. At least one inorganic/ chemical check should be included in the biopesticide treatments, however it should not be included in final recommendation.
3. AICRP trials shouldn't be presented as such, the concerned PI should add additional treatments as per the requirement of zone or state.
4. Trials related with Jivamrut, Panchagavya, Bijamrut etc. should be first carried out in vitro and find out its mode of action including microbial as well as biochemical analysis so that a scientific conclusion must be drawn.
5. Screening trials should not be brought up in the combined joint AGRESCO, but individual centres are permitted to conduct on its own level as routine work.
6. All surveyed areas should be provided with their respective GPS coordinates.

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18.4 HORTICULTURE & FORESTRY SUB COMMITTEE

DATE: May 07-09, 2022

Chairman	:	Dr. Timur Alhawat, Director of Research, NAU, Navsari
Co- Chairman-1	:	Dr. A. U. Amin, Dean (Horticulture), SDAU, Jagudan
Co- Chairman-2	:	Dr. N. I. Shah, Dean (Horticulture), AAU, Anand
Rapporteurs-1	:	Dr. N. D. Polara, JAU
Rapporteurs-2	:	Dr. J. S. Patel, AAU
Rapporteurs-3	:	Dr. R. V. Tank, NAU
Rapporteurs-4	:	Dr. Piyush Varma, SDAU
Statistician	:	Prof. A. P. Chaudhary, NAU

Presentation of recommendations and new technical programmes by Conveners of SAUs

Sr. No.	Name	Designation & University
1	Dr. D. K. Varu	Principal & Dean, College of Horticulture, CoA, JAU, Junagadh
2	Dr. M. J. Patel	Associate Prof. & Head, Dept. of Horticulture, BACA, AAU, Anand
3	Dr. Alka Singh	Professor & Head, Dept. of Floriculture & Landscape Architecture, ACHF, NAU, Navsari
4	Dr. Minal Tandel	Assistant Professor and Head, Dept. of Silviculture and Agroforestry, CoF, NAU, Navsari
5	Dr. P. C. Joshi	Associate Professor, Dept. of Horticulture, CPCA, SDAU, SKNagar

Summary of the Recommendations

Name of University	Proposed		Approved		Deferred/ Concluded
	Farmers	Scientific	Farmers	Scientific	
JAU	3	0	3	0	0
AAU	9	0	9	0	0
NAU (Horti.)	14	1	12	1	2
NAU (Forestry)	4	3	4	3	0
SDAU	17	1	17	1	0
Total	**47**	**5**	**45**	**5**	**2**

18.4.1 RECOMMENDATIONS FOR FARMING COMMUNITY

JUNAGADH AGRICULTURAL UNIVERSITY

Sr. No.	Title
18.4.1.1	**Effect of biostimulants and micronutrients on growth, flower yield and quality of tuberose (*Polianthes tuberosa* L.) cv. Prajwal**
	The farmers of Saurashtra region growing tuberose are recommended to apply four foliar spray of *panchgavya* @ 3% (300 ml/10 lit of water) starting from 30, 60, 90 & 120 days after planting and spray of FeSO4 @ 1 % (100 ml/10 lit. of water) + 0.1 % citric acid (10 ml/10 lit of water) at 45, 75,105,135 days after planting for getting higher yield and net return. સૌરાષ્ટ્ર વિસ્તારના રજનીગંધાની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે, પંચગવ્ય ૩ % (૩૦૦ મિલી/ ૧૦ લી. પાણી) ના રોપણીના ૩૦, ૬૦, ૯૦ અને ૧૨૦ દિવસે છંટકાવ કરવાથી અને ફેરસ સલ્ફેટ ૧ % (૧૦૦ મિલી/ ૧૦ લી. પાણી) + ૦.૧ % સાઇટ્રિક એસિડ (૧૦ મિલી/૧૦ લી. પાણી) મુજબના રોપણીના ૪૫, ૭૫, ૧૦૫ અને ૧૩૫ દિવસ સુધી કુલ ૪ છંટકાવ કરવાથી ફૂલદાંડી તેમજ કંદનું વધુ ઉત્પાદન અને વળતર મળે છે. **Approved**

<table>
<tr><td></td><td>(Action: Professor and Head, Dept. of Horticulture, JAU, Junagadh)</td></tr>
<tr><td>18.4.1.2</td><td>Performance of different grafted variety and mulching in Brinjal.</td></tr>
<tr><td></td><td>The farmers of Saurashtra region growing brinjal are recommended to use variety GJB3 side grafted on Solanum torvum (wild brinjal) with 25 micron silver black mulch for higher yield and net return.
સૌરાષ્ટ્ર વિસ્તારના રિંગણીની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે, વાઈલ્ડ રીંગણી (સોલેનમ ટોરવમ) ઉપર સાઈડ કલમ કરેલ જીજેબી-૩ જાતની રીંગણીને ૨૫ માઈક્રોનના સિલ્વર બ્લેક કલરના આચ્છાદન સાથે વાવેતર કરવાથી વધુ ઉત્પાદન અને વળતર મળે છે.
Approved
(Action: Professor and Head, Dept. of Horticulture, JAU, Junagadh)</td></tr>
<tr><td>18.4.1.3</td><td>Effect of organic manures, biofertilizers and biostimulants on growth and yield of drumstick (Moringa oleifera Lam.) cv. PKM-1</td></tr>
<tr><td></td><td>The farmers of South Saurashtra Agro-Climatic Zone growing drumstick are recommended to apply FYM @ 20 kg/plant along with 20:20:20 NPK g/plant as a basal dose during kharif and remaining 20 g N/plant is given after withdrawal of monsoon for getting higher yield and net return.
દક્ષિણ સૌરાષ્ટ્ર ખેત-આબોહવાકીય વિસ્તારમાં સરગવાની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે, સરગવામાં છાણિયું ખાતર ૨૦ કિગ્રા/ ઝાડ સાથે ના:ફો:પો ૨૦:૨૦:૨૦ ગ્રામ/ઝાડને પાયાના ખાતર તરીકે ચોમાસાં દરમ્યાન તેમજ બાકીનો નાઈટ્રોજન ૨૦ ગ્રામ/ઝાડ ચોમાસાં બાદ આપવાથી વધુ ઉત્પાદન અને વળતર મળે છે.
Approved
(Action: Professor and Head, Dept. of Horticulture, JAU, Junagadh)</td></tr>
</table>

ANAND AGRICULTURAL UNIVERSITY

<table>
<tr><th>Sr. No.</th><th>Title</th></tr>
<tr><td>18.4.1.4</td><td>Effect of transplanting time and spacing on growth and flower yield in gaillardia cv. Local</td></tr>
<tr><td></td><td>The farmers of Middle Gujarat Agro Climatic Zone growing gaillardia crop for getting flower in summer season are recommended to transplant the seedling in the first week of December at the spacing of 45 x 45 cm for higher yield and net return.
મધ્ય ગુજરાત ખેત-આબોહવાકીય વિસ્તારમાં ગેલાર્ડીયા (ગેબી) ફુલ પાકની ઉનાળુ ઋતુમાં ફૂલો મેળવવા માટે ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ગેલાર્ડીયાના ધરૂની ફેર રોપણી ડીસેમ્બર મહિનાના પ્રથમ અઠ્વાડિયામાં ૪૫ □ ૪૫ સે.મી.ના અંતરે કરવાથી વધુ ઉત્પાદન અને વળતર મળે છે.
Approved
(Action: Professor & Head, Department of Horticulture, BACA, Anand)</td></tr>
<tr><td>18.4.1.5</td><td>High density plantation and pruning in guava cv. Allahabad Safeda</td></tr>
<tr><td></td><td>Recommendation for farming community
The farmers of Middle Gujarat Agro Climatic Zone interested to plant Guava cv. Allahabad safeda with high density plantation are recommended to adopt planting distance at 3.0 x 1.5 m and 50% pruning of previous year growth during May month for high yield with net return.
Farmers are advise to follow steps for adopting high density plantation
<table><tr><td>1</td><td>Spacing</td><td>3.0 x 1.5 m</td></tr><tr><td>2</td><td>Training</td><td>After one month of plantation cut main stem at one feet</td></tr></table></td></tr>
</table>

		height and again cut primary branches at one feet length
3	Fertilizer dose	First year • 12 kg/Plant FYM • 260 g Urea • 375 g SSP • 100 g MOP Fifth year • 60 kg/Plant FYM • 1300 g Urea • 1875 g SSP • 500 g MOP
4	Irrigation	Through drip, No resting is required

મધ્ય ગુજરાત ખેત-આબોહવાકીય વિસ્તારમાં જામફળ જાત અલ્હાબાદ સફેદાની ઘનિષ્ઠ વાવેતર પધ્ધતિથી ખેતી કરવા ઇચ્છતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે વાવેતર અંતર ૩.0 □ ૧.૫ મી. અપનાવવાથી અને મે માસમાં પાછલા વર્ષના વૃદ્ધિના ૫૦ ટકા છટણી કરવાથી વધુ ઉત્પાદન અને વળતર મળે છે.

ખેડુતોએ નીચે દર્શાવ્યા મુજબ ઘનિષ્ઠ વાવેતર પદ્ધતિ અપનાવવી

૧	વાવેતર અંતર	૩.0 □ ૧.૫ મીટર
૨	કેળવણી	વાવેતરના એક મહીના પછી મુખ્ય થડને જમીનથી એક ફૂટ ઊંચાઈએ અને ફરીથી મુખ્ય શાખાઓ એક ફૂટ ઊંચાઈથી કાપવી
૩	ખાતર	પ્રથમ વર્ષ • ૧૨ કિલો / છોડ □□□ • ૨૬૦ ગ્રામ યુરિયા • ૩૭૫ ગ્રામ એસએસપી • ૧૦૦ ગ્રામ મયુરેટ ઓફ પોટાસ પાંચમું વર્ષ • ૬૦ કિલો / છોડ □□□ • ૧૩૦૦ ગ્રામ યુરિયા • ૧૮૭૫ ગ્રામ એસએસપી • ૫૦૦ ગ્રામ મયુરેટ ઓફ પોટાસ
૪	પિયત	ટપક સિંચાઇ પદ્ધતિ દ્વારા, આરામ આપવો નહીં

Approved

(Action: Professor & Head, Department of Horticulture, BACA, Anand)

18.4.1.6 Standardization of suitable time and condition of softwood grafting in guava cv. Allahabad Safeda

Nurserymen of Gujarat are recommended to propagate softwood grafting of guava in first week of March under 50 % green shade net house condition on nine month old rootstock or first week of June in low poly tunnel condition on twelve month old rootstock to get more graft survival

નર્સરીધારકોને સલાહ આપવામાં આવે છે કે, જામફળના પાકમાં માર્ચ મહિનાનાં પહેલા અઠવાડિયામાં ૫૦% ગ્રીન શેડ નેટ હાઉસમાં નવ મહિના જુના મૂળકાંડ પર અથવા જુન મહિનાના પહેલા અઠવાડિયામાં લો-પોલીટનલમાં બાર મહિના જુના મૂળકાંડ પર નૂતન

કલમમાં વધારે સફળતા મળે છે.

Approved

(Action: Professor & Head, Department of Horticulture, BACA, Anand)

18.4.1.7 Effect of different organics manures and PGPR consortium on growth, yield and quality of sapota (*Manilkara achras* (Mill) Forsberg) cv. Kalipatti

The farmers of Middle Gujarat Agro Climate Zone growing sapota organically are recommended to apply basal dose of 110 kg FYM per tree in month of June and 60 kg FYM per tree in the month of October **Or** To apply 50 kg FYM and 27 kg vermicompost per tree in June and 27 kg vermicompost per tree in the month of October for maintaining soil health with higher yield and net return.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ચીકુની સેન્દ્રિય ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ચીકુનાં પાકમાં પાયામાં ૧૧૦ કિલોગ્રામ છાણિયું ખાતર પ્રતિ ઝાડ જુન માસમાં આપવું અને ૬૦ કિલોગ્રામ છાણિયુ ખાતર પ્રતિ ઝાડ ઓકટોબર માસમા અથવા ૫૦ કિલોગ્રામ છાણિયું ખાતર અને ૨૭ કિલોગ્રામ અળસિયાનુ ખાતર પ્રતિ ઝાડ જુન માસમાં આપવું તેમજ ૨૭ કિલોગ્રામ અળસિયાનુ ખાતર પ્રતિ ઝાડ ઓકટોબર માસમાં આપવાથી જમીનનું સ્વાસ્થય જળવાઈ રહે છે સાથે વધુ ઉત્પાદન અને વળતર મળે છે.

Approved

(Action: Principal, College of Horticulture, AAU, Anand)

18.4.1.8 Nutrient management through organics in broccoli (*Brassica oleracea var. italica* L.)

The farmers of Middle Gujarat Agro-Climatic Zone growing broccoli cv. Palam Samridhi organically are recommended to Apply 90 kg N/ha through vermicompost (6 t/ha) or castor cake (2 t/ha) at the time of transplanting and apply 1 litre Bio-NP / hectare after 15 days of transplanting with irrigation water for getting higher yield and net return.

મધ્ય ગુજરાત ખેત આબોહવાકિય વિસ્તારમાં બ્રોકોલીની પાલમ સમૃદ્ધિ જાતની સેન્દ્રીય ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ફેરરોપણી સમયે ૯૦ કિલો/હેકટર નાઇટ્રોજન (વર્મિકમ્પોસ્ટ ખાતર ૬ ટન/હેકટર) અથવા દિવેલી ખોળ (૨ ટન/હેકટર) તથા ફેરરોપણીના ૧૫ દિવસ બાદ પિયત સાથે ૧ લીટર બાયો એનપી/હેકટર આપવાથી વધુ ઉત્પાદન અને વળતર મળે છે.

Approved

(Action: Principal, College of Horticulture, AAU, Anand)

18.4.1.9 Effect of fertigation levels and its frequency on production of banana

The farmers of Middle Gujarat Agro Climatic Zone growing banana cv. Grand Naine are recommended to apply 10 kg FYM per plant and 255:100: 170 NPK g/plant, from that 75:100:50 NPK g/plant apply in two equal splits at 30 and 60 days after planting through ring method and remaining 180:00:120 NPK g per plant applied through fertigation at 07 (seven) days interval in 16 equal splits from 90 days after planting as per below mentioned table for getting higher yield and net return with saving 15% N and K.

No.	Fertilizer/plant	N (g)	P (g)	K (g)	FYM (kg)
01	Basal	-	-	-	10
Through ring method					
01	30 DAP	37.5	50	25	-
02	60 DAP	37.5	50	25	-
Fertigation through drip at 90 days after planting					
01	90 DAP	11.25	-	7.5	-
02	97 DAP	11.25	-	7.5	-

03	104 DAP	11.25	-	7.5	-
04	111 DAP	11.25	-	7.5	-
05	118 DAP	11.25	-	7.5	-
06	125 DAP	11.25	-	7.5	-
07	132 DAP	11.25	-	7.5	-
08	139 DAP	11.25	-	7.5	-
09	146 DAP	11.25	-	7.5	-
10	153 DAP	11.25	-	7.5	-
11	160 DAP	11.25	-	7.5	-
12	167 DAP	11.25	-	7.5	-
13	174 DAP	11.25	-	7.5	-
14	181 DAP	11.25	-	7.5	-
15	188 DAP	11.25	-	7.5	-
16	195 DAP	11.25	-	7.5	-
All Total	**195 DAP**	**255**	**100**	**170**	**10**

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર માં કેળ ગ્રાન્ડ નૈન જાતની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, છોડ દીઠ ભલામણ કરેલ ૧૦ કી.ગ્રા છાણિયું ખાતર તથા ૨૫૫:૧૦૦:૧૭૦ ગ્રામ ના:ફો:પો આપવું, જેમાંથી ૭૫:૧૦૦:૫૦ ના:ફો:પો ગ્રામ પ્રતિ છોડ રોપણી બાદ ૩૦ અને ૬૦ દિવસે બે સરખા હપ્તામાં છોડની ફરતે ખામણામાં આપવું તથા બાકીનું ૧૮૦:૦૦:૧૨૦ ગ્રામ ના:ફો:પો પ્રતિ છોડ રોપણી બાદ ૯૦ મા દિવસથી અઠવાડિયાના ગાળે કુલ ૧૬ સરખા હપ્તામાં ટપક પદ્ધતિમાં નીચે દર્શાવેલ કોષ્ટક પ્રમાણે આપવાથી વધુ ઉત્પાદન તથા આવક મળે છે તેમજ ૧૫% નાઇટ્રોજન અને પોટાશ ની બચત થાય છે.

અ.નં.	છોડ દીઠ ખાતર	નાઈટ્રોજન (ગ્રામ)	ફોસ્ફરસ (ગ્રામ)	પોટાશ (ગ્રામ)	છાણીયું ખાતર (કી.ગ્રા.)
૦૧	પાયામાં રોપણી વખતે	-	-	-	૧૦
છોડની ફરતે ખામણામાં					
૦૧	રોપણી બાદ ૩૦ દિવસે	૩૭.૫	૫૦	૨૫	-
૦૨	રોપણી બાદ ૬૦ દિવસે	૩૭.૫	૫૦	૨૫	-
ટપક પધ્ધતિમાં રોપણી બાદ ૯૦ દિવસ પછી					
૦૧	૯૦ માં દિવસે	૧૧.૨૫	-	૭.૫	-
૦૨	૯૭ માં દિવસે	૧૧.૨૫	-	૭.૫	-
૦૩	૧૦૪ માં દિવસે	૧૧.૨૫	-	૭.૫	-
૦૪	૧૧૧ માં દિવસે	૧૧.૨૫	-	૭.૫	-
૦૫	૧૧૮ માં દિવસે	૧૧.૨૫	-	૭.૫	-
૦૬	૧૨૫ માં દિવસે	૧૧.૨૫	-	૭.૫	-
૦૭	૧૩૨ માં દિવસે	૧૧.૨૫	-	૭.૫	-
૦૮	૧૩૯ માં દિવસે	૧૧.૨૫	-	૭.૫	-
૦૯	૧૪૬ માં દિવસે	૧૧.૨૫	-	૭.૫	-
૧૦	૧૫૩ માં દિવસે	૧૧.૨૫	-	૭.૫	-
૧૧	૧૬૦ માં દિવસે	૧૧.૨૫	-	૭.૫	-
૧૨	૧૬૭ માં દિવસે	૧૧.૨૫	-	૭.૫	-
૧૩	૧૭૪ માં દિવસે	૧૧.૨૫	-	૭.૫	-
૧૪	૧૮૧ માં દિવસે	૧૧.૨૫	-	૭.૫	-

૧૫	૧૮૮ માં દિવસે	૧૧.૨૫	-	૭.૫	-
૧૬	૧૯૫ માં દિવસે	૧૧.૨૫	-	૭.૫	-
કુલ	૧૯૫ માં દિવસે	૨૫૫ ગ્રામ/છોડ	૧૦૦ ગ્રામ/છોડ	૧૭૦ ગ્રામ/છોડ	૧૦ કી.ગ્રા/.છોડ

Approved

(Action: Associate Research Scientist, Agriculture Research Station, College of Agriculture, AAU, Jabugam)

18.4.1.10 Effect of planting time and bunch management on yield and economics of banana

The farmers of Middle Gujarat Agro Climatic Zone growing banana (cv. Grand Naine) are recommended to plant banana between June to August and maintain 9 to 11 hands per bunch for getting higher yield and net return.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારના કેળ (ગ્રાન્ડ નૈન જાત) ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવેછે કે કેળની રોપણી જુન થી ઓગસ્ટ માસ દરમિયાન કરવાથી અને એક લુમમાં ૦૯ થી ૧૧ હાથ રાખવાથીવધુ ઉત્પાદન અને વળતર મળેલ છે.

Approved

(Action: Associate Research Scientist, Agriculture Research Station, College of Agriculture, AAU, Jabugam)

18.4.1.11 Effect of pruning time and level of pruning in mogra (*Jasminum sambac)* var. Local

The farmers of Middle Gujarat Agro-Climatic Zone cultivating mogra are recommended to prune plant at 40 cm height from the ground level in second week of December for obtaining higher flower yield and net return.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં મોગરાની ખેતી કરતા ખેડૂતોને ફૂલનું વધુ ઉત્પાદન અને વળતર મેળવવા માટે ડીસેમ્બર મહિનાના બીજા અઠવાડીયામાં જમીન સપાટીથી ૪૦ સે.મી. ઉંચાઇથી છોડની છટણી કરવાની ભલામણ કરવામાં આવે છે.

Approved

(Action: Principal, Sheth D. M. Polytechnic in Horticulture, AAU, Vadodara)

18.4.1.12 Efficacy of water soluble fertilizer on yield, chemical composition and nutrients availability in root rhizosphere of cabbage

The farmers of Middle Gujarat Agro-Climatic Zone growing cabbage under drip irrigation system are recommended to apply 150-56-56 NPK kg/ha as per below mentioned detail in total five equal splits at seven days interval. First spilt start at seven days after transplanting for getting higher yield and net return.

Details of fertilizer to be applied

Sr. No.	Name	Quantity per split by drip (kg/ha
1	WS 17-44-00	26
	Urea	56
	MOP	20
	OR	
2	WS 19-19-19	60
	Urea	40

System details

1.	Lateral spacing	60 cm
2.	Dripper spacing	45 cm
3.	Dripper discharge	4 lph
4.	Operating pressure	1.2 kg/cm^2
5.	Operating frequency	Three days
6.	Operating time	50 minutes on alternate day

	મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં કોબીજની ખેતી ટપક પધ્ધતિ દ્વારા કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે કોબીજના પાકને પ્રતિ હેકટરે ૧૫૦-૫૬-૫૬ ના.ફો.પો. કિ.ગ્રા./હે. આપવું. જે નીચે દર્શાવેલ પત્રક મુજબ પાંચ સરખા હપ્તામાં સાત દિવસના ગાળે આપવું. પ્રથમ હપ્તાની શરૂઆત ફેરરોપણી ના સાતમાં દિવસથી કરવી જેથી વધુ ઉત્પાદન અને વળતર મળે.

ટપક દ્વારા આપવાના થતા ખાતરની વિગત

ક્રમ	નામ	ટપક દ્વારા દર પૂર્તી માટેનો જથ્થો (કિ.ગ્રા/હે.)
૧	પાણીમાં દ્રાવ્ય ૧૭-૪૪-૦ ગ્રેડ	૨૬
	યુરિયા	૫૬
	મ્યુરેટ ઓફ પોટાશ	૨૦
	અથવા	
૨	પાણીમાં દ્રાવ્ય ૧૯-૧૯-૧૯ ગ્રેડ	૬૦
	યુરિયા	૪૦

ટપક પધ્ધતિની વિગત

૧	બે લેટરલ પાઇપ વચ્ચેનું અંતર	૬૦ સે.મી.
૨	બે ડ્રીપર વચ્ચેનું અંતર	૪૫ સે.મી.
૩	ડ્રીપરમાંથી પાણી નીકળવાનું પ્રમાણ	૪ લિટર પ્રતિ કલાક
૪	સંચાલન માટેનું દબાણ	૧.૨ કિ.ગ્રા .પ્રતિ ચોરસ સે.મી.
૫	ડ્રીપ સંચાલન	દર ત્રીજાદિવસે
૬	ડ્રીપ સંચાલનનો સમય	૫૦ મિનિટ દર બે દિવસે

Approved

(Action: Associate Research Scientist, Agricultural Res.earch Station for Irrigated Crops, AAU, Thasra)

NAVSARI AGRICULTURAL UNIVERSITY (HORTICULTURE)

18.4.1.13	**Effect of liquid fertilizers foliar spray on growth, yield and quality of sapota cv. Kalipatti**
	Farmers of South Gujarat growing sapota cv. Kalipatti are recommended to apply foliar spray of 1 % potassium nitrate (13:00:45) (100 g in 10 liter water) in adult orchard during second fortnight of September, November and January months along with RDF (100 kg FYM + 1000 : 500: 500 NPK g/plant) for obtaining higher yield and net returns.

દક્ષિણ ગુજરાતના ચીકુની કાલીપત્તી જાત ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે પુખ્તવયની વાડીમાં ૧% પોટેશિયમ નાઈટ્રેટ (૧૩-૦૦-૪૫) (૧૦૦ ગ્રા.પ્રતિ ૧૦ લી. પાણી) નો સપ્ટેમ્બર, નવેમ્બર અને જાન્યુઆરી માસના બીજા પખવાડિયામાં છંટકાવ કરવાની સાથે ભલામણ મુજબનું ખાતર (૧૦૦ કિલો છાણીયું ખાતર + ૧૦૦૦ - ૫૦૦-૫૦૦ ગ્રામના. ફો. પો./ઝાડ) આપવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે.

Approved with following suggestions

1. Add time of spraying ‘second fortnight’ in recommendation text
2. Replace ‘economic returns’ with ‘net returns’ in recommendation text

(Action: Prof and Head, Fruit Science and PSMA, ACHF, NAU, Navsari)

18.4.1.14	**Net house cultivation of papaya**
	Farmers of South Gujarat are recommended to cultivate gynodioecious varieties of papaya under insect proof net house (40 mesh) for getting higher yield, net return and good quality fruits. Further, incidence of papaya ring spot virus (PRSV) can be prevented. દક્ષિણ ગુજરાતના ખેડૂતોને ભલામણ કરવામાં આવે છે કે ઉભયલિંગી જાતના પપૈયાની ખેતી ઇન્સેક્ટપ્રૂફ નેટહાઉસ (૪૦ મેશ) માં કરવાથી વધુ ઉત્પાદન, નફો અને સારી ગુણવત્તાવાળા ફળ મેળવી શકાય છે. વધુમાં, પપૈયા રીંગ સ્પોટ વાયરસ (પી.આર.એસ.વી.) નો ઉપદ્રવ અટકાવી શકાય છે. **Approved with following suggestions** 1. Recast recommendation text 2. Verify the pooled data in Table No. 7 for T_1 3. Check the value in two sample test for table No. 10 4. Verify values in Annexure I and II for calculating economics ***(Action: Associate Research Scientist, FRS, NAU, Gandevi)***
18.4.1.15	**Validation of protocol for extending papaya seed viability in storage** **Deffered** and extend for one more year ***(Action: Associate Research Scientist, FRS, NAU, Gandevi)***
18.4.1.16	**Effect of paclobutrazol application before monsoon and efficacy of bud breakers on early season flowering and fruiting in mango**
	Farmers of South Gujarat having adult trees of Alphonso mango are recommended to apply paclobutrazol (25 % v/v) four times of canopy radius (m) during second week of May in soil and foliar spray of 0.5% Thiourea (50 g/10 lit. of water) after 120 days of paclobutrazol application **OR** apply paclobutrazol during last week of April in soil and foliar spray of 0.25% commercial grade potassium nitrate (25 g/10 lit. of water) after 120 days of paclobutrazol application along with recommended dose of fertilizers for obtaining early flowering, higher fruit yield with improved fruit quality and higher net realization. દક્ષિણ ગુજરાતમાં પુખ્તવયના હાફુસ આંબાના ઝાડ ધરાવતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ઝાડને ઘટાની ત્રિજ્યા (મી.)નું ચાર ગણું પેક્લોબ્યુટ્રાઝોલ (૨૫% વી.વી.) જમીનમાં મે માસના બીજા અઠવાડિયામાં આપ્યા બાદ ૧૨૦ દિવસ પછી ૦.૫% થાયોયુરિયા (૫૦ ગ્રામ/૧૦ લી. પાણી) નો છંટકાવ અથવા એપ્રિલના છેલ્લા અઠવાડીયામાં પેક્લોબ્યુટ્રાઝોલ (૨૫% વી.વી.) જમીનમાં આપ્યા બાદ ૧૨૦ દિવસ પછી વ્યાપારિક કક્ષાના ૦.૨૫% પોટેશિયમ નાઇટ્રેટ (૨૫ ગ્રામ/૧૦ લી. પાણી) નો છંટકાવની સાથે ભલામણ કરેલ ખાતર આપવાથી વહેલો મોર આવવાની સાથે ગુણવત્તાસભર વધુ ઉત્પાદન તેમજ વળતર મેળવી શકાય છે. **Approved with following suggestions** **1.** Analyze the data for days of initiation of flowering in table No.2 **2.** Add the at par treatment in recommendation text ***(Action: Research Scientist, AES, NAU, Paria)***
18.4.1.17	**Effect of nitrogen fixing bio-fertilizers on yield and quality of mango** **Conluded the experiment** ***(Action: Research Scientist, AES, NAU, Paria)***
18.4.1.18	**Effect of foliar application of novel organic nutrient and micronutrients on yield and quality of mango (*Mangifera indica* L.) cv. Kesar.**

	Farmers of South Gujarat growing mango are recommended to apply foliar spray of 2% Novel organic liquid nutrient (200 ml/ 10 l) along with 1 % calcium nitrate (100 g/10 l) at flower bud development stage and full bloom stage along with recommended dose of chemical fertilizers for getting higher yield and net returns. દક્ષિણ ગુજરાતમાં આંબાની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે, આંબામાં ૨ ટકા નોવેલ ઓર્ગેનીક લિક્વિડ ન્યુટ્રીયન્ટ (૨૦૦ મિલી/ ૧૦ લિ) અને ૧ ટકા કેલ્સિયમ નાઇટ્રેટ (૧૦૦ ગ્રા./ ૧૦ લિ) નો છંટકાવ કળીના વિકાસ અને પૂર્ણ મોર આવ્યાની અવસ્થાએ કરવાની સાથે ભલામણ કરેલ રાસાયણિક ખાતર આપવાથી વધુ ઉત્પાદન અને વળતર મળે છે. **Approved with following suggestions** 1. Correct unit of ascorbic acid in table and text 2. Verify the data in table No. 4 for specific gravity ***(Action: Professor and Head (Horticulture), CoA, NAU, Bharuch)***
18.4.1.19	**Effect of different colour shade nets on germination and seedling growth of papaya (*Carica papaya*) var. GJP-1**
	Farmers and nurserymen of Gujarat are recommended to raise papaya seedlings in plug tray (media cocopeat: red soil: vermicompost, 4:1:1 v/v) under 50% white shade net during first week of March for early germination, better growth with higher net realization. ગુજરાતના ખેડૂતો અને નર્સરીધારકોને ભલામણ કરવામાં આવે છે કે, પપૈયાના ધરૂને પ્લગ ટ્રેમાં (મીડીયા કોકોપીટ:લાલમાટી:વર્મીકોમ્પોસ્ટ, ૪:૧:૧ વો./વો.) માર્ચ મહિનાનાં પ્રથમ અઠવાડિયામાં ૫૦ ટકા સફેદ શેડનેટમાં તૈયાર કરવાથી વહેલું બીજસ્ફૂરણ અને ધરૂના ઉત્તમ વિકાસની સાથે વધુ વળતર મેળવી શકાય છે. **Approved with following suggestions** **1.** Mention time of seed sowing, media and plug tray in recommendation text**.** ***(Action: Professor and Head (Horticulture), NMCA, NAU, Navsari)***
18.4.1.20	**Response of okra to foliar application of Novel Organic Liquid Nutrients and Micronutrients**
	Farmers of South Gujarat growing *kharif* okra are recommended to apply foliar spray of 1.5 % Novel Organic Liquid Nutrients (150ml/10 litre water) at 30, 45 and 60 DAS along with recommended dose of fertilizer (100-50-50 N-P-K kg/ha) to obtain higher yield and net return. દક્ષિણ ગુજરાતનાં ચોમાસુ ભીંડાની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ૧.૫૦ % સાન્દ્રતાવાળા નોવેલ ઓર્ગેનીક લીક્વીડ ન્યુટ્રીઅન્ટસ (૧૫૦ મિ.લિ./૧૦ લિટર પાણી) નો છંટકાવ વાવણી બાદ ૩૦, ૪૫ અને ૬૦ દિવસે કરવાની સાથે ભલામણ કરેલ રાસાયણિક ખાતર (૧૦૦-૫૦-૫૦ ના.ફો.પો. કી/હે) આપવાથી વધુ ઉત્પાદન અને વળતર મેળવી શકાય છે. **Approved with following suggestions** 1. Instead of T_2, recommend T_3 and accordingly recast recommendation text of English and Guajarati version. 2. Mention recommended dose of fertilizer in bracket in recommendation text. ***(Action: Professor and Head (Veg. Sci), ACHF, NAU, Navsari)***
18.4.1.21	**Effect of sowing dates and spacing on off season okra**
	Farmers of South Gujarat are recommended to cultivate off season okra by sowing in 2nd week of October with spacing of 45 cm x 10 cm to obtain higher net return.

	દક્ષિણ ગુજરાતનાં ભીંડાની ખેતી કરતાં ખેડૂતોને વધુ વળતર મેળવવા માટે ઓફ સીઝન વાવણી ઓકટોબર માસનાં બીજા અઠવાડિયા દરમ્યાન ૪૫ સે.મી. X ૧૦ સે.મી.ના અંતરે કરવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestions** 1. Add 'off season' word and write 'sowing' instead of 'planting' and accordingly recast recommendation text in English and Gujarati version. ***(Action: Professor and Head (Veg. Sci.), ACHF, NAU, Navsari)***
18.4.1.22	**Effects of boron and molybdenum on nodulation, growth and yield of cowpea (*Vigna unguiculata* L. Walp.)**
	Farmers of South Gujarat growing summer cowpea are recommended to prime the seed with molybdenum @ 2mg/l (Ammonium molybdate @ 2.40 mg/l) for 24 hours prior to sowing followed by foliar spray of boron @ 4mg/l (Boric acid @ 22.88 mg/l) at 30, 45 and 60 DAS to obtain higher pod yield. દક્ષિણ ગુજરાતના ઉનાળુ ચોળીની ખેતી કરતા ખેડુતોને ભલામણ કરવામાં આવે છે કે મોલિબ્ડનમ @ ૨ મિગ્રા/લી (એમોનિયમ મોલિબ્ડેટ @ ૨.૪૦ મિગ્રા/લી) ની ૨૪ કલાક બીજ માવજત આપ્યા બાદ બીજની વાવણી ના ૩૦, ૪૫ અને ૬૦ દિવસે બોરોન @ ૪ મિગ્રા/લી (બોરીક એસીડ @ ૨૨.૮૮ મિગ્રા/લી) નો છંટકાવ કરવાથી શીંગોનું વધુ ઉત્પાદન મળે છે. **Approved with following suggestions** **1.** Add molybdenum @ 2mg/l and boron @ 4mg/l and recast recommendation text in English and Gujarati version. **2.** Write seed treatment of molybdenum (4 mg/l) increases nodulation in text. ***(Action: Professor and Head (Veg. Sci.), ACHF, NAU, Navsari)***
18.4.1.23	**Effect of different growing media on fern under benching system in polyhouse**
	Farmers of Gujarat growing ferns for cut greens as secondary crop under benching system in naturally ventilated polyhouse are recommended to grow in media comprising of cocopeat for better plant growth, cut greens yield and net returns. Note: Fertilize : Urea- 50 mg/l of 100 ml/pot (Once a month in the first week) 19:19:19 NPK-50 mg/l of 100 ml/pot (Once a month in third week) Pot size : 16 × 11 cm, 1500 cc હંસરાજને કટ ગ્રીન ઉપયોગ માટે કુદરતી હવા-ઉજાસવાળા પોલીહાઉસમાં વપરાતી બેંચિંગ સિસ્ટમની નીચે ગૌણ પાક તરીકે ઉગાડતા ગુજરાતનાં ખેડૂતોને છોડની વધુ સારી વૃધ્ધિ, પાનનું ઉત્પાદન તથા ચોખ્ખું વળતર મેળવવા કોકોપીટ મીડિયામાં ઉગાડવાની ભલામણ કરવામાં આવે છે. નોંધ ખાતર: યુરિયા- મહિનાના પ્રથમ અઠવાડિયામાં એક વાર ૫૦ મિલીગ્રામ/લિ સાંદ્રતાવાળું પાણી ૧૦૦ મિલી/કુંડા દીઠ આપવું. ૧૯:૧૯:૧૯ NPK- મહિનાના ત્રીજા અઠવાડિયામાં એક વાર ૫૦ મિલીગ્રામ/લિ સાંદ્રતાવાળું પાણી ૧૦૦ મિલી/કુંડા દીઠ આપવું. કૂંડાનુ માપ : ૧૬ × ૧૧સેમી., ૧૫૦૦સીસી **Approved** ***(Action: Professor and Head (FLA), ACHF, NAU, Navsari)***
18.4.1.24	**Effect of different bio-chemicals for increasing suckers in Haworthia pot plant**
	Nurserymen of Gujarat growing haworthia as pot plant under naturally ventilated polyhouse are recommended to spray Benzyladenine @ 25 mg/l twice after two months of pot planting at 15 days interval to obtain early and more number

	of suckers for propagation. કુદરતી હવા-ઉજાસવાળા પોલીહાઉસમાં હેવોર્થિયાને કુંડામાં ઉગાડતા ગુજરાતનાં નર્સરીધારકોને ભલામણ કરવામાં આવે છે કે, રોપણી કર્યાના બે માસ બાદ બેંઝાઇલ એડેનાઇન (૨૫ મિલીગ્રામ/લિટર) ના બે છંટકાવ ૧૫ દિવસના અંતરે કરવાથી સંવર્ધન માટે વહેલા અને વધુ પ્રમાણમાં પીલા મળે છે. **Approved with following suggestion** **1.** Check the data of Table No. 3 for number of suckers per plant for transformed value. **2.** Recast recommendation text in English and Gujarati version. ***(Action: Professor and Head (FLA), ACHF, NAU, Navsari)***
18.4.1.25	**Accessing compatibility of different scion to develop multi grafted adenium under soilless growing system**
	Nurserymen and amateurs gardners of Gujarat are recommended to develop multi grafted adenium on single local rootstock with scion combination as mentioned below: 1. For triple grafted adenium: G.Ad1 + G.Ad2 + Aabha to obtain maximum flowers/plant, flower clusters/plant and synchronization of flowering days with high overall quality score. 2. For dual grafted adenium with multipetalous flowers: G.Ad1 + Aabha or G.Ad2 + Aabha to obtain maximum synchronization of days for flowering and number of flowers during most part of the year with higher aesthetic value. 3. For dual grafted adenium with single type flowers: NASDUS2 + NAPVW1 to obtain earliest flowering as well as more number of flowers/plant with high aesthetic value. અડેનિયમ ઉગાડતા ગુજરાતના નર્સરીધારકો અને બાગ-બગીચાને લગતીકળાના શોખીનોએ ઉચ્ચ સૌન્દર્યતાવાળા મલ્ટીગ્રાફ્ટ અડેનિયમ વિકસાવવા માટે વિભીન્ન જાતોને દેશી મૂલકાંડ પર ગ્રાફ્ટ કરી નીચે મુજબ ભલામણ કરવામાં આવે છે. ૧. ત્રણ જાતોવાળું એડેનિયમ વિકસાવવા: G.Ad.-1 + G.Ad.-2 + આભા ગ્રાફ્ટ કરવાથી છોડ પર વધુ સંખ્યામાં ફૂલો અને ફૂલોના ઝુમખા મળે છે તેમજ વધુ દિવસો માટે ફૂલોનો સુમેળ સાધી શકાય છે. ૨. વધુ પાંખડીઓવાળા ફૂલો ધરાવતી બેજાતોવાળા એડેનિયમ વિકસાવવા: G.Ad.-1 + આભા અથવા G.Ad.-2 + આભા ગ્રાફ્ટ કરવાથી વર્ષના મોટા ભાગના સમયગાળા માટે વધુ સંખ્યામાં ફૂલો સાથે સુમેળ મેળવી શકાય છે. ૩. સિંગલ ફૂલો ધરાવતી બે જાતોવાળા એડેનિયમ વિકસાવવા: NASDUS2 + NAPVW1 ગ્રાફ્ટ કરવાથી વહેલા અને વધુ ફૂલો મેળવી શકાય છે. **Suggestions: Approved** ***(Action: Professor and Head (FLA), ACHF, NAU, Navsari)***
18.4.1.26	**Effect of foliar application of nutrients on growth and flowering of Orchid (Dendrobium) under NVPH**
	The farmers of Gujarat growing *Dendrobium* orchid under naturally ventilated polyhouse are recommended to give foliar application of 400 ppm N, 200 ppm P and 400 ppm K (782.61 mg/l urea, 327.80 mg/l 12:61:00 and 800.00 mg/l 00:00:50) two times per week for getting higher yield and better flower quality. ગુજરાતના *ડેન્ડ્રોબીયમ* ઓર્કિડની કુદરતી હવા ઉજાસવાળા પોલીહાઉસમાં ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ૪૦૦ પીપીએમ નાઈટ્રોજન, ૨૦૦ પીપીએમ ફોસ્ફરસ

	અને ૪૦૦ પીપીએમ પોટેશીયમનો (૭૮૨.૬૧ મિ.ગ્રા./લિ. યુરીયા, ૩૨૭.૮૦ મિ.ગ્રા./લિ. ૧૨:૬૧:૦૦ અને ૮૦૦.૦૦ મિ.ગ્રા./લિ. ૦૦:૦૦:૫૦) અઠવાડીયામાં ૨ વાર છોડ પર છંટકાવ કરવાથી સારી ગુણવત્તાવાળી વધુ ફૂલદાંડીઓનું ઉત્પાદન મેળવી શકાય છે. **Approved with following suggestions** **1.** Mention sources of NPK in text and recast the recommendation in English and Gujarati version. ***(Action: Professor and Head (FLA), ACHF, NAU, Navsari)***

NAVSARI AGRICULTURAL UNIVERSITY (FORESTRY)

18.4.1.27	**Macro propagation of different bamboo species by Culm Cutting with different root hormone treatments** Farmers/nursery entrepreneurs of Gujarat are recommended to use 2 to 3 years culms of bamboo in the month of February-March by making two holes between two nodes and inject 120 ml (60 ml + 60 ml) NAA 500 ppm in *Bambusa balcooa*, 120 ml (60 ml + 60 ml) IBA 500 ppm in *Bambusa bambos* and *Dendrocalamus stocksii* and 120 ml (60 ml + 60 ml) IBA 200 ppm in *Bambusa vulgaris* var. *vulgaris* followed by sealing of holes for large scale propagation by culm cutting technique in the following manner. **Cum cutting process** Select 2 to 3 years culms of bamboo having three nodes ↓ Make two holes at equal distance between three nodes ↓ Inject required quantity of rooting hormones ↓ Seal holes with cello tape ↓ Place culms horizontally in raised bed by keeping the holes upper side ↓ Uproot sprouted culms and transplant into polythene bags ગુજરાતના ખેડૂતો તેમજ નર્સરીધારકોને કલ્મ કટિંગ પદ્ધતિ વડે રોપા ઉછેર કરવા માટે ભલામણ કરવામાં આવે છે કે બામ્બુસા બાલ્કોઆના બે થી ત્રણ વર્ષના દાંડાને ફેબ્રુઆરી-માર્ચ મહિનામાં બે ગાંઠ વચ્ચે, બે છિદ્રની અંદર ૧૨૦ મિલી (૬૦ મિલી + ૬૦ મિલી) એનએએ-૫૦૦ મીલીગ્રામ/ લીટરનું દ્રાવણ, બામ્બુસા બામ્બોસ અને ડેન્ડ્રોકેલેમસ સ્ટોકસીની બે ગાંઠ વચ્ચે ૧૨૦ મિલી (૬૦ મિલી + ૬૦ મિલી) આઈબીએ-૫૦૦ મીલીગ્રામ/લીટરનું દ્રાવણ અને બામ્બુસા વલ્ગેરીસ વેરાઈટી વલ્ગેરીસ (ગ્રીન વાંસ) ની બે ગાંઠ વચ્ચે ૧૨૦ મિલી (૬૦ મિલી + ૬૦ મિલી) આઈબીએ- ૨૦૦ મીલીગ્રામ/લીટરનું દ્રાવણ નાખ્યા બાદ છિદ્રને સેલોટેપની મદદથી બરાબર બંધ કરવાથી વધારે ઉગાવો મેળવવા માટે નીચે મુજબની પદ્ધતિનો ઉપયોગ કરવો. કલ્મ કટિંગ કરવાની પદ્ધતિ બે થી ત્રણ વર્ષના વાંસના દાંડાની પસંદગી કરવી ↓ સમાન અંતરે બે ગાંઠ વચ્ચે બે છિદ્ર કરવા ↓ બે છિદ્રમાં જરૂરિયાત મુજબ રૂટિંગ હોર્મોન નાખવું ↓

	સેલોટેપની મદદથી છિદ્ર બંધ કરવું ↓ દાંડાને બે છિદ્ર ઉપર રહે તે રીતે ગાદી ક્યારામાં મૂકવું ↓ ગાદીક્યારામાથી કલ્મને મૂળ સાથે ઉપાડીને પ્લાસ્ટીકની થેલીમાં ઉછેરવા **Approved with following suggestion/s** 1. Add title of culm cutting methodology as 'Cum cutting process' 2. Add month for culm cutting process 3. Add economics in report. ***(Action: PI & HOD, Silviculture and Agroforestry Department, CoF, ACHF, NAU, Navsari)***

18.4.1.28	**Development of volumetric equation for Eucalyptus (*Eucalyptus* spp.)**

It is recommended that farmers, foresters and wood merchants of South Gujarat can use volumetric equation, $V = 0.0621 + 0.000037D^2H - 0.0003D^2 + 0.0009DH - 0.0104H$ (R^2=0.951) (V= Volume in m^3, D= Diameter at Breast Height in cm, H= Height in m) for 10-60 cm DBH and below given local volume table for estimation of volume of standing *Eucalyptus* trees.

Table- Local volume table developed for Eucalyptus (*Eucalyptus* spp.) trees grown in south Gujarat condition (m^3/tree)

			Height in m (Height range and mid value)											
	Diameter/ Height range		8-11	11-14	14-17	17-20	20-23	23-26	26-29	29-32	32-35	35-38	38-41	41-44
		Mid diameter/ Height	9.5 m	12.5m	15.5 m	18.5 m	21.5 m	24.5 m	27.5 m	30.5m	33.5 m	36.5 m	39.5 m	42.5 m
DBH (cm) (Dia range and mid value)	10-15	12.5 cm	0.078	0.098	0.118	0.138	0.158	0.178						
	15-20	17.5 cm	0.129	0.179	0.229	0.279	0.329	0.379	0.429					
	20-25	22.5 cm	0.182	0.267	0.353	0.439	0.525	0.610	0.696	0.705				
	25-30	27.5 cm		0.364	0.491	0.618	0.745	0.872	0.999	1.126	1.253			
	30-35	32.5 cm		0.469	0.643	0.817	0.991	1.165	1.338	1.512	1.686			
	35-40	37.5 cm			0.809	1.035	1.261	1.487	1.713	1.939	2.165	2.392		
	40-45	42.5 cm			0.988	1.272	1.556	1.840	2.124	2.408	2.692	2.976		
	45-50	47.5 cm			1.181	1.528	1.876	2.223	2.571	2.918	3.266	3.613	3.961	
	50-55	52.5 cm				1.804	2.220	2.637	3.053	3.470	3.886	4.303	4.719	5.136
	55-60	57.5 cm					2.589	3.080	3.571	4.063	4.554	5.045	5.536	6.027

Table: Local volume table developed for Eucalyptus (*Eucalyptus* spp.) trees grown in south Gujarat condition (ft^3/tree)

			Height in ft (Height range and mid value)											
	Diameter/ Height range		26.25-36.09	36.09-45.93	45.93-55.77	55.77-65.62	65.62-75.46	75.46-85.30	85.30-95.14	95.14-104.99	104.99-114.83	114.83-124.67	124.67-134.51	134.51-144.36
		Mid diameter/ Height	31.17ft	41.01 ft	50.85ft	60.70ft	70.54ft	80.38ft	90.22ft	100.07ft	109.91ft	119.75ft	129.59ft	139.4ft
(Dia range and mid	4-6	5 inch	2.762	3.465	4.167	4.870	5.573	6.275						
	6-8	7 inch	4.545	6.312	8.079	9.847	11.614	13.381	15.149					
	8-10	9 inch	6.418	9.446	12.474	15.502	18.530	21.558	24.586	24.886				
	10-12	11 inch		12.867	17.352	21.837	26.322	30.806	35.291	39.776	44.261			
	12-14	13 inch		16.576	22.713	28.850	34.988	41.125	47.263	53.400	59.538			

	14-16	**15 inch**			28.557	36.543	44.529	52.515	60.501	68.488	76.474	84.460		
	16-18	**17 inch**			34.883	44.914	54.945	64.976	75.007	85.038	95.069	105.100		
	18-20	**19 inch**			41.693	53.965	66.236	78.508	90.779	103.051	115.323	127.594	139.866	
	20-22	**21 inch**				63.694	78.402	93.110	107.819	122.527	137.235	151.944	166.652	181.361
	22-24	**23 inch**					91.443	108.784	126.125	143.466	160.807	178.148	195.489	212.830

દક્ષિણ ગુજરાતના ખેડૂતો, વનપાલો અને લાકડાના વેપારીઓને ૧૦-૬૦ સેમી ડીબીએચ ધરાવતા નીલગીરીના ઉભા વૃક્ષના કદના અંદાજ માટે કદદર્શક સમીકરણ, □ = ૦.૦૬૨૧ + ૦.૦૦૦૦૩૭□2□ - ૦.૦૦૦૩□2 + ૦.૦૦૦૯□□ - ૦.૦૧૦૪□ (□²=૦.૯૫૧) (□=ઘનમીટરમાં કદ □= સેન્ટીમીટરમાં ડીબીએચ (ડાયામીટર એટ બ્રેસ્ત હાઇટ, □= મીટરમાં ઉંચાઈ) અને નીચે આપેલ સ્થાનિક કદદર્શક કોષ્ટકનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે.

કોષ્ટક: દક્ષિણ ગુજરાત પરિસ્થિતિમાં ઉગાડવામાં આવેલ નીલગીરીના વૃક્ષો માટે વિકસાવવામાં આવેલ સ્થાનિક કદ દર્શક કોષ્ટક (ઘનમી. પ્રતિવૃક્ષ)

	ઊંચાઈ (મી) (હાઈટ રેંજ અને મિડ વેલ્યૂ)													
	ડાયામીટર /હાઈટ રેંજ		૮-૧૧	૧૧-૧૪	૧૪-૧૭	૧૭-૨૦	૨૦-૨૩	૨૩-૨૬	૨૬-૨૯	૨૯-૩૨	૩૨-૩૫	૩૫-૩૮	૩૮-૪૧	૪૧-૪૪
ડીબીએચ (સેમી.) (ડાયામીટર રેંજ અને મિડવેલ્યૂ)		મીડડાયામીટર/હાઈટ	૯.૫મી	૧૨.૫મી	૧૫.૫મી	૧૮.૫મી	૨૧.૫મી	૨૪.૫મી	૨૭.૫મી	૩૦.૫મી	૩૩.૫મી	૩૬.૫મી	૩૯.૫મી	૪૨.૫મી
	૧૦-૧૫	૧૨.૫ સેમી	૦.૦૭૮	૦.૦૯૮	૦.૧૧૮	૦.૧૩૮	૦.૧૫૮	૦.૧૭૮						
	૧૫-૨૦	૧૭.૫ સેમી	૦.૧૨૯	૦.૧૭૯	૦.૨૨૯	૦.૨૭૯	૦.૩૨૯	૦.૩૭૯	૦.૪૨૯					
	૨૦-૨૫	૨૨.૫ સેમી	૦.૧૮૨	૦.૨૬૭	૦.૩૫૩	૦.૪૩૯	૦.૫૨૫	૦.૬૧૦	૦.૬૯૬	૦.૭૦૫				
	૨૫-૩૦	૨૭.૫ સેમી		૦.૩૬૪	૦.૪૯૧	૦.૬૧૮	૦.૭૪૫	૦.૮૭૨	૦.૯૯૯	૧.૧૨૬	૧.૨૫૩			
	૩૦-૩૫	૩૨.૫ સેમી		૦.૪૬૯	૦.૬૪૩	૦.૮૧૭	૦.૯૯૧	૧.૧૬૫	૧.૩૩૮	૧.૫૧૨	૧.૬૮૬			
	૩૫-૪૦	૩૭.૫ સેમી			૦.૮૦૯	૧.૦૩૫	૧.૨૬૧	૧.૪૮૭	૧.૭૧૩	૧.૯૩૯	૨.૧૬૫	૨.૩૯૨		
	૪૦-૪૫	૪૨.૫ સેમી			૦.૯૮૮	૧.૨૭૨	૧.૫૫૬	૧.૮૪૦	૨.૧૨૪	૨.૪૦૮	૨.૬૯૨	૨.૯૭૬		
	૪૫-૫૦	૪૭.૫ સેમી			૧.૧૮૧	૧.૫૨૮	૧.૮૭૬	૨.૨૨૩	૨.૫૭૧	૨.૯૧૮	૩.૨૬૬	૩.૬૧૩	૩.૯૬૧	
	૫૦-૫૫	૫૨.૫ સેમી				૧.૮૦૪	૨.૨૨૦	૨.૬૩૭	૩.૦૫૩	૩.૪૭૦	૩.૮૮૬	૪.૩૦૩	૪.૭૧૯	૫.૧૩૬
	૫૫-૬૦	૫૭.૫ સેમી					૨.૫૮૯	૩.૦૮૦	૩.૫૭૧	૪.૦૬૩	૪.૫૫૪	૫.૦૪૫	૫.૫૩૬	૬.૦૨૭

કોષ્ટક: દક્ષિણ ગુજરાત પરિસ્થિતિમાં ઉગાડવામાં આવેલ નીલગીરીના વૃક્ષો માટે વિકસાવવામાં આવેલ સ્થાનિક કદદર્શક કોષ્ટક (ઘનફૂટ પ્રતિ વૃક્ષ)

			ઊંચાઈ (ફૂટ) (હાઈટ રેંજ અને મિડ વેલ્યુ)											
	ડાયામીટર/ હાઈટ રેંજ		૨૬.૨૫-૩૬.૦૯	૩૬.૦૯-૪૫.૯૩	૪૫.૯૩-૫૫.૭૭	૫૫.૭૭-૬૫.૬૨	૬૫.૬૨-૭૫.૪૬	૭૫.૪૬-૮૫.૩૦	૮૫.૩૦-૯૫.૧૪	૯૫.૧૪-૧૦૪.૯૯	૧૦૪.૯૯-૧૧૪.૮૩	૧૧૪.૮૩-૧૨૪.૬૭	૧૨૪.૬૭-૧૩૪.૫૧	૧૩૪.૫૧-૧૪૪.૩૬
		મીડ ડાયામીટર /હાઈટ	૩૧.૧૭ ફૂટ	૪૧.૦૧ ફૂટ	૫૦.૮૫ ફૂટ	૬૦.૭૦ ફૂટ	૭૦.૫૪ ફૂટ	૮૦.૩૮ ફૂટ	૯૦.૨૨ ફૂટ	૧૦૦.૦૭ ફૂટ	૧૦૯.૯૧ ફૂટ	૧૧૯.૭૫ ફૂટ	૧૨૯.૫૯ ફૂટ	૧૩૯.૪૪ ફૂટ
ડીબીએચ (ઇંચ) (ડાયામીટર રેંજ અને મિડ વેલ્યુ)	૪-૬	૫ ઇંચ	૨.૭૬૨	૩.૪૫૬	૪.૧૬૭	૪.૮૭૦	૫.૫૭૩	૬.૨૭૫						
	૬-૮	૭ ઇંચ	૪.૫૪૫	૬.૩૧૨	૮.૦૭૯	૯.૮૪૭	૧૧.૬૧૪	૧૩.૩૮૧	૧૫.૧૪૯					
	૮-૧૦	૯ ઇંચ	૬.૪૧૮	૯.૪૪૬	૧૨.૪૭૪	૧૫.૫૦૨	૧૮.૫૩૦	૨૧.૫૫૮	૨૪.૫૮૬	૨૪.૮૮૬				
	૧૦-૧૨	૧૧ ઇંચ		૧૨.૮૬૭	૧૭.૩૫૨	૨૧.૮૩૭	૨૬.૩૨૨	૩૦.૮૦૬	૩૫.૨૯૧	૩૯.૭૭૬	૪૪.૨૬૧			
	૧૨-૧૪	૧૩ ઇંચ		૧૬.૫૭૬	૨૨.૭૧૩	૨૮.૮૫૦	૩૪.૯૮૮	૪૧.૧૨૫	૪૭.૨૬૩	૫૩.૪૦૦	૫૯.૫૩૮			
	૧૪-૧૬	૧૫ ઇંચ			૨૮.૫૫૭	૩૬.૫૪૩	૪૪.૫૨૯	૫૨.૫૧૫	૬૦.૫૦૧	૬૮.૪૮૮	૭૬.૪૭૪	૮૪.૪૬૦		
	૧૬-૧૮	૧૭ ઇંચ			૩૪.૮૮૩	૪૪.૯૧૪	૫૪.૯૪૫	૬૪.૯૭૬	૭૫.૦૦૭	૮૫.૦૩૮	૯૫.૦૬૯	૧૦૫.૧૦૦		
	૧૮-૨૦	૧૯ ઇંચ			૪૧.૬૯૩	૫૩.૯૬૫	૬૬.૨૩૬	૭૮.૫૦૮	૯૦.૭૭૯	૧૦૩.૦૫૧	૧૧૫.૩૨૩	૧૨૭.૫૯૪	૧૩૯.૮૬૬	
	૨૦-૨૨	૨૧ ઇંચ				૬૩.૬૯૪.	૭૮.૪૦૨	૯૩.૧૧૦	૧૦૭.૮૧૯	૧૨૨.૫૨૭	૧૩૭.૨૩૫	૧૫૧.૯૪૪	૧૬૬.૬૫૨	૧૮૧.૩૬૧
	૨૨-૨૪	૨૩ ઇંચ					૯૧.૪૪૩	૧૦૮.૭૮૪	૧૨૬.૧૨૫	૧૪૩.૪૬૬	૧૬૦.૮૦૭	૧૭૮.૧૪૮	૧૯૫.૪૮૯	૨૧૨.૮૩૦

Approved with following suggestion/s

1. Add R^2 value in English and Gujarati version of recommendation paragraph.

(Action: PI & HOD, Silviculture and Agroforestry Department, CoF, ACHF, NAU, Navsari)

18.4.1.29	**Effect of different pre-sowing treatments on germination of Red Sanders (*Pterocarpus santalinus*L.f.)** Nurseryman and forest dwellers/ farmers are recommended to soak pods of Red Sanders (*Pterocarpus santalinus* L.f.) in GA_3 @ 500 mg/l for 1 day followed by sowing in the month of March in sand bed for sprouting and then after transplanting at two leaves stage in to growing media of Soil : Sand : FYM (2:1:2) to enhance seed germination and seedling growth. **Note:** Dilute 500 mg of GA_3 in 100 ml of water along with 5-10 ml of alcohol. Mix it properly till GA_3 dissolved and make final volume upto 1 litre. નર્સરીમેન,વનવાસી/વનખેડૂતોને ભલામણ કરવામાં આવે છે કે, રક્તચંદનની શીંગનું અંકુરણ વધારવા માટે શીંગને જીબ્રેલીક એસિડના ૫૦૦ મીલીગ્રામ /લીટર દ્રાવણમાં ૧ દિવસ સુધી પલાળી રાખી તેને માર્ચ મહિનામાં રેતીના ક્યારામાં ઉગાડ્યા પછી બે પાંદડાની અવસ્થાએ ધરુને ૨:૧:૨ ના પ્રમાણમાં માટી, રેતી અને છાણિયા ખાતરના ગ્રોવિંગ મીડિયામાં ઉગાડવાથી રોપનો સારો વિકાસ થાય છે. નોંધ: ૫૦૦ મીલીગ્રામ જીબ્રેલીક એસિડને ૧૦૦ મિલી પાણી તથા ૫-૧૦ મિલી આલ્કોહોલમાં જીબ્રેલીક એસિડને સંપૂર્ણ રીતે ઓગાળવુ અને અંતે કુલ ૧ લિટર દ્રાવણ બનાવવું. **Approved with following suggestion/s** 1. Add time of sowing of pod in English and Gujarati version of recommendation text. 2.Use □શીંગ” word in Gujarati in version of recommendation instead of □ફળ” 3. Add economics in text of recommendation ***(Action: PI & HOD, Silviculture and Agroforestry, Department, CoF, ACHF, NAU, Navsari)***
18.4.1.30	**Effect of Eucalyptus plantation on soil fertility in South Gujarat** It is recommended to farmers of Gujarat that under Eucalyptus plantation, Soil pH is reduced whereas organic carbon, available P_2O_5, available K_2O, soil bacterial and fungal population are increased. Moreover, soil EC and available nitrogen are not affected due to Eucalyptus plantation. ગુજરાતના ખેડૂતોને ભલામણ કરવામાં આવે છે કે, નિલગીરીના વૃક્ષનું વાવેતર કરવાથી જમીનની અલ્કલીતામાં ઘટાડો થાય છે જ્યારે સેંદ્રિય કાર્બન, લભ્ય ફોસ્ફરસ, લભ્ય પોટાશ, જમીનના બક્ટેરિયા અને ફૂગની સંખ્યામાં વધારો થાય છે, વધુમાં લભ્ય નાઇટ્રોજન અને જમીનની વિદ્યુત વાહકતામાં નિલગીરીના વાવેતરથી અસર થતી નથી. **Approved with following suggestion/s** 1. Use word “recommended” instead of “informed” in English version of recommendation paragraph and use “જાણ” instead of “ભલામણ” 2. Recommend this recommendation for farmers of Gujarat ***(Action: PI & HOD, Silviculture and Agroforestry, Department, CoF, ACHF, NAU, Navsari)***

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

18.4.1.31	**Effect of different growing media on growth, yield and quality of cucumber under protected condition**
	The farmers of Gujarat cultivating cucumber under natural ventilated polyhouse using grow bags are recommended to use vermiculite + cocopeat (1:1 v/v) as growing media for getting higher yield and net profit without root knot nematode infestation.

નેચરલ વેન્ટિલેટેડ પોલીહાઉસમાં ગ્રો બેગનો ઉપયોગ કરી કાકડીની ખેતી કરતા ગુજરાતનાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે, પાકની વાવણી માટે વર્મીક્યુલાઇટ + કોકોપીટ (૧:૧ કદ પ્રમાણે) મિડીયા તરીકે ઉપયોગ કરવાથી વધુ ઉત્પાદન અને નફો મળે છે તથા મૂળ ગંઠવા કૃમિનો ઉપદ્રવ જોવા મળતો નથી.

Approved with following suggestions.

1. Mention the fertilizer quantity per grow bag.
2. Check the CV % and S.Em.
3. In recommendation language write root knot nematode.

(Action: Principal, College of Horticulture, SDAU, Jagudan)

18.4.1.32 Effect of integrated nutrient management on growth, yield and quality of papaya (*Carica papaya* L.)

The farmers of North Gujarat Agro climatic Zone IV growing papaya are recommended to apply 80 per cent RDN (160 g N/plant) as per below schedule for getting higher yield with better quality and net profit as well as to sustain the soil fertility.

Source	**Basal dose**	**Days after transplanting**			
		60	**120**	**180**	**240**
FYM (kg/plant)	10	-	-	-	-
Trichoderma (g/plant)	5	-	-	-	-
Azotobacter, PSB and KSM (ml/plant each)	10	-	-	-	-
Castor cake (g/plant)	950	950	-	-	-
Urea (g/plant)	-	43.5	43.5	43.5	43.5

ઉત્તર ગુજરાત ખેત આબોહવાકીય વિભાગ ૪મા પપૈયાનું વાવેતર કરતાં ખેડૂતો માટે ભલામણ કરવામાં આવે છે કે, ભલામણ કરેલ નાઇટ્રોજનના ૮૦ ટકા (૧૬૦ ગ્રામ નાઇટ્રોજન પ્રતિ છોડ) નીચે મુજબ આપવાથી ગુણવત્તાસભર વધુ ઉત્પાદન અને નફો મળે છે તથા જમીનની ફળદ્રુપતા જળવાઇ રહે છે.

સ્ત્રોત	પાયામાં	રોપણીના દિવસ બાદ			
		૬૦	૧૨૦	૧૮૦	૨૪૦
છાણિયુ ખાતર (કિલોગ્રામ પ્રતિ છોડ)	૧૦		-	-	-
ટ્રાઇકોડર્મા (ગ્રામ પ્રતિ છોડ)	૫	-	-	-	-
એઝોટોબેક્ટર,પીએસબી અને કેએસએમ (દરેક મિલી પ્રતિ છોડ)	૧૦	-	-	-	-
દિવેલી ખોળ (ગ્રામ પ્રતિ છોડ)	૯૫૦	૯૫૦	-	-	-
યુરિયા (ગ્રામ પ્રતિ છોડ)	-	૪૩.૫	૪૩.૫	૪૩.૫	૪૩.૫

Approved with following suggestions.

1. Calculate the economics with selling price of Rs. 12/- per kg fruit.

(Action: Principal, College of Horticulture, SDAU, Jagudan)

18.4.1.33 Effect of time of air layering and IBA concentration on the rooting behaviour of pomegranate (*Punica granatum* L.) *cv.* Bhagwa

Pomegranate growers and nurserymen of Gujarat are recommended to use IBA @ 5000 ppm (5 g/l water) for air layering during 3rd week of July to get higher survival percentage and net profit.

ગુજરાતના દાડમની ગુટી કલમ તૈયાર કરતા ખેડૂતો અને નર્સરીધારકોને ભલામણ કરવામાં

	આવે છે કે, જુલાઈ માસના ત્રીજા અઠવાડિયામાં ગુટી કલમ બાંધતા સમયે ૫૦૦૦ પીપીએમ (૫ ગ્રામ/લી. પાણી) આઈબીએની માવજત આપવાથી વધુ સફળતા અને નફો મળે છે. **Approved with following suggestions** **1.** Calculate the cost of cultivation as per common format. ***(Action: Principal, College of Horticulture, SDAU, Jagudan)***
18.4.1.34	**Evaluation of chrysanthemum varieties under different growing conditions**
	The farmers of Gujarat growing chrysanthemum are recommended to grow standard group of chrysanthemum under 30 per cent white shade net house for getting maximum good quality cut flowers and net return. ગુજરાતના સેવંતીની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, સ્ટાન્ડર્ડ ગ્રુપની સેવંતી ૩૦ ટકા સફેદ શેડ નેટ હાઉસમાં વાવેતર કરવાથી મહત્તમ ગુણવત્તાસભર ફૂલદંડીઓનું ઉત્પાદન અને વળતર મળે છે. **Approved with following suggestions** 1. Recast the recommendation. ***(Action: Principal, College of Horticulture, SDAU, Jagudan)***
18.4.1.35	**Integrated nutrient management in gladiolus**
	Recommendation for farming community The farmers of North Gujarat Agro climatic Zone IV growing gladiolus are recommended to apply 75 **%** RDN (150 kg/ha) + *Azotobacter* and PSB @ 2.5 l/ha as corm soaking treatment along with recommended dose of phosphorus (200 kg/ha) and potash (200 kg/ha) for getting the maximum number of quality spikes, corms and net return**.** ઉત્તર ગુજરાત ખેત આબોહવાકીય વિભાગ ૪ ના ગ્લેડીઓલસની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ભલામણ કરેલ નાઈટ્રોજનના ૭૫ % (૧૫૦ કી. ગ્રા./હે) + એઝેટોબેક્ટર અને પી.એસ.બી. @ ૨.૫ લીટર પ્રતિ હેકટર મુજબ કંદ ડુબોળીને માવજત આપવાની સાથે ભલામણ કરેલ ફોસ્ફરસ (૨૦૦ કી.ગ્રા./હે) અને પોટાશ (૨૦૦ કી. ગ્રા./હે) આપવાથી ગુણવત્તાસભર ફૂલદંડીઓ અને કંદનું મહત્તમ ઉત્પાદન તેમજ વળતર મળે છે. **Approved** ***(Action: Principal, College of Horticulture, SDAU, Jagudan)***
18.4.1.36	**Studies on propagation of purple sage (*Leucophyllum frutescens)* through cutting**
	The nurserymen of Gujarat are recommended to propagate purple sage (Nicadevia / *Leucophyllum* - an ornamental plant) under 50 % black shade net by dipping hard wood or semi hard wood cuttings in IBA @ 1500 ppm (1.5 g/l) in the month of February or by dipping the hard wood cuttings in IBA @ 1500 ppm (1.5 g/l) in the month of July for 20 minutes to get higher number of rooted cuttings**.** ગુજરાતનાં નર્સરીધારકોને ભલામણ કરવામાં આવે છે કે, પર્પલ સેજ (નીકાડીવીયા/ લ્યુકોફાયલમ -સુશોભન છોડ) ની કલમ તૈયાર કરવા માટે ૫૦ % કાળી શેડ નેટમાં કાષ્ટમય અથવા અર્ધ કાષ્ટમય કટકાઓને ફેબ્રુઆરી માસમાં ૧૫૦૦ પીપીએમ (૧.૫ ગ્રા./લી.) આઈબીએનાં દ્રાવણમાં બોળીને અથવા કાષ્ટમય કટકાઓને જુલાઈ માસમાં ૧૫૦૦ પીપીએમ (૧.૫ ગ્રા./લી.) આઈબીએ નાં દ્રાવણમાં ૨૦ મિનીટ બોળીને રાખવાથી વધુ સંખ્યામાં કલમો મળે છે. **Approved with following suggestions** **1.** Write common name of purple sage in recommendation language. ***(Action: Principal, College of Horticulture, SDAU, Jagudan)***
18.4.1.37	**Effect of GA_3 on growth, sex expression and yield of watermelon**

The farmers of Gujarat cultivating watermelon are recommended to spray 60 ppm gibberellic acid (60 mg/l of water) solution at 2 to 4 true leaf and flowering stage for getting gibberellic acid residue free higher fruit yield and net return.

ગુજરાતના તરબૂચની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ૬૦ પીપીએમ જીબ્રેલીક એસિડ (૬૦ મિગ્રા/લી પાણી) ના દ્રાવણનો છંટકાવ ૨ થી ૪ પર્ણ અને ફૂલ અવસ્થાએ કરવાથી જીબ્રેલીક એસિડ અવશેષમુક્ત વધુ ઉત્પાદન અને વળતર મળે છે.

Approved

(Action: Professor & Head, Department of Horticulture, CPCA, SDAU, SK Nagar)

18.4.1.38 Effect of plant growth regulators along with pinching on growth, yield and quality in African marigold (*Tagetes eracta* L.)

The farmers of Gujarat growing marigold are recommended to pinch at 30 to 40 days after transplanting and spraying NAA (Naphthaline Acetic Acid) 100 mg/l water just after pinching to obtain maximum yield and net return.

ગુજરાતમાં હજારીગલની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ફેરરોપણીના ૩૦ થી ૪૦ દિવસે ખુંટણી કર્યા પછી એનએએ (નેપ્થીલીન એસિટીક એસિડ) ૧૦૦ મી.ગ્રા./લીટર પાણીમાં મિશ્ર કરી છંટકાવ કરવાથી મહત્તમ ઉત્પાદન અને વળતર મળે છે.

Approved with following suggestions

1. Mention the time of NAA spray.
2. Recast the recommendation.

(Action: Assistant Research Scientist, FRS, SDAU, Dehgam)

18.4.1.39 Spacing trial on fig (*Ficus carica* L)

The farmers of North Gujarat Agro climatic Zone IV are recommended to grow variety Poona Fig at a distance of 5.0 m x 2.0 m with pruning at last week of September for getting higher fruit yield and net return.

ઉત્તર ગુજરાતના ખેત આબોહવાકીય વિભાગ-૪ ના અંજીરની જાત પૂના ફીગ ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે છોડને ૫.૦ મી. x ૨.૦ મી. ના અંતરે રોપણી તેમજ સપ્ટેબરના છેલ્લા અઠવાડિયામાં છટણી કરવાથી વધુ ઉત્પાદન અને વળતર મળે છે.

Approved with following suggestions

1. Mention the time of pruning in recommendation.
2. Mention the variety.
3. Recast the recommendation.

(Action: Research Scientist, Agroforestry Research Station, SDAU, SK Nagar)

18.4.1.40 Fertigation in pomegranate cv. Bhagva

The farmers of North Gujarat Agro climatic Zone IV growing pomegranate are recommended to irrigate and fertilize crop through drip system using following schedules to save water and get as equivalent yield (*Hast Bahar*) as surface method of irrigation (1.0 IW/CPE ratio).

Irrigation schedule:

System detail			Plant age	Operating Schedule (alternate day, Minutes)	
				September-March	April-June
Lateral row	:	2	1st to 2nd year	09	12
Emitters/ plant	:	4	3rd Year	23	34
Emitter discharge	:	8 lph	4th year	31	45
Irrigation fraction	:	0.6 PEF	5th year onward	38	57
Operating pressure	:	1.2 kg/cm^2			

Fertigation schedule : In eight equal splits starting from 1st September at 15 days interval

Plant Age	FYM (kg/plant)	Chemical fertilizers (g/plant)		
		N	P	K
1st and 2nd year	10 and 20	250	125	125
3rd year	30	500	125	125
4th year	40	500	125	250
5th year and onwards	50	625	250	250

(Fertilizers : Urea, 12-61-00, 00:00:50)

ઉત્તર ગુજરાત ખેત આબોહવાકીય વિભાગ-૪ માં દાડમની ખેતી કરતા ખેડૂતોને પાણીની બચત અને ખામણા પિયત પદ્ધતિ (૧.૦ પિયત પાણી/બાસ્પીભવન ગુણોત્તર) ને સમકક્ષ ફળનું ઉત્પાદન (હસ્ત બહાર) મેળવવા માટે નીચે મુજબ સમય સારણીથી ટપક પધ્ધતિ મારફત પિયત તથા ખાતર આપવા ભલામણ કરવામાં આવેછે.

પિયત સમય પત્રક:

ટપક પદ્ધતિની વિગત			છોડની ઉંમર	પિયત સમય (એકાંતરે દિવસે, મિનીટ)	
				સપ્ટેમ્બર-માર્ચ	અપ્રિલ- જૂન
પ્રશાખા/હાર	:	૨	૧ થી ૨ વર્ષ	૦૯	૧૨
ડ્રીપર/છોડ	:	૪	૩જુ વર્ષ	૨૩	૩૪
ડ્રીપર પ્રવાહદર (લીટર/ કલાક)	:	૮	૪થું વર્ષ	૩૧	૪૫
બાષ્પીભવન ગુણાંક	:	૦.૬	૫માં વર્ષથી	૩૮	૫૭
ટપક સિસ્ટમનું દબાણ	:	૧.૨ કિલોગ્રામ/સેમી^{૨}			

ખાતરનું સમયપત્રકઃ ૧ લી સપ્ટેમ્બર થી શરૂ કરી આઠ સરખા હપ્તામાં દર ૧૫ દિવસે

છોડની ઉંમર	છાણીયું ખાતર (કિલોગ્રામ/ છોડ)	રાસાયણિક ખાતર (ગ્રામ/ છોડ)		
		નાઈટ્રોજન	પોટાશ	ફોસ્ફરસ
૧ થી ૨ વર્ષ	૧૦ થી ૨૦	૨૫૦	૧૨૫	૧૨૫
૩જુ વર્ષ	૩૦	૫૦૦	૧૨૫	૧૨૫
૪થું વર્ષ	૪૦	૫૦૦	૧૨૫	૨૫૦
૫ માં વર્ષથી	૫૦	૬૨૫	૨૫૦	૨૫૦

(ખાતર : યુરિયા, ૧૨:૬૧:૦૦, ૦૦:૦૦:૫૦)

Approved with following suggestions

1. Calculate the cumulative yield.

(Action: Res. Sci., CNRM, SDAU, SDAU, Sardarkrushinagar)

18.4.1.41 Effect of different organic substances on tomato seedling production

The farmers and nurserymen of Gujarat raising tomato seedling under 50 per cent green shade net in plug tray (104 cavity) are recommended to sow the seed treated with *Beejamruta* (200 ml/kg seed) and media [cocopeat + vermicompost (1:1 v/v)] enriched with *Trichoderma harzianum* (50 g) and NPK consortium (50 ml) per 10 kg media. Apply foliar spray of *Beauveria bassiana* (6 g/l water) at 10 and 20 days after sowing for healthy seedling production.

	લીલા રંગની ૫૦ ટકા શેડનેટમાં જૈવિક પદ્ધતિથી ટામેટાના ધરૂ ઉછેર કરતા ગુજરાતના ખેડૂતો તેમજ નર્સરીધારકોને ભલામણ કરવામાં આવે છે કે, કોકોપીટ + અળસિયા ખાતરના (૧:૧ કદના આધારે) માધ્યમને ટ્રાયકોડર્મા હાર્ઝિયનમ (૫૦ ગ્રામ) અને એનપીકે કન્સોર્ટિયમ (૫૦ મિલી) પ્રતિ ૧૦ કિ.ગ્રા. માધ્યમ દ્વારા સમૃદ્ધ કરી પ્લગ ટ્રેમાં (૧૦૪ ખાનાવાળી) ભરવું અને બીજને બીજામૃત (૨૦૦ મિલી/કિગ્રા.) દ્વારા માવજત આપીને વાવેતર કરવું. વાવણીના ૧૦ અને ૨૦ દિવસે બીવેરીયા બેસીયાના (૬ ગ્રામ/લિટર પાણી)નો છંટકાવ કરવાથી તંદુરસ્ત ધરૂ ઉછેર થાય છે. **Approved with following suggestions** 1. Recast the recommendation. ***(Action: Senior .Sci. & Head, KVK, SDAU, Banaskantha, Deesa)***
18.4.1.42	**Effect of different organic substances on chilli seedling production**
	The farmers and nurserymen of Gujarat raising chilli seedling under 50 % green shade net in plug tray (104 cavity) are recommended to sow the seed treated with *Beejamruta* (200 ml/kg seed) and media [cocopeat + vermicompost (1:1 v/v)] enriched with *Trichoderma harzianum* (50 g) and NPK consortium (50 ml) per 10 kg media. Apply foliar spray of *Beauveria bassiana* (6 g/l water) at 10 and 20 days after sowing for healthy organic seedling production. લીલા રંગની ૫૦ % શેડનેટમાં જૈવિક પદ્ધતિથી મરચીના ધરૂ ઉછેર કરતા ગુજરાતના ખેડૂતો તેમજ નર્સરીધારકોને ભલામણ કરવામાં આવે છે કે, કોકોપીટ+અળસિયા ખાતરના (૧:૧ કદના આધારે) માધ્યમને ટ્રાયકોડર્મા હાર્ઝિયનમ (૫૦ ગ્રામ) અને એનપીકે કન્સોર્ટિયમ (૫૦ મિલી) પ્રતિ ૧૦ કિ.ગ્રા. માધ્યમ દ્વારા સમૃદ્ધ કરી પ્લગ ટ્રેમાં (૧૦૪ ખાનાવાળી) ભરવું અને બીજને બીજામૃત (૨૦૦ મિલી/કિગ્રા.) દ્વારા માવજત આપીને વાવેતર કરવું. વાવણીના ૧૦ અને ૨૦ દિવસે બીવેરીયા બેસીયાના (૬ ગ્રામ/લિટર પાણી)નો છંટકાવ કરવાથી સફળતાપૂર્વક ધરૂ ઉછેર થાય છે. **Approved with following suggestions** 1. Recast the recommendation ***(Action: Senior Sci. & Head, KVK, SDAU, Banaskantha, Deesa)***
18.4.1.43	**Effect of different organic substances on brinjal seedling production**
	The farmers and nurserymen of Gujarat raising brinjal seedling under 50 % green shade net in plug tray (104 cavity) are recommended to sow the seed treated with *Beejamruta* (200 ml/kg seed) and media [cocopeat + vermicompost (1:1 v/v)] enriched with *Trichoderma harzianum* (50 g) and NPK consortium (50 ml) per 10 kg media. Apply foliar spray of *Beauveria bassiana* (6 g/l water) at 10 and 20 days after sowing for healthy organic seedling production. લીલા રંગની ૫૦ % શેડનેટમાં જૈવિક પદ્ધતિથી રીંગણના ધરૂ ઉછેર કરતા ગુજરાતના ખેડૂતો તેમજ નર્સરીધારકોને ભલામણ કરવામાં આવે છે કે, કોકોપીટ + અળસિયા ખાતરના (૧:૧ કદના આધારે) માધ્યમને ટ્રાયકોડર્મા હાર્ઝિયનમ (૫૦ ગ્રામ) અને એન.પી.કે. કન્સોર્ટિયમ (૫૦ મિલી) પ્રતિ ૧૦ કિ.ગ્રા. માધ્યમ દ્વારા સમૃદ્ધ કરી પ્લગ ટ્રેમાં (૧૦૪ ખાનાવાળી) ભરવું અને બીજને બીજામૃત (૨૦૦ મિલી/કિગ્રા.) દ્વારા બીજ માવજત આપીને વાવેતર કરવું. વાવણીના ૧૦ અને ૨૦ દિવસે બીવેરીયા બેસીયાના (૬ ગ્રામ/લિટર પાણી) નો છંટકાવ કરવાથી તંદુરસ્ત ધરૂ ઉછેર થાય છે. **Approved with following suggestions** 1. Recast the recommendation.

	(Action: Senior Sci. & Head, KVK, SDAU, Banaskantha, Deesa)
18.4.1.44	**Effect of different media and age of transplanting on muskmelon seedling in plug tray**
	The farmers and nurserymen of Gujarat raising muskmelon seedling under 50 % green shade net are recommended to sow the seed during last week of January in plug tray (104 cavity) filled with cocopeat + vermicompost (1:1 v/v) media for getting higher germination. Transplant the seedling at 2 to 4 leaf stage for getting the higher survival. લીલા રંગની ૫૦% શેડનેટમાં શક્કરટેટીના ધરૂં ઉછેર કરતા ગુજરાતનાં ખેડૂતો તેમજ નર્સરીધારકોને ભલામણ કરવામાં આવે છે કે, કોકોપીટ+અળસિયા ખાતરના (૧:૧ કદના આધારે) માધ્યમને પ્લગ ટ્રેમાં (૧૦૪ ખાનાવાળી) ભરીને જાન્યુઆરી માસના છેલ્લા અઠવાડિયામાં બીજની વાવણી કરવાથી ધરૂંનો વધુ ઉગાવો મળે છે. ૨ થી ૪ પર્ણ અવસ્થાએ ધરૂની ફેરરોપણી કરવાથી વધુ સફળતા મળે છે. **Approved with following suggestions** **1.** Reanalyze the data of germination percent and days taken to germination. ***(Action: Senior Sci. & Head, KVK, SDAU, Banaskantha, Deesa)***
18.4.1.45	**Effect of different media and age of transplanting on watermelon seedling in plug tray**
	The farmers and nurserymen of Gujarat raising watermelon seedling under 50 % green shade net are recommended to sow the seed during last week of January in plug tray (104 cavity) filled with cocopeat + vermicompost (1:1 v/v) media for getting the maximum germination. Transplant the seedling at 2 to 4 leaf stage for getting higher survival. લીલા રંગની ૫૦ % શેડનેટમાં તરબૂચના ધરૂં ઉછેર કરતા ગુજરાતનાં ખેડૂતો તેમજ નર્સરીધારકોને ભલામણ કરવામાં આવે છે કે, કોકોપીટ+અળસિયા ખાતરના (૧:૧ કદના આધારે) માધ્યમને પ્લગ ટ્રેમાં (૧૦૪ ખાનાવાળી) ભરીને જાન્યુઆરી માસના છેલ્લા અઠવાડિયામાં બીજની વાવણી કરવાથી ધરૂંનો મહત્તમ ઉગાવો મળે છે. ૨ થી ૪ પર્ણ અવસ્થાએ ધરૂની ફેરરોપણી કરવાથી વધુ સફળતા મળે છે. **Approved with following suggestions** 1. Reanalyze the data of germination percent and days taken to germination. ***(Action: Senior Sci. & Head, KVK, SDAU, Banaskantha, Deesa)***
18.4.1.46	**Effect of different media and age of transplanting on bottle gourd seedling in plug tray**
	The farmers and nurserymen Gujarat raising bottle gourd seedling under 50 % green shade net are recommended to sow the seed during last week of January in plug tray (104 cavity) using cocopeat + vermicompost (1:1 v/v) media for getting higher germination and growth of the seedling. Transplant the seedling at 2to 4 leaf stage for getting higher survival. લીલા રંગની ૫૦% શેડનેટમાં દૂધીનું ધરૂં ઉછેર કરતા ગુજરાતનાં ખેડૂતો તેમજ નર્સરીધારકોને ભલામણ કરવામાં આવે છે કે, કોકોપીટ+અળસિયા ખાતરના (૧:૧ કદના આધારે) માધ્યમને પ્લગ ટ્રેમાં (૧૦૪ ખાનાવાળી) ભરીને જાન્યુઆરી માસના છેલ્લા અઠવાડિયામાં બીજની વાવણી કરવાથી ધરૂંનો વધુ ઉગાવો તેમજ વૃદ્ધિ મળે છે. ૨ થી ૪ પર્ણ અવસ્થાએ ધરૂની ફેરરોપણી કરવાથી વધુ સફળતા મળે છે. **Approved with following suggestions** 1. Reanalyze the data of germination percent and days taken to germination. ***(Action: Senior Sci. & Head, KVK, SDAU, Banaskantha, Deesa)***
18.4.1.47	**Effect of fertilizer levels and cow urine on growth, yield and quality of green chilli**

The farmers of Gujarat growing green chilli are recommended to apply 160:60:50 kg/ha N: P_2O_5:K_2O along with soil drenching of cow urine 2 per cent (20 ml/l water) @ 50 ml per plant at 15 days interval starting at 20 days after transplanting and foliar spray of cow urine 2 per cent (20 ml/l water) @ 400 l/ha at 15 days interval starting at 30 days after transplanting upto last picking along with recommended plant protection measures upto 60 DAT for getting higher yield and net profit.

ગુજરાતના લીલા મરચાની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ૧૬૦:૬૦:૫૦ કિ.ગ્રા./હેક્ટર નાઈટ્રોજન:ફોસ્ફરસ:પોટાશ અને ગૌમૂત્રના ૨ ટકા (૨૦ મિલી/ લિટર પાણી) દ્રાવણનો ૫૦ મિલી પ્રતિ છોડ પ્રમાણે ફેરરોપણીના ૨૦ દિવસ પછી ૧૫ દિવસના અંતરે ટુવા આપવાથી અને ગૌમૂત્રના ૨ ટકા (૨૦ મિલી/લિટર પાણી) દ્રાવણનો ૪૦૦ લિટર/હે ના દરે ૩૦ દિવસ પછી ૧૫ દિવસના અંતરે છેલ્લી વીણી સુધી છંટકાવ કરવા ઉપરાંત ૬૦ દિવસ સુધી ભલામણ કરેલ પાક સંરક્ષણના પગલાં લેવાથી વધુ ઉત્પાદન અને નફો મળે છે.

Approved with following suggestions

1. Mention time of spray and drenching upto last picking.
2. In table write girth instead of diameter.
3. Recast the recommendation.

(Action: Senior Sci. & Head, KVK, SDAU, Banaskantha, Deesa)

18.4.2 RECOMMEDATION FOR SCIENTIFIC COMMUNITY

NAVSARI AGRICULTURAL UNIVERSITY (HORTICULTURE)

18.4.2.1 Effect of high density planting in cashew (cv. V–4).

The scientists are informed that cashew cv.V-4 can be grown at a spacing of 6.5 m x 6.5 m to get higher plant growth and yield.

Approved

(Action: Research Scientist, AES, NAU, Paria)

NAVSARI AGRICULTURAL UNIVERSITY (FORESTRY)

18.4.2.2 Evaluation of nutritive value of Leaves of different bamboo species

Bamboo leaves are rich in nutritive value in terms of dry matter, crude protein, calcium, phosphorus, fat, carbohydrate, crude fibre, nitrogen free extract and total ash content. Therefore, it can be used for further palatability and digestibility experiments. Top five species with respect to nutritive parameters are as under.

Sr. No.	Nutritive Parameters	Range (%)	Bamboo species
1.	Moisture Content (%) and Dry Matter Content (%)	45.51 to 48.09 and 51.91 to 54.49	*Thyrsostachys oliveri*, *Bambusa multiplex*, *Ochlandra travancorica*, *Schizostachyum pergracile* and *Bambusa pallida*.
2.	Crude Protein (%)	11.71 to 12.55	*Dendrocalamus hamiltonii*, *Dendrocalamus giganteus*, *Dendrocalamus sikkimensis*, *Bambusa wamin* and *Gigantochloa atroviolacea*.
3.	Calcium (%)	0.74 to 0.81	*Ochlandra travancorica*, *Bambusa pallida*, *Bambusa balcooa*, *Bambusa vulgaris* var. *vittata* and *Dendrocalamus hamiltonii*.
4.	Phosphorus (%)	0.32 to 0.42	*Gigantochloa atroviolacea*, *Bambusa nutans*, *Thyrsostachys oliveri*, *Dendrocalamus sikkimensis* and *Bambusa vulgaris* var. *vulgaris*.

5.	Ether extract or Fat %	3.79 to 4.25	*Bambusa multiplex*, *Dendrocalamus giganteus*, *Thyrsostachys oliveri*, *Bambusa wamin* and *Bambusa vulgaris* var. *vittata.*
6.	Carbohydrate (%)	76.16 to 77.91	*Bambusa vulgaris* var. *vulgaris*, *Dendrocalamus strictus*, *Schizostachyum pergracile*, *Dendrocalamus stocksii* and *Bambusa nutans*.
7.	Crude Fibre (%)	21.22 to 22.96	*Bambusa polymorpha*, *Ochlandra travancorica*, *Dendrocalamus stocksii*, *Bambusa vulgaris* var. *vittata* and *Bambusa nutans*.
8.	Nitrogen Free Extract (%)	52.91 to 54.75	*Bambusa vulgaris* var. *vulgaris, Dendrocalamus stocksii*, *Bambusa nutans*, *Dendrocalamus strictus* and *Bambusa vulgaris* var. *vittata*.
9.	Total Ash Content (%)	8.00 to 9.91	*Bambusa wamin*, *Dendrocalamus giganteus*, *Dendrocalamus strictus*, *Bambusa vulgaris* var. *vittata*, *Gigantochloa atroviolacea* and *Bambusa vulgaris* var. *vulgaris*.

Approved with following suggestion/s

1. Give range of nutritive parameters in table of recommendation

[Action: PI & HoD, Silviculture and Agroforestry Dept., CoF, ACHF, NAU, Navsari]

18.4.2.3 Evaluation of various Poplar clones for early growth and establishment under South Gujarat condition

Poplar clone P-5503 is better suited for block plantation under South Gujarat condition.

Approved

[Action: PI & HoD, Forest Biology and Tree Improvement Department, CoF, ACHF, NAU, Navsari]

18.4.2.4 Vegetative propagation of *Salix tetrasperma*

The vegetative propagation of Indian Willow (*Salix tetrasperma*) can be better achieved when softwood cuttings procured in the month of January and dipped in IBA @ 2500 ppm concentration for 30 minutes and grown in net-house under South Gujarat condition.

Approved with following suggestion/s

1. Add month of cutting in recommendation paragraph

(Action: PI & HoD, Forest Biology and Tree Improvement Department, CoF, ACHF, NAU, Navsari)

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

18.4.2.5 Study on fruit drop pattern in date palm (*Phoenix dactylifera*L.) fruits

Fruit drop in date palm was around 50 % during its whole fruiting period (up to *Khalal* stage). Most of the fruit drop took place in-between 30 to 45 days after pollination. Among the various cultivars minimum fruit drop observed in Barhee and MDP/TC 21.

Approved with following suggestions

1. Check the fruit drop pattern equation.
2. Recast the recommendation.

(Action: Research Scientist, SDAU, DPRS, Mundra)

18.4.3 NEW TECHNICAL PROGRAMMES

Summary

Name of University	Presented	Approved	Not Approved
JAU	4	4	0
AAU	9	9	0
NAU (Horticulture)	29	28	1
NAU (Forestry)	21	21	0
SDAU	9	8	1
Total	**72**	**70**	**2**

JUNAGADH AGRICULTURAL UNIVERSITY

Sr. No.	Title/Centre	Suggestions
18.4.3.1	Effect of climatic parameters on Dwarf Green coconut variety in various locations of Saurashtra region	**Accepted with following suggestions:** 1. Use word weather instead of climatic in title. 2. Add observation on sunshine hour, wind velocity and button shading. 3. Mention the age of tree. ***(Action: Principal, College of Horti., JAU, Junagadh)***
18.4.3.2	Effect of climatic parameters on D X T coconut variety in various locations of Saurashtra region	**Accepted with following suggestions:** 1. Use word weather instead of climatic in title. 2. Add observation on sunshine hour, wind velocity and button shading. 3. Mention the age of tree. ***(Action: Principal, College of Horti., JAU, Junagadh)***
18.4.3.3	Induction of rooting through biological materials and plant growth regulator in stem cutting of Rose	**Accepted with following suggestions:** 1. Take 30 cutting per treatment. 2. Add observation on success rate. 3. Use quick dip method for IBA treatment. 4. Take two periods for observation. 5. Take IBA at 500, 750, 1000, 1500 and 1250 ppm conc. ***(Action: Professor and Head, Department of GPB, CoA, JAU, Junagadh)***
18.4.3.4	Varietal evaluation of ber (*Zizyphus mauritiana* L.)	**Approved.** ***(Action: Assoc. Res. Scientist, Grassland Research Station, JAU, Dhari)***

ANAND AGRICULTURAL UNIVERSITY

Sr. No.	Title	Suggestion/s and Action
18.4.3.5	Effect of time and length of pruning on yield and quality of custard apple (*Annona squamosa* L.) under middle Gujarat conditions	**Accepted with following suggestions:** **1.** Add observation days to flowering from pruning date. **2.** Remove treatment (B) no. 4 from length of pruning and Data should be analyzed as Controlvs Rest. **3.** Use 2 (Two) Plant per Treatment. ***(Action: Principal, College of Horti., AAU, Anand)***
18.4.3.6	Effect of seed treatment on germination of foxtail palm (*Wodyetia bifurcata*)	**Accepted with following suggestions:** 1. Use word Hot water instead of Boiling water in Treatment 2. Observation No 2 write as No 1 and vice versa ***(Action: Principal, College of Horti., AAU, Anand)***

18.4.3.7	Effect of nano nitrogen (nN) on yield and quality of mango	**Accepted with following suggestions:** 1. Use control as Treatment T_1 and T_3. 2. Remove Treatment T_7. 3. Add ½ RDN in all treatments. 4. Add Observation Days to flowering from 1st November. ***(Action: Principal, Sheth D. M. Polytechnic in Horticulture, AAU, Vadodara)***
18.4.3.8	Effect of seed treatment on germination and growth of fishtail palm (*Caryota urens* L.) seedling	**Accepted with following suggestions:** 1. Use word early before germination in Objective 2. Remove word combination from treatment 3. Add observation Days to initiation of germination 4. Treatment T_4 use Hot water instead of Boiling water 5. T_9 and T_{12} write % after name of Treatment ***(Action: Principal, Sheth D. M. Polytechnic in Horticulture, AAU, Vadodara)***
18.4.3.9	Effect of IBA and growing conditions on growth of cutting in mogra (*Jasminum sambac*) var. Local.	**Accepted with following suggestions:** 1. Add Objective interaction effect 2. Use 30 cuttings per replication 3. Remove observation No.3 No. of buds 4. Observation No 4 and 5 start from 30 DAP ***(Action: Principal, Sheth D. M. Polytechnic in Horticulture, AAU, Vadodara)***
18.4.3.10	Effect of different growing media on crop sequence of broccoli- brinjal under terrace vegetable cultivation	**Accepted with following suggestions:** 1. Treatment no.1 use word *Goradu soil* instead of Garden soil 2. Add observation on Crop duration 3. Add units in observations ***(Action: Principal, Sheth D. M. Polytechnic in Horticulture, AAU, Vadodara)***
18.4.3.11	Effect of growing condition, rootstock height and polytube cap on softwood grafting in jamun	**Accepted with following suggestions:** 1.Objective no.1 use word growing instead of favourable ***(Action: Principal, Sheth D. M. Polytechnic in Horticulture, AAU, Vadodara)***
18.4.3.12	Effect of plant geometry on yield of banana (dwarf banana) **Change Title as "Effect of spacing on growth and yield of dwarf banana"**	**Accepted with following suggestions:** 1. Objective: add word growth and before yield 2. Observations No.2 use word Pseudo before stem girth 3. Observations No.4 days to shooting instead of flowering ***(Action: Principal, College of Agriculture, AAU, Jabugam)***
18.4.3.13	Effect of nitrogen, phosphorus and potassium on growth and yield of brinjal (*Solanum melongena L.*) cv. GRB 8 (Anand Raj) **Change Title as "Effect of nitrogen, phosphorus and potash on growth and yield**	**Accepted with following suggestions:** 1.Add objective : Interaction effect if any 2.Remove Note No.4 ***(Action: Principal, College of Agriculture, AAU,***

	of brinjal cv. Anand Raj"	***Jabugam)***

NAVSARI AGRICULTURAL UNIVERSITY (HORTICULTURE)

Item no.	Title	Suggestions and Action
18.4.3.14	Response of banana cv. Grand Naine to plant growth retardants	**Accepted with following suggestion/s** 1. Conduct trial as feeler trail. 2. If results found promising, consider as a first year trail. ***(Action: Prof and Head, Fruit Science & PSMA, ACHF, NAU, Navsari)***
18.4.3.15	Canopy architecture in mango var. Totapuri	**Accepted with following suggestion/s** 1. In treatment details, take Factor II – as Pruning intensity for canopy management. 2. In observation no. 4, Write Days to flowering instead of Date of full bloom. ***(Action: Prof and Head, Fruit Science & PSMA, ACHF, NAU, Navsari)***
18.4.3.16	Optimization of nitrogen and potash fertilizer in dragon fruit	**Accepted with following suggestion/s** 1. Add objective interaction effect 2. In treatment detail, for Factor I remove N 350 g/pole and add N 600 g/pole. 3. For Factor II, write K_1, K_2, K_3, K_4. 4. In observations measure the canopy area at the time of flowering. 5. Take fruit volume (ml) instead of fruit size in yield parameters no.4. 6. Add fresh biomass in observation in growth character. 7. Remove observation on Number of cladode per piller. 8. Take Nutrient uptake by plants and soil nutrient content at before and after fertilizer application. 9. Add observation days to flowering ***(Action: Prof and Head, Fruit Science& PSMA, ACHF, NAU, Navsari)***
18.4.3.17	Crop improvement in mango through half-sibs	**Approved** ***(Action: Prof and Head, Fruit Science& PSMA, ACHF, NAU, Navsari)***
18.4.3.18	Effect of chemical mutagen in banana	**Approved** ***(Action: Prof and Head, Fruit Science& PSMA, ACHF, NAU, Navsari)***
18.4.3.19	Effect of time of inarch grafting on success and survival of guava	**Accepted with following suggestion/s** 1. Delete observations no. 1 to 4. 2.Remove '(days)' from observation no.7 ***(Action: Prof and Head, Fruit Science& PSMA, ACHF, NAU, Navsari)***
18.4.3.20	Performance of strawberry cultivars in South Gujarat	**Approved** ***(Action: Prof and Head, Fruit Science& PSMA, ACHF, NAU, Navsari)***
18.4.3.21	Evaluation of banana germplasm for processing	**Approved** ***(Action: Res. Scientist, FRS, NAU, Gandevi)***
18.4.3.22	Effect of age of rootstock on	**Accepted with following suggestion/s**

	success of approach grafting in Mango	1. Keep only one objective instead of two. 2. Remove observations no. 1 to 4. ***(Action: Res. Scientist, FRS, NAU, Gandevi)***
18.4.3.23	Grafting in papaya	**Accepted with following suggestion/s** 1. Delete table from Experimental details for Factor 1 and 2. 2. Remove treatment combination column from treatment detail. 3. Fix the time of grafting. 4. In T_5 and T_6 keep GJP-1 as a rootstock instead of Local. ***(Action: Res. Scientist, FRS, NAU, Gandevi)***
18.4.3.24	Effect of organic liquid on growth and yield of turmeric	**Accepted with following suggestion/s** 1. Add cucurmin content in observation. ***(Action: Prof and Head, Fruit Science & PSMA, ACHF, NAU, Navsari)***
18.4.3.25	Influence of micronutrient on growth and yield of turmeric	**Accepted with following suggestion/s** 1. Add quality in objective and recast objective 2. Check plot size with statistician. 3. Add cucurmin content in observation. 4. Add observation on Nutrient uptake at harvest from plant and rhizome. ***(Action: Prof and Head, Fruit Science & PSMA, ACHF, NAU, Navsari)***
18.4.3.26	Response of Indian bean to foliar application of plant growth hormones on flowering and yield	**Accepted with following suggestion/s** 1. Analyse data in Factorial RBD as well as control v/s rest. 2. Add 'Residue analysis as per CIB guide line' in observation. ***(Action: Professor and Head (Veg. Sci.), ACHF, NAU, Navsari)***
18.4.3.27	IET on Elephant Foot Yam (AICRP)	**Approved** ***(Action: Professor and Head (Veg. Sci), ACHF, NAU, Navsari)***
18.4.3.28	High Density Planting in Elephant Foot Yam (AICRP)	**Accepted with following suggestion/s** 1. Write 'optimum' in place of 'best suitable' in objective and recast. ***(Action: Professor and Head (Veg. Sci.), ACHF, NAU, Navsari)***
18.4.3.29	High Density Planting in Greater Yam (AICRP)	**Approved** ***(Action: Professor and Head (Veg. Sci.), ACHF, NAU, Navsari)***
18.4.3.30	Effect of foliar application of organic liquid nutrients on growth, yield and quality of knol-khol	**Accepted with following suggestion/s** 1. Foliar spray should be at 30 and 45 days after planting. 2. Add pest and diseases incidence in observation. ***(Action: Professor and Head (Veg. Sci.), ACHF, NAU, Navsari)***
18.4.3.31	Effect of different levels of saline irrigation water on money plant grown under soilless and soil media.	**Not approved** ***(Action: Professor and Head (FLA), ACHF, NAU, Navsari)***

18.4.3.32	Evaluation of new crosses in Adenium for different novel traits in flower form	**Approved** ***(Action: Professor and Head (FLA), ACHF, NAU, Navsari)***
18.4.3.33	Effect of different media on leaf propagation in Echeveria succulent plant	**Approved** ***(Action: Professor and Head (FLA), ACHF, NAU, Navsari)***
18.4.3.34	Evaluation of different germplasm in Hibiscus rich in biochemical for edible use	**Approved** ***(Action: Professor and Head (FLA), ACHF, NAU, Navsari)***
18.4.3.35	PET of tuberose genotypes for flower production	**Approved** ***(Action: Professor and Head (FLA), ACHF, NAU, Navsari)***
18.4.3.36	Preliminary evaluation trial of tuberose genotypes for pot culture and landscaping	**Approved** ***(Action: Professor and Head (FLA), ACHF, NAU, Navsari)***
18.4.3.37	Preliminary evaluation trial in China aster	**Approved** ***(Action: Professor and Head (FLA), ACHF, NAU, Navsari)***
18.4.3.38	Optimization of micronutrient doses for aster	**Accepted with following suggestion/s** 1. Write in Note that 'RDF to be applied in all the treatments except T_9.' 2. Check the plot size. ***(Action: Professor and Head (FLA), ACHF, NAU, Navsari)***
18.4.3.39	Standardization of planting time and geometry on growth, flowering and seed yield of gaillardia (*Gaillardia pulchella*Foug.)	**Accepted with following suggestion/s** 1. Remove seed parameters from observation in state trail. 2. Add flowering duration and yield per day in observation. ***(Action: Professor and Head (FLA), ACHF, NAU, Navsari)***
18.4.3.40	Response of African marigold to different organic manures.	**Accepted with following suggestion/s** 1.Modify the treatments as T_4: 80 % FYM + Biofertilizer, T_5: 80 % Vermicompost + Biofertilizer, T_6: 80 % Biocompost + Biofertilizer, T_7: 40 % FYM + 20 % Vermicompost + 20 % Biocompost, T_8: 40 % Vermicompost + 20 % FYM + 20 % Biocompost, T_9: 40 % Biocompost + 20 % FYM + 20 % Vermicompost, T_{10}: Biofertilizer (Control) 2. Mention time of pinching as 30 to 40 days in cropping details. ***(Action: Professor and Head (FLA), ACHF, NAU, Navsari)***
18.4.3.41	Standardization of formulation for preparation of jaggery from sapota	**Approved** ***(Action: Professor and Head (PHT), ACHF, NAU, Navsari)***
18.4.3.42	Standardization of processing technology for dried Kothimbda/ Kachri [*Cucumiscallosus* (Rottl.) Cogn].	**Approved** ***(Action: Professor and Head (PHT), ACHF, NAU, Navsari)***

NAVSARI AGRICULTURAL UNIVERSITY (FORESTRY)

Sr. No.	Title	Suggestion/s and Action
18.4.3.43	Influence of pre-sowing seed treatments on germination and seedling vigour in Dandosi (*Dalbergia lanceolaria* L. f.)	**Accepted with following suggestion:** 1. Delete treatment T_3 ***(Action: PI & HOD, Silviculture and Agroforestry Department, CoF, ACHF, NAU, Navsari)***
18.4.3.44	Preparation of stem-form table for estimation of volume in Teak (*Tectona grandis* L. f.)	**Approved** ***(Action: PI & HOD, Silviculture and Agroforestry Department, CoF, ACHF, NAU, Navsari)***
18.4.3.45	Growth, productivity and carbon sequestration potential of *Sterculia foetida* L. under agroforestry models and block plantations in South Gujarat	**Accepted with following suggestions** 1. Remove 3rd Objective 2. For Fenugreek use Pusha Early Bunchy Variety 3. For Aloe vera, use INGR 13043 Variety ***(Action: PI & HOD, Silviculture and Agroforestry Department, CoF, ACHF, NAU, Navsari)***
18.4.3.46	Growth, productivity and carbon sequestration potential of *Toona ciliata* M. Roem under agroforestry models and block plantations in South Gujarat	**Accepted with following suggestions:** 1. Remove 3rd Objective 2. For Fenugreek use Pusa Early Bunchy Variety 3. For Lemongrass, use LS -1 Variety ***(Action: PI & HOD, Silviculture and Agroforestry Department, CoF, ACHF, NAU, Navsari)***
18.4.3.47	Growth assessment of carps with respect to species ratio under freshwater conditions	**Accepted with following suggestions:** 1. Modify title as "Growth assessment of carps with respect to species ratio and boundary planation of trees under freshwater conditions" 2. Add tree Growth parameters (Height, DBH, Crown diameter) 3. Remove 3rd Objective ***(Action: PI & HOD, Silviculture and Agroforestry Department, CoF, ACHF, NAU, Navsari)***
18.4.3.48	Effect of boundary plantation of different tree species on associate crops	**Accepted with following suggestion:** 1. Add particle density parameter in observation ***(Action: PI & HOD, Silviculture and Agroforestry Department, CoF, ACHF, NAU, Navsari)***
18.4.3.49	Development of volumetric equation for Bangali baval (*Acacia auriculiformis* A. Cunn. ex Benth)	**Approved** ***(Action: PI & HOD, Silviculture and Agroforestry Department, CoF, ACHF, NAU, Navsari)***
18.4.3.50	Development of volumetric equation for Khair [*Acacia catechu* (L.f.) Willd]	**Approved** ***(Action: PI & HOD, Silviculture and Agroforestry Department, CoF, ACHF, NAU, Navsari)***

18.4.3.51	Estimation of tree biomass and carbon sequestration potential of selected tree species of South Gujarat	**Approved** ***(Action: PI & HOD, Silviculture and Agroforestry Department, CoF, ACHF, NAU, Navsari)***
18.4.3.52	Evaluation of selected short rotation tree species for growth, biomass and carbon yield under south Gujarat condition	**Accepted with following suggestion:** 1. Remove completion year. ***(Action: PI & HOD, Silviculture and Agroforestry Department, CoF, ACHF, NAU, Navsari)***
18.4.3.53	Growth, productivity and carbon sequestration potential of *Toona ciliata* M. Roem genotypes in South Gujarat	**Accepted with following suggestions:** 1. Remove objective 2 i.e. Economics. 2. Remove completion year. ***(Action: PI & HOD, Silviculture and Agroforestry Department, CoF, ACHF, NAU, Navsari)***
18.4.3.54	Growth, productivity and carbon sequestration potential of *Sterculia foetida* L. genotypes in South Gujarat	**Accepted with following suggestions:** 1. Remove objective 3 i.e. Economics. 2. Remove completion year. ***(Action: PI & HOD, Silviculture and Agroforestry Department, CoF, ACHF, NAU, Navsari)***
18.4.3.55	Clonal evaluation of Casuarina spp. for growth and biomass in South Gujarat	**Accepted** ***(Action: PI & HOD, Forest Biology and Tree Improvement Department, CoF, ACHF, NAU, Navsari)***
18.4.3.56	Evaluation of open pollinated progenies of Sultan Champo (*Calophyllum inophyllum* L.) for flowering phenology, fruit yield, seed traits and oil content in South Gujarat condition	**Accepted** ***(Action: PI & HOD, Forest Biology and Tree Improvement Department, CoF, ACHF, NAU, Navsari)***
18.4.3.57	Clonal and seedling variability among selected CPTs of Kadamba (*Neolamarckia cadamba* Roxb. Bosser)	**Accepted with following suggestions:** 1. For Shoot and Root biomass, modify unit as "g/plant". 2. For GCV, PCV and ECV mention unit as "%". ***(Action: PI & HOD, Forest Biology and Tree Improvement Department, CoF, ACHF, NAU, Navsari)***
18.4.3.58	Radiation use efficiency of turmeric varieties under Ailanthus alley system in saline soils	**Accepted with following suggestions:** 1. Remove Treatments "V_5" and "V_6" 2. Add other two varieties of Turmeric if possible 3. Remove heading "Ancillary observation" and modify "Soil analysis" as "Soil and Water analysis" 4. Retain water quality parameter in "Soil and Water analysis". ***(Action: PI & HOD, Natural Resource Management Department, CoF, ACHF, NAU, Navsari)***
18.4.3.59	Influence of tree plantations on soil organic carbon and physico-chemical properties of soils	**Accepted with following suggestions:** 1. Add physical properties of soil viz., Bulk Density, WHC and porosity.

		(Action: PI & HOD, Natural Resource Management Department, CoF, ACHF, NAU, Navsari)
18.4.3.60	Status of wild mammalian fauna in NAU campus	**Approved** *(Action: PI & HOD, Wildlife Sciences Dept., CoF, ACHF, NAU, Navsari)*
18.4.3.61	Population assessment of leopard in human dominated landscape of Vansada taluka of Navsari District	**Approved** *(Action: PI & HOD, Wildlife Sciences Dept., CoF, ACHF, NAU, Navsari)*
18.4.3.62	Long term monitoring of roadkill on NH 64 from Eru Char Rasta to Dandi, Dist. Navsari	**Approved** *(Action: PI & HOD, Wildlife Sciences Dept., CoF, ACHF, NAU, Navsari)*
18.4.3.63	Bird community structure in Vansada National Park, Navsari, Gujarat	**Approved** *(Action: PI & HOD, Wildlife Sciences Dept., CoF, ACHF, NAU, Navsari)*

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

Item no.	Title	Suggestions and Action
18.4.3.64	Effect of growing condition and growing media on survivability of air layers in pomegranate (*Punica granatum* L.)	**Accepted with following suggestions** **1.** Replace the treatment natural shade by open condition in factor A. ***(Action: Principal, College of Horticulture, SDAU, Jagudan)***
18.4.3.65	Intercropping study in African marigold with green onion	**Accepted with following suggestions** **1.** Recast the title as "Feasibility of intercropping in African marigold with spring onion"**.** **2.** Mention the time of transplanting (August/ September) ***(Action: Principal, College ofHorticulture, SDAU, Jagudan)***
18.4.3.66	Effect of different storage condition and packaging material on shelf life of phalsa (*Grewia asiatica* L.) fruit.	**Accepted with following suggestions** 1. Suggested to present the experiment in Food Tech. AGRESCO Sub Committee in next year. ***(Action: Professor & Head, Dept. of Horti, CPCA, SDAU, SK Nagar)***
18.4.3.67	Effect of pinching on growth and yield of rainfed okra (*Abelmoschus esculentus*)	**Accepted with following suggestions** 1. Recast the title as "Effect of pinching on growth and yield of different varieties of okra (*Abelmoschus esculentus*) under rainfed condition. 2. Pinching is to be done at 45 and 60 DAS. 3. Measure the plant height and number of branches at 45, 60 DAS and at final harvest. 4. Add the observation - Number of pickings. ***(Action: Principal, Vanbandhu Agricultural Polytechnic, SDAU, Amirgadh)***
18.4.3.68	Effect of different time of sowing and crop cover for off seasonal muskmelon production.	**Accepted with following suggestions** 1. Recast the title as "Crop cover, time and method of sowing in muskmelon for early production". 2. Replace propagation method words by method of sowing in factor C. 3. Add the observation: Pest and disease

		incidence upto crop cover opening stage. ***(Action: Senior Sci. & Head, KVK, SDAU, Banaskantha, Deesa)***
18.4.3.69	Effect of different methods of grafting and hardening on muskmelon seedling.	**Accepted with following suggestions** 1. In observation, transplanting age will be two sprouted leaf stage. ***(Action: Senior Sci. & Head, KVK, SDAU, Banaskantha, Deesa)***
18.4.3.70	Effect of different methods of grafting and hardening on watermelon seedling.	**Accepted with following suggestions** 1. Mention the variety of bottle gourd (rootstock) : Pusa Navin 2. In observation, transplanting age will be two sprouted leaf stage. ***(Action: Senior Sci. & Head, KVK, SDAU, Banaskantha, Deesa)***
18.4.3.71	Effect of different organic substances and time of seed soaking on germination, survivability and growth of papaya seedling	**Accepted with following suggestions** 1. Write the concentration of organic substances in treatments 2. Use variety GJP 1 of papaya 3. In objectives, add interaction effect of both the factors instead of if any ***(Action: Senior Sci. & Head, KVK, SDAU, Tharad)***
18.4.3.72	Effect of seed treatments on germination of drumstick	**Not approved.** ***(Action: Senior Sci. & Head, KVK, SDAU, Khedbrahma)***

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<u>General suggestions:</u>

1. In all the SAUs, report should be in common format. All the conveners should finalize the common format and circulate.
2. In all the SAUs, presentation (ppt) should be in common format. All the conveners should finalize the common format and circulate.
3. Economics must be in common format as circulated by JAU during last year.
4. Data should be given in column as main effect and if interaction is significant then only it is to be given.
5. For AICRP experiments, uniform guidelines should be followed in all the SAUs and should be finalized at DOR level.
6. One Recommendation or NTP should not be considered in two sub-committees to avoid creates the duplication.
7. Economics must be calculated in all the experiments.
8. Labour cost should be same in all the experiments of one station.
9. Photographs showing the treatment effect should be presented.
10. In presentation (ppt), for ancillary observations only pooled data may be presented while for core or important characters, year wise and pooled data should be presented. (In report all the data of all the characters (year wise and pooled) should be given.

18.5 AGRICULTURAL ENGINEERING AND AIT

DATE: May 11-13, 2022

Chairman	:	Prof. (Dr. N. K. Gontia), Vice Chancellor, JAU, Junaadh
Co- Chairman-1	:	Dr. B. S. Deora, Director of Research, SDAU, Sardarkrushinagar
Co- Chairman-2	:	Dr. R .Subbaih, Dean (Agril. Engg.), AAU, Godhra
Rapporteurs-1	:	1. Dr. G. V. Prajapati, JAU
Rapporteurs-2	:	2. Dr. Navneet Kumar, AAU
Rapporteurs-3	:	3. Dr. A. K. Lakkad, NAU
Rapporteurs-4	:	4. Dr. B. S. Parmar, SDAU
Statistician	:	Dr. N. J. Rankja, Assoc. Professor, JAU

Presentation of recommendations and new technical programmes by Conveners of SAUs

Sr. No.	Name	Designation & University
1	Dr. V. K. Tiwari	Research Scientist (Agril. Engg.), RTTC, JAU, Junagadh
2	Dr. R. S. Parmar	Professor, College of Agril. Information Technology, AAU, Anand
3	Dr. S. H. Sengar	Associate Professor, Dept. of Renewable Energy Engineering, CAET, NAU, Dediapada
4	Dr. V. M. Modi	Associate Professor, Dept. of Renewable Energy, College of RE & EE, SDAU, Sardarkushinagar

Summary of the Recommendations

Name of University	Proposed		Approved	
	Farmer	Scientific	Farmer	Scientific
JAU	7	4	7	4
AAU	0	2	0	2
NAU	2	0	2	0
SDAU	1	1	1	1
Total	**10**	**7**	**10**	**7**

18.5.1 RECOMMENDATIONS FOR FARMING COMMUNITY

JUNAGADH AGRICULTURAL UNIVERSITY

Sr. No.	Title
18.5.1.1	**Design, development and performance evaluation of battery operated pruner for horticultural crops**
	The farmers are recommended to use the "Battery operated rotary blade pruner for horticultural crops" developed by Junagadh Agricultural University, to prune horticultural crops like Lime, Guava, Jamun and Ornamental crops. The operator can prune in all directions up to height of 4 meters.
	ખેડૂતોને બાગાયતી પાકો જેવા કે, લીંબુ, જામફળ, જાંબુ, અને શોભાના છોડને પ્રુનીંગ કરવા માટે જુનાગઢ કૃષિ યુનિવર્સીટી દ્વારા વિકસાવવામાં આવેલ "બેટરી ઓપરેટેડ રોટરી બ્લેડ પ્રુનર ફોર હોર્ટીકલ્ચરલ ક્રોપ્સ" વાપરવા ભલામણ કરવામાં આવે છે. આ પ્રુનરના વપરાશથી ૪ મીટરની ઉંચાઈ સુધીની ડાળખીઓને ગમે તે દિશામાંથી પ્રુનીંગ કરી શકાય છે.
	Release proposal accepted by the house with following suggestion: 1. Remove word "without going near to twig" from recommendation. 2. Replace word "advised" with "Recommended". 3. Remove "Junagadh/ જુનાગઢ" word from both English & Gujarati paragraph. 4. Replace "up to height of four meters" with "up to height of 4 meters" in both

English & Gujarati paragraph.

5. Check specifications of voltage/ampere of battery and motor, Include cost of battery.

*[**Action:** Prof. & Head, Department of Farm Machinery and Power Engineering, CAET, JAU, Junagadh]*

18.5.1.2 Assessment and management planning of groundwater resources of Uben river basin

It is recommended to the farmers, NGOs and Government line departments that 50 % of rainfall as groundwater recharge including natural recharge is required for sustaining water resources in the Uben basin. The optimum groundwater recharge planning of Uben basin should be done by recharging through 2372 check dams, 15751 farm ponds, 5558 open wells and 1390 tube wells.

ખેડૂતો સ્વૈચ્છિક સંસ્થાઓ અને સરકારના સંલગ્ન વિભાગોને ભલામણ કરવામાં આવે છે કે ઉબેણ બેસીનમાં ટકાઉ ભૂગર્ભજળ રીચાર્જ માટે કુદરતી રીચાર્જ સાથે વરસાદના ૫૦ % રીચાર્જ થવો જરૂરી છે. યુક્તતમ ભૂગર્ભજળ રીચાર્જનું અયોજન ૨૩૭૨ ચેકડેમ, ૧૫૭૫૧ ખેત તલાવડી, ૫૫૫૮ ખુલ્લા કુવાઓ અને ૧૩૯૦ ટ્યુબવેલ દ્વારા રીચાર્જ થી કરવુ.

Release proposal accepted by the house with following suggestion:

1. Correct Fig. 28 in the report.

2. In Gujarati Paragraph, replace word "ફાર્મ પોન્ડ" with "ખેત તલાવડી".

3. In Gujarati Paragraph, Replace "ભુગર્ભ જળ સંશાધન" with "ભુગર્ભ જળ રિચાર્જ"

*[**Action:** Prof. & Head, Department of Soil and Water Conservation. Engineering, CAET, JAU, Junagadh]*

18.5.1.3 Impact of irrigation regimes and fertigation scheduling on brinjal crop

Farmers of South Saurashtra Agro climatic Zone growing brinjal crop during *rabi* season are recommended to apply 100 % RDF of phosphorous and 25 % RDF of N and K (100:37.5:37.5 N: P_2O_5: K_2O) as a basal dose and remaining 75 % RDF of N and K through drip irrigation in 7 equal splits after 25 days of transplanting at 12 days interval to obtain higher yield, net return, water use efficiency and save up to 42 % irrigation water compared to furrow irrigation.

Details of drip system	Irrigation scheduling
Lateral spacing : 90 cm Dripper spacing: 60cm Dripper discharge: 4 lph Operating pressure: 1.2 kg/cm^2	At 0.8 ETc with 3 days interval a) November:47 min b) December: 50 min c) January: 1 hr. 15 min d) February: 1 hr. 50 min e) March : 2 hr. 20 min.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકિય વિસ્તારમાં શિયાળામાં રીંગણના પાકનું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે,રીંગણના પાકમાં ભલામણ કરવામાં આવેલ રસાયણિક ખાતર (૧૦૦: ૩૭.૫: ૩૭.૫ N: P_2O_5: K_2O) ના ૧૦૦ % ફોસ્ફરસ અને ૨૫ % નાઈટ્રોન અને પોટાશનો જથ્થો વાવેતર સમયે આપવો અને બાકીના ૭૫ % નાઈટ્રોન અને પોટાશનો જથ્થો ફેરરોપણીના ૨૫ દિવસ બાદ ૭ સરખા ભાગમાં દર ૧૨ દિવસના અંતરાલે ટપક સિંચાઈ પદ્ધતિ દ્વારા નીચે મુજબ આપવાથી ધોરીયા પિયત પદ્ધતિની સરખામણીમાં વધુ ઉત્પાદન, વધુ ચોખ્ખી આવક, વધુ પાણીની ઉત્પાદકતા મેળવી શકાય છે અને ૪૨ % જેટલો પિયત પાણીનો બચાવ કરી શકાય છે.

ટપક પદ્ધતિ અંગેની માહિતી	ડ્રીપ ચલાવવાનો સમય
લેટરલનું અંતર :૯૦ સેમી ડ્રીપર નું અંતર :૬૦ સેમી ડ્રીપરનો પ્રવાહ દર :૪ લી/કલાક પરીસંચલન દબાણ: ૧.૨ કિગ્રા/ચો.સેમી	૦.૮ ઈટીસી લેવલે ત્રણ દિવસના અંતરાલે નીચે મુજબ પિયત આપવું અ) નવેમ્બર :૪૭ મિનીટ બ) ડીસેમ્બર : ૫૦ મિનીટ ક) જાન્યુઆરી :૧ કલાક ૧૫ મિનીટ ડ) ફેબ્રુઆરી :૧ કલાક ૫૦ મિનીટ ઈ) માર્ચ: ૨ કલાક ૨૦ મિનીટ

Release proposal accepted by the house with following suggestion:

1. Add “water use efficiency” in recommendation.
2. Replace word “advised” with “recommended”
3. Replace “100 % of phosphorous and 25 % of N and K of RDF ...” with 100 % RDF of phosphorous and 25 % RDF of N and K.
4. Remove percentage from recommendation.

*[**Action:** Research Scientist (Agril. Engg.), RTTC, JAU, Junagadh]*

18.5.1.4 Performance evaluation of farm yard manure applicator for wheat crop

Farmers of South Saurashtra Agro-climatic Zone growing wheat are recommended to apply 7.5 t/ha. FYM in furrow in addition to RDF, using Junagadh Agricultural University developed FYM applicator to obtain higher net return and save 25 % of FYM.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકિય વિસ્તારમાં ઘઉંનું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ઘઉંના પાકમાં જૂનાગઢ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ ફાર્મયાર્ડ મેન્યુર એપ્લીકેટર દ્વારા ચાસમાં ભલામણ કરેલ રસાયણિક ખાતર ઉપરાંત ૭.૫ ટન/હે. છાણીયું ખાતર આપવાથી વધુ ચોખ્ખી આવક મેળવી શકાય છે અને ૨૫ % છાણીયા ખાતરનો બચાવ કરી શકાય છે.

Release proposal accepted by the house with following suggestion:

1. Replace “Advised” word with “Recommended” in English paragraph
2. Add Junagadh Agricultural University developed FYM applicator in reco.

*[**Action:** Research Scientist (Agril. Engg.), RTTC, JAU, Junagadh]*

18.5.1.5 Design and development of grain treater for enzymatic pre-treatment to pigeon pea grains

The pulses processors are recommended to use the grain treater (capacity 100 kg/batch of 8 h) developed by Junagadh Agricultural University for efficient enzymatic pre-treatment to increase the hulling efficiency, reduce the processing cost and improve the benefit-cost ratio as compared to the traditional dhal processing.

આથી કઠોળ પ્રોસેસરોને તુવેર ના દાણાને અસરકારક રીતે ઉત્સેચકોની પ્રાથમિક પ્રક્રિયા આપવા માટે જુનાગઢ કૃષિ યુનિવર્સીટી દ્વારા વિકસાવવામાં આવેલ ગ્રેઇન ટ્રીટર (ક્ષમતા: ૧૦૦ કિગ્રા પ્રતિ ૮ કલાક બેચ) નો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે જે તુવેર નું ફોતરૂ દુર કરવાની ક્ષમતામાં વધારો કરે છે અને તેને કારણે દાળ બનવવાની પરંપરાગત પ્રક્રિયાની સરખામણીમાં દાળનો પ્રોસેસિંગ ખર્ચ ઘટે છે તથા નફો વધે છે.

Release proposal accepted by the house with following suggestion:

1. Remove “Method” word from English paragraph.
2. Replace “નફા-ખર્ચનો ગુણોત્તર” with **“**નફો” in Gujarati paragraph**.**
3. Add the capacity of grain treater.

*[**Action:** Prof. & Head, Dept. of Processing and Food Engg., CAET, JAU, Junagadh]*

18.5.1.6 Low temperature grinding of spices (Turmeric)

	The farmers and spice processors are recommended to use Junagadh Agricultural University developed grinding process for turmeric rhizome feed at low temperature (-10±2 ^{0}C) using coolant (propylene glycol) circulation (15 lpm) through jacketed grinding mill for better retention of biochemical compounds (including curcumin) and volatile oil.
	ખેડૂતો અને મસાલા પ્રોસેસરોને હળદરના પાવડરમાં જીવરસાયણિક તત્વો (કરક્યુમીન સહીત) અને બાષ્પશીલ તેલનું વધુ પ્રમાણ જાળવવા માટે નીચા તાપમાને (-૧૦ ± ૨° સે.) હળદરના ગાંઠિયાને જેકેટેડ દળવાની મીલમાં ૧૫ લી. પ્રતિ મિનીટ પ્રવાહ દરે પ્રોપિલીન ગ્લાયકોલ કુલન્ટના પરિભ્રમણથી જુનાગઢ કૃષિ યુનિવર્સીટી દ્વારા વિકસાવેલ દળવાની પધ્ધતિ માટે ભલામણ કરવામાં આવે છે.
	Release proposal accepted by the house with following suggestions: **1.** Correct the spelling of "Statistically" in conclusions section in report**.** 2. Add word 'farmers' in the recommendation. ***[Action:** Prof. & Head, Dept. of Processing and Food Engg., CAET, JAU, Junagadh**]***
18.5.1.7	**Effect of protected structure and mulching on cauliflower cultivation during rainy season**
	The farmers of Gujarat are recommended to use Junagadh Agricultural University developed poly-cum-net house for off-season cauliflower cultivation during rainy season to achieve higher crop production and net return.
	ગુજરાતના ખેડૂતોને ચોમાસા દરમ્યાન ઓફ-સિઝન કોલીફલાવરની ખેતીમાં વધુ પાક ઉત્પાદન તથા વળતર મેળવવા માટે જૂનાગઢ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ પોલી-કમ-નેટ હાઉસનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે.
	Release proposal accepted by the house with following suggestions: 1. Add word 'Junagadh Agricultural University developed' in the recommendation. ***[Action:** Prof. & Head, Dept. of Renewable Energy Engg., CAET, JAU, Junagadh**]***

NAVSARI AGRICULTURAL UNIVERSITY

18.5.1.8	**Development of Zero Energy Evaporative Cooling Storage Structure (ZEECSS) for Tribal Region of Dediapada**
	The farmers and entrepreneurs of dry tribal region of South Gujarat are recommended to use Zero Energy Evaporative Cooling Storage Structure (ZEECSS) having 50 kg capacity consisting of bricks cooling pad having 100 mm thickness, to store yellowish red fresh tomatoes up to 10 days without loss with 11±2 ^{o}C temperature drop, 87 % relative humidity, 677.89 W/m^2 solar radiation and 2.39 m/s wind speed towards the wind direction..
	દક્ષિણ ગુજરાતના સૂકા વિસ્તારના આદિવાસી ખેડૂતો અને ઉદ્યોગ સાહસિકોને ૧૧±૨° ડીગ્રી સે . તાપમાનના ઘટાડા, ૮૭ % સાપેક્ષ આદ્રતા (રીલેટીવ હ્યુમીડિટી), ૬૭૭.૮૯ વોટ/ચો.મી. સોલાર રેડિયેશન અને પવનની દિશામાં ૨.૩૯ મી./સે. ગતિ સાથે ૧૦ દિવસ સુધી લાલ પીળા તાજા ટામેટાંનો નુકસાન વિના સંગ્રહ કરવા માટે ૫૦ કિગ્રા ક્ષમતાના શૂન્ય એનર્જી બાષ્પીભવનકારી ઈંટોના ૧૦૦ મીમી જાડાઈના કૂલિંગ પેડ સાથે કૂલીંગ સ્ટોરેજ સ્ટ્રક્ચર ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે.
	Release proposal accepted by the house with following suggestions: 1. Revise recommendation paragraph as a. Mention '100 mm' cooling pad thickness. b. Instead of '14 days', mention 'up to 10 days' 2. Replace word "**સાઉથ**" with "**દક્ષિણ**" in Gujarati paragraph.

	3. Replace word "ઝીરો" with "શુન્ય" in Gujarati paragraph. 4. Add "dry tribal region of South Gujarat" in recommendation ***[Action:** Head, PFE, CAET, NAU, Dediapada]*
18.5.1.9	**Design, development and performance evaluation of mixed mode cabinet solar dryer**
	Farming community and entrepreneurs are recommended to use the 20 kg capacity mixed mode cabinet solar dryer (2 m² solar collector and 0.8 m^3 drying chamber with glass cover) for: Tomato drying (from 94 % moisture content to 8 % moisture content) cut in to 8 mm thick slices and 7 kg/m^2 tray load in 10 hours in summer and 14 hours in winter, which saves 22 hours and 34 hours respectively in summer and winter, compared to open sun drying. Onion drying (from 85 % moisture content to 8 % moisture content) cut in to 8 mm thick slices and 7 kg/m^2 tray load in 9 hours in summer and 13 hours in winter, which saves 20 hours and 29 hours respectively in summer and winter, compared to open sun drying.
	ખેડૂત સમુદાય અને ઉદ્યોગ સાહસિકોને, ૨૦ કિગ્રા ક્ષમતાવાળા મિશ્રમોડ કેબિનેટ સૌર સૂકવણી યંત્રની (૨ ચો.મી. સોલાર કલેક્ટર અને કાચની છત સાથે ૦.૮ ઘનમીટર ડ્રાઈંગ ચેમ્બર) ની ભલામણ કરવામાં આવે છે કે... (૧) ટામેટાને (૯૪ % થી ૮ % ભેજ સુધી) ૮ મીમી જાડી સ્લાઈસ અને ૭ કિલો પ્રતિ ચો.મી. ટ્રે લોડ સાથે સુકવણી કરતા ઉનાળામાં અને શિયાળામાં અનુક્રમે ૧૦ અને ૧૪ કલાકનો સમય લાગે છે કે જે ખુલ્લા તડકાની સરખામણીએ અનુક્રમે ૨૨ અને ૩૪ કલાકની બચત કરે છે. (૨) ડુંગળીને (૮૫ % થી ૮ % ભેજ સુધી) ૮ મીમી જાડી સ્લાઈસ અને ૭ કિલો પ્રતિ ચો.મી. ટ્રે લોડ સાથે સુકવણી કરતા ઉનાળામાં અને શિયાળામાં અનુક્રમે ૯ અને ૧૩ કલાકનો સમય લાગે છે કે જે ખુલ્લા તડકાની સરખામણીએ અનુક્રમે ૨૦ અને ૨૯ કલાકની બચત કરે છે.
	Release proposal accepted by the house with following suggestions: Recast the recommendation paragraph for both crop in winter and summer season ***[Action:** Head, REE, CAET, NAU, Dediapada]*

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

18.5.1.10	**Effect of lateral spacing and irrigation interval on productivity of drip irrigated wheat under North Gujarat conditions**
	The farmers of North Gujarat Agro Climatic Zone IV growing wheat under drip irrigation are recommended to apply 5 tonne FYM per hectare in addition to recommended dose of fertilizers as well as adopt following drip irrigation system and scheduling to obtain higher yield and income.

Details of drip irrigation system	Irrigation scheduling
Lateral spacing : 67.5 cm (One lateral after three rows of wheat) Dripper spacing : 40 cm Dripper discharge : 4 lph	At every two days interval a) December : 26 min b) January : 40 min c) February : 50 min d) March : 38 min

ઉત્તર ગુજરાત ખેત આબોહવકિય વિભાગ-૪ માં ટપક સિંચાઈ પદ્ધતિ દ્વારા ઘઉંનું વાવેતર કરતા ખેડૂતો ને વધારે ઉત્પાદન અને આવક મેળવવા માટે હેક્ટરે ભલામણ કરેલ રસાયણિક ખાતર ઉપરાંત ૫ ટન છાણીયું ખાતર આપવું તેમજ નીચે મુજબ ડ્રીપ સિસ્ટમની ગોઠવણી કરી પિયત આપવાની ભલામણ કરવામાં આવે છે.

ટપક પદ્ધતિ અંગેની વિગત	ડ્રીપ ચલાવવાનો સમય
ડ્રીપ લેટરલનું અંતર : ૬૭.૫ સે.મી. (ઘઉંની ત્રણ હાર પછી એક લેટરલ) ડ્રીપરનું અંતર : ૪૦ સે.મી. ડ્રીપરનો પ્રવાહ : ૪ લી/ કલાક	દર બે દિવસના અંતરાલે અ. ડિસેમ્બર : ૨૬ મિનીટ બ. જાન્યુઆરી : ૪૦ મિનીટ ક. ફેબ્રુઆરી : ૫૦ મિનીટ ડ. માર્ચ : ૩૮ મિનીટ

Release proposal accepted by the house with following suggestions:

1. Verify the moisture distribution in recommended spacing and dripper discharge.
2. Recast the language of recommendation paragraph as suggested by house.

***[Action:** Research Scientist, CNRM, SDAU, S K Nagar]*

18.5.2 RECOMMEDATION FOR SCIENTIFIC COMMUNITY

JUNAGADH AGRICULTURAL UNIVERSITY

18.5.2.1 Assessment and management planning of groundwater resources of Uben river basin

It is recommended to the Scientific community that the calibrated hydraulic conductivities for confined and unconfined aquifers of Uben river basin determined by electrical resistivity method are as:

Calibrated hydraulic conductivity of Uben basin

SN	Location	Unconfined Aquifer K (m/s)	Confined Aquifer K (m/s)
1	Sakkarbaugh	0.006482947	0.00387976
2	Sukhpur	0.004538363	0.00363189
3	Ranpur	0.002018549	0.004539113
4	Parabdham	0.0030266	0.0034919
5	Evenagar	1.00E-04	0.0051875
6	Patala	1.50E-04	3.00E-04
7	Choki	0.0060522	0.001398
8	Vadal	0.0064829	3.00E-04
9	Makhiyala	1.50E-04	0.0090752
10	Chobari	0.0030246	0.0052944
11	Satalpur	0.0013	0.0014
12	Goladhar	0.00303	0.00248
13	Ravani-Rupavati	2.63E-04	0.0009102
14	Fareni	0.0060486	0.0090752
15	Bava-Pipaliya	0.0018163	0.0060512

Release proposal accepted by the house with following suggestions:

1. Write method for determination of hydraulic conductivity in the recommendation.

***[Action:** Prof. & Head, Department of Soil and Water Conservation Engineering, CAET, JAU, Junagadh]*

18.5.2.2 Root growth study of Brinjal crop under different irrigation methods

The drip designers/ Irrigation water managers /Scientific communities are advised to adopt the following root growth models of exponential model of either Rasmussen and Hanks or Hanks and Hill for Brinjal crop grown in loamy soil as a decision support tool for drip operational parameters to get wetted bulb matching with depth and spreading of root zone. Model efficiency was observed 99.79 %. The maximum number of lateral roots and length of the lateral roots found under drip irrigation with mulch resulted maximum moisture uptake (56.91 %) from first quarter of root zone (0-25 % from top) at all plant growth stages compared to other irrigation

methods.

Root growth model	Horizontal root spreading	Vertical root zone
Rasmussen and Hanks, 1978	$L_t = L_0+(L_m-L_0) / [1+Exp\{A-B(t/t_m)\}]$ Where, A = 0.78 and B = 6.99	$RD_t = RD_0+(RD_m-RD_0) / [1+Exp\{A-B(t/t_m)\}]$ Where, A = 3.25, B = 13.14
Hanks and Hill, 1980; Arora et al., 1987	$L_t = L_m / [1+Exp \{a-b(t/t_m)\}]$ Where, a = 0.64, b = 6.81	$RD_t = RD_m / [1+Exp \{a-b(t/t_m)\}]$, Where, a = 3.25, b = 13.14

Release proposal accepted by the house with following suggestions:

1. Add model efficiency

***[Action:** Research Scientist (Agril. Engg.), RTTC, JAU, Junagadh]*

18.5.2.3 Online university student fees receipt system

It is recommended to use Junagadh Agricultural University developed Web based “Online university student fees receipt system" by the State Agricultural Universities (SAU's) of Gujarat as a part of e-Governance initiatives in the Universities. It provides seamless digital interface to the students of the various colleges for making digital payment towards their educational fees such as semester fee, hostel fee, etc. and equips the staff for better governance.

Release proposal accepted by the house with following suggestions:

1. Remove the word “academic staff” from English paragraph and recast the paragraph.
2. Add ‘Junagadh Agricultural University developed’ in the recommendation.

***[Action:** Director, IT Cell, JAU, Junagadh]*

18.5.2.4 Development of online salary bill management for JAU, Junagadh

It is recommended to use Junagadh Agricultural University developed Web based “Online Salary Bill Management” by the State Agricultural Universities (SAUs) of Gujarat as a part of e-Governance initiatives. It is time and paper saving digital interface that provides administratively hierarchical salary bill processing system through which university employees’ salary bills can be managed online. This system provides various report generation facilities for the preparation of budget as well as monthly and periodic salary statement of each employee.

Release proposal accepted by the house with following suggestions:

1. Remove “Junagadh/જુનાગઢ” word from both English & Gujarati paragraph.
2. Add ‘Junagadh Agricultural University developed’ in the recommendation

***[Action:** Director, IT Cell, JAU, Junagadh]*

ANAND AGRICULTURAL UNIVERSITY

18.5.2.5 Monthly Forecasts of SPI and SPEI Drought Indices in Middle Gujarat

Scientists, irrigation planners, policy makers, and NGOs of middle Gujarat region are recommended (a) to use SPI drought index over SPEI drought index for one month lead time; (b) to use sigmoidal activation function in the hidden and output layers; (c) to use following ANN architecture for the specified location to predict one month lead SPI drought index.

Grid Code	Location under the district	ANN Architecture	Lag Variable
AE1	Anand	2-7-1	2
AE2	Vadodara	1-16-1	1
AE3	Vadodara	3-16-1	3
AE4	Vadodara	3-12-1	3
AE5	Chhota Udepur	1-20-1	1
AE6	Chhota Udepur	2-3-1	2
AE7	Chhota Udepur	2-13-1	2
AE8	Anand	2-14-1	2
AE9	Anand	1-16-1	1

AE10	Vadodara	1-14-1	1
AE11	Vadodara	1-16-1	1
AE12	Panchmahal	1-19-1	1
AE13	Chhota Udepur	3-20-1	3
AE14	Chhota Udepur	2-15-1	2
AE15	Kheda	2-15-1	2
AE16	Kheda	2-15-1	2
AE17	Anand	2-17-1	2
AE18	Vadodara	2-18-1	2
AE19	Panchmahal	2-16-1	2
AE20	Dahod	2-11-1	2
AE21	Dahod	2-13-1	2
AE22	Ahmedabad	3-19-1	3
AE23	Kheda	3-18-1	3
AE24	Kheda	1-1-1	1
AE25	Panchmahal	1-19-1	1
AE26	Panchmahal	1-14-1	1
AE27	Dahod	1-1-1	1
AE28	Dahod	3-5-1	3
AE29	Ahmedabad	1-20-1	1
AE30	Ahmedabad	3-8-1	3
AE31	Kheda	3-16-1	3
AE32	Mahisagar	1-18-1	1
AE33	Mahisagar	2-20-1	2
AE34	Mahisagar	3-4-1	3
AE35	Dahod	1-19-1	1
AE36	Gandhinagar	1-20-1	1
AE37	Gandhinagar	2-6-1	2
AE38	Aravalli	2-3-1	2
AE39	Mahisagar	3-14-1	3
AE40	Mahisagar	3-14-1	3
AE41	Mahisagar	1-17-1	1
AE42	Dahod	2-15-1	2

Release proposal accepted by the house with following suggestions:

1. Revise the recommendation paragraph

***[Action:** Professor and Head, Department of IDE, CAET, AAU, Godhra]*

18.5.2.6 Effect of magnetic field on germination and seedling growth of cumin

It is recommended that the exposure of 300 mT magnetic field for 45 minutes to cumin seeds improve the germination and seedling growth of cumin.

Release proposal accepted by the house with following suggestions:

1. Remove "10 days after storing" from recommendation paragraph.

***[Action:** Professor and Head, Dept. of Agril. Science, CAIT, AAU, Anand]*

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

18.5.2.7 Evaluation of rainfall and temperature variation for rainwater and crop management of Sardarkrushinagar

The Scientific community is recommended to consider the increasing trend of seasonal rainfall, annual rainfall and rainfall in 35th SMW detected through Man Kendall and Sen's Slope tests for *kharif* crop planning in North Gujarat Agro-climatic Zone IV.

Release proposal accepted by the house with following suggestions:

1. Recast the language of recommendation paragraph for scientific community as suggested by house.

***[Action**: Research Scientist, CNRM, SDAU, SK Nagar]*

18.5.3 NEW TECHNICAL PROGRAMMES

Summary

Name of University	Proposed	Approved	Not Approved
JAU	6	6	0
AAU	10	9	1
NAU	7	7	0
SDAU	3	3	0
Total	**26**	**25**	**1**

JUNAGADH AGRICULTURAL UNIVERSITY

Sr. No.	Title	Suggestion/s and Action
18.5.3.1	Development of Semi-automatic channel for border irrigation	**Approved** ***[Action:** Prof. & Head, Dept. of Soil & Water Cons. Engg., CAET, JAU, Junagadh**]***
18.5.3.2	Identification of potential groundwater recharge zones in Ozat river basin	**Approved** ***[Action:** Prof. & Head, Dept. of Soil & Water Cons. Engg., CAET, JAU, Junagadh**]***
18.5.3.3	Yield response to drip fertigation to wheat-green gram crop sequence	**Approved with following Suggestions.** 1. Include harvest index, water use efficiency 2. Add water productivity parameter in the observation to be recorded. 3. Evaluate Coefficient of Variation of drip system as suggested by house. ***[Action:** Prof. & Head, Dept. of Soil & Water Cons. Engg., CAET, JAU, Junagadh**]***
18.5.3.4	Modelling of water fluxes in the Gir forest catchment and assessment of submarine groundwater discharge in the coastal region of Saurashtra	**Approved with following Suggestions.** 1. Revise the title as "Modelling of water fluxes in the Gir forest catchment and assessment of submarine groundwater discharge in the coastal region of Saurashtra" 2. Revise the objectives as suggested by the house. ***[Action:** Prof. & Head, Dept. of Soil & Water Cons. Engg., CAET, JAU, Junagadh**]***
18.5.3.5	Study on dehulling characteristics of different sesame cultivars	**Approved** ***[Action:** Research Scientist (Pl. Br.), Agricultural Research Station, JAU, Amreli**]***
18.5.3.6	Gasification of castor & pigeon pea stalks for gas as well as biochar production in open core throat less downdraft gasifier	**Approved** ***[Action :** Prof. & Head, Dept. of Renewable Energy Engg.,CAET, JAU, Junagadh**]***

ANAND AGRICULTURAL UNIVERSITY

18.5.3.7	QR code driven species information system	**Approved** ***[Action:** Professor and Head, Dept. of AIT, CAIT, AAU, Anand**]***
18.5.3.8	Estimating evaporation using artificial intelligence technique	**Approved with following Suggestions.** 1. Add statistical Index parameter as suggested by house. ***[Action:** Professor and Head, Dept. of Agril. Science, CAIT, AAU, Anand**]***

18.5.3.9	Web and mobile based asset management using smart RFID tagging	**Approved** ***[Action:** Director, IT, AAU, Anand]*
18.5.3.10	Development of a battery operated hand tool for intra row weeding operation	**Approved with following Suggestions.** 1. Analyze the data with T test instead of CRD design 2. Revise title of project by replacing "inter plant weeding operation" with "Intra-row weeding operation" ***[Action:** Professor and Head, Department of FMPE, CAET, AAU, Godhra]*
18.5.3.11	Development of a battery operated cutting hand tool for multipurpose farm uses	**Approved as feeler trial** ***[Action:** Professor and Head, Department of FMPE, CAET, AAU, Godhra]*
18.5.3.12	Design and development of multiutility foldable domestic container from agriculture residue	**Approved with following Suggestions.** 1. Revise the title as "Design and Development of Multi-utility Foldable Domestic Container from Agriculture Residue" ***[Action:** Professor and Head, Department of BEAS, CAET, AAU, Godhra]*
18.5.3.13	Development of process technology for water chestnut	**Approved** ***[Action:** Unit Head, PAE, AAU, Dahod]*
18.5.3.14	Evaluation of GPM IMERG, TRMM and CHIRPS precipitation products over Middle Gujarat	**Approved with following Suggestions.** 1. Add the probability analysis parameters as suggested by house, i. e. Probability of detection, false alarm ratio, critical success index. ***[Action:** Professor and Head, Department of AE, BACA, AAU, Anand]*
18.5.3.15	Development of location specific synthetic hyetographs for Middle Gujarat	**Approved with following Suggestions.** 1. Revise the sentences of both objectives as suggested by house **2.** Include evaluation criteria as suggested by house**.** ***[Action:** Professor and Head, Department of AE, BACA, AAU, Anand]*
18.5.3.16	Transformation of Information through Multimedia based Interactive Media for Medicinal Crops (commercial**)**	**House suggested to drop the experiment.** ***[Action:** Professor and Head, Dept. of AIT, CAIT, AAU, Anand]*

NAVSARI AGRICULTURAL UNIVERSITY

18.5.3.17	Development and quality evaluation of jackfruit seed flour value added Biscuit	**Approved with following Suggestions.** 1. Measure the hardness of the biscuits 2. Add one more treatment as T7: Wheat flour – 40 % and Jackfruit seed flour – 60 %. 3. Use Experimental Design: RSM instead of CRD as suggested by house. *[Action: Head, CE on PHT, NAU, Navsari]*
18.5.3.18	Study of micro irrigation management and spacing under off- season planted banana in relation to cover crop	**Approved with following Suggestions.** 1. Measure the Water Distribution Uniformity. *[Action: Head, SWMRU, NAU, Navsari]*

18.5.3.19	Study on drying of Moringa Oleifera leaves for development of its powder based biscuits	**Approved with following Suggestions.** 1. Change the title as suggested by House. *[Action: Head, PFE, CAET, NAU, Dediapada]*
18.5.3.20	Evaluation of Solar PV system for boiling of corn by roadside vendors	**Approved with following Suggestions.** 1. Use lithium battery 2. Give statistical design 3. Add work of comparison of the developed system with traditional boiling system used by vendors. *[Action: Head, REE, CAET, NAU, Dediapada]*
18.5.3.21	Development of SPV powered cold storage system pulled by tractor for enhancing shelf life of agricultural produce	**Approved.** *[Action: Head, BEAS, CAET, NAU, Dediapada]*
18.5.3.22	Studies of mahua (Madhuca Longifolia) flower powder based value added biscuit	**Approved** *[Action: Head, PFE, CAET, NAU, Dediapada]*
18.5.3.23	Standardization of process technology for dried kothimbda/ kachri (*Cucumis callosus* (Rottl.) cogn.)	**Approved** [*Action: Prof. & Head, Dept. of Horti, CoA, NAU, Bharuch*]

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

18.5.3.24	Enhancing water productivity of summer pearl millet through water management practices	**Approved with following Suggestions.** 1. Modify the objectives as a) To find out optimum irrigation scheduling and insitu moisture conservation practices for summer pearl millet b) To evaluate techno economic feasibility of drip irrigated summer pearl millet ***[Action:** Res. Sci., CNRM, SDAU, SK Nagar]*
18.5.3.25	Development and performance evaluation of solar fencing system for farm protection	**Approved with following Suggestions.** 1. Modify the title as "Development and performance evaluation of solar fencing system for farm protection" 2. Take trial with 5 wire and 7 wire system. 3. Recast objectives as under: a) To develop and evaluate technical performance of the solar fencing system b) To evaluate economics of the system ***[Action:** Dean, CREEE, SDAU, SK Nagar]*
18.5.3.26	Design and Development of Hybrid Solar Tunnel Dryer for High Value Agricultural Produce	**Approved with following Suggestions.** 1. To avoid duplication of work, go through the experimental work of JAU solar tunnel dryer 2. Incorporate pre-drying processing of turmeric and date palm. 3. Review the work done on this topic by other institutes ***[Action:** Dean, CREEE, SDAU, SK Nagar]*

18.6 ANIMAL SCIENCE (ANIMAL HEALTH, ANIMAL PRODUCTION AND FISHERIES SCIENCE)

DATE: May 11-13, 2022

Chairman	**:**	Dr. N. H. Kelawala, Hon'ble VC, KU, Gandhinagar
Co-Chairmen	**:**	Dr. D. B. Patil, DR, KU, Gandhinagar Dr. S. Yusufzai, Principal (Fisheries), KU, Veraval
Rapporteurs	**:**	Dr. G. B. Solanki, JAU, Junagadh Dr. J. B. Nayak, KU, Anand Dr. H. D. Chauhan, SDAU, SK Nagar Dr. B. G. Chudasama, KU, Veraval Dr. F. P. Savaliya, AAU, Anand Dr. Gaurav Pandya, NAU, Navsari
Statistician	**:**	Dr. D. V. Patel, JAU, Junagadh

Dr. B. D. Savaliya, Convener of Animal Science Sub-committee and Research Scientist, CBF, JAU, Junagadh welcomed Dr. N. H. Kelawala, Hon'ble Vice Chancellor, KU, Gandhinagar and Chairman of the session; Dr. D. B. Patil, Director of Research, KU, Gandhinagar and Co-chairman of session; Dr. S. Yusufzai, Principal, Fisheries College, KU, Veraval and Co-chairman of session, Rapporteurs, Statistician, Deans, University officers, Conveners of sub-committee of the respective Universities and all scientists attending the virtual meeting from various SAUs and KU progression.

Dr. N. H. Kelawala, Hon. Vice chancellor, Kamdhenu University, Gandhinagar as a chairman welcomed all scientist and learned members. He congratulated the efforts of all faculty for showing hard work, dedication and undaunted efforts even in tough times of covid-19 pandemic and proposing 20 recommendations for farmer's community and 39 for scientific fraternity. He also complimented the experts for articulating 82 new technical programmes and urged for their thorough churning and scrutiny. Hon. VC, congratulated team of Dairy Science college, Amreli for ranking first (Rs. 5 lakh award) among 1974 participants across the country at Kritagya Hackathon 2.0 competition organized by ICAR for developing a dipstick to detect 8 different types of adulterants in milk. He highlighted the progression of Kamdhenu University by citing that 44 research articles and 164 theses are being published in previous year; 22 MoUs are being signed with esteemed institutions across the country and abroad; reimbursement of publication charges to scientist for publications in NAAS rated journals and the service to society from Veterinary College, KU, Sardarkrushinagar, for performing 2.63 lakh diagnostic RT-PCR tests of Covid-19 in very short span of time during pandemic. He made a special mention of Dr. Haresh Solanki and his team of Fisheries College, KU, Navsari for publishing their research work in journal with NASS rating of 16.59. He appealed to intensify the number of new research proposals collaborating with other agencies by identifying the problems faced by animal owners and giving emphasis on increasing our contribution towards Hon. Prime Minister's aim of doubling the farmer's income.

Dr. N. H. Kelawala, Hon. Vice chancellor, KU, Gandhinagar in his concluding remarks thanked all scientists for their patience, constructive scientific screening and whole hearted participation during this marathon session. He pointed out some general suggestions *viz.*, names of contractual staff should not be inscribed in research projects, prior permission of research from governing bodies/boards, calendar year shall be considered for duration of experiment not academic year. All research programmes related to Veterinary, Dairy and Fisheries shall be presented in Veterinary and Animal Sciences Research Council (VASRC) of Kamdhenu

University from next year. He expressed his joy and satisfaction for thorough, productive and in-depth discussion of research proposals and recommended all the esteemed members to disseminate their findings from lab to land, so that ultimate users can be benefitted.

Presentation of recommendations and new technical programmes by Conveners of SAUs & KU

Sr. No.	Name	Designation & University
1	Dr. B. D. Savaliya	Research Scientist (AGB), Cattle Breeding Farm, JAU, Junagadh
2	Dr. K. N. Wadhwani	Research Scientist, LRS, Veterinary College, KU, Anand
3	Dr. Sanjay Pradhan	Assistant Professor, Animal Science, NMCA, NAU, Navsari
4	Dr. H. H. Panchasara	Research Scientist, Livestock Research Station, SDAU, SKNagar
5	Dr. P. V. Patel (Animal Health)	Professor & Head, Veterinary Parasitology, College of Veterinary Science & A.H., KU, Anand
6	Dr. P. R. Pandya (Animal Production)	Professor & Head, Animal Nutrition, College of Veterinary Science & A.H., KU, Anand
7	Dr. D. T. Vaghela (Fisheries Science)	Associate Professor, Aquatic Environment Management, College of Fisheries Science, KU, Veraval

Executive Summary of the Recommendations:

University	Proposed		Approved		Not Approved	
	Farmer	Scientific	Farmer	Scientific	Farmer	Scientific
JAU	07	08	06	08	01	-
AAU	03	15	03	15	-	-
NAU	07	11	05 (7-1-1*)	10 (9 + 1*)	01	02
SDAU	03	04	03	04	-	-
KU	---	01	--	01	-	-
Total	**20**	**39**	**17**	**38**	**02**	**02**

* One recommendation shifted from farmers to scientific community

18.6.1 RECOMMENDATIONS FOR FARMING COMMUNITY

JUNAGADH AGRICULTURAL UNIVERSITY

ANIMAL HEALTH	
Sr. No.	**Particulars**
18.6.1.1	**Clinical study on ultrasonographic morphology of healthy udder and teat in Gir cattle**
	Udder and teat disorders have major concerns in Gir milch cattle. Ultrasonography is one of the available diagnostic modalities for early and prompt diagnosis of such abnormalities. So, dairy farmers are recommended to visit the Veterinary clinic for the diagnosis of udder and teat disorder with ultrasonography as per the guidance of Veterinarian. દૂધાળા ગીર ગૌવંશમાં બાવલા તથા આંચળને લગતી તકલીફો એક જટીલ સમસ્યા છે. જેના વહેલા અને ચોક્કસ નિદાન માટે અન્ય તપાસની સાથે અલ્ટ્રાસોનોગ્રાફી જેવી નિદાન પધ્ધતી પણ ઉપલબ્ધ છે. જેથી ડેરી પશુપાલકોને ગીર ગૌવંશનાં બાવલા તથા આંચળની સમસ્યાઓના નિદાન સારૂ પશુચિકીત્સાલય ખાતે પશુચિકીત્સકનાં માર્ગદર્શન અનુસાર અલ્ટ્રાસોનોગ્રાફીથી તપાસ કરાવવાની ભલામણ કરવામાં આવે છે.
	Approved as above after incorporating following suggestions: 1. Rephrase the recommendation in Gujarati.

	Action: HoD/PI, Dept. of Vet. Clinical Complex, CoVS & AH, KU, Junagadh.
ANIMAL PRODUCTION	
18.6.1.2	**Efficacy of Artificial Neural Network for milk prediction in Jaffarabadi buffaloes**
	Dairy farmers are recommended that the first lactation 305-day milk yield in Jaffrabadi buffaloes can be predicted with 35th, 125th, 155th and 185th day milk records of the first lactation using the following equation with 77.89 percent accuracy. First lactation 305 Day milk yield =198.69 + (32.77 x 35th day milk yield) + (39.36 x125th day milk yield + (45.23 x155th day milk yield + (109.31 x185th day milk yield). ડેરી પશુપાલકો ને ભલામણ કરવામાં આવે છે કે જાફરાબાદી ભેસો ના પ્રથમ વેતરના ૩૦૫ દિવસના દૂધ ઉત્પાદન નો અંદાજ વેતર ના ૩૫ મા, ૧૨૫ મા, ૧૫૫ મા અને ૧૮૫ માં દિવસ ના ઉત્પાદન ના આધારે નીચે મુજબ ના સુત્ર દ્વારા ૭૭.૮૯% ની ચોકસાઈ સાથે મેળવી શકાય છે. પ્રથમ વેતર નું ૩૦૫ દિવસીય અંદાજીત કુલ દૂધ ઉત્પાદન = ૧૯૮.૬૯ + (૩૨.૭૭ x ૩૫ મા દિવસ નું દૂધ ઉત્પાદન) + (૩૯.૩૬ x ૧૨૫ મા દિવસ નું દૂધ ઉત્પાદન) + (૪૫.૨૩ x ૧૫૫ મા દિવસ નું દૂધ ઉત્પાદન) + (૧૦૯.૩૧ x ૧૮૫ મા દિવસ નું દૂધ ઉત્પાદન)
	Dropped
	Action: HoD/PI, Dept. of Animal Genetics and Br., CoVS & AH, KU, Junagadh
18.6.1.3	**Effect of feeding Moringa (*Moringa oleifera*) based calf starter on the performance of suckling Jaffarabadi buffalo calves**
	It is recommended to livestock owners rearing Jaffarabadi calves that Moringa leaf powder-based calf starter (46 kg Moringa leaves/100 kg calf starter) can be fed to increase growth rate at lower feed cost. Composition of calf starter:- 1. Groundnut cake- 10 % 2. Maize – 25 % 3. Skim milk powder- 16 % 4. Moringa leaves- 46 % 5. Salt-1 % 6. Mineral mixture- 2 % જાફરાબાદી પાડી/ પાડાઓના ઉછેર કરતા પશુપાલકોને આથી ભલામણ કરવામાં આવે છે કે, પાડી/ પાડાઓને ખવડાવવામાં આવતા ખાસ દાણમા સરગવાનાં પાનનો પાવડર (૧૦૦ કિલોગ્રામ કાફ સ્ટાર્ટર બનાવવા માટે ૪૬ કિલો) ઉપયોગ કરવાથી આંશિંક ખર્ચ ઘટાડા સાથે નોંધપાત્ર વૃદ્ધિદર મેળવી શકાય છે. ખાસ દાણનું બંધારણ : ૧. મગફળીનો ખોળ – ૧૦ % ૨. મકાઇ – ૨૫ % ૩. સ્કિમ મિલ્ક પાઉડર – ૧૬ % ૪. સરગવાના પાન – ૪૬ % ૫. મીઠું – ૧ % ૬. ક્ષાર મિશ્રણ – ૨ %
	Approved as above after incorporating following suggestion/(s): 1. Remove the scientific data and recast it
	Action: Unit Head/PI, Cattle Breeding Farm, JAU, Junagadh.
FISHERIES SCIENCE	
18.6.1.4	**Maximum Sustainable Yield (MSY) estimation of fisheries resources of Gujarat coast with Surplus Production Model**

	This is recommended to the fishermen of Gujarat that Hilsa, Shark, Catfish, Eel, Seer fish and Lobster show signs of over exploitation; hence reduce fishing efforts of these species as they have slow growth rates, low fecundity for their sustainable harvest. The fishing effort can be reduced through increase in mesh size of fishing gear, releasing back brooders in the sea, extensive use of selective fishing gears like gill nets, long-line & traps and expanding fishing ban period voluntarily. ગુજરાતના માછીમારોને ભલામણ કરવામાં આવે છે કે પાલવો, મગરા, ખાગા, વામ, છાપરી-શેરમાઈ અને ટીટણ પ્રજાતિઓ વધુ પડતી માછીમારીના સંકેતો દર્શાવે છે અને આ પ્રજાતિઓનો ધીમી વૃદ્ધિ દર તેમજ ઓછી ફળદ્રુપતાને કારણે આ પ્રજાતિઓ પર માછીમારીના પ્રયત્નો ઘટાડવાની જરૂર છે .મત્સ્ય જાળના કણના માપમાં વધારો, દરિયામાં પકડાયેલા ઈંડાવાળી માછલીને છોડી મુકવી, મત્સ્ય પ્રજાતિના કદને અનુરુપ પસંદગીલક્ષી ઓજારો જેમ કે જાડાજાળ, લોંગ-લાઇન, પાંજરાનો બહોળા પ્રમાણમાં ઉપયોગ અને માછીમારી પ્રતિબંધ સમયગાળા પર સ્વૈચ્છિક વધારો કરી માછીમારીના પ્રયાસને ઘટાડી શકાય છે.
	Approved as above after incorporating following suggestion/(s): 1. Recast the Gujarati version of recommendation 2. Statistically: Surplus model formula and its numerical data analysis needs to be incorporated
	Action: PI/Head, Dept. of Fisheries Resource Management, CoFS, KU, Veraval.
18.6.1.5	**Effect of oral administration of probiotic *Lactobacillus plantarum* on growth, survival, disease resistance and stress tolerance of *Litopenaeus vannamei* juveniles**
	Shrimp farmers are recommended to incorporate probiotic bacteria *Lactobacillus plantarum* @ 10^7 CFU in one gram feed of shrimp *Penaeus vannamei* for higher growth, survival and resistance against pathogenic *Vibrio harveyi,* reduce ammonia stress and hence increase profit. ઝીંગા ઉછેરતા ખેડૂતોને વનામેઈ ઝીંગાના વધુ ઉત્પાદન, જીવંતદર, રોગકારક વિબ્રીઓ હારવેયી સામે રક્ષણ એમોનીયાનો તણાવ ઘટાડવા તથા નફાકારકતા વધારવા માટે પ્રોબાયોટિક બેક્ટેરિયા લેક્ટોબેસીલસ પ્લાન્ટરમ ૧૦^{૭} સી.એફ.યુ. એક ગ્રામ ખોરાકમાં ભેળવવાની ભલામણ કરવામાં આવે છે.
	Approved as above after incorporating following suggestion/s: 1. Recast the English / Gujarati version of recommendation 2. In recommendation add importance of 'Ammonia' and 'Cost of economy' 3. Mention which strains of bacteria used for the study 4. Change species name of *Litopenaeus vannamei* to *Penaeus vannamei*
	Action: Unit Head/PI, Fisheries Research Station, JAU, Okha.
18.6.1.6	**Effect of dressing on quality parameters of dry salted Dhoma (*Otolithes cuvieri*) during storage**
	The dry fish processors/exporters are recommended to remove gill and gut from dry salted Dhoma fish (*Otolithes cuvieri*) packed in plastic bag for better quality and shelf-life upto nine months. સુકી માછલીના પ્રક્રિયકો/નિકાસકારોને મીઠું ચડાવીને સુકવેલ ધોમા માછલી (ઓટોલીથસ કુવેરી) ને પ્લાસ્ટીકની કોથળીમાં પેક કરી નવ માસ સુધી સંગ્રહ કરવા તથા સારી ગુણવતા જાળવવા ચૂઈ અને આંતરડા દુર કરવાની ભલામણ કરવામાં આવે છે.
	Approved as above after incorporating following suggestion/s: 1. Recast the Gujarati version of recommendation 2. Mention type of packaging used for the storage study
	Action: Unit Head/PI, Fisheries Research Station, JAU, Okha.

18.6.1.7 **Supplementation of shrimp protein hydrolysate in practical diets of *Litopenaeus vannamei* (Boone, 1931)**

Shrimp farmers growing *Penaeus vannamei* juvenile shrimps are recommended to use feed with 2 % shrimp protein hydrolysate at the rate of 5 % of body weight/day for better growth, survival rates and higher economic return.

પીનીયસ વનામેઇ જુવેનાયલ જીંગા ઉછેર કરતા જીંગાપાલકોને ભલામણ કરવામાં આવે છે કે, ૨% પ્રોટીન હાઇડ્રોલિસેટ વાળો ખોરાક, શરીરના વજનના ૫% ના દરે આપવાથી સારી વૃદ્ધિ અને જીવંતદર તથા વધુ આર્થિક વળતર મેળવી શકાય છે.

Approved as above after incorporating following suggestion/s:

1. Recast the English / Gujarati version of recommendation
2. Replace word Biometric parameters with the Growth performance in the text
3. Change species name of *Litopenaeus vannamei* to *Penaeus vannamei*

Action: Unit Head/PI, Fisheries Research & Training Centre, JAU, Mahuva.

ANAND AGRICULTURAL UNIVERSITY

ANIMAL HEALTH

18.6.1.8 **Effect of nutritional management of Transition period on Serum Endocrine, metabolic and Mineral profile and Postpartum fertility in Gir cows**

It is recommended to supplement, rumen protected choline @ 45 g/head/day or rumen protected fat @ 80 g/head/day alone from 30 days prepartum to 60 days postpartum in the ration of transition Gir cows to improve profitable postpartum reproductive performance.

આથી પશુપાલકોને ભલામણ કરવામાં આવે છે કે, સગર્ભા ગીર ગાયોને વિયાણના ૩૦ દિવસ અગાઉથી લઇ વિયાણબાદના ૬૦ દિવસ સુધી તેનાદૈનિક આહારમાં રુમેન બાયપાસ કોલિન ૪૫ ગ્રામ કે રુમેન બાયપાસ ફેટ ૮૦ ગ્રામ પ્રતિ ગાય પ્રતિ દિન એકલુ આપવાથી તેઓની પ્રજનન ક્ષમતા આર્થિકસ્તરે સુધરે છે.

Approved as above after incorporating following suggestion/s:

1. Remove supplement of Vit. E and Selenium injection part from text.

Action: Professor and Head, Dept. of VGO, Vet. College, KU, Anand.

ANIMAL PRODUCTION

18.6.1.9 **Effect of feeding *Moringa oleifera* fodder in post-weaned crossbred (HF x K) heifer calves**

Farmers of Gujarat state are recommended to replace high protein (25 %; CP) compounded concentrate mixture with 7.5 % *Moringa oleifera* meal (MOM; 84 % leaves and 16 % soft twigs; DM basis) in total mixed ration of crossbred (HF x K) heifer calves to reduce 5 % feed cost per kg weight gain.

ગુજરાત રાજ્યના ખેડૂતોને આથી ભલામણ કરવામાં આવે છે કે, સંકર વાછરડીઓના કુલમિશ્રિત આહારમાં વધુ પ્રોટીનવાળા (૨૫ %) દાણને બદલે ૭.૫ ટકા સરગવાનો પાવડર (૮૪ % પાંદડા અને ૧૬ % કુમળી ડાળીઓ; સુકીમાત્રા પ્રમાણે) ઉમેરતા પ્રતિ કીલોગ્રામ વૃધ્ધિ માટે ખોરાકીય ખર્ચમાં ૫ ટકાનો ઘટાડો થાય છે.

Approved

Action: Research Scientist and Head, LRS, Vet. College, KU, Anand.

18.6.1.10 **Replacement of maize with wheat on performance of broilers**

The poultry farmers of Gujarat state are recommended to prepare broiler feed replacing 50 % from total quantity of maize by wheat, along with adding 200 g cocktail enzyme (Xylanase, 12,200 IU/g + β-glucanase, 1520 IU/g) per tonne of broiler diet in order to improve Feed Conversion Ratio.

ગુજરાત રાજ્યના મરઘાપાલકોને ભલામણ કરવામાં આવે છે કે બ્રોઈલર પક્ષીઓના

	દાણમાં મકાઈની કૂલ માત્રા ને ૫૦ % ઘંઉ વડે ફેરબદલ કરી તેમાં ૨૦૦ ગ્રામ કોકટેલ એન્જાઈમ (ઝાયલેનેજ ૧૨,૨૦૦ આંતરાષ્ટ્રીય એકમ/ગ્રામ + બીટા ગ્લુકેનેજ ૧૫૨૦ આંતરાષ્ટ્રીય એકમ/ગ્રામ) પ્રતિ ટન દાણમાં ઉમેરી ખવડાવવાથી તેમની ખોરાક રૂપાંતરણ ક્ષમતા (એફસીઆર) માં નોંધપાત્ર સુધારો થાય છે.
	Approved as above after incorporating following suggestion/s: 1. Approved with minor corrections
	Action: Research Scientist and Head, ANRS, Vet. College, KU, Anand.

NAVSARI AGRICULTURAL UNIVERSITY

ANIMAL HEALTH	
18.6.1.11	**Therapeutic efficacy of Cloprostenol in combination with cabergoline in canine open pyometra**
	Dog owners are recommended to consult a veterinarian immediately on noticing symptoms like purulent vaginal discharge, excessive thirst and urination, increased heart and respiration rate and fever etc. in female dogs for the treatment of pyometra. શ્વાન પાલકોને આથી ભલામણ કરવામાં આવે છે કે માદા શ્વાનમાં જો યોની માર્ગથી પરૂ જેવો બગાડ, વારંવાર પાણી પીવુ તથા પેશાબ કરવો, હૃદયના ધબકારા તથા શ્વસનક્રિયામાં વધારો, તાવ વગેરે જેવા લક્ષણો જણાય તો તેને ગર્ભાશયમાં પરૂ થવાના રોગની શક્યતા રહેલ હોય તેની સારવાર અર્થે તાત્કાલીક પશુચિકિત્સકનો સંપર્ક કરવો.
	Dropped
	Action: PI/Head, Veterinary Clinical Complex, Vet. College, KU, Navsari
ANIMAL PRODUCTION	
18.6.1.12	**Impact of bedding material on performance of commercial broilers**
	The broiler farmers of south Gujarat region are recommended to use black sand (1.5 inch thickness) as bedding material during winter season for economic rearing of broilers in comparison to shredded paper. દક્ષિણ ગુજરાતનાં બ્રોઈલર ઉછેર કરતાં મરઘાંપાલકોને ભલામણ કરવામાં આવે છે કે કાગળના ટુકડાની સાપેક્ષે કાળી રેતીનો (૧.૫ ઇંચ જાડાઈ) ઉપયોગ શિયાળાની ઋતુમાં ભોયતળિયા ઉપર પથારી તરીકે કરવાથી આર્થિક રીતે ફાયદો થાય છે.
	Approved as above after incorporating following suggestion/s: 1. Use word “broiler” in Gujarati recommendation 2. Economic rearing to be mentioned in the recommendation and recast accordingly
	Action: PI/Head LFC, College of Vet. Sci. & AH, KU, Navsari.
18.6.1.13	**Estimation of genetic trend for growth related traits in Surti goats**
	A) Surti goat kids born during monsoon season (July to October) fetches more body weight during the age of 6 to 12 months as compared to other seasons. Hence, the Surti goat keepers of south Gujarat are recommended to plan breeding of females so that kidding takes place during monsoon season. B) The body growth of Surti goats born as twins and triplets becomes at par with that of singlet born kids after 9 months of age. So, the goat keepers of south Gujarat are recommended to keep the Surti goats giving birth to twins and triplets. A) ચોમાસાની ઋતુ (જુલાઈ થી ઓક્ટોબર માસ) દરમ્યાન જન્મેલા સુરતી બકરીના લવારાઓમાં બીજી ઋતુઓમાં જન્મેલા લવારાઓની સરખામણીએ ૬ થી ૧૨ મહિનાની ઉંમર દરમ્યાન વધારે વજન જોવામળતું હોવાથી દક્ષિણ ગુજરાતના સુરતી બકરા પાલકોને બકરીના

	બચ્ચા ચોમાસાની ઋતુ દરમ્યાન જન્મે એ રીતે બકરીઓને ફેળવવાની ભલામણ કરવામાં આવે છે. B) જોડિયા અને ત્રિપુટી જન્મેલા લવારાઓનો શારીરિક વિકાસ નવ મહિના પછી એકલા જન્મેલા લવારાઓ જેટલો જ થતો હોવાથી દક્ષિણ ગુજરાતના બકરાપાલકોને જોડિયા અને ત્રિપુટી બચ્ચા આપતી સુરતી બકરીઓનું પાલન કરવાની ભલામણ કરવામાં આવે છે.
	Approved
	Action: PI/Research Scientist, LRS, NAU, Navsari.
18.6.1.14	**Effect of steaming-up on growth performance of grazing Surti goats and their kids in high rainfall zone of south Gujarat.**
	The Surti goat rearing farmers of South Gujarat are recommended that feeding of concentrate (18 % CP) 60 days before kidding up to 60 days after kidding @ 200 g/d increases milk yield and milk fat in goats, higher birth weight and improved growth rate in Surti kids. દક્ષિણ ગુજરાતનાં સુરતી બકરા પાલકોને ભલામણ કરવામાં આવે છે કે સુરતી બકરીઓને વિયાણના ૬૦ દિવસ પહેલા અને વિયાણ બાદ ૬૦ દિવસ સુધી દૈનિક ૨૦૦ ગ્રામ દાણ (૧૮ % CP) આપવાથી બકરીઓના દૂધ ઉત્પાદન, દૂધમાં ફેટના પ્રમાણમાં તેમજ બચ્ચાઓના જન્મ સમયે વજન તેમજ જન્મ બાદ વૃધ્ધિદરમાં નોંધપાત્ર વધારો જોવા મળે છે.
	Approved as above after incorporating following suggestion/s: 1. Mention CP % in the recommendation
	Action: PI/Research Scientist, LRS, NAU, Navsari.
18.6.1.15	**Studies on effect of different ecbolic agents on post-partum reproductive performance in Surti buffaloes**
	Surti buffalo owners are recommended to give oral ayurvedic liquid ecbolic preparation @ 100 ml for 10 days, immediately after parturition to improve the reproductive efficiency. <u>Composition of Herbal Liquid Ecbolic:</u> Each 10 ml contains extract derived from (in mg) *Aloe barbadensis Lx.-80, Aristolochia indica Rt.-160, Citrullus colocynthis Rt.- 20, Cyperus rotundus Rz.-120, Caesalpinia crista Sd.- 120, Desmodium Gangeticum Wh. Pl.- 60, Gardinia gummifera Ex.- 80, Gloriosa superba Rt.- 120, Gossypium herbaceum Rt.- 160, Inula racemosa Rt.-60, Leptadenia reticulata St.- 160, Lepidium sativum Fr.- 100, Plumbago zeylanica Rt.- 160, Peganum harmala Sd.- 160, Piper longum Rt.- 80, Rubia cordifolia Rt.- 160, Saraca indica Bk.-120, Tribulus terrestris Fr.- 40, Uraria picta Wh. Pl-40, Excipients-q.s.* સુરતી ભેંસ પાળતા પશુપાલકોને આથી ભલામણ કરવામાં આવે છે કે તાજી વિયાએલ ભેંસોને વિયાણ બાદ તરત જ દરરોજ ૧૦ દિવસ સુધી ૧૦૦ મી.લી. આયુર્વેદીક પ્રવાહિ એકબોલીક દવા પીવડાવવાથી પ્રજનન કાર્યક્ષમતામાં વધારો થાય છે. <u>કોષ્ટક: પ્રવાહિ એકબોલીક દવાની સામગ્રી:</u> Each 10 ml contains extract derived from (in mg) *Aloe barbadensis Lx.-80, Aristolochia indica Rt.-160, Citrullus colocynthis Rt.- 20, Cyperus rotundus Rz.-120, Caesalpinia crista Sd.- 120, Desmodium Gangeticum Wh. Pl.- 60, Gardinia gummifera Ex.- 80, Gloriosa superba Rt.- 120, Gossypium herbaceum Rt.- 160, Inula racemosa Rt.-60, Leptadenia reticulata St.- 160, Lepidium sativum Fr.- 100, Plumbago zeylanica Rt.- 160, Peganum harmala Sd.- 160, Piper longum Rt.- 80, Rubia cordifolia Rt.- 160, Saraca indica Bk.-120, Tribulus terrestris Fr.- 40, Uraria picta Wh. Pl-40, Excipients-q.s.*
	Approved as above after incorporating following suggestion/s: 1. Incorporate the major components of the ecbolic agent in the recommendation

	Action: PI/ Research Scientist, LRS, NAU, Navsari.
FISHERIES SCIENCE	
18.6.1.16	**Study of *Sillago sihama* fish growth under varying salinities**
	The brackish water fish growing farmers of Gujarat are recommended to rear *Silago sihama* fry in 30 ppt salinity of water for better survival, growth and economical returns. ગુજરાતના ભાંભરા પાણીમાં મત્સ્યપાલન કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે સિલાગો સીયામાં માછલીની પ્રજાતિના બચ્ચાનો ઉછેર 30 પીપીટી ખારાશ ધરાવતા પાણીમાં કરવાથી વધુ સારો જીવંતદર, વિકાસ અને આર્થિક વળતર મેળવી શકાય છે.
	Approved as above after incorporating following suggestion/s: 1. Mention "**આર્થિક વળતર**" word in Gujarati
	Action: PI/Head, Fisheries College, KU, Navsari.
18.6.1.17	**Tissue depletion and withdrawal period estimation of Florfenicol in feed administration to *Cirrhinus mrigala* advance fingerlings**
	The freshwater fish farmers of Gujarat are recommended that no withdrawal period is required after use of florfenicol at 10mg/kg of fish biomass as feed additive for a period of 10 days to the advanced fingerlings of Mrigal. ગુજરાતના મીઠા પાણીમાં મત્સ્યપાલન કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે ફ્લોરફેનિકોલને ૧૦ મી.ગ્રા. /કી.ગ્રા. મત્સ્ય જથ્થા પ્રમાણે પૂરક આહાર તરીકે ૧૦ દિવસના સમય સુધી મ્રિગલ માછલીના એડવાન્સ ફીંગરલીંગને આપ્યા બાદ અવશેષ નિવારણ માટે સમયગાળો રાખવાની જરૂરિયાત રહેતી નથી.
	Shifted and Approved for Scientific community
	Action: PI/Head, Fisheries College, KU, Navsari.

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

ANIMAL PRODUCTION	
18.6.1.18	**Comparative study on milking ability of Kankrej cattle under hand milking and machine milking**
	Kankrej cow rearing farmers are recommended to use Machine-milking as compared to hand-milking for efficient milking. કાંકરેજ ગાયોના પશુપાલકોને કાર્યક્ષમ દૂધ દોહન માટે હાથ દોહનની સરખામણીએ મશીન દોહન પદ્ધતિ અપનાવવા ભલામણ કરવામાં આવે છે.
	Approved as above after incorporating following suggestions: 1. In English version use Compared instead of Compare
	Action: Unit Head, LRS, SDAU, Sardarkrushinagar.
18.6.1.19	**Study the performance of white Giant and Soviet Chinchilla rabbits under semi-arid climatic conditions of North Gujarat**
	It is recommended to livestock farmers that under arid and semi-arid climatic conditions of North Gujarat, both White Giant and Soviet Chinchilla rabbit's broiler breeds are suitable for rearing on the basis of growth, feed conversion ratio and lesser mortality upto twelve weeks of age. વ્હાઈટજાયંટ અને સોવિયેત ચિન્ચીલા ઓલાદના સસલામાં ૧૨ અઠવાડિયાના ઉમરે શારીરિક વિકાસ, ખોરાક રૂપાંતર કરવાની ક્ષમતા અને ઓછા મૃત્યુ-દરને જોતાં ગુજરાતના સુકા અને અર્ધ-સુકાવિસ્તારના પશુપાલકોને આ ઓલાદ ઉછેર કરવાની ભલામણ કરવામાં આવે છે.
	Approved
	Action: Head, Dept. of LPM, Vet. College, KU, Sardarkrushinagar.

18.6.1.20	**Effect of calf separation on Maternal Behavior of Kankrej cows**
	Kankrej cows are more possessive of neonate immediately after calving due to high maternal instinct; hence the workers of Gaushala are recommended to take precautions during daily activities till one week. કાંકરેજ ગૌશાળાના પશુપાલકો માટે ભલામણ કરવામાં આવે છે કે કાંકરેજ ગાયોમાં વિયાણ પછી પોતાના બચ્ચાં પ્રત્યે માતૃત્વનો ગુણ વધુ સતેજ હોવાથી વિયાણનાં પ્રથમ અઠવાડિયા દરમ્યાન કામદારોએ રોજીંદી કામગીરીમાં સાવચેતી રાખવી જોઈએ.
	Approved
	Action: Head, Dept. of LPM, Vet. College, KU, Sardarkrushinagar.

KAMDHENU UNIVERSITY – NIL

18.6.2 RECOMMENDATIONS FOR SCIENTIFIC COMMUNITY

JUNAGADH AGRICUTURAL UNIVERSITY

ANIMAL HEALTH	
Sr. No.	**Particulars**
18.6.2.1	**Clinical study on Ultrasonographic morphology of healthy udder and teat in Gir cattle**
	In Gir cattle, ultrasonographic morphology of normal and healthy teat viz., streak canal length, streak canal diameter, teat diameter and teat wall thickness ranges between 3.7 to 4.7, 2.8 to 3.1, 19 to 20 and 4.4 to 5.4 mm, respectively, while normal and healthy udder shows hypoechoic uniform texture with round borders and normal shape. These baseline data of ultrasonographic morphology of healthy udder and teat can be used as reference values for diagnostic and prognostic features to confirm udder and teat abnormalities.
	Approved
	Action: HoD/PI, Dept. of VCC, Veterinary College, KU, Junagadh.
18.6.2.2	**Clinical studies on balanced anesthesia using different anesthetic protocols in horses**
	Combination of Inj. Butorphanol (0.02 mg/kg BW), Midazolam (0.1 mg/kg BW) and Xylazine (0.8 mg/kg BW) intravenously as preanaesthetics followed by Inj. Ketamine HCl (1.6-2.4 mg/kg BW, IV) induction and Isoflurane (2–3 %) maintenance can be used to produce balanced anaesthesia in horses.
	Approved as above after incorporating following suggestions: 1. Concise and recast the recommendation
	Action: HoD/PI, Dept. of VCC, Veterinary College, KU, Junagadh.
18.6.2.3	**Evaluation of antioxidant and immunomodulatory effect of seeds of *Cassia absus* L. in rats**
	Daily oral administration of flavonoid rich fraction of *Cassia absus* L. (Chimed) seed at the rate of 200 mg/kg body weight for 21 days alleviates cyclophosphamide-induced immunosuppression and oxidative stress in rats.
	Approved
	Action: HoD/PI, Dept. of VPT, Veterinary College, KU, Junagadh.
18.6.2.4	**Ultrasonography, Uterine Swab Culture and Endometrial Cytology for diagnosis of Equine Endometritis**
	Ultrasonography along with endometrial cytology is effective diagnostic method for subclinical endometritis in infertile mares.
	Approved
	Action: HoD/PI, Dept. of VGO, Veterinary College KU, Junagadh.
ANIMAL PRODUCTION	
18.6.2.5	**Efficacy of Artificial Neural Network for milk Prediction in Jaffarabadi**

	buffaloes
	First lactation milk yield in Jaffarabadi buffaloes can be predicted using 2nd, 4th, 5th & 6th monthly test day milk records with 77.89 % accuracy. The optimum equation for prediction of FL305DMY using backward elimination method of Multiple Linear Regression is $\hat{Y}$=198.69+ (32.77) TD2+ (39.36) TD4 + (45.23) TD5+ (109.31) TD6. Furthermore, Artificial Neural Network using training and testing ratio of 80:20 with two hidden layers and 5 neurons can be used to predict the first lactation milk yield in Jaffarabadi buffaloes with accuracy of 86.49 percent.
	Approved as above after incorporating following suggestions: 1. Recast the recommendation
	Action: HoD/PI, Dept. of AGB, Veterinary College, KU, Junagadh.
18.6.2.6	**Effect of Feeding Moringa (*Moringa oleifera*) based calf starter on the performance of suckling Jaffarabadi buffalo calves**
	Moringa leaves (*Moringa oleifera*) are cheaper and economical source of good quality protein (25.19 %) to be used to meet out 50 % protein requirement in the formulation of calf starter to obtain a higher (36 %) growth rate in Jaffarabadi calves.
	Approved
	Action: Unit Head/PI, Cattle Breeding Farm, JAU, Junagadh.
FISHERIES SCIENCE	
18.6.2.7	**Analysis of condition factor of the ribbonfish *Lepturacanthus savala* and *Trichurus lepturus* off Veraval Coast**
	Condition factor obtained for *Trichurus lepturus* is 0.092 to 0.205 and 0.073 to 0.159 for male and female respectively. The condition factor obtained for *Lepturacanthus savala* is 0.058 to 0.251 and 0.063 to 0.136 for male and female respectively. The length-weight relationship obtained for *Trichurus lepturus* is W=0.000013 L 2.90 and W=0.000014 L 2.93 for male and female respectively. The length-weight relationship obtained for *Lepturacanthus savala* is W=0.000010 L 2.71 and W=0.000013 L 2.65 respectively for male and female. The Ribbon fish *Trichurus lepturus* and *Lepturacanthus savala* shows similar condition factor and shows allometric growth.
	Approved as above after incorporating following suggestion/s: 1. Recast the recommendation 2. Remove the denotation of W (weight) and L (length)
	Action: PI/Head, Dept. of Fisheries Resource Management, CoFS, KU, Veraval.
18.6.2.8	**Seed production of mud spiny lobster *Panulirus polyphagus* (Herbst, 1793) in hatchery**
	Incubation and hatching of eggs and rearing of larvae up to phyllosoma-II stage of high value mud spiny lobster *Panulirus polyphagus* achieved at Fisheries Research Station, JAU, Okha. The average initial egg size was 496.07 µ and incubation period was 25.76 days. The average duration of phyllosoma-I (1525.18 µ) and phyllosoma-II (2239.67 µ) stage were 13.76 and 4.75 days respectively. Looking to its economic importance, further detailed studies are required using advanced hatchery system.
	Approved as above after incorporating following suggestion/s: 1. Recast the recommendation 2. Use symbol for the Micron i.e. (µ) in recommendation
	Action: Unit Head/PI, Fisheries Research Station, JAU, Okha

ANAND AGRICUTURAL UNIVERSITY

ANIMAL HEALTH	
18.6.2.9	**To evaluate immunomodulatory activity of clove oil (*Syzygium aromaticum*) in**

	broiler
	Clove oil can be used as an immunostimulant at the rate of 400 mg/kg feed as dietary supplement in broiler.
	Approved
	Action: PI/Professor and Head, Dept. of VPT, Veterinary College, KU, Anand.
18.6.2.10	**Application of physiotherapy in the clinical cases of canine**
	A. Treatment with different physiotherapy modalities along with medicinal and surgical management reduced recovery time and enhanced resumption of functional activities in paraplegia, hind quarter weakness, fracture, muscle strain, arthritis, DJD, ataxia and surgical wounds in canine. B. Use of different physiotherapy modalities produces recovery / relief in various chronic locomotory affections, viz., Hind quarter weakness, paralysis, muscle strain, fractures, arthritis, dropped jaw, rupture of cruciate ligament, post immobilization stiffness and fibrosis in canines, which are refractory with medicinal and/ or surgical treatments.
	Approved as above after incorporating following suggestions: 1. Recast the recommendation
	Action: PI/Professor and Head, Dept. of Vet. Surgery, Vet. College, KU, Anand.
18.6.2.11	**Clinical studies on surgical anaesthesia using Tiletamine-Zolazepam for induction with and without Xylazine premedication and Isoflurane for maintenance of anaesthesia in dogs**
	Xylazine (0.5 mg/kg,i/m) premedication along with Atropine sulphate (0.04 mg/kg, i/m) followed by induction with Tiletamine-Zolazepam combination (3 mg/kg, i/v) and maintenance with Isoflurane (3-5 %) provides efficient analgesia during surgical procedures and excitement free recovery in canines.
	Approved as above after incorporating following suggestions: 1. Write analgesia instead of nociception.
	Action: PI/Professor and Head, Dept. of Vet. Surgery, Vet. College, KU, Anand.
18.6.2.12	**Effect of nutritional management of transition period on Serum Endocrine, Metabolic and Mineral Profile and Postpartum fertility in Gir cows**
	Injection Vit.-E and Selenium @ 500 mg and 15 mg, respectively, i/m at fortnightly interval or supplement rumen protected choline @ 45 g/head/day or rumen protected fat @ 80 g/head/day from 30 days prepartum to 60 days postpartum in the ration of transition Gir cows improves the postpartum reproductive efficiency.
	Approved as above after incorporating following suggestions: 1. Recast the recommendation
	Action: PI/Prof. and Head, Dept. of Vet. Gynecology and Obt., Vet. College, KU, Anand
18.6.2.13	**Ovum pick-up and *in vitro* embryo production from buffaloes with Ovarian Stimulation and its pregnancy rates**
	For better results under OPU-IVEP programme, stimulation of the donor buffaloes using FSH with CIDR can be used to enhance in vitro oocytes recovery rate, cleavage rate and hatched blastocyst rate. Furthermore, follicular wave synchronization should be preferred over heat synchronization for efficient stimulatory response as exogenous progesterone along with estradiol benzoate is more effective to induce follicular wave emergence as compared to GnRH in buffaloes.
	Approved
	Action: PI/Associate professor and Head, VCC, Vet College, KU, Anand.
18.6.2.14	**Diagnosis, epidemiology and management of diseases of livestock**
	Overall prevalence of endoparasites in goats was 32.82 %. Among the 388 positive faecal samples in goats, *Trichostrongyliid* group parasites were found to be the highest (32.22 %), followed by *Coccidia* and *Trichuris* (18.30 % each),

	Amphistome (17.78 %) and *Strongyloides* (13.40 %) species in and around Anand.
	Approved
	Action: Professor and Head, Dept. of Vet. Medicine, Vet. College, KU, Anand.
18.6.2.15	**Development of rapid multiplex PCR method for simultaneous detection of gram-positive foodborne pathogen**
	The combination of following primers can be used for simultaneous detection of listed gram-positive foodborne pathogens from standard bacterial culture community by multiplex PCR method.

Organism	Gene	Primer Sequence (5'-3')	Amplicon Size
Staphylococcus aureus	nuc-F	GCTGGCATATGTATGGCAATT	389
	nuc-R	GCTTCAGGACCATATTTCTCTAC	
Bacillus cereus	nheA-F	AAGGCGAATGTACGAGAGTGG	553
	nheA-R	CTTCTCTCGTTTGACTATCTGCAG	
Listeria monocytogenes	mogA-F	GTTCTTCATACCCAATCCTT	890
	mogA-R	GTCATGGTTTCGTTTTGTTG	
Clostridium perfringens	cpe-F	GGAGATGGTTGGATATTAGG	233

	Approved
	Action: PI/Professor and Head, Department of VPH, Vet. College, KU, Anand.
18.6.2.16	**DBT Network programme on bovine tuberculosis control: Mycobacterial diseases in animals Network (My DAN) programme**
	The prevalence of bovine tuberculosis (bTB) assessed by single intradermal comparative cervical tuberculin test (SICCT) and single intradermal tuberculin test (SIT) was 1.24 and 11.29%, respectively. So, animals positive for bTB by SIT, which is routinely practiced in the field for screening of animals, should be confirmed with SICCT after 60 days to avoid the false-positive result.
	Approved
	Action: Associate Prof. and Head, Dept. of Vet. Microbiology, Vet College, Anand
18.6.2.17	**Isolation, identification and antimicrobial sensitivity pattern of different bacterial species isolated from houseflies in and around Anand district**
	The gut samples of housefly (*Musca domestica*) collected from animal farms, poultry farms, sweet shops, sewage and meat market revealed E. coli (27.61%), *Proteus* spp. (7.46%), *Salmonella* spp. and *Staphylococcus* spp. (6.71% each), *Pseudomonas* spp. (5.97%), *Klebsiella* spp. (5.22%), *Micrococcus* spp. (4.47%), *Enterococcus* spp. (3.73%), *Streptococcus* spp. and *Corynebacterium* spp. (2.98% each), and *Actinomycetes* and *Serratia* spp. (1.49% each) and others [Gram +ve bacilli (12.68%) and Gram –ve bacilli (10.48%)]. The antibiotic sensitivity test by disk diffusion method revealed that organisms were resistant to erythromycin (56.72%), tetracycline (47.01%), enrofloxacin (44.03%), co-trimoxazole (33.58%), ceftriaxone (32.09%), and amikacin (23.88%). The multidrug resistance was found in 80.60% isolates by multi-antibiotic resistance (MAR) index (0.2-1.0). The study indicated that as house flies carry MDR bacteria. This becomes potential transmitter for spread of antimicrobial resistance.
	Approved
	Action: Assoc. Prof. and Head, Dept. of Vet. Microbiology, Vet. College, KU, Anand
ANIMAL PRODUCTION	
18.6.2.18	**Effect of feeding *Moringa oleifera* fodder in post-weaned crossbred (HF x K) heifer calves**
	By replacing high protein (25%; CP) compounded concentrate mixture with 7.5 % *Moringa oleifera* meal (MOM; 84 % leaves and 16 % soft twigs; DM basis) in total mixed ration of crossbred (HF x K) heifer calves improved antioxidant capacity

	without adverse effect on liver and kidney function.
	Approved as above after incorporating following suggestions: 1. Remove normal hematology words from text.
	Action: PI/Research Scientist and Head, LRS, Vet. College, KU, Anand.
18.6.2.19	**Effect of supplementing mango stone kernel and green gram gotar on Methane mitigation and growth performance of calves**
	Feeding of mango stone kernel @ 10% in total mixed ration (R:C=50:50) to Kankrej calves significantly reduces energy loss through methane emission by 9.16 % and improved digestibility of nutrients without any adverse effect on growth performance and feed efficiency.
	Approved
	Action: PI/Research Scientist and Head, ANRS, Vet. College, KU, Anand.
18.6.2.20	**Optimization of dietary energy and protein level of native chicken of North Gujarat (Aravali)**
	Native chicken of North Gujarat (proposed as "Aravali") fed with chick mash (0-8 weeks) having 19 % CP and 2700 Kcal/kg ME; grower mash (9-16 weeks) with 15 % CP and 2400 Kcal/kg ME; layer mash-I (17-40 weeks) with 17 % CP and 2500 Kcal/kg ME and layer mash-II (41-64 weeks) with 15 % CP and 2300 Kcal/kg ME had produced the highest egg number (159) with the highest Return Over Feed Cost (Rs.375.17) up to 64 weeks of age as compared to birds fed with higher dietary levels of CP and ME during various stages of age.
	Approved
	Action: Research Scientist and Head, PRS, Vet. College, KU, Anand.
18.6.2.21	**Study of genetic divergence among the different native breeds / populations of chicken in and around Gujarat**
	Based on allelic variation, heterozygosity and genetic distance among native chicken breed of North Gujarat (Proposed as 'Aravali'), Ankaleshwar and Mewari chicken population, 'Aravali' be considered as distinct population. Hence, 'Aravali' needs to be registered as new chicken breed of Gujarat.
	Approved
	Action: Professor and Head, Dept. of Vet. AGB, Vet. College, KU, Anand.
18.6.2.22 & 18.6.2.23	**NGS based SNP genotyping in genes related to egg production and egg weight in Anand Synthetic White Leghorn and Anand Bantamized White Leghorn chicken**
	1. Anand Bantamized White Leghorn (ABWLH) chicken population, SNPs rs734923321 and rs741121319 of GnRH II gene and C1826555T of VIPR-1 gene are significantly ($p<0.05$) associated with egg number produced upto 64 weeks of age. Hence, these three SNPs can be used as marker for selection of egg production in ABWLH chicken. **2.** In Anand Synthetic White Leghorn (ASWLH) chicken population, SNP C1826542A of VIPR-1 gene is significantly ($p<0.05$) associated with egg number produced upto 64 weeks of age. Hence, this SNP can be used as marker for selection of egg production in ASWLH chicken.
	Approved
	Action: Professor and Head, Dept. of Biotechnology, Vet. College, KU, Anand.

NAVSARI AGRICUTURAL UNIVERSITY

ANIMAL HEALTH	
18.6.2.24	***In-vitro* screening of indigenous medicinal plants for their acaricidal activity against the bovine ticks**
	Freeze dried methanolic extract (paste) of air dried leaf powder of 100% concentration in 5% Tween-20 of *Azadirachta indica* (Neem) / *Eucalyptus alba* (Nilgiri) stand a promising acaricidal agent on the cellulose filter paper against the

	adult stage of *Rhipicephalus (Boophilus) microplus* with the mortality of 98.75±1.25%/ 96.25±1.83% and inhibition of oviposition of 44.47±0.87%/ 42.39±0.48% at 72 hours of treatment over the extracts of *Ashoka indica* (Ashok)/ *Murraya koenigii* (Curry) and 1:1 ratio of *Azadirachta indica* (Neem): *Eucalyptus alba* (Nilgiri)/ *Azadirachta indica* (Neem): *Ashoka indica* (Ashok) / *Azadirachta indica* (Neem): *Murraya koenigii* (Curry)/ *Ashoka indica* (Ashok): *Eucalyptus alba* (Nilgiri) / *Eucalyptus alba* (Nilgiri): *Murraya koenigii* (Curry).
	Approved
	Action: PI through Head, Department of Parasitology, Vet. college, KU, Navsari.
18.6.2.25	***In-vitro* evaluation of lemongrass (*Cymbopogon flexuosus*) extract for pharmacological properties**
	Methanolic and aqueous extracts of lemon grass (*Cymbopogon flexuosus*) possess antioxidant, antiproteinase and antibacterial properties with following details:

Properties	Methanol Extract	Aqueous Extract
Antioxidant (IC50)		
DPPH	0.52 mg/ml	0.65 mg/ml
ABTS	0.38 mg/ml	0.45 mg/ml
Antiproteinase (IC50)	1.53 mg/ml	4.38 mg/ml
Antibacterial (MIC)		
Staphylococcus aureus	20.48 mg/ml	-
Escherichia coli	20.48 mg/ml	20.48 mg/ml
Salmonella Typhimurium	20.48 mg/ml	-
Bacillus subtillis	1.28 mg/ml	10.24 mg/ml
Streptococcus pyogenes	0.32 mg/ml	20.48 mg/ml
Proteus mirabilis	-	5.12 mg/ml

Approved as above after incorporating following suggestions:

1. Combine A and B as one recommendation
2. Give the information in tabular form

Action: PI/ Head, Dept. of Pharmacology and Toxicol., Vet. College, KU, Navsari.

18.6.2.26 **Comparative study of anaesthetic regimens of butorphanol or buprenorphine with dexmedetomidine as preanaesthetic and propofol as induction & maintenance anaesthesia in dogs**

The balanced anaesthetic protocol for performing various surgical interventions in dogs is as follows:

Butorphanol (0.2 mg/kg) or
buprenorphine (0.02 mg/kg) IM
⇩ After 15 minutes
dexmedetomidine (5µg/kg) IV
⇩ After 5 minutes
1% propofol IV (till effect)
(Induction Anaesthesia)
⇩
Propofol @ 0.2 mg/kg/min
(Maintenance Anaesthesia)

Approved

Action: PI/Head, Dept. of Veterinary Surgery and Radiology, Vet. College, KU, Navsari.

18.6.2.27 **Clinico-diagnostic and therapeutic study of otitis externa in dogs**

Cleaning of ear canal with normal saline followed by 0.1% salicylic acid ear cleanser twice daily along with topical and systemic antibiotic (Enrofloxacin 5mg/kg BW BID) and NSAIDs for 7–15 days can be used for management of

	chronic otitis externa in dogs.
	Approved as above after incorporating following suggestions: 1. Mention the name of antibiotic in information
	Action: PI/Head, Dept. of Veterinary Surgery and Radiology, Vet. College, KU, Navsari.
18.6.2.28	**Therapeutic efficacy of Cloprostenol in combination with Cabergoline in canine open pyometra**
	Combination of Cloprostenol@ 1µg/kg B.Wt.,S/C, OD and Tab. Cabergoline@ 5µg/kg B.Wt., PO, OD for seven days along with supportive therapy is an effective remedial measures for the treatment of open pyometra in dogs after critical evaluation.
	Dropped
	Action: PI/Head, Veterinary Clinical Complex, Vet. College, KU, Navsari.
18.6.2.29	**Comparative efficacy of different concentrations of egg yolk for cryopreservation of Surti Buck semen**
	Egg yolk @10 % in Tris egg yolk citrate dilutor gives better post thaw motility, live count, morphology and plasma membrane functional integrity of spermatozoa for cryopreservation of Surti buck semen.
	Approved
	Action: PI/Head, Dept. of Vet. Gynaecology and Obstetrics, Vet. College, KU, Navsari.
18.6.2.30	**Effect of mango *(Mangifera indica)* plant leaves extract supplementation in Tris egg yolk citrate extender on Surti buck semen quality preserved at refrigerated temperature**
	The aqueous extract of Mango (*Mangifera indica*) plant leaves @1% in tris egg yolk citrate extender gives better result over 2% as well as 3% to maintain motility above 50% till 48 hours at refrigerated temperature with normal sperm membrane integrity and morphology. Aqueous extract from Mango (*Mangifera indica*) plant leaves has good antioxidant property with inhibition percentage of 90.21 and 82.07 at concentration of 10mg/ml in ABTS and DPPH assay, respectively.
	Approved as above after incorporating following suggestions: 1. Delete the temperature range i.e “4-5^{0}C” from the recommendation 2. Replace “normal semen parameters *viz*. structural membrane integrity and sperm morphology” with “normal sperm membrane integrity and morphology”
	Action: PI/Head, Dept. of Vet. Gynaecology and Obstetrics, Vet. College, KU, Navsari.
18.6.2.31	**Cryosurvival quality of Surti buck spermatozoa in TRIS-egg yolk citrate extender supplemented with lemongrass (*Cymbopogon flexuosus*) leaves extract**
	Use of 3% aqueous extract of lemongrass (*Cymbopogon flexuosus*) plant leaves in tris egg yolk citrate extender is recommended to maintain optimal post thaw motility with other quality semen parameters *viz*. structural and functional membrane integrity as well as sperm morphology for cryopreservation of Surti buck semen.
	Dropped
	Action: PI/Head, Dept. of Vet. Gynaecology and Obstetrics, Vet. College, KU, Navsari.
ANIMAL PRODUCTION	
18.6.2.32	**Placental morphometry vis-à-vis neonatal behavior in Surti buffalo**
	Placental morphometry in Surti buffaloes revealed that the multiparous buffaloes tend to have significantly (P<0.05) higher breadth, radius and surface

	area of medium size cotyledon, weight of small cotyledon as well as higher birth weight and ponderal index of calves. Moreover, dams of male calves tend to have significantly higher radius of medium size cotyledon. Further, birth weight of calves was significantly (*p*<0.01) positively correlated with length of placenta (0.507**), weight of placenta (0.483**), no. of large size cotyledon (0.511**), surface area of large size cotyledon (0.516**). Therefore, while selecting the animals for added birth weight of calf length of placenta, weight of placenta, no. of large size cotyledon, surface area of large size cotyledon may be considered.
	Approved as above after incorporating following suggestions: 1. Recommendation to be re-casted giving the biometric data information
	Action: PI/Head, Department of LPM, Vet. college, KU, Navsari.
18.6.2.33	**Comparison of film forming solution on wound healing in rats**
	The wound healing characterized by collagen deposition, vascularisation and epithelialisation of the below mentioned film-forming solution is better as compared to the 10% Povidone-iodine solution and normal saline in aseptic punched wounds of rats. Composition of Film Forming Solution:

No.	Items/ chemicals	Quantity
1.	Chitosan	1.00 g
2.	Lemon Juice (Filtered)	100 ml
3.	Tween 20	7.0 ml
4.	Ethanol	36.0 ml
5.	Propylene Glycol	9.0 ml
6.	NaCl (Sodium chloride)	100 mg
7.	Turmeric Extract :40 mg/ml (Curcuminoids 95%)	1 ml
8.	Thymol	19.0 ml
9.	Demineralised water	To make up the volume 355 ml

	Approved as above after incorporating following suggestions: 1. Quantity of ingredients to be mentioned in “g” instead of “gm”
	Action: PI through Research Scientist, LRS, NAU, Navsari.
18.6.2.34	**Studies on effect of different ecbolic agents on post-partum reproductive performance in Surti buffaloes**
	Inj. Dinoprost tromethamine ($PGF_{2\alpha}$ analogue) @ 25 mg, i/m, immediately after parturition improves the post-partum reproductive performance in Surti buffaloes.
	Approved
	Action: PI/Research Scientist, LRS, NAU, Navsari.
FISHERIES SCIENCE	
18.6.2.35	**Tissue depletion and withdrawal period estimation of Florfenicol in feed administration to *Cirrhinus mrigala* advance fingerlings**
	No withdrawal period is required after use of florfenicol at 10 mg/kg of fish biomass as feed additive for a period of 10 days to the advanced fingerlings of Mrigal.
	Approved (Shifted from farmers community and approved for scientific community)
	Action: PI through Head, Fisheries College, KU, Navsari.

SARDARKRUSHINAGAR DANTIWADA AGRICUTURAL UNIVERSITY

ANIMAL HEALTH	
18.6.2.36	**Study on sharp molars in bovines**
	Electric rasping of sharp molar in bovine is quicker, easier to perform and without mucosal laceration as compared to manual rasping

	Approved
	Action: PI/Head, Dept. of Vet. Surgery, Vet. College, KU, Sardarkrushinagar.
ANIMAL PRODUCTION	
18.6.2.37	**Study the performance of white Giant and Soviet Chinchilla rabbits under semi-arid climatic conditions of North Gujarat**
	White Giant and Soviet Chinchilla rabbit's broiler breeds are suitable for rearing under arid and semi-arid climatic conditions of North Gujarat. The overall performance of White Giant breed is better than the Soviet Chinchilla breed in the region.
	Approved
	Action: PI/Head, Dept. of LPM, Vet. College, KU, Sardarkrushinagar.
18.6.2.38	**Effect of calf separation on Maternal Behavior of Kankrej cows**
	To assess the stress behaviour of Kankrej cows after separation from their calves, the Alert Behaviour Score card (1–4 point scale) *viz.*, 1- Highly active and alert; 2- Active and alert; 3- Indifferent; and 4-Apathetic can be used. Effect of calf separation is more intense and prominent in primiparous than multiparous Kankrej cows' maternal behaviour.
	Approved
	Action: PI/Head, Dept. of LPM, Vet. College, KU, Sardarkrushinagar.
18.6.2.39	**Identification of optimum heat stress indices based on test day milk and fat yield in Mehsana buffaloes**
	The temperature-humidity index $3.43+1.058\times T_{db}-0.293\times RH+0.0164\times T_{db}\times RH+35.7$ is the most suited THI for evaluating the impact of heat stress on test day milk yield and test day fat yield in Mehsana buffaloes in the area of North Gujarat. Further, with one unit increase in THI value, there will be reduction of a 60.15 ml of test day milk yield and 4.97 ml test day fat yield.
	Approved
	Action: PI/Head, Dept. of AGB, Vet. College, KU, Sardarkrushinagar.

KAMDHENU UNIVERSITY

ANIMAL PRODUCTION	
18.6.2.40	**Expression of selected biomarker candidate genes to confer *in vitro* maturation of oocytes in Indian buffaloes**
	The expression of three down-regulated (COL18A1, GPC4, ARHGAP22) and three up regulated (GDF9, HAS2, SPRY1) candidates were validated by qPCR for use as a marker for confirmation of IVM of oocyte in Indian buffaloes.
	Approved as above after incorporating following suggestions: 1. Write IVM of oocyte in Indian buffaloes instead of IVM in buffaloes
	Action: PI, PGIVER, KU, Himmatnagar.

18.6.3 NEW TECHNICAL PROGRAMMES

Summary

University	Presented	Accepted
JAU	06	06
AAU	--	--
NAU	--	--
SDAU	01	01
KU	75**	75
Total	**82**	**82**

** KU- Total 75 (36 Animal Science + 30 Animal Production + 9 Fisheries Science)

JUNAGADH AGRICULTURAL UNIVERSITY

Sr. No.	Title	Suggestion/s and Action
18.6.3.1	Phytochemical analysis and antibacterial activity of selected red seaweeds against pathogenic bacteria of shrimp and fish farming	**Approved with following suggestion/s:** 1. Use Ethanol for the seaweed extract preparation and store it in amber color bottle *[Action: Unit Head/PI, Fisheries Research Station, JAU, Okha]*
18.6.3.2	Determination of mineral and proximate composition of some phaeophyceae seaweeds available at seacoast of Okha	**Approved with following suggestion/s:** 1. Estimate carbohydrates as: Crude Fiber + N_2 free extract or mention as: Total Carbohydrate (as analytical parameter) 2. If possible, Inductively Coupled Plasma (ICP) based analytical method may be used instead of Atomic Absorption Spectroscopy (AAS) 3. Correct the tenure/year of the project *[Action: Unit Head/PI, Fisheries Research Station, JAU, Okha]*
18.6.3.3	Effect of gamma irradiation on the quality of sun-dried Bombay duck (*Harpodon nehereus*)	**Approved with following suggestion/s:** 1. Modified or add the objective for the study as "Standardization of dose irradiation used for dried Bombay duck preservation" 2. Correct the tenure/year of the project *[Action: Unit Head/PI, Fisheries Research Station, JAU, Okha]*
18.6.3.4	Evaluation of heavy metals and minerals composition in seaweed along Sikka coast	**Approved with following suggestion/s:** 1. Add water sample analysis for heavy metal estimation as well 2. Correct the tenure/year of the project *[Action: Unit Head/PI, Fisheries Research Station, JAU, Sikka]*
18.6.3.5	Breeding and larval rearing of Nudibranch fauna (*Sakuraeolis gujaratica, Atagema spongiosa, Doriopsilla miniata, Jorunna funebris*) at Sikka	**Approved with following suggestion/s:** 1. Correct the tenure/year of the project *[Action: Unit Head/PI, Fisheries Research Station, JAU, Sikka]*
18.6.3.6	Diversity and distribution of *Cypraeoidea* fauna in Gulf of Kachchh	**Approved with following suggestion/s:** 1. Evade the name of SRF and JRF as Co-PI for the study 2. Correct the tenure/year of the project *[Action: Unit Head/PI, Fisheries Research Station, JAU, Sikka]*

ANAND AGRICULTURAL UNIVERSITY – NIL

NAVSARI AGRICULTURAL UNIVERSITY – NIL

SARDARKRUSHINAGAR DANTIWADA AGRICUTURAL UNIVERSITY

18.6.3.7	Nutritional status of lactating Mehsani buffaloes	**Approved with following suggestion/s:** 1. Incorporate statstical methods [Action: PI/Scientist (Animal Science),

		KVK, Deesa, SDAU, Sardarkrushinagar]

KAMDHENU UNIVERSITY

ANIMAL HEALTH		
College of Veterinary Science & A.H., KU, Anand		
S. No.	**Title**	**Suggestion/s and Action**
18.6.3.8	To evaluate immunomodulatory activity of cinnamon oil (*Cinnamomum zeylanicum*) in broiler	**Approved** [Action: PI & Prof & Head, Dept. of Vet. Pharmacology and Toxicology, Vet. College, Anand]
18.6.3.9	To evaluate growth promoting effects of clove oil (*Syzygium aromaticum*) in broiler	**Approved with following suggestion/s:** 1. Specify the name of antibiotics used in experiment [Action: PI & Prof & Head, Dept. of Vet. Pharmacology and Toxicology, Vet. College, Anand]
18.6.3.10	The study of the seasonal prevalence of gastrointestinal parasites by faecal examination of captive deer and antelope at Sri Sayajibaug Zoo, Vadodara	**Approved** [Action: PI & Prof & Head, Dept. of Vet. Parasitology, Vet. College, Anand]
18.6.3.11	Molecular detection for the presence of the resistant gene in the housefly against pyrethroid insecticides	**Approved** [Action: PI & Prof & Head, Dept. of Vet. Parasitology, Vet. College, Anand]
18.6.3.12	Comparative Efficacy of Herbal Formulation on Clinical Mastitis in Goats	**Approved** [Action: PI & Prof & Head, Dept. of Vet. Medicine, Vet. College, Anand]
18.6.3.13	To study therapeutic effect of anthelmintics against gastrointestinal parasites of birds kept at Sri Sayajibaug Zoo, Vadodara	**Approved** [Action: PI & Prof & Head, Dept. of Vet. Medicine, Vet. College, Anand]
18.6.3.14	Isolation, identification and antibiogram of cloacal microflora from captive zoo birds of Shri Sayaji Baug zoo, Vadodara	**Approved** [Action: PI & Prof & Head, Dept. of Vet. Microbiology, Vet. College, Anand]
18.6.3.15	Antimicrobial resistance genes profiling of *Escherichia coli* isolates for colistin resistance and integrons	**Approved** [Action: PI & Prof & Head, Dept. of Vet. Microbiology, Vet. College Anand]
18.6.3.16	Whole genome sequencing and genome mining of *Escherichia coli* isolates for Antimicrobial resistance genes	**Approved** [Action: PI & Prof & Head, Dept. of Vet. Microbiology, Vet. College, Anand]
18.6.3.17	Enumeration and comparison of total viable bacterial count from bovine dung	**Approved** [Action: PI & Prof & Head, Dept. of Vet. Microbiology, Vet. College, Anand]
18.6.3.18	Therapeutic management of transmissible venereal tumour in dogs	**Approved** [Action: PI & Prof & Head, Dept. of Vet. Gynaecology & Obstetrics, Vet. College, Anand]
18.6.3.19	Peripartum nutritional management and postpartum fertility in Gir cows.	
18.6.3.20	Applicability of conventional, CASA and flow cytometry based *in vitro* sperm function assays in predicting field fertility of cryopreserved bovine semen	**Approved** [Action: PI & Prof & Head, Dept. of Vet. Gynaecology & Obstetrics, Vet. College, Anand]
18.6.3.21	Evaluation of the antimicrobial potential of ZnO nanoparticles	**Approved** [Action: PI & Prof & Head, Dept. of Vet. Public Health & Epidemiology,

		Vet. College, Anand]
18.6.3.22	Determination of prevalence of *Vibrio* spp. in fish and their environment	**Approved** [Action: PI & Prof & Head, Dept. of Vet. Public Health & Epidemiology, Vet. College, Anand]
18.6.3.23	Surgical management of canine mammary neoplasia along with adjuvant Doxorubicin chemotherapy	**Approved with following suggestion/s:** 1. Follow up of the cases for reoccurrence of tumour should be done up to six months [Action: PI & Head, Dept. of Vet. Surgery & Radiology, Vet. College, Anand]
18.6.3.24	Clinical studies on surgical anaesthesia using Glycopyrrolate-Dexmedetomidine-Butorphanol for premedication with Tiletamine-Zolazepam induction and Isoflurane maintenance in dogs and cats	**Approved** [Action: PI & Head, Dept. of Vet. Surgery & Radiology, Vet. College, Anand]
18.6.3.25	Studies on prevalence and management of lameness in horses	**Approved** [Action: PI & Head, Dept. of Vet. Surgery & Radiology, Vet. College, Anand]
18.6.3.26	Studies on ear mites in cats and its therapeutic management	**Approved** [Action: PI & Prof & Head, Vet. Clinical Complex, Vet. College, Anand]
18.6.3.27	Standardization and evaluation of chicken cutlets prepared with *Moringa oleifera* flowers	**Approved** [Action: PI & Prof & Head, Dept. of Livestock Products Technology, Vet. College Anand]
18.6.3.28	Gross, Morphology and Histology of Mesenteric Lymphnodes in Goat (*Capra hircus*)	**Approved** [Action: PI & Prof & Head, Dept. of Vet. Anatomy & Histology, Vet. College, Anand]
College of Veterinary Science & A.H., KU, Sardarkrushinagar		
18.6.3.29	Expression of P-glycoprotein by curcumin and its effects on pharmacokinetics of marbofloxacin in broilers	**Approved with following suggestion/s:** 1. Write the full form of PGP in title [Action: PI & Head, Dept. of VPT, Vet. College, SKNagar]
18.6.3.30	In silico screening of phytomolecules against bovine rotavirus	**Approved** [Action: PI & Head, Dept. of VPT, Vet. College, SKNagar]
18.6.3.31	Disposition kinetics of marbofloxacin in broiler birds alone and along with organic acids	**Approved** [Action: PI & Head, Dept. of VPT, Vet. College, SKNagar]
18.6.3.32	Detection and molecular characterization of Newcastle disease virus (NDV) from poultry	**Approved** [Action: PI & Prof & Head, Dept. of Vet. Microbiology, Vet. College, SKNagar]
18.6.3.33	Detection of *Neospora caninum* in aborted bovine/bubaline dam and fetuses.	**Approved** [Action: PI & Prof & Head, Regional Animal Disease Investigation Centre, Vet. College, SKNagar]
18.6.3.34	Clinical study on traumatic injuries in peacocks (*Pavo cristatus)*	**Approved** [Action: PI & Prof & Head, Dept. of

		Vet. Surgery & Radiology, Vet. College, SKNagar]
18.6.3.35	Correlation between infrared thermometer measured body surface temperature and mercury / digital thermometer measured rectal temperature in bubaline	**Approved** [Action: PI & Prof & Head, Dept. of Vet. Medicine, Vet. College, SKNagar]
College of Veterinary Science & A.H., KU, Navsari		
18.6.3.36	Gross and histomorphological observations of orbital glands in fowl.	**Approved** [Action: PI & Prof & Head, Dept. of Vet. Anatomy & Histology, Vet. College, Navsari]
18.6.3.37	Development of polymerase spiral reaction assay for the rapid detection of *Anaplasma marginale* in the bovine	**Approved** [Action: PI & Prof & Head, Dept. of Vet. Parasitology, Vet. College, Navsari]
18.6.3.38	Ultrasonographic assessment of abdominal affections in dogs	**Approved** [Action: PI & Prof & Head, Vet. Clinical Complex, Vet. College, Navsari]
18.6.3.39	Detection and characterization of *Pseudomonas aeruginosa* in raw milk from dairy animals	**Approved** [Action: PI & Prof & Head, Dept. of Vet. Public Health & Epidemiology, Vet. College, Navsari]
18.6.3.40	Standardization of dried blood spot (DBS) for differential leukocyte count (DLC) in Surti buffaloes	**Approved** [Action: PI Asstt. Res. Sci., Livestock Research Station, Navsari)]
College of Veterinary Science & A.H., KU, Junagadh		
18.6.3.41	*In vitro* and *in vivo* evaluation of acaricidal effect of polyherbal oil mixture on ticks	**Approved with following suggestion/s:** 1. Use standard drug cypermethrin. [Action: PI & Head, Dept. of VPT, Vet. College, Junagadh]
18.6.3.42	Effect of seasons on histoarchitecture and histochemistry of pancreas of Jaffarabadi buffalo	**Approved** [Action: PI & Prof & Head, Dept. of Vet. Anatomy & Histology, Vet. College, Junagadh]
18.6.3.43	Studies on salivary fern pattern during estrus cycle in Gir cow and Jaffrabadi buffaloes	**Approved** [Action: PI & Prof & Head, Dept. of Vet. Physiology & Biochemistry, Vet. College, Junagadh]
ANIMAL PRODUCTION		
College of Veterinary Science & A.H., KU, Anand		
18.6.3.44	Study of nutritional status of dairy animals of Anand district	**Approved** [Action: HoD/PI, ANRS, Vet. College, Anand]
18.6.3.45	Effect of different feeding methods on performance of lactating Crossbred cows	**Approved** [Action: HoD/PI, ANRS, Vet. College, Anand]
18.6.3.46	Dietary interventions to enhance performance of growing crossbred heifers.	**Approved with following suggestion/s:** 1. Use Lentin/Green gram gotar, whichever is available in market [Action: HoD/PI, ANRS, Vet. College, Anand]
18.6.3.47	*In-vitro* evaluation of babul pods and soap nut (*Sapindus mukorossi)* on methane emission	**Approved** [Action: HoD/PI, ANRS, Vet. College, Anand]

18.6.3.48	Development of environment friendly feeding regimes for dairy cattle to mitigate methane emission and enhance productivity	**Approved** [Action: HoD/PI, ANRS, Vet College, Anand]
18.6.3.49	Growth performance of post weaned Kankrej calves on direct fed microbials based ration	**Approved** [Action: HoD/PI, ANRS, Vet College, Anand]
18.6.3.50	Comparative performance of early weaned crossbred calves reared under different milk feeding regimens	**Approved with following suggestion/s:** Use word regimens in place of regimes. [Action: HoD/PI, LRS, Anand]
18.6.3.51	Growth Performance of Crossbred Heifers on High Plane of Nutrition	**Approved** [Action: HoD/PI, LRS, Anand]
18.6.3.52	Growth performance of crossbred heifer calves fed rumen protected lysine and methionine	**Approved** [Action: HoD/PI, LRS, Anand]
18.6.3.53	Performance of feeding distillers dried grains with solubles (DDGS) on milk production of crossbred cows	**Approved** [Action: HoD/PI, LRS, Anand]
18.6.3.54	Assessment of earthworm species *Eisenia foetida* and *Endrullus engeniae* with day light alteration in vermicompost production	**Approved** [Action: HoD/PI, LRS, Anand]
18.6.3.55	Studies on Comparative urine endocrine profile of different breeds of cattle and buffaloes	**Approved with following suggestion/s:** 1. Use word studies in place of study. [Action: HoD/PI, RBRU, Anand]
18.6.3.56	Effects of varying levels of dietary energy and crude protein on juvenile growth performance and economics of rearing Ankaleshwar chicken	**Approved** [Action: HoD/PI, PRS, Anand]
18.6.3.57	Comparative study of buck effect and hormonal protocol for synchronization of estrus in Surti goats	**Approved** [Action: HoD/PI, PSK, Ram na muvada Anand]
18.6.3.58	Effect of different floor space allowance on growth and feed efficiency of post weaned Indigenous lambs under intensive rearing system	**Approved** [Action: HoD, LPM, Vet. College, Anand]
18.6.3.59	Supplementation of *Moringa oleifera* as concentrate source on growth performance of Surti kids	**Approved with following suggestion/s:** 1. Clarify protein level of different treatments [Action: HoD, LPM, Vet. College, Anand]
18.6.3.60	PCR-RFLP based validation of SNPs of GnRH-II, VIPR-I, GHR, OCX-32 genes and their association with egg production and egg weight in Anand Synthetic White Leghorn Chicken and Anand Bantamised White Leghorn Chicken	**Approved** [Action: HoD, Dept. of AnBT, Vet. College, Anand]
18.6.3.61	SNPs identification in GHR, IGF-I, OCX-32 and GDF9 genes and their association with egg production in Anand Synthetic White Leghorn and Anand Bantamised White Leghorn Chicken	**Approved** [Action: HoD, Dept. of AGB, Vet. College, Anand]
18.6.3.62	Knowledge and adaption of dairy farmers to control bovine ecto-parasites in Anand	**Approved with following suggestion/s:** 1. Include the name of scientist from

	and Kheda districts	Parasitology department 2. Refine and submit the objectives of technical programme to Director of Research, KU [Action: Action: HoD/PI, Vet. Extension Vet College, Anand]
College of Veterinary Science & A.H., KU, Sardarkrushinagar		
18.6.3.63	Melatonin expression patterns during breeding and non- breeding season in short day and long day breeders	**Approved** [Action: HoD, Dept. of Physiology, Vet. College, S. K. Nagar]
18.6.3.64	Influence of service period on ranking of Mehsana buffalo bulls based on first lactation milk yield	**Approved** [Action: HoD, Dept. of AGB, Vet. College, S. K. Nagar]
College of Veterinary Science & A.H., Navsari		
18.6.3.65	Study on A1/A2 β casein protein gene variants of Gir and Crossbred cattle using PCR-RFLP	**Approved** [Action: HoD, Dept. of AGB, Vet. College, Navsari]
18.6.3.66	Development of weight estimation formula using linear type traits and its comparative efficacy to predict live body weight in Surti goats	**Approved with following suggestion/s:** 1. Clarify month and year of completion [Action: HoD, Dept. of LPM, Vet. College, Navsari]
18.6.3.67	Studies on hemato-biochemical alteration in leptospirosis confirmed dogs	**Approved with following suggestion/s:** 1. Clarify month and year of completion [Action: HoD, Dept. of physiology, Vet. College, Navsari]
College of Veterinary Science, Himmatnagar		
18.6.3.68	Influence of non-genetic factors on occurrence of mastitis in the sheep flocks of Himmatnagar Taluka	**Approved with following suggestion/s:** 1. Clarify month and year of completion [Action: HoD, PGIVER, Himmatnagar]
18.6.3.69	Survey on camel husbandry practices by camel cart owners in Sabarkantha district	**Approved with following suggestion/s:** 1. Clarify month and year of completion [Action: HoD, LPM, CVSc, Himmatnagar]
18.6.3.70	Study of nutritional management practises in organized dairy farms of Sabarkantha district	**Approved with following suggestion/s:** 1. Clarify month and year of completion. 2. Replace word specialized with organized in title of technical program [Action: HoD, AN, CVSc, Himmatnagar]
18.6.3.71	Preliminary Investigation on Physio-biochemical Changes associated with Hyperketonemia in Freshly-calved Dairy Cattle	**Approved with following suggestion/s:** 1. Clarify month and year of completion 2. Replace word recently with freshly in title of technical program [Action: HoD, Dept. of Physiology, CVSc, Himmatnagar]
SMC College of Dairy Science, KU, Anand		
18.6.3.72	Development of MOOC on Dairy	**Approved with following suggestion/s:**

	Farming Techniques	1. Clarify month and year of completion [Action: PI, Dairy Sci. College, Anand]
18.6.3.73	Prevailing Crossbred Calf Mortality & its Pattern in Operational Area of Dairy Vigyan Kendra, Vejalpur	**Approved** [Action: PI, Dairy Sci. College, Anand]
FISHERIES SCIENCE		
18.6.3.74	Biochemical characterization, antioxidant potential and phycocolloid content of seaweeds available on Saurashtra coast	**Approved with following suggestion/s:** 1. Correct the tenure/year of the project as suggested by house. 2. Incorporate Peroxidase method for antioxidant activity analysis along with DPPH [Action: PI/Head, Dept of Aquaculture, CoFS, Veraval]
18.6.3.75	Impact of herbs Shatavari and Ashwagandha on growth performance of freshwater fish *Cirrhinus mrigala*	**Approved** [Action: PI & Asso. Prof. & Head, Dept of Aquaculture, CoFS, Veraval]
18.6.3.76	Reproductive biology of the Malabar grouper (*Epinephelus malabaricus*) landed at fishing harbour, Veraval	**Approved with following suggestion/s:** 1. Merge objective 1st and 3rd [Action: PI/Head, Dept of Fisheries Resource Management, CoFS, Veraval]
18.6.3.77	Seaweed diversity and their associations with gastropods along the intertidal coast of Loej, Gujarat.	**Approved** [Action: PI & Asst. Prof & Head, Dept. of Fisheries Resource Management, CoFS, Veraval]
18.6.3.78	Marine fish catch composition of mechanized gill netters off Porbandar coast, Gujarat	**Approved with following suggestion/s:** 1. Use FAO volume for fish identification [Action: PI/Head, Dept. of Fisheries Resource Management, CoFS, Veraval]
18.6.3.79	Effect of chitosan, gelatin and chitosan-gelatin based coating blended with clove essential oil on the quality attributes of peeled shrimp (*Litopenaeus vannamei*) stored under refrigerated condition	**Approved with following suggestion/s:** 1. Change species name of *Litopenaeus vannamei* to *Penaeus vannamei* [Action: PI/Head, Dept. of Fish Processing Technology, CoFS, Veraval]
18.6.3.80	Effect of active and vacuum packaging on the quality of dried white fish (*Lactarius lactarius*) during storage period	**Approved with following suggestion/s:** 1. Modifiy 1st objective as: Use word drying kinetics instead of only drying [Action: PI/Head, Dept. of Fish Processing Technology, CoFS, Veraval]
18.6.3.81	Assessment of phytoplankton diversity of Hiran-2 reservoir, Gujarat	**Approved** [Action: PI & Asso. Prof. & Head, Dept of Aquatic Environment Management, CoFS, Veraval]
18.6.3.82	Genetic Characterization and Nutritional Profiling of few Indigenous Fishes in Tapi District	**Approved with following suggestion/s:** 1. Year of completion of program will be 2024. [Action: PI/In-charge, Centre of Excellence in Aquaculture, KU, Ukai]

18.7 DAIRY SCIENCE AND FOOD PROCESSING TECHNOLOGY & BIO ENERGY

DATE: May 04-06, 2022

Chairman	Dr. B. J. Patel, I/c Principal, G. N. Patel College of Dairy Tech., KU, SK Nagar
Co-Chairman	1. Dr. Samit Dutta, Principal & Dean, College of FPTBE, AAU, Anand
	2. Dr. I. N. Patel, Dean (Food Tech.), SDAU, SK Nagar
Rapporteurs	1. Dr. Bhavesh Joshi, AAU, Anand
	2. Dr. Subrota Hati, KU, Anand
	3. Dr. Amit Kumar, KU, SK Nagar
	4. Dr. Devraj, NAU, Navsari
Statistician	Dr. M. K. Chaudhari, SDAU, SK Nagar

Presentation of recommendations and new technical programmes by Conveners of SAUs and KU

SN	Name	Designation & University
1	Dr. S. S. Kapdi	Prof. & Head, Dept. of Bio Energy, College of FPTBE, AAU, Anand
2	Dr. Ashish Dixit	Assistant Professor, FPT, SDAU, SKNagar
3	Dr. A.H. Jana	Professor & Head, DDPO, DSC, KU, Anand.

Summary of the Recommendations

Name of University	Proposed		Approved	
	Industry Entrepreneurs / Farmers	Scientific Community/ Policy Makers	Industry Entrepreneurs / Farmers	Scientific Community/ Policy Makers
AAU	16	8	16	8
NAU	02	-	01	-
SDAU	01	-	01	-
KU	01	3	01	3
Total	**20**	**11**	**19**	**11**

18.7.1 RECOMMENDATION FOR FARMERS / INDUSTRY & ENTREPRENEURS

ANAND AGRICULTURAL UNIVERSITY

Sr. No.	Title/ Suggestions/ Action
18.7.1.1	**Development of a portable ripening system for selected fruits** The farmers, traders and retailers interested in ripening of mango (cv. Kesar) and banana (cv. G9) fruits are recommended to use the portable ripening system developed by Anand Agricultural University, Anand. Portable ripening system made of HDPE lamination fabric (180 micron) of [610 (L) x 457 (B) x 711 (H) mm] can ripen about 30 kg of the mango (cv. Kesar) and banana (cv. G9) fruits within 4 and 5 days, respectively by 100 ppm ethylene gas treatment for 24 h. The mango (cv. Kesar) and banana (cv. G9) fruits ripening process involves washing of fruits with clean water, sodium hypochlorite (100 ppm) and then again with clean water. Thereafter, surface drying and ethylene gas spraying, leave for 24 h in the chamber followed by opening of chamber for air flushing at every 24 h and closing for ripening of the fruits. કેરી (કેસર) અને કેળા (જી૯) ના ફળોને પકવવામાં રસ ધરાવતા ખેડૂતો, વેપારીઓ અને છૂટક વિક્રેતાઓને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવેલ પોર્ટેબલ રાઈપનીંગ સીસ્ટમનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. એચ.ડી.પી.ઈ. લેમિનેશન ફેબ્રિક (૧૮૦

	માઇક્રોન) માંથી બનાવેલ પોર્ટેબલ રાઈપનીંગ સીસ્ટમમાં [૬૧૦ (લં) x ૪૫૭ (પ) x ૭૧૧ (ઉ) મીમી] ૩૦ કિલો કેરી (કેસર) અને કેળા (જી૯) ને ૧૦૦ પીપીએમ ઇથિલિન ગેસનો છંટકાવ કરી ૨૪ કલાક માટે રાખવાથી અનુક્રમે ૪ અને ૫ દિવસમાં પકાવી શકાય છે. આ રીતે કેરી (કેસર) અને કેળા (જી૯) ને પકવવા માટે ફળોને પાણીથી ત્યારબાદ સોડિયમ હાઇપોક્લોરાઇટ (૧૦૦ પીપીએમ)થી અને છેલ્લે ફરીથી પાણીથી ધોઈ સુકવીને ચેમ્બરમાં મૂકી ઇથિલિન ગેસનો છંટકાવ કરી ૨૪ કલાક રાખવામાં આવે છે. ત્યારબાદ દર ૨૪ કલાકે સીસ્ટમમાં હવાફેર માટે ચેમ્બર ખોલી ફરીથી બંધ કરવામાં આવે છે. ***[Action: PI &Prof. & Head, Dept. of PHET, College of FPTBE, AAU, Anand]***
18.7.1.2	**Varietal evaluation of selected fruits and vegetables for respiration rate under the steady state storage condition** Refrigeration engineers or food processing industries interested in designing cold/low temperature/CA/MA storage facilities for fruits/vegetables such as Green chilli (cv. Market 1, GVC 111, GVC 101) Tomato (cv. AT 3, GAT 4, GAT 5), Brinjal (cv. GOB 1, GAOB 2), Mango (cv. Langdo, Kesar) and Guava (Bhavnagri red, Allahbad Safeda) are advised to use the data on respiration rate and heat of respiration for the above commodities for various temperature and RH, determined by Anand Agricultural University, Anand. Among the studied varieties of green chilli, GVC 101 variety had minimum respiration rate (1.03 ml CO_2/kg/h) at 10^0C temperature & 95% RH followed by GVC 111 and Market 1. Similarly, for tomato, minimum respiration rate was observed for AT 3 variety (1.30 ml CO_2/kg/h) at 10^0C temperature & 95% RH followed by GAT 5 and GAT 4. GAOB 2 brinjal variety had minimum respiration rate 1.55 mlCO_2/kg/h at 10^0C temperature & 95% RH as compared to GOB 1. In case of mango fruit, Kesar mango variety had minimum respiration rate, 5.87 mlCO_2/kg/h at 10^0C temperature & 95% RH in comparison with Langdo. Accordingly, minimum respiration rate 8.47 mlCO_2/kg/h at 10^0C temperature & 80% RH was noted for Bhavnagri red variety of guava fruit as compared to Allahbad Safeda. Hence, different varieties of a produce have significant difference in their rate of respiration and thereby heat of respiration. It was noted that as the temperature of storage increased rate of respiration increased for all selected commodities. Moreover, with increase in storage humidity, rate of respiration was decreased for mango, tomato brinjal and green chilli whereas reverse trend was observed for the guava. ફળો તથા શાકભાજી જેવા કે લીલા મરચાં (માર્કેટ ૧, જીવીસી ૧૧૧, જીવીસી ૧૦૧), ટામેટા (એટી ૩, જીએટી ૪, જીએટી ૫), રીંગણ (જીઓબી ૧, જીએઓબી ૨), કેરી (લંગડો, કેસર) અને જામફળ (ભાવનગરી લાલ, અલ્લાહબાદ સફેદા) માટે ઠંડા/નીચા તાપમાન/ સીએ/ એમએ સંગ્રહ સીસ્ટમ ડિઝાઇન કરવામાં રસ ધરાવતા રેફ્રિજરેશન એન્જિનિયરો તથા ફૂડ પ્રોસેસિંગ ઉદ્યોગોને ભલામણ કરવામાં આવે છે કે તેઓ આણંદ કૃષિ યુનિવર્સિટી, આણંદ ધ્વારા ઉપર જણાવેલ ફળો તથા શાકભાજીના જુદા જુદા તાપમાન અને ભેજ યુક્ત વાતાવરણમાં માપવામાં આવેલ શ્વસન દર (રેટ ઓફ રેસ્પીરેસન) અને તેમના દ્વારા ઉત્પન્ન થતી ગરમી (હિટ ઓફ રેસ્પીરેસન) ના ડેટાનો ઉપયોગ કરે. લીલા મરચાની અભ્યાસ કરેલ જાતોમાં, જીવીસી ૧૦૧ જાતનો શ્વસન દર ૧૦^{0}સે તાપમાન અને ૯૫% ભેજ ધરાવતા વાતાવરણમાં સંગ્રહ દરમ્યાન લઘુત્તમ (૧.૦૩ મિલી CO_2/કિલો/કલાક) હતો, ત્યારબાદ અનુક્રમે જીવીસી ૧૧૧ અને માર્કેટ ૧ નો શ્વસન દર વધારે નોધાયો. એ જ રીતે, ટામેટા માટે, લઘુત્તમ શ્વસન દર (૧.૩૦ મિલી CO_2/કિલો/કલાક) એટી ૩ જાતનો ૧૦^{0}સે તાપમાન અને ૯૫% ભેજ વાળા વાતાવરણમાં સંગ્રહ દરમ્યાન નોધવામાં આવ્યો અને જીએટી ૫ અને

	જીએટી ૪ માટે ક્રમશઃ વધારો થતો જોવા મળ્યો. વધુમાં, જીઓબી ૧ ની સરખામણીમાં જીએઓબી ૨ રીંગણની જાતમાં ૧૦^{0}સે તાપમાન અને ૯૫% ભેજ ધરાવતા વાતાવરણમાં લઘુત્તમ શ્વસન દર (૧.૫૫ મિલી CO_2/કિલો/કલાક) હતો. કેરીના ફળની અભ્યાસ કરવામાં આવેલ વિવિધ જતો માટે, કેસર કેરીનો લંગડોની સરખામણીમાં લઘુત્તમ શ્વસન દર (૫.૮૭ મિલી CO_2/કિલો/કલાક) ૧૦^{0}સે તાપમાન અને ૯૫ % ભેજ ધરાવતા વાતાવરણમાં મળેલ છે. તદનુસાર, ૧૦^{0}સે તાપમાન અને ૮૦ % ભેજવાળા વાતાવરણમાં અલ્લાહબાદ સફેદાની સરખામણીમાં લઘુત્તમ શ્વસન દર ૮.૪૭ મિલી CO_2/કિલો/કલાક ભાવનગરી લાલ જાતના જામફળ માટે નોંધવામાં આવ્યો હતો. આમ, ઉપર જણાવેલ ફળો તથા શાકભાજીની વિવિધ જાતો તેમના શ્વસન દર અને તેના લીધે તેમના દ્વારા ઉત્પન્ન થતી ગરમીમાં નોંધપાત્ર તફાવત ધરાવે છે. આ ફળો તથા શાકભાજીની વિવિધ જાતો માટે નોંધવામાં આવ્યું હતું કે સંગ્રહના તાપમાનમાં વધારો થતાં તેમના શ્વસન દરમાં વધારો થાય છે. વધુમાં, તેમને સંગ્રહ કરવામાં આવેલ વાતાવરણના ભેજમાં વધારો કરવાથી કેરી, ટામેટા રીંગણ અને લીલા મરચાંના શ્વસન દરમાં ઘટાડો થયો હતો જ્યારે જામફળ માટે વિપરીત વલણ જોવા મળ્યું હતું. ***[Action: PI &Prof. & Head, Dept. of PHET, College of FPTBE, AAU, Anand]***
18.7.1.3	**Effect of different pretreatments on mature banana for increasing the shelf life** Farmers, entrepreneurs and Agro-processing units involved in increasing the shelf life of mature banana variety G9 are advised to use the hot water treatment technology developed by Anand Agricultural University, Anand. The technology involves dipping the mature banana in hot water (55°C) for 5 minutes. This results in increasing the shelf life of banana by 6 days over ambient (34±2°C) water dipping. પરિપક્વ કેળા જી૯ની સંગ્રહશક્તિ વધારવામાં રસ ધરાવતા ખેડૂતો, ઉદ્યોગસાહસિકો અને એગ્રો-પ્રોસેસિંગ એકમોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસિત ગરમ પાણીની પ્રક્રિયાનો ઉપયોગ કરવાની સલાહ આપવામાં આવે છે. આ તકનીકમાં પરિપક્વ કેળાને ગરમ પાણીમાં (૫૫°સે) ૫ મિનિટ માટે ડુબાડવામાં આવે છે. આ રીતે સાદા પાણીમાં (૩૪±૨°સે) ડુબાડવામાં આવેલ કેળા કરતાં ૬ દિવસ વધુ સંગ્રહ કરી શકાય છે. ***[Action: PI &Prof. & Head, Dept. of PHET, College of FPTBE, AAU, Anand]***
18.7.1.4	**Production of premium quality powder with maximum retention of essential oil using cryogenic grinding of fennel seed** Entrepreneurs and agro-processing units involved in grinding of spices are advised to use the technology of cryogenic grinding developed by Anand Agricultural University, Anand for superior quality fennel seed powder with higher retention of essential oil. For higher retention (2.8%) of essential oil, the cryogenic grinding of fennel seed at temperature of -100°C, sieve size of 1.5 mm and feed rate of 16 kg/h is recommended. Cryo-ground sample stored in aluminium laminated zip lock bags at ambient conditions (34±2°C) retained higher (1.5%) essential oil. વરિયાળીના પાવડરનું ઉત્પાદન કરતા ઉદ્યોગ સાહસિકો તથા ઉદ્યોગકારોને ઉત્તમ ગુણવત્તાવાળા પાવડરનું ઉત્પાદન કરવા માટે આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવવામાં આવેલ ક્રાયોજેનિક ગ્રાઇન્ડીંગની તાંત્રિક્તાનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. ક્રાયોજેનિક ગ્રાઇન્ડીંગ તાંત્રિક્તાથી દળેલ વરિયાળી પાવડરમાં તૈલીય તત્વની મહત્તમ માત્રા (૨.૮%) જળવાઇ રહે છે. વરિયાળી પાવડરમાં મહત્તમ એસેન્શિયલ ઓઇલને જાળવી રાખવા માટે વરિયાળીને -૧૦૦°સે તાપમાને, ૧.૫ મીમીની ચાળણીનો ઉપયોગ કરી ૧૬ કિલોગ્રામ

	પ્રતિ કલાકના ફીડ રેટે દળવાની ભલામણ કરવામાં આવે છે. ક્રાયોજેનિક ગ્રાઇન્ડીંગ તાંત્રિક્તાથી દળેલ વરિયાળી પાવડરને સામાન્ય સ્થિતિ (૩૪±૨°સે)માં એલ્યુમિનિયમ લેમિનેટેડ ઝિપ લોક બેગમાં સંગ્રહ કરવાથી તેમાં તૈલીય તત્વની મહત્તમ માત્રા (૧.૫%) જળવાઈ રહે છે. ***[Action: PI &Prof. & Head, Dept. of PHET, College of FPTBE, AAU, Anand]***
18.7.1.5	**Development of high fiber cookies and muffins supplemented with pomegranate seed flour** Bakery entrepreneurs interested in production of high fiber cookies are advised to use the technology developed by Anand Agricultural University, Anand. The technology involves preparation of cookies by replacing 15% of pomegranate seed flour and 85% refined wheat flour of total refined wheat flour. The cookie packed in aluminum laminates has 75 days of shelf life at 30±2 °C. The fibre content in developed cookies is 5.82%. વધુ ફાઇબર ધરાવતી કુકીઝના ઉત્પાદનમાં રસ ધરાવતા બેકરી ઉદ્યોગસાહસિકોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ ધ્વારા વિકસિત તાંત્રિક્તાનો ઉપયોગ કરવાની સલાહ આપવામાં આવે છે. આ તાંત્રિક્તામાં કુકીઝના ઉત્પાદનમાં કુલ મેંદાને બદલે ૧૫% દાડમના બીજનો પાવડર અને ૮૫ % મેંદાનો ઉપયોગ કરવામાં આવે છે. કુકીઝ ને એલ્યુમીનીયમ લેમિનેટ્સમાં પેક કરી ૭૫ દિવસ સુધી ૩૦±૨°સે. તાપમાને સંગ્રહીત કરી શકાય છે. આ કુકીઝ્માં રેષાયુક્ત પદાર્થ ૫.૮૨ % હોય છે. ***[Action: PI &* Assoc. *Prof. & Head, Dept. of FPT, College of FPTBE, AAU, Anand]***
18.7.1.6	**Utilization of flaxseed meal for value added product** The entrepreneurs and food processors interested in utilization of flaxseed cake for value added product are recommended to adopt the technology developed by Anand Agricultural University, Anand. The technology involves roasting and grinding of flaxseed cake at 150 °C and 15 min followed by preparation of cookies by replacing 20% flaxseed cake and 80% refined wheat flour of total refined wheat flour. The cookies can be packed in metalized polypropylene bag and can be stored for 120 days at 30±2 ºC. અળસીના ખોળની મૂલ્યવર્ધિત બનાવટોના ઉત્પાદનમાં રસ ધરાવતા સાહસિકો અને ઉદ્યોગકારોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવવામાં આવેલ તાંત્રિક્તાનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. આ તાંત્રિક્તામાં અળસીના ખોળને ૧૫૦°સે. તાપમાને ૧૫ મિનિટ માટે શેકી અને દળવામાં આવે છે અને ત્યારબાદ કુલ મેંદાને બદલે ૨૦% અળસીનો ખોળ અને ૮૦% મેંદો ઉમેરીને કૂકીઝ તૈયાર કરવામાં આવે છે. આ કૂકીઝને મેટલાઈઝ્ડ પોલીપ્રોપીલિન બેગમાં પેક કરી ૩૦±૨ °સે. તાપમાને ૧૨૦ દિવસ માટે સંગ્રહિત કરી શકાય છે. **[*Action: PI & Assoc. Prof. & Head, Dept. of FPT, College of FPTBE, AAU, Anand]***
18.7.1.7	**Technology for extraction of carvone and limonene rich essential oil from dill seed** Entrepreneurs and Agro-processing units involved in production of superior quality of dill seed essential oil are recommended to use the supercritical fluid extraction technology developed by Anand Agricultural University, Anand. This technology involves use of carbon dioxide super critical fluid extraction at controlled pressure of 300 bar, temperature of 30 °C and dynamic time of 146 min, which yielded 5.43 % dill seed essential oil consisting 43.06 mg carvone and 6.74 mg limonene in 100 g essential oil. સુવાના ઉત્કૃષ્ટ ગુણવત્તા ધરાવતા એસેન્શ્યલ ઓઇલના ઉત્પાદન સાથે સંકળાયેલા ઉદ્યોગ-સાહસિકો અને એગ્રો પ્રોસેસિંગ એકમોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવેલ

	સુપરક્રીટિકલ નિષ્કર્ષણ પદ્ધતિનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. આ પદ્ધતિમાં ૩૦૦ બારના દબાણે, ૩૦°સે તાપમાને અને ૧૪૬ મિનીટના ડાયનેમિક સમય પર કાર્બન ડાયોક્સાઈડ સુપરક્રીટિકલ નિષ્કર્ષણના ઉપયોગ દ્વારા ૫.૪૩% એસેન્શ્યલ ઓઇલનું નિષ્કર્ષણ કરી શકાય છે. આ પ્રક્રિયાથી મળેલ ૧૦૦ ગ્રામ એસેન્શ્યલ ઓઇલમાં, ૪૩.૦૬ મિ.ગ્રા. કાર્વોન અને ૬.૭૪ મિ.ગ્રા. લિમોનીન હોય છે. ***[Action: PI & Assoc. Prof. & Head, Dept. of FQA, College of FPTBE, AAU, Anand]***
18.7.1.8	**Super critical fluid extraction of essential oil from fennel seed** Entrepreneurs and Agro-processing units involved in production of superior quality of fennel seed essential oil are recommended to use the supercritical fluid extraction technology developed by Anand Agricultural University, Anand. This technology involves use of carbon dioxide supercritical fluid extraction at controlled pressure of 300 bar, temperature of 55°C and dynamic time of 180 min, which yielded 3.41% fennel seed essential oil consisting of 32.29 mg anethol in 100 g essential oil. વરીયાળીના ઉત્કૃષ્ટ ગુણવત્તા ધરાવતા એસેન્શ્યલ ઓઇલના ઉત્પાદન સાથે સંકળાયેલા ઉદ્યોગ સાહસિકો અને એગ્રો પ્રોસેસિંગ એકમોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવેલ સુપરક્રીટિકલ નિષ્કર્ષણ તાંત્રિક્તાનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. આ પદ્ધતિમાં ૩૦૦ બારના દબાણે, ૫૫° સે તાપમાને અને ૧૮૦ મિનીટના ડાયનેમીક સમય પર કાર્બન ડાયોક્સાઈડ સુપરક્રીટિકલ નિષ્કર્ષણના ઉપયોગ દ્વારા ૩.૪૧% એસેન્શ્યલ ઓઇલનું નિષ્કર્ષણ કરી શકાય છે. આ પ્રક્રિયાથી મળેલ ૧૦૦ ગ્રામ વરીયાળીના એસેન્શ્યલ ઓઇલમાં, ૩૨.૨૯ મિ.ગ્રા. એનેથોલ હોય છે. ***[Action: PI & Assoc. Prof. & Head, Dept. of FQA, College of FPTBE, AAU, Anand]***
18.7.1.9	**Technology for continuous microwave drying of *Moringa oleifera* (Drumstick) leaves** The entrepreneurs and food processors interested in continuous production of dried moringa leaves are recommended to use the processing technology developed by the Anand Agricultural University, Anand. Continuous microwave drying takes lesser time as compared to other drying technologies. The technology involves continuous microwave drying of moringa leaves (1.49 kg/h) using three magnetrons at desired pulsating ratio to less than 10% moisture content in 29 min. It results good quality dried moringa leaves which retained about 83% of the Vitamin C present in the fresh sample. સરગવાના પાનની સતત સુકવણી કરવા ઈચ્છતા ઉદ્યોગસાહસિકો અને ફૂડ પ્રોસેસરોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવવામાં આવેલ તાંત્રિક્તાનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. અન્ય સુકવણીની તાંત્રિકતા કરતા સતત માઇક્રોવેવ ડ્રાઈંગમાં ઓછો સમય લાગે છે. આ તાંત્રિક્તામાં સરગવાના પાનના (૧.૪૯ કી.ગ્રા./કલાકના દરે) સતત માઇક્રોવેવ ડ્રાઈંગ, નક્કી કરેલ પલ્સેટીંગ રેશીયો પર ૩ મેગ્નેટ્રોનનો ઉપયોગ કરી ૨૯ મિનીટમાં ૧૦ % થી ઓછા ભેજ સુધી ડ્રાઈંગ કરી શકાય છે. આ તાંત્રિક્તાથી સારી ગુણવત્તાવાળા સરગવાના સુકા પાન મળે છે, કે જેમાં તાજા પાનમાં રહેલ વિટામિન સી નું પ્રમાણ ૮૩% સુધી જળવાઇ રહે છે. ***[Action: PI &Prof. & Head, Dept. of FE, College of FPTBE, AAU, Anand]***
18.7.1.10	**Development of soya milk bread** The bakery industrialist and entrepreneurs interested in production of soya extract bread are recommended to use technology developed by the Anand Agricultural University, Anand. This technology involves use of 10% water and 90% soya

	extract (containing 13.6% solids) for bread making. Developed bread contains 26.45 %, 0.029 % and 0.040 % more protein, calcium and iron, respectively as compared to control bread. સોયા એક્ષટ્રેકટ બ્રેડના ઉત્પાદનમાં રસ ધરાવતા બેકરી ઉદ્યોગકારો અને ઉદ્યોગસાહસિકોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવાયેલ તાંત્રિકતાનો ઉપયોગ કરવા ભલામણ છે. આ તાંત્રિકતામાં કુલ પાણીના બદલે ૯૦% સોયા એક્ષટ્રેકટ (કે જેમા ૧૩.૬ % ઘનપદાર્થ) અને ૧૦% પાણીનો ઉપયોગ કરી બ્રેડ તૈયાર કરી શકાય છે. જેમાં સામાન્ય બ્રેડ કરતાં અનુક્રમે ૨૬.૪૫ %, ૦.૦૨૯ % અને ૦.૦૪૦ % પ્રોટીન, કેલ્શિયમ અને લોહતત્વ વધારે હોય છે. ***[Action: PI & Principal, Polytechnic in Food Sci. & Home Eco., AAU, Anand]***
18.7.1.11	**Development of technology for manufacture of a protein enriched moringa fortified spread** The entrepreneurs interested in manufacture of 'Protein Enriched Moringa Fortified Spread' (PEMFS) are recommended to use technology developed by Anand Agricultural University, Anand. The protein content of developed PEMFS is 20% higher than normal cheese spread. The developed PEMFS had a shelf life of 21 days when stored in polypropylene cups at 7±1°C. વધુ પ્રોટીન વાળી અને સરગવાની સીંગનો પાવડર ઉમેરેલ સ્પ્રેડ (પી.ઈ.એમ. એફ.એસ) ના ઉત્પાદનમાં રસ ધરાવતા ઉદ્યોગસાહસિકોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવાયેલ ટેકનોલોજીનો ઉપયોગ કરવા ભલામણ છે. આ વિકસિત પી.ઈ.એમ.એફ.એસનું પ્રોટીન, સામાન્ય સ્પ્રેડ કરતાં ૨૦% વધારે છે. આ પી.ઈ.એમ.એફ.એસ ને ૭±૧^{o} સે તાપમાને પોલીપ્રોપિલિન કપમાં સંગ્રહ કરતા તે ૨૧ દિવસ સુધી સારૂં રહી શકે છે. ***[Action: PI &Prof & Head, Dept. of Dairy Tech., SMCDSC, VDU, AAU, Anand]***
18.7.1.12	**Development of technology for manufacture of low-fat paneer** The entrepreneurs interested in manufacture of low-fat paneer using whey protein concentrate-70 as fat replacer and glucono delta lactone as coagulant are recommended to use technology developed by Anand Agricultural University, Anand. The shelf life of the developed product when packed under vacuum in 12 μ polyester + 50 μ LD/LLDPE laminated pouches was 16 days at refrigerated (7±2 ◦C) temperature. લો ફેટ પનીર બનાવવા માટેની તકનીકમાં રસ ધરાવતા ઉદ્યોગસાહસિકોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ ધ્વારા વિકસાવાયેલ ટેકનોલોજીનો ઉપયોગ કરવા ભલામણ છે. આ પનીરમાં ફેટ રિપ્લેસર તરીકે વ્હે પ્રોટીન કોન્સેન્ટ્રેટ-૭૦ અને કોગ્યુલન્ટ તરીકે ગુલકોનોડેલ્ટાલેક્ટોન નો ઉપયોગ કરવામા આવેલ છે. આ પનીરને ૧૨ μ પોલિએસ્ટર + ૫૦ μ એલ.ડી/એલ.એલ.ડી.પી.ઈ. લેમિનેટેડ પાઉચમાં વેક્યૂમ હેઠળ પેક કરવામાં આવે ત્યારે ૭±૨^{o} સે તાપમાને ૧૬ દિવસ સુધી સાચવણી કરી શકાય છે. ***[Action: PI &Prof & Head, Dept. of Dairy Tech., SMCDSC, VDU, AAU, Anand]***
18.7.1.13	**Development of whey-based candy incorporating *Moringa oleifera*** Process for whey based candy containing moringa ingredients developed by Anand Agricultural University, Anand is recommended to interested Dairy industry and Entrepreneurs. The technology enables value added whey based candy containing moringa ingredients with acceptable sensory characteristics can be prepared using 70% paneer whey, 2% moringa pod powder and 0.2% carrageenan stabilizer.. આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસીત સરગવાના તત્વો ધરાવતી વ્હે આધારીત મૂલ્યવર્ધિત કેન્ડીમા રસ ધરાવતા ડેરી ઉદ્યોગો અને વ્યવસાયિકોને આ પ્રક્રિયા માટે ભલામણ

	કરવામાં આવે છે. સરગવાના તત્વો ધરાવતી વ્હે આધારીત મૂલ્યવર્ધિત અને સ્વીકાર્ય ગુણવત્તાવાળી કેંડી, ૭૦% પનીર વ્હે, ૨% સરગવાની સીંગનો પાવડર અને ૦.૨% કેરાગીનન સ્ટેબીલાઈઝરનો ઉપયોગ કરીને બનાવી શકાય છે. ***[Action: PI &Prof & Head, Dept. of Dairy Tech., SMCDSC, VDU, AAU, Anand]***
18.7.1.14	**Development of fermented cactus pear (*Opuntiaficus indica*) beverage** The entrepreneurs interested in manufacture of fermented cactus pear (*Opuntia elatior* Mill.) beverage using lactic starter culture (*L. fermentum* KGL4 + *L. rhamnosus* M9) are recommended to use technology developed by Anand Agricultural University, Anand. The product can be prepared by addition of cactus pear powder (12.00 %) and sucrose (2.87 %) in water, followed by its fermentation. The developed product remained stable for 20 days when stored in PET bottle at refrigerated (7±1°C) condition. લેક્ટિક સ્ટાર્ટર કલ્ચર (*એલ .ફર્મેન્ટમ* કેજીએલ૪ +*એલ .રામનોસસ* એમ૯) નો ઉપયોગ કરીને આથવેલ હાથલો થોરના ફીંડલાનું પીણું વિકસાવવામાં રસ ધરાવતા ઉદ્યોગસાહસિકોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવાયેલ ટેકનોલોજીનો ઉપયોગ કરવા ભલામણ છે. આ પીણું, પીવાના પાણીમાં ફીંડલાનો પાવડર (૧૨.૦૦ %) તથા ખાંડ (૨.૮૭ %) ઉમેરી આથવીને તૈયાર કરવામાં આવેલ છે .જે પેટ બોટલમાં રેફ્રિજેરેટેડ સ્થિતીમાં (૭±૧°સે) ૨૦ દિવસ સુધી સારું રહે છે. ***[Action: PI & Assoc. Prof & Head, Dept. of Dairy Microbiology, SMCDSC, VDU, AAU, Anand]***
18.7.1.15	**Development of synbiotic creamed cottage cheese** A method for preparing acceptable quality synbiotic creamed cottage cheese with promising antioxidant and ACE-inhibitory activities has been standardized at Anand Agricultural University, Anand using *Streptococcus thermophilus* MTCC 5460, probiotic *Lactobacillus helveticus* MTCC 5463 and inulin as prebiotic. The product has a shelf life of 15 days when stored at refrigerated conditions (7±1^{0}C). The probiotic count at the end of shelf life was >8 log CFU/g. આણંદ કૃષિ યુનિવર્સિટી, આણંદ ખાતે સ્ટ્રેપ્ટોકોકસ થર્મોફિલસ એમ.ટિ.સી.સી. ૫૪૬૦, પ્રોબાયોટિક લેક્ટોબેસિલસ હેલ્વેટીકસ એમ.ટિ.સી.સી. ૫૪૬૩ અને પ્રીબાયોટિક તરીકે ઇન્યુલિનનો ઉપયોગ કરીને આશાસ્પદ એન્ટીઑકિસડન્ટ અને એ.સી.ઈ.-નિરોધક પ્રવૃત્તિઓ સાથે સ્વીકાર્ય ગુણવત્તાયુક્ત સિન્બાયોટિક ક્રીમ્ડ કોટેજ ચીઝ તૈયાર કરવાની પદ્ધતિને પ્રમાણિત કરવામાં આવી છે .જ્યારે રેફ્રિજરેટેડ સ્થિતિમાં (૭±૧°સે) સંગ્રહિત કરવામાં આવે ત્યારે ઉત્પાદનની સંગ્રહશક્તિ ૧૫ દિવસની હોય છે. સંગ્રહશક્તિના અંતે પ્રોબાયોટિકની સંખ્યા > ૮ લોગ સી.એફ.યુ./ગ્રામ હતી. ***[Action: PI & Assoc. Prof & Head, Dept. of Dairy Microbiology, SMCDSC, VDU, AAU, Anand]***
18.7.1.16	**Mechanized manufacture of beetroot halwa** The entrepreneurs and dairy processing units interested in production of mechanized manufacture of beetroot halwa are advised to use the technology developed by Anand Agricultural University, Anand. The beetroot halwa with highly acceptable quality can be prepared using 30% sugar, 8% ghee and 33% khoa, of beetroot shred (3.0 kg) in steam jacketed kettle (5.0 kg loading capacity), keeping 1.5 kg/cm^2 steam pressure and 30 rpm scrapper speed for 35 minutes. બીટના હલવાના યાંત્રિક રીતના ઉત્પાદનમાં રસ ધરાવતા ઉદ્યોગ સાહસિકો અને ડેરી પ્રોસેસિંગ એકમોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસિત ટેકનોલોજીનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. સ્ટીમ જેકેટેડ કેટલમાં (૫.0 કી.ગ્રા. લોડિંગ ક્ષમતા) બીટની

	છીણ (3.0 કી.ગ્રા.) ના 30% ખાંડ, ૮% ઘી અને 33% માવાનો ઉપયોગ કરીને, ૧.૫ કી.ગ્રા./સી.એમ² સ્ટીમ પ્રેશર અને 30 આર.પી.એમ સ્ક્રેપરની ઝડપનો ઉપયોગ કરીને અત્યંત સ્વીકાર્ય ગુણવત્તાવાળો બીટનો હલવો ૩૫ મિનિટમાં તૈયાર કરી શકાય છે. ***[Action: PI & Prof & Head, Dept. of Dairy Engg., SMCDSC, VDU, AAU, Anand]***

NAVSARI AGRICULTURAL UNIVERSITY

18.7.1.17	**Standardization of technology for minimal processing of fresh cut cauliflower (*Brassica oleracea* var. botrytis L.)** It is recommended to the processors and entrepreneurs that minimally processed fresh cut cauliflower pieces (25 mm size) can be prepared followed by its blanching for 3 minutes at 95°C along with 1.0 % calcium chloride ($CaCl_2$). Then keeping in the solution of 0.1 % citric acid and 0.1 % potassium meta bisulphite for 15 minutes. After removal of excess water, the pieces were packed in 200 gauge LDPE (Low Density Poly Ethylene) bags can be successfully stored for 20 days at refrigerated temperature (5°C). પ્રોસેસરો અને ઉદ્યોગસાહસિકોને ભલામણ કરવામાં આવે છે કે, ફુલેવરના ટુકડા (૨૫ મીમી કદ) ને ૯૫°સે તાપમાને પાણીમાં ૧.૦ % કેલ્શિયમ ક્લોરાઇડ ઉમેરી ૩ મીનીટ સુધી બ્લાન્ચીંગ કરવા. ત્યારબાદ ૦.૧ % સાઇટ્રીક એસીડ અને ૦.૧ % પોટેશીયમ મેટા બાય સલ્ફાઇટના દ્રાવણમા ૧૫ મીનીટ સુધી રાખવા. પછી વધારાનું પાણી દૂર કરી ટુકડાને ૨૦૦ ગેજ એલ.ડી.પી.ઇ. (લો ડેન્સીટી પોલી ઇથીલીન) બેગમાં પેક કરી રેફ્રીજરેટર તાપમાને (૫°સે) ૨૦ દિવસ સુરક્ષિત રીતે સંગ્રહ કરી શકાય છે. ***[Action: Professor & Head, PHT, ACHF, NAU, Navsari]***
18.7.1.18	**To standardize the process for preparation of IMF (Intermediate Moisture Food) from Jackfruit (*Artocarpus heterophyllus* Lam.)** It is recommended to the farmers, processors and entrepreneurs that ripe jackfruit bulbs can be utilized for the preparation of IMF (Intermediate Moisture Food) to increase the acceptability. For preparation of IMF, 1 kg deseeded jack fruit bulbs can be dipped in one litre sugar syrup (60° B) for 12 hours along with 500 ppm potassium metabisulphite (KMS) by maintaining 0.7 per cent acidity and dried for 15 hours at 60 °C temperature. The prepared IMF can be stored satisfactorily for four months at ambient temperature when packed in polypropylene bags (400 gauge). ખેડૂતો, પ્રોસેસરો અને ઉદ્યોગસાહસિકોને ભલામણ કરવામાં આવે છે કે ફણસના ચાંપામાંથી આઇ.એમ.એફ. (ઇન્ટરમીડીયેટ મોઇશ્ચર ફૂડ) બનાવવા માટે પાકા ફણસના ચાંપાના ૧ કિલો ટુકડાને ૬૦° બ્રિક્ષ ટી.એસ.એસ. ધરાવતી ૧ લીટર ખાંડની ચાસણીમાં ૫૦૦ પી.પી.એમ. પોટેશીયમ મેટા બાયસલ્ફાઇટ (કે.એમ.એસ.) અને ૦.૭ ટકા સાઇટ્રીક એસીડ નાંખી ૧૨ કલાક સુધી ડૂબાડી રાખવા. ત્યારબાદ ૬૦°સે. તાપમાને ૧૫ કલાક સુધી સુકવી તૈયાર થયેલ આઇ.એમ.એફ. ને પોલીપ્રોપીલીન(૪૦૦ ગેજ) ની બેગમાં પેક કરવાથી ચાર માસ સુધી સામાન્ય તાપમાને સંતોષકારક રીતે તેનો સંગ્રહ કરી શકાય છે. **Project to be concluded.** ***(Action: Professor & Head, PHT, ACHF, NAU, Navsari)***

SARDAR KRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

18.7.1.19	**Development of Potato-Gulabjamun recipe** A technology suitable for food entrepreneurs and households for preparing potato-gulabjamun is developed by Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar includes ingredients such as boiled and mashed

	potatoes (60.00 g), skim milk powder (40.00 g), maida (30.00 g) and sodium bi-carbonate (1.00 g). Such potato-gulabjamun packed in glass jar had a shelf life of 4 days and up to 14 days when stored at 30±2°C and 7±2°C temperature, respectively. સરદારકૃષિનગર દાંતીવાડા કૃષિ યુનિવર્સિટી, સરદારકૃષિનગર દ્વારા બટાટા-ગુલાબજાંબુ તૈયાર કરવા માટે ખાદ્ય સાહસિકો અને પરિવારો માટે યોગ્ય ટેકનોલોજી વિકસાવવામાં આવી છે, જેમાં બાફેલા અને છૂંદેલા બટાટા (૬૦.૦૦ ગ્રામ), સ્કિમ મિલ્ક પાવડર (૪૦.૦૦ ગ્રામ), મેંદો (૩૦.૦૦ ગ્રામ) અને સોડિયમ બાય-કાર્બોનેટ (૧.૦૦ ગ્રામ) જેવા ઘટકોનો સમાવેશ થાય છે. કાચની બરણીમાં પેક કરેલા આવા બટાટા-ગુલાબજાંબુને ૩૦±૨°સે અને ૭±૨°સે તાપમાને સંગ્રહ કરવામાં આવે ત્યારે અનુક્રમે ૪ દિવસ અને ૧૪ દિવસ સુધીની સંગ્રહ શક્તિ ધરાવે છે. ***[Action: PI & HOD, FSN, ACH, SDAU, Sardarkrushinagar]***

KAMDHENU UNIVERSITY

18.7.1.20	**Development of carrot juice based reduced sugar milk drink** Carrot juice based reduced sugar milk drink optimized using 20% carrot (Nantes variety) juice (~10% TSS) and milk having 4% fat and 9.5% Solids-Not-Fat content. Sweetener was added at the rate of 8% sugar: intense sweetener (Sucralose with bulking agent, 1:1). The product was given heat treatment of 75°C for 1 min and cooled at 10± 1°C and thereafter fill and sealed in glass bottle. It remained acceptable up to 8 days at refrigerated condition (7± 1°C). સારી ગુણવતા ધરાવતું ગાજરનાં રસ આધારિત ઓછી ખાંડવાળા દૂધનું પીણું બનાવવા માટે ૨૦% ગાજરનો (નાન્ટેસ વેરાયટી) રસ (~૧૦ % ટી.એસ.એસ) અને ૪% ફેટ તથા ૯.૫% સોલિડ નોટ ફેટ ધરાવતા દૂધનો ઉપયોગ કરી એમા ગળપણ ૮% ના દરે ખાંડ:તીવ્ર ગળપણ ધરાવતી ખાંડ (સુક્રાલોઝ અને બલ્કિંગ એજંટ, ૧:૧) ઉમેરી ઉત્પાદનને ૭૫°સે તાપમાને ગરમ કરી, ૧૦±૧°સે તાપમાને ઠંડુ કર્યા બાદ કાચની બોટલમાં ભરી સીલબંધ કરવામાં આવે છે. આ ઉત્પાદનની ગુણવતા રેફ્રિજરેટેડ (૭±૧ °સે) તાપમાને ૮ દિવસ સુધી સ્વીકાર્ય રહે છે. **The house approved the recommendation for farmers / industry & entrepreneurs** ***[Action: PI & Asst. Prof. & Head, Dept. of Dairy Technology, CDS, Amreli]***

18.7.2 RECOMMEDATION FOR SCIENTIFIC COMMUNITY

ANAND AGRICULTURAL UNIVERSITY

18.7.2.1	**Production technology for extraction of bioactive compounds from mango seed kernel** Anand Agricultural University, Anand recommends method for extraction of polyphenols from *Kesar* variety mango seed kernels. The extraction technology involves the use of microwave assisted extraction technique by the use of methanol as solvent with sample to solvent ratio 1:20 which yielded 22.67 % extract, with total phenolics content of 628.56 mg GAE/g and 2.25 ppm antioxidant activity (DPPH) value. ***[Action: PI & Assoc. Prof. & Head, Dept. of FPT, College of FPTBE, AAU, Anand]***
18.7.2.2	**Performance evaluation of feed forward neural network for detection of boric acid adulteration in wheat flour using FTIR spectra with solvent extraction** Feed forward artificial neural networks (learning rate 0.04, momentum 0.9) can be successfully used to detect boric acid adulteration in wheat flour up to 0.4% levels using FTIR spectra taken after extracting 10 g of wheat flour sample with 50 ml of methanol followed by drying and re-suspension in 10 ml distilled water.

	[Action: PI & Assoc. Prof. & Head, Dept. of FQA, College of FPTBE, AAU, Anand]
18.7.2.3	**Evaluation of microbial decontamination efficiency of electrolysed water for safety and quality of selected fruits and vegetables** The scientist interested in non-thermal microbial decontamination techniques is recommended to use electrolyzed alkaline water with 10.5 pH and -600 ORP. This alkaline water is effective in reducing minimum up to 2.8 log population of *E. coli*, *S. aureus. S. typhi* and *P. aeruginosa* upon 15 min of exposure. ***[Action: PI & Assoc. Prof. & Head, Dept. of FQA, College of FPTBE, AAU, Anand]***
18.7.2.4	**Study of temperature and velocity distribution in a heat pump assisted dryer by computational fluid dynamics** The present simulation study on the existing Heat Pump Assisted Dryer suggested using louvers (23 numbers, length 440 mm, width 30 mm, and having an angle of 30° with respect to the central horizontal axis) at the inlet plane of the dryer chamber for uniform fluid's temperature and velocity profiles. ***[Action: PI &Prof. & Head, Dept, of FE, College of FPTBE, AAU, Anand]***
18.7.2.5	**Quantification of selected adulterants in milk using existing qualitative tests** Anand Agricultural University, Anand recommends spectrophotometric methods for quantification of adulterants such as urea, glucose, sucrose and starch in milk based on p-dimethyl amino benzaldehyde test, Barfoed test, Seliwanoff test and Iodine test, respectively. The absorption maxima (λmax) of the colour complex formed in tests for urea, glucose, sucrose and starch are at 425 nm, 670 nm, 480 nm and 570 nm wavelength, respectively. The developed methods can quantify minimum 0.05 % each of added urea, glucose and sucrose, respectively in milk whereas 0.01 % of added starch in milk. ***[Action: PI & Assoc. Prof & Head, Dept. of Dairy Chemistry, SMCDSC, VDU, AAU, Anand]***
18.7.2.6	**Evaluating the effect of selected spices on cholesterol level in ghee** Anand Agricultural University, Anand recommends the addition of ground black pepper, cardamom or ginger individually @ 0.50% by weight in melted butter (50°C) during ghee making which reduces 13.00%, 14.50% and 12.50% cholesterol content, respectively in the ghee. ***[Action: PI & Assoc. Prof & Head, Dept. of Dairy Chemistry, SMCDSC, VDU, AAU, Anand]***
18.7.2.7	**Evaluation of antioxidant activity of Cheddar cheese whey and *paneer* whey** In order to enhance antioxidant activity of whey, Anand Agricultural University, Anand recommends heating of Cheddar cheese whey or paneer whey at 80°C without holding and held for 12 hours at 4°C. ***[Action: PI & Assoc. Prof & Head, Dept. of Dairy Chemistry, SMCDSC, VDU, AAU, Anand]***
18.7.2.8	**Development of enrichment broth for selective growth of coliforms** A selective enrichment broth for the growth of coliforms has been recommended by Anand Agricultural University, Anand. This broth is formulated with addition of Sodium lauryl sulphate salt, Gentamicin sulphate + Amoxycillin (1:1 ratio) and Cefsulodin in base broth formulation. It showed good growth of *E .coli* ATCC 25922 and coliforms while inhibition of targeted organisms like *Salmonella typhi* ATCC 14028, *Enterococcus faecalis* ATCC 29212 and *Staphylococcus aureus* ATCC 25923. ***[Action: PI & Assoc. Prof & Head, Dept. of Dairy Microbiology, SMCDSC, VDU, AAU, Anand]***

KAMDHENU UNIVERSITY

18.7.2.9	**Study of novel preservatives alternative to Formalin** At refrigerator temperature (5±1°C), compositional parameters (Fat, SNF,

	Lactose and Protein) of raw milk does not change when a combination of preservative of 2-bromo-nitro-1,3 propanediol (0.2%) and hydrogen peroxide (0.2%) is added to raw milk separately. This said combination of preservatives is able to extend the shelf life of raw milk and suitable for analytical purpose (compositional analysis) up to 15 days at refrigeration temperature. Hence, this said preservative combination could be used as an alternative to formalin. ***[Action: PI & Asst. Prof. & Head, Dept. of Dairy Chemistry, CDS, Amreli]***
18.7.2.10	**Characterization of ghee prepared from sheep milk and evaluation of its shelf life during storage** The R. M. Value, P. Value and B. R. reading of Sheep ghee made using "direct cream method" are 34.43, 1.27 and 41.29, respectively. Poly Unsaturated Fatty Acid content in sheep ghee is almost 10.03 %. Higher carbon numbers (C36-C54) triglycerides are the predominant tri-glycerides in sheep ghee. Shelf life of Sheep Ghee is up to five months when stored at 40°C. ***[Action: PI & Asst. Prof. & Head, Dept. of Dairy Chemistry, CDS, Amreli]***
18.7.2.11	**Identification of "signature sequence" associated with raw milk for quality and safety of dairy products: A metagenomics approach** Metagenomic analysis of raw milk samples collected from indigenous cows (Gir), cross bred cows and buffalo revealed significant differences in the composition of microflora. The family level analysis showed that Gir cow milk showed dominance of *Bacillaceae* (25.20%), *Bifidobacteriaceae* (10.91%) and *Lactobacillaceae* (9.77%); crossbred cow milk had *Streprococcaceae* (29.42%), *Bacillaceae* (28.51%) and *Psudomonadaceae* (5.33%); while buffalo milk was dominated with *Bacillaceae* (17.73%) followed by *Psudomonadaceae* (11.99%) and *Xanthomonadaceae* (10.75%) as dominant microflora. The study revealed that Gir cow milk has higher proportion of Bifidobacterium (10.91%) and Lactobacillus (9.77%). ***[Action: PI & Asst. Prof. & Head, Dept. of Dairy Microbiology, CDS, Amreli]***

18.7.3 NEW TECHNICAL PROGRAMMES

Summary

Name of University	Proposed	Approved
AAU	8	8
NAU	3	3
SDAU	6	6
KU	10	10
Total	**27**	**27**

ANAND AGRICULTURAL UNIVERSITY

Sr. No.	Title	Suggestion/s and Action
18.7.3.1	Super critical fluid extraction of essential oil from coriander seed	**Approved with following suggestion/s:** 1. Mention the range of variables used in the study. ***[Action: PI & Assoc. Prof & Head, Dept. of FQA, College of FPTBE, AAU, Anand]***
18.7.3.2	Evaluation of decontamination efficacy of ozone on selected microorganisms	**Approved.** ***[Action: PI & Assoc. Prof & Head, Dept. of FQA, College of FPTBE, AAU, Anand]***
18.7.3.3	Evaluation of decontamination efficacy of vacuum assisted cold plasma against the selected microorganisms	**Approved.** ***[Action: PI & Assoc. Prof & Head, Dept. of FQA, College of FPTBE, AAU, Anand]***
18.7.3.4	Boric acid detection in wheat flour using tears of the wine	**Approved.** ***[Action: PI & Assoc. Prof & Head, Dept. of FQA,***

	phenomenon	*College of FPTBE, AAU, Anand]*
18.7.3.5	Modification and performance evaluation of Heat Pump Assisted Dryer (HPAD) for effective heat transfer	**Approved with following suggestion/s:** 1. Dry bulb and Wet bulb temperatures should be taken. ***[Action: PI & Prof & Head, Dept. of FE, College of FPTBE, AAU, Anand]***
18.7.3.6	Standardization of thermal processing of drumstick (*Moringa oleifera*) pod pulp using retortable pouches and its utilization in food product	**Approved with following suggestion/s:** 1. Remove “using retortable pouches” from the title of project. 2. Variable F_0 should be 5, 7 and 9 instead of 6,7, and 8. 3. Rewrite third objective as “Development and evaluation of Moringa chutney”. 4. Include optimization of chutney ingredients. ***[Action: PI & Assoc. Prof & Head, Dept. of FPT, College of FPTBE, AAU, Anand]***
18.7.3.7	Development of sorghum based multigrain biscuits	**Approved with following suggestion/s:** 1. Treatment combinations to be mentioned with statistical design. ***[Action: PI & Assoc. Prof & Head, Dept. of FPT, College of FPTBE, AAU, Anand]***
18.7.3.8	Development of farali cake using farali raw materials	**Approved with following suggestion/s:** 1. Use word “of” instead of “for” in second objective. 2. Treatment combinations to be mentioned with statistical design. 3. Mention specific minerals to be studied. ***[Action: PI & Principal, Polytechnic in FSHE, AAU, Anand]***

NAVSARI AGRICULTURAL UNIVERSITY

18.7.3.9	Standardization of formulation for preparation of jaggery from sapota	**Approved with following suggestion/s:** 1. Title should be modified as “Standardization of process for preparation of Sapota based Jaggery”. 2. Mineral analysis, TPC, Yeast & Mold, coliform counts to be carried out. 3. Standardization of Sapota juice preparation process to be mentioned. 4. Sample size should be in kilogram instead of 50 g. 5. Clarify process of concentration of juice by heating (method & % TSS to be mentioned) in flow diagram. 6. Mention the year of completion of project. 7. Change packaging material to plastic jar. ***(Action: Professor & Head, PHT, ACHF, NAU, Navsari)***
18.7.3.10	Standardization of processing technology for dried Kothimbda /Kachri [*Cucumis callosus* (Rottl.) Cogn].	**Approved with following suggestion/s:** 1. Combine objective one and two. 2. Add objective for standardization of drying parameters (time and temperature as a variable and sun drying should be kept as a control). 3. Recast third objective as “to evaluate the quality

		parameters and nutritional composition of dried *Kachri"*. 4. Add coliform and yeast and mold analysis in microbiological parameters. 5. Remove word 'crude from the crude fat. 6. Modify necessary steps in the flow diagram as per the suggestions of house. ***(Action: Professor & Head, Dept. of Hort., CoA, NAU, Bharuch)***
18.7.3.11	Organoleptic evaluation of nutri-cereals bar made with mix millets flour.	**Approved with following suggestion/s:** **1.** Modify the tile of project by removing the word "mix". **2.** Standardize the baking time and temperature combination based on nutritional aspects. **3.** Chemical and nutritional (compositional) analysis to be carried out (as 3rd objective). **4.** Microbial analysis (TPC, coliform and yeast & mold) to be carried out. **5.** Systematic shelf life studies to be incorporated as a fourth objective (minimum up to three months). **6.** Mention the ratio of ragi and bajra (1:1) with RBF flour. ***(Action: Senior Scientist & Head, KVK, NAU, Dediapada)***

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

18.7.3.12	Optimization of process parameter for preparation of nutritious extrudate from Brown rice Maize-Moringa leaf flour blend	**Approved with following suggestion/s:** 1. Moringa leaf flour level above 20% is not advisable. 2. Use market (commercial) leaf powder rather than drying. 3. Optimization should be carried out based on nutritional parameters. 4. Mention parameters to be studied in second objective. 5. Modify proportion of flours in different treatment as suggested. 6. Systematic storage studies with compositional and microbial analysis (TPC, coliform and yeast & mold) should be undertaken (minimum up to three months). 7. The duration of project is to be 2 years, if required. ***(Action: PI & HoD, FPT, CFT, SDAU, SK Nagar)***
18.7.3.13	Development of Pasta from Sorghum and Moringa Leaves Powder	**Approved with following suggestion/s:** 1. Moringa leaf flour level above 20% is not advisable. 2. Modify proportion of flours in different treatment as suggested. 3. Two stage drying should be carried out. 4. Systematic storage studies with compositional and microbial analysis (TPC, coliform and yeast & mold) should be undertaken.

		(Action: PI & HoD, FPT, CFT, SDAU, SKNagar)
18.7.3.14	Standardization of process parameters for millet fortified extruded snacks	**Approved with following suggestion/s:** 1. Remove crispiness/crunchiness from observation. 2. Keep moisture content up to 14% only for the study. 3. Perform nutritional and compositional analysis of final product. 4. Systematic storage studies with compositional and microbial analysis (TPC, coliform and yeast & mold) should be undertaken. ***(Action: PI & HoD, FSN, ACH, SDAU, SK Nagar)***
18.7.3.15	Development of Amaranth based Bread	**Approved with following suggestion/s:** 1. Add 'fibre" analysis. 2. Specific volume, water activity and coliform analysis of the prepared bread to be undertaken. 3. Mention the packaging material to be used. 4. Include cost economics of prepared bread. ***(Action: PI & HoD, FSN, ACH, SDAU, SK Nagar)***
18.7.3.16	Development of Amaranth and Citrullus vulgaris seed flour based cookies	Project is approved with following suggestions to be incorporated. 1. Title of project is on *Citrullus vulgaris* seed flour based cookies, while the objective is with watermelon seed flour- clarify it. 2. Microbial analysis (TPC, coliform and yeast & mold) should be undertaken. 3. Systematic storage studies to be undertaken. 4. Use "9 point hedonic scale' for the sensory analysis. ***(Action: PI & HoD, FSN, ACH, SDAU, SK Nagar)***
18.7.3.17	Development of Amaranth based Mohanthal	**Approved with following suggestion/s:** 1. Market (commercially standardized) Mohanthal to be kept as control. 2. Coliform analysis of the prepared product to be undertaken. ***(Action: PI & HoD, FSN, ACH, SDAU, SK Nagar)***

KAMDHENU UNIVERSITY

18.7.3.18	Technology for manufacture of paneer incorporated with lemon rinds	**Approved with following suggestion/s:** 1. Use word lime instead of lemon. 2. Fiber analysis to be carried out as observation. ***[Action: PI & Prof & Head, Dept. of Dairy Technology, SMCDSC, KU, Anand]***
18.7.3.19	Technological means to produce value-added '*Bhapa dahi*'	**Project is approved.** ***[Action: PI & Prof & Head, Dept. of DDPO, SMCDSC, KU, Anand]***
18.7.3.20	Developments of methods for detection of adulterants in milk and milk products sub-title: Quantification of selected preservatives in milk using existing qualitative tests	**Project is approved.** ***[Action: PI & Assoc. Prof & Head, Dept. of Dairy Chemistry, SMCDSC, KU, Anand]***
18.7.3.21	Evaluation of *Moringa oleifera* pod powder as	**Project is approved.** ***[Action: PI & Assoc. Prof & Head, Dept. of Dairy***

	natural antioxidant in ghee	***Chemistry, SMCDSC, KU, Anand]***
18.7.3.22	Evaluation of physico-chemical characteristics and biofunctional properties of probiotic whey and fruit based frozen candy	**Approved with following suggestion/s:** 1. Cost economic to be carried out. ***[Action: PI & Assoc. Prof & Head, Dept. of Dairy Chemistry, SMCDSC, KU, Anand]***
18.7.3.23	Production and characterization of anti-diabetic and ACE inhibitory peptides from fermented camel milk	**Project is approved.** ***[Action: PI & Asst. Prof & Head, Dept. of Dairy Microbiology, SMCDSC, KU, Anand]***
18.7.3.24	Evaluation of techno-functional attributes of *Weissella* Strains isolated from traditional fermented foods and human fecal matter	**Project is approved.** ***[Action: PI & Asst. Prof & Head, Dept. of Dairy Microbiology, SMCDSC, KU, Anand]***
18.7.3.25	Development and performance evaluation of hybrid integrated milk cooling system	**Approved with following suggestion/s:** 1. Write 'Solar roof top' in place of 'Solar PV' 2. Project to be completed within 2-year duration. ***[Action: PI & Prof. & Head, Dept. of Dairy Engineering, SMCDSC, KU, Anand]***
18.7.3.26	Financial ratio analysis of maahi milk producer company	**Approved with following suggestion/s:** 1. Next year onwards the progress of the project may be presented to Social Science Group. ***[Action: PI & Assoc. Prof. & Head, Dept. of Dairy Business Mgmt., SMCDSC, KU, Anand]***
18.7.3.27	Assessment of anti-oxidative effect of Olive (*Olea europaea L.*) leaves in ghee	Project is approved with following suggestions to be incorporated. 1. Correct leaf powder instead of leaf. 2. Specify the room temperature in the flow chart. 3. Remove hyphen from the word "Antioxidant". 4. Drying to be carried out till moisture content reaches to $\leq$ 6 % rather than 20 h. ***[Action: PI & Assoc. Prof. & Head, Dept. of Dairy Chemistry, GNPDSC, SDAU, SKNagar]***

18.8 BASIC SCIENCE & HUMANITY

DATE: 04-06 May, 2022

Chairman	Dr. M. K. Jhala, Director of Research, AAU, Anand
Co-Chairman-1	1. Dr. V. H. Kanbi, Dean (Basic Sci.), SDAU, Sardarkrushinagar
Co-Chairman-2	2. Dr. Y.M. Shukla, Dean (Agri.), AAU, Anand
Rapporteurs	1. Dr. U. K. Kandoliya, JAU 2. Dr. Sushil Kumar, AAU 3. Dr. A.V. Narwade, NAU 4. Dr. Kapil Tiwari, SDAU
Statistician	Dr. Alok Srivastava, NAU

Presentation of recommendations and new technical programmes by Conveners of SAUs

Sr. No.	Name	Designation & University
1	Dr. H. P. Gajera	Professor & Head, Dept. of Biotechnology, JAU, Junagadh
2	Dr. Akarsh Parihar	Associate Professor & Head, Dept. of Genetics & Plant Breeding, BACA, AAU, Anand
3	Dr. Sanjay Jha	Associate Professor, Dept. of Plant Biotechnology, ASPEE Shakilam Biotechnology, NAU, Surat
4	Dr. Anurag Yadav	Assistant Professor, Dept. of Microbiology, College of Basic Sci. & Humanities, SDAU, Sardarkrushinagar

Summary of the Recommendations

Name of University	Proposed		Approved		Not Approved
	Farmers	Scientific	Farmers	Scientific	Farmer
JAU	01	06	00	06	01
AAU	00	07	--	07	-
NAU	00	05	--	05	-
SDAU	00	06	--	06	-
Total	**01**	**24**	**00**	**24**	**01**

18.8.1 RECOMMEDATION FOR FARMERS COMMUNITY

JUNAGADH AGRICULTURAL UNIVERSITY

18.8.1.1	**Development and characterization of polymer based nanofertilizers and their response to wheat** The farmers of south Saurashtra Agro-climatic Zone growing wheat during Rabi season are advised to use 5 % NPK nanofertilizers formulation with 10 timeless fertilizer dose (12:6:6 kg/ha; 6:6:6 kg/ha as basal dose + 6:0:0 kg/ha splitting at 21 DAS) for achieving grain yield equivalent to chemical fertilizer dose (120:60:60 kg/ha). The NPK nanofertilizers maintained higher nutritional seed quality (protein, gluten and fiber content) and have a slow release behavior of available NPK nutrients during crop growth, being degradable in soil and environment friendly. દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વીસ્તારમાં શિયાળું સીઝન દરમિયાન ઘઉં ઉગાડતાં ખેડૂતોને સલાહ આપવામાં આવે છે કે, ઘઉંનાં ખાતરમાં ૫ % એનપીકે નેનોફર્ટિલાઇઝર્સ નો ૧૦ ગણો ઓછો ઉપયોગ (૧૨:૬:૬ કિ.ગ્રા./હેક્ટર; ૬:૬:૬ કિ.ગ્રા./હેક્ટર પાયના ખાતર તરીકે અને ૬:૦:૦ કિ.ગ્રા./હેક્ટર વાવેતર બાદ ૨૧ દિવસે જમીનમા) કરવાથી રાસાયણિક ખાતર (૧૨૦:૬૦:૬૦ કિ.ગ્રા./હેક્ટર) ને સમકક્ષ ઉત્પાદન મળે છે. એનપીકે નેનોફર્ટિલાઇઝર્સ બીજની ઉચ્ચ ગુણવત્તા (પ્રોટીન, ગ્લુટેન અને ફાઇબર) જાળવી રાખે છે અને

	ઘઉંના પાકની વૃદ્ધિ દરમિયાન નાઇટ્રોજન, ફોસ્ફરસ અને પોટેશીયમ પોષકતત્વો ધીમા દરે ઉપલબ્ધ કરાવે છે જે જમીન અને પર્યાવરણને ફાયદાકારક છે. **Suggestions: Not Approved** **1. Recommendation cannot be approved for farming community due to issues of biosafety and commercialization of product.** **2. Merge with Scientific recommendation** ***[Action:** Prof. & Head, Dept. of Biotechnology, College of Agri., JAU, Junagadh**]***

18.8.2 RECOMMEDATION FOR SCIENTIFIC COMMUNITY

JUNAGADH AGRICULTURAL UNIVERSITY

Sr. No.	Title/ Suggestions/ Action
18.8.2.1	**Development and characterization of polymer based nanofertilizers and their response to wheat** Chitosan nanoparticles (CS-NPs) were synthesized and examined greater than 40 mV zeta potential indicating good stability. The urea, tricalcium phosphate and muriate of potash were used as sources for incorporation of N, P and K elements individually onto the CS-NPs and the elevation of size of the nanofertilizers, without aggregation of nanoparticles, were observed. Scanning electron micrograph illustrated spherical shape of the CS-NPs and gave the idea about the morphology of incorporated NPK nanofertilizers. The FTIR study indicated that there is an electrostatic interaction occurs between the charges of CS-NPs and the N P K elements, resulted to stretching of spectra (peak) at specific wavelength confirming the incorporation of N P and K elements on to the CS-NPs. The application of 5 % NPK nanofertilizers (10 times less) on wheat suggested higher nutritional seed quality and maintained yield equivalent to chemical fertilizers. The cost-effective NPK-nanofertilizers thus developed may save the forex (subsidy) about 38.22 %. It has better controlled-release system in a liquid formulation to enhance nutrient use efficiency and sustained crop growth. **Suggestions: Approved with correction** 1. Modify text language of recommendation para. ***[Action:** Prof. & Head, Dept. of Biotechnology, College of Agri., JAU, Junagadh**]***
18.8.2.2	**Biochemical appraisal of enzymatic activities from soils of permanent plot experiment at JAU, Junagadh** The soil enzyme activity studied viz., urease, acid phosphatase, alkaline phosphatase, −Galactosidase and nitrate reductase, from the plot having different fertilizer applications, remains higher during the mid-season and found to be lower before sowing and after harvest of the crop. Minimum variation of enzyme activity was observed in a plot of only FYM treatment (25 tons/ha). The activity of urease, β−Galactosidase and β−gluosidase as well as acid phosphatase and alkaline phosphatase was enhanced by balance fertilizer application (100 % NPK (25:50:50) as per soil test as well as 25 tons/ha FYM application. The pod yield of groundnut was remained highly positively correlated with urease, acid phosphatase and alkaline phosphatase enzyme activity. **Suggestions: Approved with following corrections** 1. Recast the text. 2. Remove the word permanent plot experiment. 3. Include details of best treatment. ***[Action:** Prof. & Head, Dept. of Biotechnology, College of Agri., JAU, Junagadh**]***
18.8.2.3	**Isolation and identification of entomopathogenic microorganisms from the soils of Junagadh district** The Scientific communities involved in microbial and entomological research are recommended to use native identified entomopathogenic microbes including

	Pseudomonas putida (MK415028.1), *P. monteilii* (KT881478.1), *P. knackmussii (KY324901.1)*, *P. fulva* (KC293832.1), *Bacillus subtilis* (MH141058.1), *B. thuringiensis* (KY003094.1), *B. clausii* (AB251924.1), *Enterobacter asburiae* (MK 467572.1), *E. cloacae* (JX514409.1), *Beauveria bassiana* (KC753382.1), *Metarhizium anisopliae* (KJ573520.1) and *Verticillium lecanii* (AJ292383.1) for the production of biofertilizer and biocontrol agent as they suppressed *Helicoverpa armigera,* and have PGPR activity. **Suggestions: Approved with following corrections** 1. Recast the recommendation text. 2. Use abbreviations for bacterial genera, if genera is repeated. ***[Action:** Prof. & Head, Dept. of Biotechnology, College of Agri., JAU, Junagadh**]***
18.8.2.4	**Isolation and identification salt tolerant strains of beneficial microorganisms from the coastal soils of Saurashtra region.** Native halophilic bacterial strains isolated from agricultural soils of coastal regions of Saurashtra have potential for application in both industries and agriculture. The promising performance of these isolates in terms of plant growth promoting characteristics such as nitrogen fixing capacity, solubilization of phosphate and potash, production of IAA, siderophore along with production of biochemically important enzymes and bioactive compounds such as chitinase, cellulase, protease, carotene, ectoine, glycine betaine was observed. Halophilic bacterial isolates were *Halomonas pacifica* strain_JAU_7B (MK955347), *H. pacifica* strain_JAU_20A (MK575078), *H. pacifica* strain_JAU_22A (MK042491), *H. pacifica* strain_JAU_22C (MK043087), *H. pacifica* strain_JAU_25A (MK116946), *H. pacifica* strain_JAU_29A (MK114047), *H. pacifica* strain_JAU_36A(MK114047), *H. pacifica* strain_JAU_36B (MK114047), *H. stenophila* strain_JAU_37A (MK961217), *Oceanobacillus aidingensis* strain_JAU_39B (MK148253), *H. pacifica* strain_JAU_40B (MK114047), *Bacillus haynesii* strain_JAU_41A (MK157609), *B. licheniformis* strain_JAU_43A (MK118996), *B. haynesii* strain_JAU_43B (MK157608) and *B. haynesii* strain_JAU_45A (MK157609) which confirmed through molecular characterization by 16srRNA . **Suggestions: Approved with following corrections** 1. Modify text language of recommendation para. 2. Provide NCBI accession number; Scientific name should be italic. 3. Use abbreviations for bacterial genera if genera is repeated. ***[Action:** Prof. & Head, Dept. of Biotechnology, College of Agri., JAU, Junagadh**]***
18.8.2.5	**Diversity analysis of fresh water diatoms through SEM-EDX from surface microalgae of water bodies of Junagadh region** The scientific community involved in diatom study of fresh water in context to climate change and environment are recommended to use cataloguing of fresh water diatoms collection images from water bodies in and around JAU, Junagadh. Total 46 species of diatoms were identified from water bodies of Junagadh, out of which eleven genera *viz., Cyclotella, Melosira, Navicula, Achnanthes, Amphora, Synedra, Nitzschia, Gomphonema, Hantzschia, Pinnularia* and *Fragillaria* were predominant.The sizeable variation among the elements presents on freshwater algae through SEM EDAX showed the presence of all macro elements except phosphorus and nitrogen. All species of diatoms had higher amount of diversity indices including Shannon-Wiener diversity index (3.57) and Berger Parker Dominance (30.57). Morphometric analysis showed wider variability in location and species wise according to length (7.049 µm to 43.08 µm) and width (2.53 µm to 23.44 µm) as well as diversity indices too. Willington dam site showed maximum spp. variation of diatoms than the other location. **Suggestions: Approved with following correction** 1. Recast the text

	*[**Action:** Prof. & Head, Dept. of Biotechnology, College of Agri., JAU, Junagadh]*
18.8.2.6	**Evaluation of nano fertilizer in Bt. cotton (*Gossypium hirsutum* L.) under rainfed condition** In the North South Saurashtra Agro-climatic Zone (AES-IV), *Bt.* cotton fertilized with 80:40 N:P_2O_5 kg ha^{-1} (Nitrogen in three splits i.e. 25 % as basal at the time of sowing and 50 and 25 % as top dressing at 35-40 and 60-65 days after sowing) to *Bt.* cotton recorded higher yield and net realization as well as sustained soil fertility under rainfed condition. Application of nano nitrogen fertilizer as developed by JAU save 60 % conventional fertilizer dose. **Suggestions: Approved** *[**Action:** Research Scientist, Main Dry Farming Res. Station, JAU, Targhadia]*

ANAND AGRICULTURAL UNIVERSITY

18.8.2.7	**Comparative field study of growth of Safed musli planting materials generated through conventional and tissue culture method** The conventional Safed musli planting materials (fasciculated root) grown in *kharif* season exhibited higher survival rate (83.88%),which was 30.61 % higher than tissue culture raised plantlets (64.22%) in field condition. Maximum number of fasciculated root per plant (13.72), length (9.43 cm), girth (2.70 cm), fresh weight (21.31 g) and dry weight (4.48 g) with greater dry matter recovery rate (21.74 %) and saponin content (2.16%) was found in conventional planting materials, which fetched higher net return. **Suggestions: Approved with following suggestion** 1. Apply transformation in table-7 (survival %), if required consult statistician **[*Action: Assoc. Research Scientist and Head, M&APRS, AAU, Anand*]**
18.8.2.8	**Enhancement of seed germination in Charoli (*Buchanania lanzan*).** Charoli (*Buchanania lanzan*) seed should be dipped in water for 24 hours followed by 24 hours shade drying for better germination percentage (61.29 %), germination index (1.26), maximum root length (9.81 cm), root dry weight (11.92 mg) with greater vigour index I (1144.4) and vigour index II (4511.1). **Suggestions: Approved with following suggestions** 1. Check the statistics and apply appropriate transformation 2. Provide source of seed 3. Check data of 2nd year **[*Action: Assoc. Research Scientist and Head, M&APRS, AAU, Anand*]**
18.8.2.9	**Identification of markers associated with leaf curl virus (LCV) resistance in Chili** In chilli, SSR markers namely, P-148, P-455 and P-468 were found linked with ChiLCV resistance and can be used for the development of resistant varieties through backcross breeding and to screen the germplasm at seedlings stage to identify genotypes having ChiLCV resistance. **Suggestions: Approved** ***[Action: Research Scientist, Biotechnology, AAU, Anand]***
18.8.2.10	**Synthesis and characterization of Sulphur nanoparticles and study of its anti-fungal activity against phytopathogens** Green synthesis of sulfur nanoparticles has been standardized by Anand Agricultural University. Sodium thiosulphate (0.2M) and hydrochloric acid (10N) of analytical grade is used for the synthesis of sulfur nanoparticles. Neem leaves extract exhibit better conversion efficiency compared to ardusi and calotropsis leaves extract. Among different combinations, 75 ml of 5% neem leaves extract and 0.2M sodium thiosulphate is best suited for providing coating to overcome aggregration of particles and also effectively reduce the size of particles. The size of green synthesized above sulfur nanoparticles was 18.16 nm and PDI value of 0.188. These green synthesized sulfur nanoparticles exhibited good antifungal activity against *A.*

	solani, Macrophoemina sp., Fusarium sp., and Sclerotium sp. under *in vitro* conditions **Suggestions: Approved with following suggestions** 1.Check the data for C.V. % value 2. Remove zeta potential value from recommendation para ***[Action: Assoc. Research Scientist, Centre for Advanced Research in Plant Tissue Culture, AAU, Anand]***
18.8.2.11	**Evaluation of efficacy of zinc nanoparticles for its enhancement of growth of groundnut crop** pH mediated zinc nanoparticle synthesis has been standardized by Anand Agricultural University. Analytical grade zinc sulphate and sodium hydroxide as a substrate and reducing agents, respectively, are used for the synthesis of nanoparticles. 11.5 pH was found to be best for reduction of particle size and sonication method was found to be most suited for dispersion of zinc nanoparticles. The size of pH mediated ZnONPs ranges from 13.53 to 184.6 nm, PDI ranges from 0.22 to 0.49 and zeta potential ranges from -61.7 to -65.1 (mV) at the end of 45 days of stability incubation studies. Seed priming of Groundnut variety GG 34 (Bunch type) with 100 ppm zinc oxide nanoparticles was found to be effective for growth enhancement under *in vitro* conditions. Under control conditions, maximum growth promotory effect was measured in nanoparticle treated seeds compared to bulk particles. Therefore, synthesized nanoparticle can be utilized for seed priming studies in groundnut seeds. **Suggestions: Approved with suggestion** 1. Mention type of variety (for example bunch or spanish) ***[Action: Assoc. Research Scientist, Centre for Advanced Research in Plant Tissue Culture, AAU, Anand]***
18.8.2.12	**Green synthesis of silver nanoparticles and assessment of its anti-fungal activity against early blight disease causing *Alternaria solani* in tomato** Neem leaves mediated green synthesis of silver nanoparticles has been standardized by Anand Agricultural University. Among different approaches, room temperature mediated synthesis was found to be best followed by sunlight and water-bath approach. Room temperature incubation for 24 hrs effectively synthesized AgNPs using 49 ml silver nitrate (0.1M) as a substrate and 1 ml neem leaves extract (5 %) as reducing and capping agent. The size of green synthesized AgNPs ranges from 37.9 to 81.4 nm with PDI ranging from 0.35 to 0.54 and zeta potential ranging from -17.37 to -25.20 (mV). Storage of silver nanoparticles in amber bottles was found to be effective in storing silver nanoparticles for 45 days. These synthesized nanoparticles possessed excellent anti-microbial activity against *A. solani* as revealed by *in vitro* growth inhibition, detached leaf assay and *in planta* hydrogen peroxide studies. **Suggestions: Approved with suggestion** 1. Provide CV values in report **[*Action: Assoc. Research Scientist, Centre for Advanced Research in Plant Tissue Culture, AAU, Anand]***
18.8.2.13	**Nutraceutical characterization of Garden cress (*Lepidium sativum*) at various crop growth stages** It is recommended that to obtain higher content of nutraceutical molecules viz., total soluble sugars, total phenols, flavanoids, protein and fiber as well as phenolics viz.ferulic acid, Vanilic acid and Cinnamic acid, the garden cress leaves can be harvested at 60 days after sowing. **Suggestions: Approved** ***[Action: Prof. and Head, Dept. of Biochemistry, BACA, AAU, Anand]***

<table>
<tr><td>18.8.2.14</td><td>In silico characterization of different banana bunchy top virus (BBTV)
Comparing BBTV different genome components, at nucleotide (DNA-R and DNA-U3), and amino acid level (DNA-C and DNA-U3) during in silico analysis of different Banana bunchy top virus (BBTV) showed higher genetic variability in all reported BBTV strains. Comparing DNA- R (Replicase protein) and DNA-S segments (Coat protein), majority of Indian isolates matched with isolates of the countries in East and Southeastern Africa region and belong to Pacific Indian Oceans (PIO) groups of BBTV isolates classification. BBTV coat protein model showed maximum binding affinity with NBS-LRR class resistance protein. Three mutagenic epitope (GDDLVRLW, IADEFYVERL, SKRFLLVLDD) were predicted from BBTV coat protein region. This will extend the understanding of the processes required for antibody binding and aid the development of epitope based diagnostic tools for identification of disease resistance/management strategy in Banana against BBTV.
Suggestion: Approved with following suggestion
1. Write the name of virus as per standard format.
[Action: Principal, ASBI, NAU, Surat]</td></tr>
<tr><td>18.8.2.15</td><td>Development of mapping population and identification of molecular markers linked to jassid resistance in cotton (9.8.3.2)
The following transgressive RILs were identified as candidate jassid resistant lines that possesses desirable biochemical traits, low jassid count with less jassid injury grade; and higher seed cotton yield than the jassid resistant parent GISV-218. Thus, these potential RILs can used for the further development of cotton varieties with high yield and jassid resistance.
<table>
<tr><th>RIL No.</th><th>Character</th></tr>
<tr><td>RIL-94, RIL-31, RIL-96, RIL-108</td><td>Gossypol</td></tr>
<tr><td>RIL-88, RIL-28, RIL-96, RIL-108, RIL-107, RIL-113,</td><td>Phenol</td></tr>
<tr><td>RIL-94, RIL-25, RIL-95, RIL-69</td><td>Reducing sugar</td></tr>
<tr><td>RIL-94, RIL-31, RIL-6, RIL-24, RIL-25, RIL-69</td><td>Jassid count</td></tr>
<tr><td>RIL-94, RIL-88, RIL-31, RIL-28, RIL-24</td><td>Jassid injury grade</td></tr>
</table>
Suggestion: Approved with following suggestions
1. Recast the recommendation.
2. Remove 1 and 2 text para from recommendation
[Action: Research Scientist, Main Cotton Research Station, NAU, Surat]</td></tr>
<tr><td>18.8.2.16</td><td>Evaluation of Biochemical parameters of selected cotton genotypes
The scientific community is recommended to use the below mentioned cotton genotypes in the breeding programme to improve desired characters
<table>
<tr><th>Genotypes</th><th>Characters</th></tr>
<tr><td>G.Cot-100,GISV-218andG.Cot-10</td><td>Protein</td></tr>
<tr><td>G.Cot-10,GSHV-01/1338andG.Cot-100</td><td>Gossypol</td></tr>
<tr><td>G.Cot-16,GISV-218and Suraj</td><td>Oil</td></tr>
<tr><td>LRA-5166,GISV-218andG.Cot-16</td><td>Iodine value</td></tr>
<tr><td>American Nectariles, Surat Dwarf and G.Cot-10</td><td>Saponification value</td></tr>
<tr><td>G.Cot-100,G.Cot-10andG– 67</td><td>Unsaturatated fatty acid</td></tr>
<tr><td>LRA-5166,GISV-218andG.Cot-16</td><td>Polyunsaturated fatty acid</td></tr>
<tr><td>G.Cot-100,BC-68-2and G-67</td><td>Monounsaturated fatty acid</td></tr>
</table>
Suggestion: Approved with following correction
1. Recast the recommendation.
2. Modified recommendation text
[Action: Research Scientist, MCRS, NAU, Surat]</td></tr>
<tr><td>18.8.2.17</td><td>Diazotropic bacterial populations and other associated microbe on the</td></tr>
</table>

phyllosphere of sugarcane

Sugarcane phyllospheric isolates *Bacillus amyloliquefaciens* S2.4 and *Enterobactercloacae* S 4.1 possesses multiple plant growth promoting characters *viz.*, ACCdeaminase, siderophore production, nutrient solubilization, antagonistic potential, extra cellular hydrolytic enzyme secretion and plant growth hormone production under *in vitro* conditions.

Suggestion: Approved with following correction

1. Recast the recommendation.

***[Action:** HoD, Dept. of Agril. Microbiology, NMCA, NAU, Navsari]*

18.8.2.18 Nutritional profiling of different Tannia (*Xanthosomas agittifolium*) genotype

Among Tannia genotypes; NT-5 (lower oxalate content 0.05 %), NT-9 (lower tannin content 16.24 mg/100 g) and NT-7 (higher ash content 1.98 %) are recommended for leafy vegetable purpose. Whereas, NT-5 (lower oxalate content 0.43 %), NT-3 (lower tannin 87.04 mg/100 g) and NT-1(lower phytate 123.63 mg/100 g) are recommended for corm purpose. Further NT-5 is recommended to the breeders due to lower antinutritional factor for further breeding programme.

Suggestion: Approved with following correction

1. Recast the recommendation.

***[Action:** HoD, Dept. of Soil Science and Agril. Chemistry, NMCA, NAU, Navsari]*

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

18.8.2.19 Exploring potassium solubilization potential of rhizospheric bacteria

Four bacterial isolates KSB-1, KSB-2, KSB-4 and KSB-5 with *in vitro* potassium solubilizing traits were obtained from root zone of soil of north Gujarat. The BLAST homology search against 16S rRNA gene sequence of the isolates with code KSB-1, KSB-2, KSB-4 and KSB-5 showed 100, 99.66, 99.32, and 99.78% similarity with *Klebsiella pneumoniae, Pantoea brenneri, Citrobacter cronae* and *Pseudomonas oryzihabitans*, respectively. KSB-1 and KSB-2 displayed greater extent of potassium solubilization from Mica, whereas, KSB-4 and KSB-5 showed greater extent of potassium solubilization from potassium aluminosilicate in seven days under *in vitro* submerged condition.

Suggestions: Approved with the following suggestions

1. Add "soil of north Gujarat" in first sentence of recommendation text
2. Add "in vitro" in last sentence of recommendation text before "submerged condition"

(*Action: Head, Dept. of Microbiology, CBSH, SDAU, Sardarkrushinagar*)

18.8.2.20 Biochemical evaluation of Grain *Amaranthus* species

Grain *Amaranthus* genotypes under study showed variability for the protein, lysine, linoleic acid (PUFA), starch and calcium content. The lysine content in all the tested genotypes of four different Grain *Amaranthus* species ranged between 5.07-8.13% with lowest and highest values being exhibited by the genotype IC-38219 and EC-198122. Moreover, following genotypes were found superior with respect to the following quality parameters.

Sr. No.	Quality Parameters	Genotypes
1.	Protein	*A. caudatus* (IC-38155 (14.66 %), *A. caudatus* (IC-202090 (14.11 %), *A. hypochondriacus* (SKGPA-74 (13.8 %), *A. Caudatus* (IC-274449 (13.73%)
2.	**Protein Quality**	
	Lysine	*A. cruentus* (EC-198122 (8.13 %), *A. caudatus* IC-274449 (7.88 %), *A. cruentus* (EC-198127 (7.47 %), *A. hypochondriacus* GA-5 (7.27 %)
3.	**Oil Quality**	

		Linoleic acid (PUFA)	*A. caudatus* (IC-38155 (53.57 %), *A. caudatus* (IC-202090 (53.26 %), *A. caudatus* (IC-35771 (51.77%)), *A. edulic* (IC-38219 (51.28%))
	4.	Starch	*A. caudatus* (IC-35771 (69.15 %), *A. caudatus* (IC-274449 (68.84 %), *A. caudatus* (IC-38155 (66.43 %), *A. caudatus* (IC-202090 (65.93%)
	5.	Calcium	*A. hypochondriacus* (GA-3 (278.13 mg/100g)), *A. hypochondriacus* (GA-6 (259.89 mg/100g), *A. cruentus* (EC-198128 (237.74 mg/100g), *A. Hypochondriacus* (GA-2 (233.32 mg/100g)

Based on above results, *A. caudatus* and *A. hypochondriacus* species were found to be most promising for different nutritional quality parameters.

Suggestions: Approved with the following suggestions

1. Add species in table, add "found" before "superior" in recommendation text
2. Include lysine content in the text.

(Action: Head, Dept. of Biochemistry, CBSH, SDAU, Sardarkrushinagar)

18.8.2.21 Degradation of pesticide residues from Cauliflower

Ozonation (using air/pure oxygen for ozone generation) of cauliflower for 60 to 120 minutes (for most of the pesticides) in closed polyethylene bag was found to reduce pesticide residues up to 87.6% depending on types of pesticides as follows.

Sr no	Pesticides	Most prominent treatment	% Residues Reduction
1	Emamectin B1a& B1b	T7 -B3 O2 O3- 120min	87.57
2	Carbaryl	T7 -B3 O2 O3- 120min	80.25
3	Spinosad A+D	T7 -B3 O2 O3- 120min	76.45
4	Azoxystrobin	T7 -B3 O2 O3- 120min	74.75
5	Pyraclostrobin	T7 -B3 O2 O3- 120min	69.52
6	Cyhalothrin I (lambda)	T7 -B3 O2 O3- 120min	66.41
7	Propargite	T7 -B3 O2 O3- 120min	61.79
8	Meptyldinocap	T7 -B3 O2 O3- 120min	58.56
9	Carbendazim	T7 -B3 O2 O3- 120min	54.19
10	Quinalphos	T7 -B3 O2 O3- 120min	53.60
11	Thiacloprid	T7 -B3 O2 O3- 120min	52.56
12	Fipronil	T7 -B3 O2 O3- 120min	51.44
13	Tricyclazole	T7 -B3 O2 O3- 120min	47.82
14	Diafenthiuron	T7 -B3 O2 O3- 120min	47.65
15	Triazophos	T7 -B3 O2 O3- 120min	46.85
16	Difenoconazole	T7 -B3 O2 O3- 120min	41.81
17	Carbofuran	T7 -B3 O2 O3- 120min	38.57
18	Flubendiamide	T6 -B2 O2 O3- 60min	24.33
19	Chlorfenapyr	T6 -B2 O2 O3- 60min	22.77
20	Metalaxyl	T7 -B3 O2 O3- 120min	20.76
21	Myclobutanil	T7 -B3 O2 O3- 120min	17.00
22	Acetamiprid	T7 -B3 O2 O3- 120min	15.97
23	Profenofos	T3 -A2 Air O2- 60min	9.60

Suggestions: Approved with the following suggestions

1. Insert "for most of the pesticides" in parenthesis after 120 minutes and replace "can" with "was found to" in recommendation text
2. Remove asterisk (*) from table

(Action: Unit Head, BSRC, SDAU, SDAU, Sardarkrushinagar)

18.8.2.22	**Biochemical evaluation of *Kappaphycus* spp. cultivated at costal area of *Mandavi (Kachchh)*** Seaweed *Kappaphycus* cultivated at the coastal area of *Mandvi* (Kachchh), Gujarat contains 2.52% total fat content with relative fatty acid composition of Saturated fatty acid (26.87%), Mono unsaturated fatty acid (51.92%) and Poly Unsaturated fatty acid (21.03%). It also contains Lead (0.37ppm), Cadmium (1.55ppm), Arsenic (3.77ppm), Mercury (0.01ppm) and trans fatty acid (0.18%). **Suggestions: Approved with the following suggestion** 1. Remove "however" from recommendation text ***(Action: Research Scientist, Pulses Research Station, SDAU, Sardarkrushinagar)***
18.8.2.23	**Induced mutagenesis and molecular characterization of wilt resistant Cumin (*Cuminum cyminum* L.)** Gamma radiation 40kR found effective dose of mutagen in cumin that can be used for induction of mutations. **Suggestions: Approved with the following suggestion** 1. Recast the recommendation language ***(Action: Head, Dept. of Biotechnology, CBSH, SDAU, Sardarkrushinagar)***
18.8.2.24	**Degradation of Chlorpyrifos pesticide residues in soil** Moist natural soil, as compared to sterile soil inoculated with bacterial cultures *Pseudomonas aeruginosa* and *Bacillus paralicheniformis* reduced Chlorpyrifos residues more effectively up to 21 days of application with an average reduction rate of 0.17 ppm per day. **Suggestions: Approved with the following suggestion** 1. Replace "incubation" with "application"; insert "average" before "reduction rate…" in recommendation text. ***(Action: Unit Head, BSRC, SDAU, Sardarkrushinagar)***

18.8.3 NEW TECHNICAL PROGRAMMES

Summary

Name of University	Proposed	Approved
JAU	04	04
AAU	03	03
NAU	08	08
SDAU	12	12
Total	**27**	**27**

JUNAGADH AGRICULTURAL UNIVERSITY

Sr. No.	Title	Suggestion/s and Action
18.8.3.1	**Marker-assisted backcrossing to develop foliar disease-resistant genotypes in GJG-22 variety of peanut (*Arachis hypogaea* L.)**	**Approved with following suggestions** 1. Provide name and numbers of resistant QTL donor source. 2. Provide breeding scheme to transfer QTL from donor, if number of donors are more than one. **[Action:** *Prof. & Head, Dept. of Biotechnology, CoA, JAU, Junagadh***]**
18.8.3.2	**Development of SRAP based DNA fingerprinting technique in sesame varieties released by JAU**	**Approved with following suggestions** 1. Change the title and objectives and it should be "Molecular characterization of sesame genotypes using SRAP markers". 2. Add at least 40 genotypes of sesame. 3. Reproducible polymorphic markers should be resolved on Automatic DNA/ Genetic Analyzer.

		[Action: Prof. & Head, Dept. of Biotechnology, CoA, JAU, Junagadh]
18.8.3.3	**Optimization of regeneration protocol using different plant growth regulator in Pomegranate (*Punica granatum* L.) cv.'Bhagwa' cultivar**	**Approved with following suggestions** 1. Instead of direct organogenesis proceed with in-direct organogenesis. 2. Formulate a feeler trial on re-generation protocol in kagzi lime. *[Action: Prof. & Head, Dept. of Biotechnology, CoA, JAU, Junagadh]*
18.8.3.4	**Characterization for drought tolerance to identify parental lines of pearl millet suitable for summer cultivation**	**Approved with following suggestions** 1. Check the objective. 2. Add No. of inbred / genotypes in treatments. 3. Provide drought creation methodology. *[Action: Research Scientist, Pearl Millet Research Station, JAU, Jamnagar]*

ANAND AGRICULTURAL UNIVERSITY

Sr. No.	Title	Suggestion/s and Action
18.8.3.5	**Morphological, phytochemical and molecular characterization of ashwagandha [*Withania somnifera* (L.)]**	**Suggestions: Approved** *[Action: Prof. and Head, Dept. of Biochemistry, BACA, AAU, Anand]*
18.8.3.6	**Morpho-physiological and phytochemical characterization of aromatic plants in response to cadmium stress**	**Suggestions: Approved** 1. Add Background Information *[Action: Assoc. Research Scientist and Head, M&APRS, AAU, Anand]*
18.8.3.7	**Development of micropropagation protocol for large scale multiplication in orchid (*Dendrobium spp.*)**	**Suggestions: Approved** 1. Use transformation as and when applicable. *[Action: Assoc. Res. Sci.t, Centre for Advanced Res. in Plant Tissue Culture, AAU, Anand]*

NAVSARI AGRICULTURAL UNIVERSITY

Sr. No.	Title	Suggestion/s and Action
18.8.3.8	***Melia dubia* crude extract inspired Ag nanoparticle synthesis and evaluation of its antimicrobial activity**	**Approved with following Suggestions** 1. Use neem extract as absolute control in experiment. 2. Take observations on PDI, Zeta Potential & Size. 3. Add stability study at fixed interval of time period. *[Action: Principal, ASBI, NAU, Surat]*
18.8.3.9	**Standardization of extraction protocol for curcuminoids and its stability assay**	**Approved with following Suggestions** 1. In title replace “curcuminoids” with “curcumin” and frame the objectives accordingly, if possible add di-methoxy curcumin 2. Remove hexane from the treatment /experiment 3. Add observation on purity 4. Estimate the curcumin and its derivatives *[Action: Principal, ASBI, NAU, Surat]*
18.8.3.10	**Development of colorimetric sensors for the pesticides in**	**Approved with following Suggestions** 1. Specify the group of pesticide

	agricultural produces	*[**Action:** Principal, ASBI, NAU, Surat]*
18.8.3.11	**Effects of postharvest treatments of Calcium chloride ($CaCl_2$) on shelf life and quality characteristics of mango (*Mangifera indica cultivar Kesar*).**	**Approved with following Suggestions** 1. Add the methodology related to the Self life 2. Mention the period of storage. 3. Time of observation recording should be included. *[**Action:** Principal, ASBI, NAU, Surat]*
18.8.3.12	**Biochemical and molecular characterization of *Cry1Ac* genotypes of cotton (*Gossypium hirsutum* L.)**	**Suggestions: Approved** *[**Action:** Research Scientist, MCRS, NAU, Surat]*
18.8.3.13	**Metagenomic analysis of flooded rice ecosystem under climate change resilience**	**Approved with following Suggestions** 1. Add "soil" before ecosystem in title 2. Remove objective 1 3.Objective 2 should be "to identify the soil microbial community by metagenomic profiling" 4. Correct statistical design. *[**Action:** HoD, Basic Sci. Dept., ACHF, NAU, Navsari]*
18.8.3.14	**Exploration of molecular tools for identification of potential DNA barcodes and biomarkers for Red Sanders (*Pterocarpus santalinus* L.f.) authentication**	**Approved with following Suggestions** 1. Modify objective 1 "validation of chloroplast genome based markers" 2. For metabolic study include seedling stage *[**Action:** HoD, Basic Sci. Dept., ACHF, NAU, Navsari]*
18.8.3.15	**Evaluation of fruit characteristic and nutritional values of banana genotypes**	**Approved with following Suggestions** 1. Add total carotene and carotenoid, total soluble sugar (%), total soluble solids (brix), reducing sugar 2.Insetad of "carbohydrate" take observations on "starch" 3.Mineral unit should be in ppm *[**Action:** HoD, Pl. Physiology, NMCA, NAU, Navsari]*

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

Sr. No.	Title	Suggestion/s and Action
18.8.3.16	**Enumeration and comparison of total viable microbial count from buffalo dung**	**Approved with the following suggestions** 1. Record the weather parameter at the time of sample collection. 2. Age of animal at the time of sample collection should be recorded. 3. Feeding should be same for all the animal before sample collection ***(Action: Head, Dept. of Microbiology, CBSH, SDAU, Sardarkrushinagar)***
18.8.3.17	**Evaluation of microbial population in *Jeevamrut* prepared with cow, buffalo and horse dung**	**Approved with the following suggestion** 1. Add weather data ***(Action: Head, Dept. of Microbiology, CBSH, SDAU, Sardarkrushinagar)***
18.8.3.18	**Genome-wide identification and development of**	**Approved with the following suggestions** 1. Title should be like "*In silico* identification

	microsatellite markers for Custard apple.	and validation of microsatellite markers in Annona species" 2. Add the information about number of genotypes ***(Action: Head, Dept. of Biotechnology, CBSH, SDAU, Sardarkrushinagar)***
18.8.3.19	**Effect of smoke water on biochemical and physiological attributes of green gram**	**Approved with the following suggestions** 1. Use DMRT during data analysis 2. Add the total phenol estimation. 3. Term chlorophyll content should be used instead of chlorophyll Index ***(Action: Research Scientist, Pulses Research Station, SDAU, Sardarkrushinagar)***
18.8.3.20	**Effect of smoke water on biochemical and physiological attributes of kidney beans (Rajmash)**	**Approved with the following suggestions** 1.Use DMRT during data analysis 2. Add the total phenol estimation. 3.Term chlorophyll content should be used instead of chlorophyll Index ***(Action: Research Scientist, Pulses Research Station, SDAU, Sardarkrushinagar***
18.8.3.21	**Enumeration and comparison of total viable microbial count from cow dung**	**Approved with the following suggestion** 1. Also include "Gir" breed of cow in experiment ***(Action: Head, Dept. of Microbiology, CBSH, SDAU, Sardarkrushinagar)***
18.8.3.22	**Physicochemical and biochemical characterization of *Jeevamrut* prepared with buffalo and horse dung**	**Suggestions: Approved** ***(Action: Head, Dept. of Biochemistry, CBSH, SDAU, Sardarkrushinagar)***
18.8.3.23	**Physicochemical and biochemical evaluation of *Jeevamrut* prepared with Kankrej and H.F. cross-bred cow dung**	**Suggestions: Approved** ***(Action: Head, Dept. of Biochemistry, CBSH, SDAU, Sardarkrushinagar)***
18.8.3.24	**Determination of total viable bacterial population in the dung of dairy animals**	**Approved with the following suggestion** 1. Include Sheep and Goat in experiment ***(Action: Head, Dept. of Microbiology, CPCA, SDAU, Sardarkrushinagar)***
18.8.3.25	**Analysis of nutritional properties of Pearl millet grown at different locations of North Gujarat**	**Approved with the following suggestion** 1. Add free fatty acid parameter in experiment ***(Action: Head, Dept. of Biochemistry, CBSH, SDAU, Sardarkrushinagar)***
18.8.3.26	**Dissipation study on dithiocarbamate pesticides residues in/on cumin seed**	**Suggestions: Approved** ***(Action: Unit Head, BSRC, SDAU, Sardarkrushinagar)***
18.8.3.27	**Dissipation study on triazole group fungicides residues in/on cauliflower**	**Suggestions: Approved** ***(Action: Unit Head, BSRC, SDAU, Sardarkrushinagar)***

18.9 SOCIAL SCIENCE

DATE: May 07-09, 2022

Chairman	**:**	Dr. R. M. Chauhan, Hon’ble VC, SDAU, Sardarkrushinagar
Co-Chairmen	**:**	Dr. H. M. Gajipara, DEE, JAU, Junagadh
		Dr. H. B. Patel, DEE, AAU, Anand
Rapporteurs	**:**	Dr. B. Swaminathan, JAU, Junagadh
		Dr. H. M. Vinay Kumar, AAU, Anand
		Dr. Narendra Singh, NAU, Navsari
		Dr. J. J. Mistry, SDAU, Sardarkrushinagar
Statistician	**:**	Dr. A. D. Kalola, Professor & Head, AAU

The inaugural session of the 18th Combined AGRESCO Social Science Subcommittee Meeting commenced from 9:00 hrs onwards over online mode *via* Google Meet video-conferencing platform. Junagadh Agricultural University (JAU), Junagadh served as the host organization for this edition of the meeting. Dr. R. M. Chauhan, Hon’ble Vice-Chancellor, SDAU, Sardarkrushinagar graced the occasion as the Chairman of the meeting while Dr. H. M. Gajipara, DEE, JAU, Junagadh and Dr. H. B. Patel, DEE, AAU, Anand served as the Co-Chairmen. The rapporteurs were drawn from all the SAUs comprising Dr. B. Swaminathan (JAU); Dr. H. M. Vinaya Kumar (AAU); Dr. Narendra Singh (NAU), and Dr. J. J. Mistry (SDAU). Besides, Dr. A. D. Kalola (AAU) facilitated as the statistician during the meeting.

The meeting was declared open with Dr. H. M. Gajipara, Director of Extension Education, JAU, Junagadh formally welcoming the august gathering. He opined that the planned period of three days for the meeting (*i.e*., from 07 to 09 May 2022) was sufficient for healthy discussions and academic churnings that would ultimately benefit not only the researchers to sharpen their research studies in terms of objectives and methodology part but also provide an interdisciplinary platform promoting cross-learning among the researchers. In his inaugural address, Dr. H. B. Patel, DEE, AAU, Anand observed that the social science discipline in agriculture by default is a diverse group with economics, extension, statistics, and agri-business management research programmes complementing each other despite each being divergent and mutually exclusive in their approaches. Dr. Patel also requested the investigators of the concluded studies and new technical programmes to take the suggestions of the house with a positive frame of mind in a bid to improve networking and coordination in research.

In his presidential address, Dr. R. M. Chauhan, Hon’ble Vice-Chancellor, SDAU acknowledged JAU, Junagadh for conducting this online meeting and for timely completion of the tasks related to the dispatch of invitations, meeting links, and reports. He also highly appreciated the researchers of all the four SAUs who have joined the meeting despite being the weekend and their readiness to join the office on a Sunday. He further added that the recognition of social science discipline is gaining currency in the present times more than ever. As the reach or impact of any technology or a policy measure is set to be assessed in both quantitative and qualitative aspects, social science researchers should equip themselves with the latest analytical tools and techniques. He also emphasized that the location-specific primary data-driven research should be undertaken to benefit the farming community with quality outcomes. Attaching importance to the on-time completion of the meeting as planned, he insisted that the members should take turns without letting the discussions overlap each other.

Presentation of recommendations and new technical programmes by Conveners of SAUs

Sr. No.	Presenter	Designation & University
1.	Dr. N. B. Jadav / Dr. C. D. Lakhlani	Convener, Social Science, JAU, Junagadh
2.	Dr. K. S. Jadav	Convener, Social Science, AAU, Anand
3.	Dr. R. M. Naik	Convener, Social Science, NAU, Navsari
4.	Dr. K. P. Thakar	Convener, Social Science, SDAU, Sardarkrushinagar

Summary of the Scientific Recommendations and New Technical Programmes

Name of University	Scientific Recommendations			
	Proposed	Approved	Dropped	Withheld
JAU	04	02	01	01*
AAU	04	04	-	-
NAU	05	05	-	-
SDAU	03	03	-	-
Total	**16**	**14**	**01**	**01***

Note: *The study was extended for the year 2022-23.

18.9.1 RECOMMENDATIONS FOR FARMING COMMUNITY - Nil

18.9.2 RECOMMENDATIONS FOR SCIENTIFIC COMMUNITY/ POLICYMAKERS/ MESSAGE FOR EXTENSION AGENCIES

JUNAGADH AGRICULTURAL UNIVERSITY

Sr. No.	Title/ Suggestions/ Action
18.9.2.1	**Analysing India's comparative advantage in world cumin (*Cuminum cyminum* L.) exports: An application of Gravity model**
	The recast recommendation for scientific community/policymakers as approved by the house is given below. The comparative advantage of India, and particularly Gujarat, can be enhanced in cumin exports and the country can emerge as a price setter in the world cumin trade only when the issues around domestic yield and prices are addressed institutionally. Yield levels should be sustained at lower production costs for reducing export instability through competitive pricing and to cool down domestic prices. Large-scale pre-shipment quality checks and long-term contracts may be facilitated for better price negotiation. Above all, production and export incentives should also be channelized directly to the cumin farmers for generating a genuine market-driven exportable surplus. *(**Action:** Professor and Head, Dept. of Agril. Economics, JAU, Junagadh)*
18.9.2.2	**Exploring the scope to start Auto-Advisory Services for groundnut growers in Saurashtra region**
	The recommendation for scientific community was dropped/ not approved by the house citing the generalized nature of the study. *(**Action:** Professor and Head, Dept. of Agril. Statistics, JAU, Junagadh)*
18.9.2.3	**Financial literacy among the students of Junagadh Agricultural University**
	Junagadh Agricultural University can strengthen the financial literacy of students by influencing their financial knowledge, behaviour and attitude. Students should be trained in financial knowledge since low level is more prevalent in this area, especially in terms of investment. **Withheld with the following suggestions:** The study should be extended for another year (*i.e.*, 2022-23) to fulfill the mandate of

Sr. No.	Title/ Suggestions/ Action
	recommended sample size (n=300) and to improve the methodology part in such a way to capture the knowledge, attitude and behaviour of UG and PG students separately. ***(Action:** Principal, PGIABM, JAU, Junagadh)*
18.9.2.4	**Training needs of farmers with respect to scientific cultivation of cumin crop in Porbandar district**
	The recast message for extension agencies approved by the house The cumin farmers of Porbandar district with social participation and mass media exposure may be focused for one-day training programs that are arranged continuously over a year in the areas of new variety, ploughing and value addition. ***(Action:** Principal, College of Agriculture, JAU, Khapat)*

ANAND AGRICULTURAL UNIVERSITY

Sr. No.	Title/ Suggestions/ Action
18.9.2.5	**Evaluation and development of yardstick of CV % for tobacco crop experiments**
	The house approved the recommendation for scientific community as under: The yard stick of CV % for accepting the results of tobacco crop experiments is 14.76, *i.e.*, 15 per cent for yield character. ***(Action:** Professor and Head, Dept. of Agril. Statistics, BACA, AAU, Anand)*
18.9.2.6	**Comparison of different statistical models to forecast the area, production and productivity of major fruit crops of Gujarat**
	The house approved the recommendation for scientific community as under: It is recommended that ARCH/GARCH model can be used to describe the pattern of area, production and productivity of banana crop in Gujarat as the data shows nonlinearity. ARIMA model can be used to capture area and productivity of mango due to less fluctuation in the data, while ARCH model can be used to forecast mango production due to non-linear trends in the data. The ANN model can be used to describe the pattern of area, production and productivity of sapota and citrus crops in Gujarat as the data possess non-linear pattern as well as outliers. ***(Action:** Principal, CoH, AAU, Anand)*
18.9.2.7	**Development of a tool to measure the self-working confidence to be successful poultry farmers**
	The house approved the recommendation for scientific community comprising the following final selected statements for measuring the self-working confidence to be successful poultry farmers:

Sl. No.	Statements	SA	A	UD	DA	SDA
1	I have self-working confidence to be a successful poultry farmer. (+) મને સફળ મરઘાપાલક બનવા માટે મારી આવડત ઉપર ભરોસો છે.	5	4	3	2	1
2	I have practical ability needed to be a successful poultry farmer. (+) સફળ મરઘાપાલક બનવા માટે જરૂરી પ્રાયોગિક આવડત મારી પાસે છે.	5	4	3	2	1
3	I am self-dependent to purchase good inputs for poultry farming. (+) હું મરઘાપાલન માટે જરૂરી સાધનસામગ્રી ખરીદવા માટે આત્મનિર્ભર છું.	5	4	3	2	1
4	I am capable of handling key operations of poultry farming practically. (+)	5	4	3	2	1

Sr. No.	Title/ Suggestions/ Action

	હું મરઘાપાલન માટે મુખ્ય કાર્યો સંભાળવા સક્ષમ છું.					
5	I am skilful enough to operate poultry farming related machinery. (+) મારી પાસે મરઘાપાલન સંલગ્ન યંત્રો ચલાવવા માટે પર્યાપ્ત કુશળતા છે.	5	4	3	2	1
6	I am self-sufficient in adopting poultry farming as an occupation. (+) મરઘાપાલનને એક વ્યવસાય તરીકે અપનાવવા હું આત્મનિર્ભર છું.	5	4	3	2	1
7	I am highly confident to start poultry farming even though I don't get any support from the government. (+) સરકાર તરફથી કોઇપણ સહાય ન મળે છતાંય હું મરઘાપાલન કરવા અતિ સક્ષમ છું.	5	4	3	2	1
8	The scientific poultry farming is beyond my capacity to handle. (-) વૈજ્ઞાનિક રીતે મરઘાપાલન કરવું એ મારી ક્ષમતા બહારનું છે.	1	2	3	4	5
9	I am highly skilful in the handling of marketing aspects of poultry products. (+) મરઘાપાલનની પેદાશોના વેચાણ સબંધિત બાબતો સંભાળવા હું અતિ કુશળ છું.	5	4	3	2	1
10	For me, poultry farming is difficult to start due to the risky diseases associated with it. (-) મરઘાપાલનમાં જોખમી રોગ આવતા હોવાથી તે ચલાવવું મારા માટે અઘરૂં છે.	1	2	3	4	5
11	I am firm to go for poultry farming even though poor approval of my society. (+) સમાજ તરફથી અસ્વીકૃતિ મળતી હોવા છતાં હું મરઘાપાલન કરવા મક્કમ છું.	5	4	3	2	1
12	I have no confidence to obtain credit to start poultry farming. (-) મરઘાપાલન શરૂ કરવા માટે ધિરાણ લેવાનો મારામાં આત્મવિશ્વાસ નથી.	1	2	3	4	5

SA: Strongly Agree, A: Agree, UD: Undecided, DA: Disagree, SDA: Strongly Disagree

*(**Action:** Professor and Head, Dept. of Agril. Extn. & Com., AAU, Anand)*

18.9.2.8	**Consumers' awareness, perception and acceptance of various types of functional foods in selected cities of Gujarat**
	The recast recommendation approved for policymakers is given below. It is recommended that the demographic factors *viz.* education, occupation and marital status of the consumers should be considered while launching and positioning functional foods in the market. As consumers showed positive perceptions of functional foods for their health attributes in lowering cholesterol levels, improving bone and teeth health and managing body weight, such attributes should also be focused upon for successful marketing of the functional food products in Gujarat. *(**Action:** Professor & Head, Dept. of FBM, College of FPT&BE, AAU, Anand)*

Sr. No.	Title/ Suggestions/ Action
18.9.2.9	**Development and standardization of scale to measure the attitude of employees towards ICTs apparatus for exploring agricultural information**

The house approved the recommendation for scientific community as under:

Methodology: Among the available scaling techniques, an 'Equal Appearing Interval Scale Technique' developed by Thurstone's (1928) was used for selection of items and ascertaining the responses.

1. **Item collection:** 100 statements were finalized after content analysis.
2. **Item analysis:** To judge the degree of most unfavourableness to most favourableness of each statement on the 11-point continuum, the schedule was sent to148 judges and among them 96 had responded. However as 36 had carelessly responded; only 60 schedules were kept for the study.
3. **Determination of Scale 'S' & 'Q' values:** Based on judgment, the Median Value (S) of the distribution and Inter Quartile value (Q) for 100 statements were calculated.
4. **Selection of Statements:** In all, 28 statements (17 positive and 11 negative statements) were selected whose 'S' values were greater than 'Q' values. However, when a few items had the same scale values, and for those the lowest 'Q' values were considered.

Reliability: Split Half Technique was used and reliability was 0.8907 for the year 2017, 0.9038 in the year 2018, 0.9013 in the year 2019 and 0.9068 in the year 2020. Thus, scale is recommended for Scientific Community.

Selected attitude statements

Sl.	Statements	F	N	UF
1.	ICTs apparatus plays a pivotal role in exploring agricultural information. (+)			
2.	ICTs apparatus are not resolving the conflicts among the users. (-)			
3.	ICTs apparatus induces one for acquiring more information. (+)			
4.	ICTs apparatus is an effective medium to impart training. (+)			
5.	ICTs apparatus resolves the crisis of ToT staff. (+)			
6.	ICTs apparatus are unable to meet the increasing demands of farmers. (-)			
7.	Teacherless classroom can be conceptualized through ICTs apparatus. (+)			
8.	Television helps to explore new technology among the farmers. (+)			
9.	Radio converts an individual from awareness to interest stages of adoption. (+)			
10.	Farm Radio enhances the interactive communication between scientists and farmers. (+)			
11.	Computer helps to present offline agriculture content. (+)			
12.	Computer enables the extension workers to take quick decisions while ToT. (+)			
13.	In the present time crop-based CD/DVD becomes ready reckoner for the farmers. (+)			
14.	Internet strengthens the linkage between different stakeholders. (+)			
15.	Accuracy of information available on the agricultural website is questionable. (-)			
16.	Web portals are useful to farmers for accurate and timely information. (+)			
17.	Mobile phone is not a potential tool to reach the unreached. (-)			
18.	Mobile phones facilitate teleconferencing within the group. (+)			

Sr. No.	Title/ Suggestions/ Action

19.	Kiosk is complex ICT apparatus and therefore, it does not reach rural areas. (-)			
20.	Field functionaries have very poor acquaintance with a kiosk. (-)			
21.	Extension personnel are not considering KCC as a credible source for information. (-)			
22.	Video conferencing reduces the time and cost of extension functionaries. (+)			
23.	Practicability of video conferencing is less. (-)			
24.	Extension personnel cannot analyse the intensity of field problem by video conferencing. (-)			
25.	Whats App and Facebook generate the peer-to-peer discussion. (+)			
26.	Social Media is for entertainment only. (-)			
27.	'Kisan Mitra' app developed by NAU, Navsari is widely appreciated by the farming community. (+)			
28.	'Kisan Mitra' app is not a good source to avail offline agricultural information. (-)			
(Note: F= Favourable, N= Neutral, UF= Unfavourable)				

*(**Action:** HoD, Agril. Extension & Communication, NMCA, NAU, Navsari)*

18.9.2.10	**Development and standardization of scale to measures knowledge of rural women about the agro-based enterprises**

The house approved the recommendation for scientific community:

Methodology: Guilford method and Rulon formula (1965) was used to measure the knowledge about the agro-based enterprises.

1. **Item collection:** 76 statements were finalized after content analysis
2. **Item analysis:** To judge the items collected from different sources and schedule of items were sent to 178 judges and among them 82 had responded. However as 22 had carelessly responded; only 60 schedules were kept for the study.
3. **Determination:** Calculation of "Index of item difficulty", "Index of item discrimination" and "Biserial correlation" for all the collected items.
4. **Selection of the statements: Based on** significant values of the biserial 'r_{bis}', difficulty index and discrimination values, the items were selected for the final test battery of knowledge about agro-based enterprises.
5. **Reliability:** Split half technique was used and reliability was **0.9306 for the year 2018**, **0.9028 in the year 2019** and **0.9665 in the year 2020**. Thus, scale is recommended for scientific community.
6. Further, it is to be noted that the right answer on the statement with dichotomous choices was given 1 score for 'YES' and 0 for 'NO' answer. Whereas for the statements with four choices, a score of 0.25 were allotted to each correct answer and the statements with three choices were allotted 0.33 score for each correct answer.

Actual format of the test to measure knowledge of rural women about agro-based enterprise as presented in following table:

Sl. No.	Questions
	Dairying
1	Do you know that the colostrum should be fed to the newborn calf within an hour after birth? **Yes/No**
2	Do you know about balanced feeding for healthy dairy animals? **Yes/No**
3	Do you know about treatment for improving the quality of roughages? **Yes/No**
4	Do you know how much mineral mixture to feed a dairy animal? **Yes/No**
5	Do you know that fodder should be fed to dairy animals only after chaffing? **Yes/No**

Sr. No.	Title/ Suggestions/ Action	
	6	Do you know about the importance of pre and post milking teat dip? **Yes/No**
	7	Do you know why the orientation of cattle should be in the east-west direction? **Yes/No**
	8	Do you know that cross ventilation is essential in cattle sheds? **Yes/No**
	9	Do you know that concrete floor is better than kachcha floor in cattle shed? **Yes/No**
	10	Do you know why dairy animals are vaccinated? (a) Preventing or reducing disease (b) Higher milk production (c) Other reasons
	11	Do you know why deworming among dairy animals? **Yes/No**
	12	Is raw milk safe to be consumed as such? **Yes/No**
	13	Do you know which agency set the price of milk in Gujarat? (a) Amul (b) National Dairy Development Board (c) GCMMF
	14	Is selling milk directly to consumers more economically beneficial? **Yes/No**
	15	Do you know that drinking fresh and cold water throughout the day is essential for animals? **Yes/No**
	Vermicomposting	
	1	Do you know the species of earthworms that are utilized for vermicomposting in South Gujarat? (a) Red wigglers [Eisenia fetida] (b)European night crawlers[Eisenia hortensis] (c) Red worms [Lumbricus rubellus]
	2	Do you know the worms during the natural climate for compost? **Yes/No**
	3	Do you utilize a mixture of decomposing vegetable or food waste, bedding materials for preparing vermicompost? **Yes/No**
	4	Do you know that the site of vermicomposting attracts flies and mosquitoes? **Yes/No**
	5	Do you know that earthworms are safe to handle with hands? **Yes/No**
	6	Do you know about the recommended size of vermibed? **Yes/No**
	7	How many earthworms are required for 15m×4m size vermibed? (a) 1-2 kg (b) 2-3 kg (c) 4-5 kg (d) 10 kg
	8	Do you know the price of 1 kg earthworms used for vermicomposting? **Yes/No**
	9	Do you know the sources from where one can buy earthworms? (a) Private agency (b) Agro-business Center (c) Agricultural University (d) others
	10	Do you know the estimated cost for preparing vermicompost from 15m × 4m size vermibed? (a) Rs.1000 to Rs.1500 (b) Rs.1500 to Rs.2000 (c) Rs.2000 to Rs.2500 (d) Above Rs.2500
	11	Do you know the average selling price of 50kg vermicompost? (a) Rs.100 to Rs.200 (b) Rs.250 to Rs. 300 (c) Rs.350 to 400
	Food Processing	
	1	How many products of mango fruits are prepared by processing? (a)1 to 2 products (b) 2-3 products (c) 3-5 products (d) More than 5 products
	2	Do you know the packaging of food is economically beneficial? **Yes/No**
	3	Do you know about products that are prepared from pulses by food processing? (a) Papad and Vadi, (b) Soybean balls, (c) protein-rich flour
	4	Do you know about marketing facilities available for different food processing products in South Gujarat? (a) Hat Bazaars (b) Grocery stores (c) Commercial Online Websites (d) Craft Markets

<table>
<tr><th>Sr. No.</th><th>Title/ Suggestions/ Action</th></tr>
<tr><td></td><td>
<table>
<tr><td>5</td><td>Do you know that value addition gives more benefits? Yes/No</td></tr>
<tr><td>6</td><td>Do you know various sources from where one can buy fresh fruits, vegetables, chemicals and packaging materials for food processing?
(a) Hat Bazaars (b) Grocery stores (c) e-Commerce websites (d) Craft Markets</td></tr>
<tr><td>7</td><td>Which fruits are uses for making pickles?
(a) Mango (b) Lemon (c) Aonla (d) Koronda</td></tr>
<tr><td colspan="2">Beekeeping</td></tr>
<tr><td>1</td><td>Do you know that the Apis melifera species of honeybee, which has been domesticated in South Gujarat? Yes/No</td></tr>
<tr><td>2</td><td>Honeybee activities are higher in winter as compared to summer, is it true or false?</td></tr>
<tr><td>3</td><td>Do all honeybees make honey? Yes/No</td></tr>
<tr><td>4</td><td>Do you know the honey never goes “bad” or “spoiled”? Yes/No</td></tr>
<tr><td>5</td><td>Do you know the reason for honey solidification? Yes/No</td></tr>
<tr><td>6</td><td>Do You know the places where one can buy hives for beekeeping?
(a) Private agencies (b) NGOs (c) Progressive beekeepers (d) Navsari Agricultural University</td></tr>
<tr><td>7</td><td>How many beehives require for one hectare cucumber farm?
(a) 2-3 beehives/ha (b) 3-5 beehives/ha (c) 5-7 beehives/ha
(d) Above 7/ha</td></tr>
<tr><td>8</td><td>Do you know the four frames beehive and ten frames beehive are available for beekeeping? Yes/No</td></tr>
<tr><td>9</td><td>How much honey is produced by one four frames beehive?
(a) 0.5 kg to 1 kg (b) 1 kg to 2 kg (c) 3 kg to 5 kg (d) More than 5 kg</td></tr>
<tr><td>10</td><td>Which safety measures for harvesting the honey from beehives?
(a) Do the inspection during good weather (b) Wear protected Gear (c) Keep the hive tidy</td></tr>
<tr><td>11</td><td>How can we know the purity of honey?
(a) Thumb test (b) Water test (c) Flame test (d) Heat test</td></tr>
</table>
(Action: Senior Scientist & Head, KVK, NAU, Vyara, Tapi)</td></tr>
<tr><td>18.9.2.11</td><td>Group dynamics of FIGs/CIGs working under ATMA in South Gujarat</td></tr>
<tr><td></td><td>The house approved the following message for the scientific community:
Extension officers of ATMA project are advised to emphasize on the three dimensions of group dynamics viz. interpersonal trust, group leadership and group atmosphere in order to empower group functioning through the members. Moreover, economic orientation, extension contacts and market orientation factors/aspects of groups should also be prioritized.
(Action: DEE, NAU, Navsari)</td></tr>
<tr><td>18.9.2.12</td><td>Seasonal variations and forecasting in wholesale prices of okra in Surat market</td></tr>
<tr><td></td><td>The house approved recommendation for the scientific community:
Seasonal ARIMA model to develop dependable monthly wholesale price forecasts for okra in Surat market is found to be more effective as compared to various non-seasonal models (viz. Simple Non-Seasonal, Holts Linear Trend, Brown’s Linear Trend, Damped Trend) as well as various seasonal models (viz. Simple Seasonal, Winter Additive, Winter Multiplicative) on the basis of different model selection criteria like minimum Mean Absolute Percentage Error (MAPE) and minimum Bayesian Information Criterion (BIC).
(Action: Principal, AABMI, NAU, Navsari)</td></tr>
<tr><td>18.9.2.13</td><td>Population growth study of sheath mites in different rice cultivars using statistical models</td></tr>
<tr><td></td><td>The house approved recommendation for the scientific community:</td></tr>
</table>

Sr. No.	Title/ Suggestions/ Action
	The maximum temperature and minimum relative humidity were both positively and significantly associated with the sheath mite population indicating that the weather characteristics are primarily responsible for vulnerability of the rice crop, particularly in the 42nd and 43rd SMW. Accordingly, the scientists are advised to suggest farmers take preventative steps prior to the 42nd and 43rd SMW. The Sinusoidal model accurately describes the growth pattern in almost all years. As a result, it is recommended that the Sinusoidal nonlinear model can be used to forecast Sheath mite population growth dynamics in Navsari, Gujarat. *(**Action:** Asso. Prof. & Head (I/c), Dept. of Agril. Statistics, NMCA, NAU, Navsari)*

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

Sr. No.	Title/ Suggestions/ Action
18.9.2.14	**Assessment of green consumer behaviour of SDAU Employees**
	The house approved the following recommendation for policymakers: Awareness should be created amongst employees to consider environmental aspects whenever they purchase, use or dispose any product. Proper waste collection, segregation of waste at household level as well as centrally and proper waste disposal mechanism is needed to make a clean and green campus. *(**Action:** Professor & Head, Department of Family Resource Management, ASPEE College of Nutrition and Community Science, SDAU)*
18.9.2.15	**An assessment of technological and structural changes in isabgol cultivation in North Gujarat**
	The house approved the following recommendation for policymakers: The growth of gross margin and total factor productivity (TFP) in isabgol cultivation has increased substantially in the first decade (2000-01 to 2009-10). However, the slower growth in gross margin and negative growth in TFP was noticed in subsequent period (2010-11 to 2020-21) and the area has also reduced (-5.43%) over time, which is a matter of concern. Hence, policymakers are recommended to take necessary actions such as cluster-based approach, better incentives to the growers and value addition suiting the domestic and international market demand. *(**Action:** Assoc. Prof. & Head, College of Agribusiness Mgmt., SDAU, SKNagar)*
18.9.2.16	**Estimation of optimum plot size and shape from uniformity trial data of fennel *(Foeniculum vulgare Mill.)***
	The house approved the following recommendation for the scientific community: A plot of 10 basic unit having shape of 5x2 (5.0 m. length and 1.80 m. width), *i.e.*, 4 rows each of 5 m. length is considered to be optimum size and shape of plot (net plot) with 2 minimum replications for field experiments on fennel grown in *rabi* season for North Gujarat Agro climate zone. *(**Action:** Principal, College of Horticulture, SDAU, Jagudan)*

18.9.3 NEW TECHNICAL PROGRAMMES

Summary

Name of University	Proposed	Approved	Dropped
JAU	08	07	01
AAU	38	36	02
NAU	20	18	02
SDAU	20	20	-
Total	**86**	**81**	**05**

JUNAGADH AGRICULTURAL UNIVERSITY

Sr. No.	NTP Title	Suggestions
18.9.3.1	Growth, instability and decomposition analysis of nutri-cereals production in Gujarat	**Accepted with the following suggestions:** 1. Do not categorize the objectives into main and specific types. 2. Add the words 'selected nutri-cereal crops' at the end of the third objective. *(**Action:** Professor and Head, Dept. of Agril. Economics, JAU, Junagadh)*
18.9.3.2	India's balance of trade in agriculture with SAARC nations: An econometric analysis	**Accepted with the following suggestions:** 1. Explore the scope of including HS code-wise products under the selected commodities for BoT analysis. 2. Replace the word 'BoT' in the first objective with 'agricultural balance of trade'. 3. Include fruit & vegetable products for analysis, if found feasible. *(**Action:** Professor and Head, Dept. of Agril. Economics, JAU, Junagadh)*
18.9.3.3	Time-series forecasting of area, production and productivity of cotton and groundnut by using various methods in Gujarat state **Revised title:** Forecasting area, production and productivity of cotton and groundnut in Gujarat	**Accepted with the following suggestions:** 1. Change the title to 'Forecasting area, production and productivity of cotton and groundnut in Gujarat'. 2. Include AIC and BIC amongst the model selection criteria. *(**Action:** Professor and Head, Dept. of Agril. Statistics, JAU, Junagadh)*
18.9.3.4	Development of statistical analysis programme using Python machine learning and data visualization	**Accepted with the following suggestions:** 1. Include pooled data analysis for CRD and RBD trials with transformation. *(**Action:** Professor and Head, Dept. of Agril. Statistics, JAU, Junagadh)*
18.9.3.5	Assessment of farmers' adoption of cotton production technology recommended by JAU, Junagadh	**Accepted with the following suggestions:** 1. Modify the starting of the first objective from 'To measure…' to 'To assess the factors…". 2. Include level of adoption. *(**Action:** Professor and Head, Dept. of Agril. Extension, JAU, Junagadh)*
18.9.3.6	Sensitization level of farmers about safe pesticides usage in Junagadh district of Saurashtra region. **Revised title:** Sensitization level of farmers about safe pesticide usage in Junagadh district	**Accepted with the following suggestions:** 1. Cast off the words 'of Saurashtra region' from the title and keep the title as 'Sensitization level of farmers about safe pesticide usage in Junagadh district'. 2. Increase the sample size to 300 respondents. *(**Action:** Professor and Head, Dept. of Agril. Extension, JAU, Junagadh)*
18.9.3.7	Awareness and intention of consumers to buy organic products in Saurashtra region	**Not approved due to the following issues:** 1. Ambiguity in operationalizing natural and organic products. 2. Little scope in the study in understanding the consumption pattern of organic products. 3. Undefined population. 4. Obscurity in sampling technique and subsequent data collection process.

Sr. No.	NTP Title	Suggestions
		(***Action:*** *Principal, PGIABM, JAU, Junagadh)*
18.9.3.8	Training needs of farmers regarding rainwater harvesting and groundwater recharge	**Accepted with the following suggestions:** 1. Restrict to three researchers comprising one PI and two Co-PIs. 2. Change the survey period in the methodology part to 2022-23. 3. Change the 'level of primary education' indicator in the interview schedule to 'up to 8th standard' instead of 'up to 7th standard'. 4. Include management orientation and innovativeness variables in the study. (***Action:*** *Senior Sci. & Head, KVK, JAU, Amreli)*

ANAND AGRICULTURAL UNIVERSITY

NTP No.	NTP Title	Suggestions
18.9.3.9	An economic analysis of colocasia production in Middle Gujarat	**Accepted with the following suggestions:** 1. In the second objective, write "return" instead of "returns". (***Action:*** *Professor & Head, Department of Agril. Econ., BACA, AAU, Anand)*
18.9.3.10	Export performance of major fresh fruits of India	**Accepted with the following suggestions:** 1. Specify the study period involving the period of time-series data in the methodology section. 2. Analyse the growth and instability indicators also in terms of importing partners. (***Action:*** *Professor & Head, Department of Agril. Econ., BACA, AAU, Anand)*
18.9.3.11	Growth in area, production and productivity of vegetable crops in Gujarat	**Accepted with the following suggestions:** 1. Delete the 4th objective of the study, *i.e.*, "to classify growth and instability" as it is taken care of in the 1st objective itself. (***Action:*** *Professor & Head, Department of Agril. Econ., BACA, AAU, Anand)*
18.9.3.12	Estimation of supply chain of Pearl millet in middle Gujarat	**Accepted with the following suggestions:** 1. Include both forward and backward linkages in the supply chain analysis. *(**Action:** Principal, IABMI, AAU, Anand)*
18.9.3.13	Assessing the consumer preference for inland fisheries in middle Gujarat **Revised title:** Assessment of consumer preferences for inland fisheries in middle Gujarat	**Accepted with the following suggestions:** 1. In the title, write the words "assessment of consumer preferences…" instead of "assessing the consumer….". *(**Action:** Principal, IABMI, AAU, Anand)*
18.9.3.14	Variety mapping and supply chain analysis of paddy in Gujarat	**Accepted with the following suggestions:** 1. Include both forward and backward linkages in the supply chain analysis. *(**Action:** Principal, IABMI, AAU, Anand)*
18.9.3.15	Investment analysis of food processing companies	**Accepted with the following suggestions:** 1. Verify data sources of the selected food processing companies in terms of their authenticity. 2. Include discounting and compounding

NTP No.	NTP Title	Suggestions
		techniques along with break-even point estimation under investment analysis. ***(Action:** Principal, IABMI, AAU, Anand)*
18.9.3.16	Consumers' attitude, purchase intention and behaviour towards organic vegetables in middle Gujarat	**Accepted with the following suggestions:** 1. Specify the sampling procedure and sample size in the methodology. 2. Use a pre-tested interview schedule in place of a questionnaire. 3. Set the sample size to be 300 respondents. ***(Action:** Prof. & Head, Department of FBM, College of FPT & BE, AAU, Anand)*
18.9.3.17	Detection of late blight and early blight diseases of potato using deep learning	**Accepted with the following suggestions:** 1. Cite the online source in methodology from which the thousands of plant disease symptom images are to be extracted. 2. Explore the possibility of including the disease symptom images of late and early blights from the local farmers as well. 3. Include the name of the statistical software using which the deep learning is to be carried out. 4. Include a Co-PI from plant pathology. ***(Action:** Professor and Head, Dept. of Basic Sciences, College of Horticulture, AAU, Anand)*
18.9.3.18	Application of harmonic analysis in the preliminary prediction of hourly air temperature of Anand station	**Accepted by the house.** ***(Action:** Professor & Head, Department of Basic Sciences and Humanities, BACA, AAU, Anand)*
18.9.3.19	Development and standardization of a scale to measure attitude of youth towards Agri - startup programs	**Accepted with the following suggestions:** 1. Operationalize the term 'agri-startup programs' in context to the study. ***2.*** Include the list of state or central govt. startup programs ***(Action:** Professor & Head, Department of Agril. Extn. & Com., BACA, AAU, Anand)*
18.9.3.20	Entrepreneurial ability of girl students of agriculture faculty of State Agricultural Universities of Gujarat	**Accepted with the following suggestions:** 1. Use proportionate sampling technique. 2. The investigation should conduct for two years (2022-24) rather than just one (2022-2023). *(Action: Professor & Head, Department of Agril. Extn. & Com., BACA, AAU, Anand)*
18.9.3.21	Economic feasibility and farmers' willingness to adopt solar-powered irrigation pumps for self-reliance	**Accepted with the following suggestions:** 1. Mention the assumptions clearly in the methodology that are to be considered while estimating economic feasibility. ***(Action:** Professor & Head, Department of Agril. Extn. & Com., BACA, AAU, Anand)*
18.9.3.22	Development of the scale to measure the attitude of the trainees towards online trainings conducted by EEI **Revised title:** Development of a scale to measure attitude of trainees towards online training	**Accepted with the following suggestions:** 1. Remove the words "conducted by EEI" from the title. 2. Change the title to "Development of a scale to measure attitude of trainees towards online training programmes".

NTP No.	NTP Title	Suggestions
	programmes	*(**Action:** Director, EEI, AAU, Anand)*
18.9.3.23	Consequences of Agriculture Skill Council of India training programme on trainees	**Accepted with the following suggestions:** 1. Operationalize the term 'consequences' in the methodology section. *(**Action:** Director, EEI, AAU, Anand)*
18.9.3.24	Horizontal spread of Gujarat Anand Okra-5 among the okra growers	**Accepted with the following suggestions:** 1. Sampling design should be specified in the methodology section as purposive sampling with its due justification. 2. Increase the sample size to 300 respondents. *(**Action:** Director, EEI, AAU, Anand)*
18.9.3.25	Horizontal spread of tomato cultivar GAT-5 among the tomato growers	**Accepted with the following suggestions:** 1. Sampling design should be specified in the methodology section as purposive sampling with its due justification. 2. Increase the sample size to 300 respondents. *(**Action:** Director, EEI, AAU, Anand)*
18.9.3.26	Group cohesiveness among members of Farm Women Interest Groups (FWIGs) in Kheda District **Revised title:** Group cohesiveness among members of Farm Women Interest Groups in Kheda District	**Accepted with the following suggestions:** 1. Delete the abbreviation "FWIGs" from the title. 2. Change the title to "Group cohesiveness among members of Farm Women Interest Groups in Kheda district". 3. Operationalize the term 'Group cohesiveness' in the study. 4. Mention the group cohesiveness indicators in the methodology. *(**Action:** Professor & Head, Department of Agricultural Sciences, CAIT, AAU, Anand)*
18.9.3.27	Knowledge and adoption of natural farming practices among the trained cotton growers of Chhotaudepur district	**Accepted by the house.** (**Action:** Principal, CoA, AAU, Jabugam)
18.9.3.28	Horizontal spread of Gujarat Anand Mungbean 5 among the mungbean growers	**Not accepted due to the following issues:** The house suggested to drop the study as it is a duplication of the NTP No. **18.9.3.38.** *(**Action:** Principal, CoA, AAU, Jabugam)*
18.9.3.29	Feedback of beneficiary farmers about the urd bean cultivar Shyamal (GAU-4) **Revised title:** Horizontal spread of Shyamal (GAU-4) among the urd bean growers	**Accepted with the following suggestions:** 1. Modify the title as "Horizontal spread of Shyamal (GAU-4) among the urd bean growers". 2. Specify the sampling technique as purposive sampling with its due justification. 3. Increase the sample size to 300 respondents. *(**Action:** Principal, CoA, AAU, Jabugam)*
18.9.3.30	Knowledge and adoption of dairy farmers about bovine ecto-parasites in Anand and Kheda districts	**The house suggested to drop the study** as the same will have to be approved only by Kamdhenu University. *(**Action:** Professor & Head, Dept. of Extension Education, Veterinary Sci. College, Anand)*
18.9.3.31	Knowledge of Vegetable Growers' About Hazardous	**Accepted with the following suggestions:** 1. Change the title as "Knowledge of vegetable

NTP No.	NTP Title	Suggestions
	Effect of Pesticides in middle Gujarat **Revised title:** Knowledge of vegetable growers on the protective measures of using pesticides	growers on the protective measures of using pesticides." 2. Use purposive sampling method with due justification. ***(Action:*** *Director, Institute of Distance Education, AAU, Anand)*
18.9.3.32	An explorative study on rooftop gardening in Vadodara city of Gujarat	**Accepted with the following suggestions:** 1. Use snowball sampling method for data collection. 2. Include the word "rooftop garden" in the second objective. ***(Action:*** *Principal, Polytechnic in Horti., AAU, Vadodara)*
18.9.3.33	Training needs of chickpea growers in Panchmahal district	**Accepted with the following suggestions:** 1. Modify the 3rd objective as "To study the relationship between the profile of chickpea growers and their training needs of chickpea production technologies." ***(Action:*** *Associate Res. Scientist, ARS, AAU, Derol)*
18.9.3.34	Study of credibility of different information sources used by the farmers of Panchmahals district	**Accepted with the following suggestions:** 1. Use random sampling for taluka selection. 2. Operationalize the term 'credibility' in context of the study's methodology. ***(Action:*** *Research Scientist, Main Maize Research Station, AAU, Godhara)*
18.9.3.35	Horizontal spread of Gujarat Anand Desi Cotton 2 among the desi cotton growers	**Accepted with the following suggestions:** 1. Sampling design should be specified in the methodology section as purposive sampling with its due justification. 2. Increase the sample size to 300 respondents. ***(Action:*** *Senior Sci. and Head, KVK, AAU, Arnej)*
18.9.3.36	Horizontal spread of Gujarat Anand Rice 13 among the rice growers in Anand district	**Accepted with the following suggestions:** 1. Specify the sampling design in the study as purposive sampling with due justification. 2. Increase the sample size to 300 respondents. ***(Action:*** *Senior Scientist and Head, KVK, AAU, Devataj)*
18.9.3.37	An Economic analysis of dairy entrepreneurs in Chhotaudepur district of Gujarat **Revised title:** An economic analysis of dairy farmers in Chhotaudepur district of Gujarat	**Accepted with the following suggestions:** 1. Replace "entrepreneurs" word with "farmers" in the title of the study. 2. Recommended to adopt purposive sampling with due justification. 3. Increase the sample size to 300 respondents. 4. Remove the "production pattern" word from the 1st objective, as this part is taken care of in the 2nd objective of the study. ***(Action:*** *Senior Scientist and Head, KVK, Mangalbharti, Vadodara-Chhotaudepur)*
18.9.3.38	Horizontal spread of Gujarat Anand Mungbean (GAM)-5 among the mungbean growers in Chhotaudepur district of Gujarat	**Accepted with the following suggestions:** 1. Sampling design should be specified in the methodology section as purposive sampling with its due justification. 2. Increase the sample size to 300 respondents.

NTP No.	NTP Title	Suggestions
		*(**Action:** Senior Scientist and Head, KVK, Mangalbharti, Vadodara-Chhotaudepur)*
18.9.3.39	Attitude of farmers towards Pradhan Mantri Kisan Samman Nidhi (PM-KISAN) scheme in Kheda district	**Accepted by the house.** *(**Action:** Sr. Scientist and Head, KVK, Gujarat Vidyapeeth, Dethali, Kheda)*
18.9.3.40	Horizontal spread of GG 34 variety among the groundnut growers of Kheda district	**Accepted with the following suggestions:** 1. Specify the use of purposive sampling in the methodology section. 2. Increase the sample size to 300 respondents. *(**Action:** Sr. Scientist and Head, KVK, Gujarat Vidyapeeth, Dethali, Kheda)*
18.9.3.41	Horizontal spread of NRC 37 among the soybean growers	**Accepted with the following suggestions:** 1. Specify the use of purposive sampling in the methodology section. 2. Increase the sample size to 300 respondents. *(**Action:** Sr. Sci. and Head, KVK, AAU, Dahod)*
18.9.3.42	Horizontal spread of GAC 11 variety of castor adopted by farmers of Middle Gujarat	**Accepted with the following suggestions:** 1. Sampling design (*i.e.*, purposive sampling) should be specified in methodology section. 2. Increase the sample size to 300 respondents. *(**Action:** Head, FTTC, AAU, Sansoli-Nenpur)*
18.9.3.43	Role performance of tribal farm women in agriculture **Revised title:** Role performance of tribal farm women in agriculture and allied sectors	**Accepted with the following suggestions:** 1. Rephrase the title as "Role performance of tribal farm women in agriculture and allied sectors." *(**Action:** Head, TRTC & TFWWTC, AAU, Devgadhbaria)*
18.9.3.44	Nutritional status and food consumption pattern of tribal farm women of Dahod district	**Accepted by the house.** (**Action:** Head, TRTC & TFWWTC, AAU, Devgadhbaria)
18.9.3.45	Knowledge level of Integrated Pest and Disease management practices among okra growing farmers of Dahod district	**Accepted with the following suggestions:** 1. Adopt multistage random sampling technique. *(**Action:** Head, Agri.-Polyclinic for Tribal Farmers, AAU, Dahod)*
18.9.3.46	Awareness about climate change among the farmer friends of Dahod district	**Accepted with the following suggestions:** 1. Increase the sample size to 300 respondents. *(**Action:** Head, Agri.-Polyclinic for Tribal Farmers, AAU, Dahod)*

NAVSARI AGRICULTURAL UNIVERSITY

NTP No.	NTP Title	Suggestions
18.9.3.47	Impact assessment of frontline demonstrations (FLDs) on soybean growers	**Accepted with the following suggestions:** 1. Include an additional objective as 'To study the impact of frontline demonstrations.' 2. Set the sample size to be 300. 3. Include the two-sample independent 't' test in methodology section. *(**Action:** Senior Sci. & Head, KVK, NAU, Vyara)*
18.9.3.48	Aspiration of farmers towards natural farming in the Dangs district of Gujarat	**Accepted with the following suggestions:** 1. Use multi-stage random sampling technique. 2. Use correlation analysis in methodology

NTP No.	NTP Title	Suggestions
		section. 3. Set the sample size to be 300 respondents 4. Extend the duration of the study for three consecutive years (*i.e.*, 2022-23 to 2024-25) 5. Specify the aspiration indicators in the methodology part. *(**Action:** Senior Sci. & Head, KVK, NAU, Waghai)*
18.9.3.49	Impact of frontline demonstration on green gram growers in Navsari district of South Gujarat	**Accepted with the following suggestions:** 1. Add one more objective as "To study association of personal profile of gram growers with Impact of Frontline demonstration. 2. Use a pre-tested structured interview schedule in place of a questionnaire. 3. Keep the same variety across the FLDSs. 4. Set the sample size to be 300 respondents. *(**Action:** Senior Sci. & Head, KVK, NAU, Navsari)*
18.9.3.50	Knowledge and adoption of improved maize production technology in Narmada district	**Accepted with the following suggestions:** 1. Set the sample size to be 300 respondents. 2. Add the words "…in adoption of improved production technologies" in the 4th objective. 3. Specify the area of sampling (taluka and village) of the study. *(**Action**: Senior Scientist & Head, KVK, NAU, Dediapada)*
18.9.3.51	Documentation of local varieties with special characteristics in Narmada district	**Accepted with the following suggestions:** 1. Remove "improved strains" from the objectives and only focus on local varieties. 2. Use snowball sampling technique. *(**Action:** Senior Scientist & Head, KVK, NAU, Dediapada)*
18.9.3.52	Motivational sources of newly enrolled students of B.Sc. (Hons) agriculture	**Accepted with the following suggestions:** 1. Specify the research design as descriptive research design. *(**Action:** Principal (I/c), Polytechnic in Agriculture, NAU, Waghai)*
18.9.3.53	Growth and Instability of pigeon pea production in South Gujarat **Revised title:** Growth and instability of pigeon pea cultivation in South Gujarat	**Accepted with the following suggestions:** 1. Modify the title as 'Growth and instability of pigeon pea cultivation in South Gujarat.' 2. Include the time-period of data collection. *(**Action:** Professor & Head, Dept. of Agril. Econ., NMCA, Navsari)*
18.9.3.54	Assessment of performance and constraints of nursery produced mango grafts at farmers field	**Accepted with the following suggestions:** 1. Analyse and compare the performance of private and public nurseries. 2. In methodology section, add Garrett's ranking technique for examining the constraints. *(**Action:** Professor & Head, Dept. of Agril. Econ., NMCA, NAU, Navsari)*
18.9.3.55	Dynamics of land use pattern in South Gujarat	**Not approved due to the following issues:** The proposed study was not approved due to the inherent unsuitability and distinct unavailability of the data to fulfil the cut-out objectives.

NTP No.	NTP Title	Suggestions
		*(**Action:** Professor & Head, Dept. of Social Science, ACHF, NAU, Navsari)*
18.9.3.56	Role of agricultural infrastructure on agricultural efficiency in Gujarat	**Accepted with the following suggestions:** 1. Include all requisite formulae concerned with agriculture infrastructure index (AII) in the methodology. 2. Mention the indicators and their assumptions for estimating AII and AEI. *(**Action:** Professor & Head, Dept. of Social Science, ACHF, NAU, Navsari)*
18.9.3.57	Economics of pigeon pea production in Bharuch district of South Gujarat	**Accepted with the following suggestions:** 1. Increase the sample size to 300. 2. Conduct the study for two years (*i.e.*, 2022-23 and 2023-24). *(**Action:** Assistant Professor, Dept. of Agril. Econ., CoA, NAU, Bharuch)*
18.9.3.58	Estimating total factor productivity of banana in South Gujarat region	**Accepted with the following suggestions:** 1.Split the study period into two categories pre- and post-NHM to capture the implications of NHM. 2.Specify the data source. 3.Include analytical tool for the second objective. *(Action: Assistant Professor, Dept. of Agril. Econ., CoA, NAU, Bharuch)*
18.9.3.59	Area, production, productivity and export performance of vegetables of India **Revised title:** Production and export performance of selected vegetables from India	**Accepted with the following suggestions:** 1. The title should be modified as 'Production and export performance of selected vegetables from India'. 2. Delete the first objective. 3. Use the word 'selected' instead of 'major vegetables' in objectives. 4. Select the vegetable crops based on their contribution equalling more than 50 per cent of the total vegetable production in Gujarat. *(**Action:** Assistant Professor, Agril. Economics, CoA, NAU, Waghai)*
18.9.3.60	Awareness, perception and willingness of farmers to join Farmers' Producer Organization (FPOs) in South Gujarat	**Accepted with the following suggestions:** 1. Reframe the first objective as 'To study the awareness of farmers regarding FPO's in South Gujarat'. 2. Set the sample size to be 300 respondents. 3. Use structured interview schedule in place of questionnaire. *(**Action:** Principal, AABMI, NAU, Navsari)*
18.9.3.61	Assessment of income inequality among agricultural households in Gujarat	**Accepted with the following suggestions:** 1. Compare the latest NSSO data with that of its previous rounds. 2. Extend the study for two years (*i.e.*, 2022-23 and 2023-24). *(**Action**: Principal, AABMI, NAU, Navsari)*
18.9.3.62	Awareness, perception and willingness of farmers to join Farmers' Producer Org. (FPOs)	**Accepted with the following suggestions:** 1. Rephrase the title of the study as the following: Small and marginal member

NTP No.	NTP Title	Suggestions
	in South Gujarat **Revised title:** Small and marginal member farmers' participation and their attitude towards Farmer Producer Organizations in South Gujarat	farmers' participation and their attitude towards Farmer Producer Organizations in South Gujarat. 2. The objectives should be revised in line with the title. *(**Action:** Principal, AABMI, NAU, Navsari)*
18.9.3.63	Assessment of income inequality among agricultural households in Gujarat Revised title: Assessment of preferred learning modes of postgraduate students of Navsari Agricultural University, Navsari	**Accepted with the following suggestions:** 1. Reframe the title as 'Assessment of preferred learning modes of postgraduate students of Navsari Agricultural University, Navsari'. 2. Modify the objectives as: (i) To find out the preferred learning modes of postgraduate students of Navsari Agrilcultural University, Navsari. (ii) To measure the awareness level of students regarding various tools for online teaching-learning. (iii) To assess the changes in preferred learning modes among students due to COVID-19 pandemic induced lockdown. (iv) To suggest measures to improve the online learning scenario of postgraduate students. 3. Use proportionate random sampling. *(**Action:** Principal, AABMI, NAU, Navsari)*
18.9.3.64	Awareness, expectations and influencing factors for professional networking among the postgraduate students of Navsari Agril. Uni., Navsari	**Not approved by the house due to the ambiguity in problem statement.** *(**Action:** Principal, AABMI, NAU, Navsari)*
18.9.3.65	Assessing and interpreting the spatial distributions of insect populations in paddy crops in Navsari	**Accepted with the following suggestions:** 1. Replace 'environmental' with 'meteorological' in the 2nd objective. *(**Action:** Associate Professor & Head (I/c), Dept. of Agril. Stat., NMCA, Navsari)*
18.9.3.66	Determination of sample size and sampling techniques in Agricultural Research	**Accepted with the following suggestions:** 1. Highlight the expected outcomes of the study in methodology section. 2. Include publications from India as well under literature review. *(**Action:** Associate Professor & Head (I/c), Dept. of Agril. Stat., NMCA, Navsari)*

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

NTP No.	NTP Title	Suggestions
18.9.3.67	Bodyweight perception and weight control practices amongst the undergraduate girl students of SDAU	**Accepted with the following suggestions:** 1. Give the analytical tools for the third objective. 2. Include the 'food habit' variable in 1st objective. 3. Add one objective as "To study the association between the profile of girls students with their nutritional status." 4. Specify the indicators of bodyweight

NTP No.	NTP Title	Suggestions
		perception. 5. Mention the sampling technique to be used. ***(Action:** Professor & Head, Department of Food & Nutrition, ASPEE College of Nutrition and Community Science, SDAU, SKNagar)*
18.9.3.68	Effect of Social networking Site on adolescent rural girls of Dantiwada Taluka **Revised title:** Effect of social networking sites on adolescent rural girls of Dantiwada taluka	**Accepted with the following suggestions:** 1. Change the word 'site' into 'sites' in the title. 2. Change the word 'find' to 'assess' in the second objective. ***(Action:** Prof. & Head, Dept. of Extn. Edu. & Comm. Mgt., ASPEE College of Nutrition and Community Sci., SDAU, SKNagar)*
18.9.3.69	Assessment of Stress and Stress Management Strategies among working women **Revised title:** Assessment of stress and its management strategies among working women	**Accepted with the following suggestions:** 1. Reframe the title of study as "Assessment of stress and its management strategies among working women". 2. Replace the words 'contributing to' with 'developing' in the second objective. 3. Mention the details in the methodology regarding the 'types of stress' to be undertaken in the study. ***(Action:** Senior Scientist & Head, KVK, SDAU, Deesa)*
18.9.3.70	Traditional post-natal dietary practices followed by tribal women in Banaskantha district	**Accepted with the following suggestions:** 1. Drop the third objective from the proposed study. ***(Action:** Prof. & Head, Dept. of Home Sci. Extn. and Comm. Mgt., ASPEE College of Nutrition and Community Sci., SDAU, SKNagar)*
18.9.3.71	Adoption of Natural Farming by Farmers of Banaskantha district **Revised title:** Adoption of natural farming practices by farmers of Banaskantha district	**Accepted with the following suggestions:** 1. Replace the word 'natural farming' with 'natural farming practices' in the title and modify the objectives accordingly. 2. Replace the word 'derived' with 'perceived' in the fourth objective. *(**Action**: Senior Scientist & Head, KVK, SDAU, Deesa)*
18.9.3.72	Adoption of Natural Farming by Farmers of Mehsana district **Revised title:** Adoption of natural farming practices by farmers of Mehsana district	**Accepted with the following suggestions:** 1. Replace the word 'natural farming' with 'natural farming practices' in the title and modify the objectives accordingly. 2. Replace the word 'derived' with 'perceived' in the fourth objective. ***(Action:** Principal, College of Horticulture, SDAU, Jagudan)*
18.9.3.73	Adoption of Natural Farming by Farmers of Patan district **Revised title:** Adoption of natural farming practices by farmers of Patan district	**Accepted with the following suggestions:** 1. Replace the word 'natural farming' with 'natural farming practices' in the title and modify the objectives accordingly. 2. Replace the word 'derived' with 'perceived'

NTP No.	NTP Title	Suggestions
		in the fourth objective. ***(Action:*** *Research Scientist, Pulse Research Station, SDAU, SK Nagar)*
18.9.3.74	Adoption of Natural Farming by Farmers of Sabarkantha district **Revised title:** Adoption of natural farming practices by farmers of Sabarkantha district	**Accepted with the following suggestions:** 1. Replace the word 'natural farming' with 'natural farming practices' in the title and modify the objectives accordingly. 2. Replace the word 'derived' with 'perceived' in the fourth objective. ***(Action:*** *Senior Scientist & Head, KVK, SDAU, Khedbrahma,)*
18.9.3.75	Adoption of Natural Farming by Farmers of Aravalli district **Revised title:** Adoption of natural farming practices by farmers of Aravalli district	**Accepted with the following suggestions:** 1. Replace the word 'natural farming' with 'natural farming practices' in the title and modify the objectives accordingly. 2. Replace the word 'derived' with 'perceived' in the fourth objective. ***(Action:*** *Principal, Polytechnic in Agriculture, SDAU, Khedbrahma)*
18.9.3.76	Adoption of Natural Farming by Farmers of Kutch district **Revised title:** Adoption of natural farming practices by farmers of Kutch district	**Accepted with the following suggestions:** 1. Replace the word 'natural farming' with 'natural farming practices' in the title and modify the objectives accordingly. 2. Replace the word 'derived' with 'perceived' in the fourth objective. ***(Action:*** *Date palm Research Station, SDAU, Mundra, Kachchh)*
18.9.3.77	Adoption of Natural Farming by Farmers of Gandhinagar district **Revised title:** Adoption of natural farming practices by farmers of Gandhinagar district	**Accepted with the following suggestions:** 1. Replace the word 'natural farming' with 'natural farming practices' in the title and modify the objectives accordingly. 2. Replace the word 'derived' with 'perceived' in the fourth objective. ***(Action:*** *Principal, Coll. of Horticulture, SDAU, Jagudan)*
18.9.3.78	Effect of training course on knowledge gain of dairy farmers in Banaskantha district **Revised title:** Impact of training programmes on knowledge gained by the dairy farmers in Banaskantha district	**Accepted with the following suggestions:** 1. Reframe the title of the study as "Impact of training programmes on knowledge gained by the dairy farmers in Banaskantha district". 2. Include paired t-test analysis in methodology. ***(Action:*** *Senior Scientist & Head, KVK, SDAU, Tharad)*
18.9.3.79	Calf rearing practices followed by farmers of Banaskantha district **Revised title:** Calf rearing practices adopted by farmers of Banaskantha district	**Accepted with the following suggestions:** **1.** Change the title of the study as 'Calf rearing practices adopted by farmers of Banaskantha district'. **2.** Replace the word 'followed' with 'adopted' in the second objective. **3.** Include an additional objective (third objective) on analysing the relationship between the knowledge of calf rearing

NTP No.	NTP Title	Suggestions
		practices and profile of farmers. **4.** Rephrase the third objective (and serial it as the fourth objective) as 'To study the constraints faced by the farmers in calf rearing'. *(**Action:** Professor & Head, Dept. of Animal Science, CPCA, SDAU, Sardarkrushinagar)*
18.9.3.80	Marketing of Indian bean in Sabarkantha district	**Accepted with the following suggestions:** **1.** Delete the words 'and practices' from the first objective of the study. **2.** Add the words 'marketing efficiency' to the second objective. *(**Action:** Professor & Head, Dept. of Agril. Economics, CPCA, SDAU, SKNagar)*
18.9.3.81	Seasonality and market integration of castor seed in Gujarat	**Accepted with the following suggestions:** 1. Include both Engle Granger and Johansen's Cointegration approaches for analysing long-term integration. *(**Action:** Professor & Head, Dept. of Agril. Economics, CPCA, SDAU, SKNagar)*
18.9.3.82	An Analysis of Public and Private Investment in Dairy and Crop Sector in context to Gujarat **Revised title:** Analysis of public and private investments in crop and dairy sectors in Gujarat	**Accepted with the following suggestions:** 1. Reframe the title of the study as 'Analysis of public and private investments in crop and dairy sectors in Gujarat'. *(**Action:** Associate Prof. & Head, College of Agribusiness Management, SDAU, SKNagar)*
18.9.3.83	Statistical analysis on nutritional status and its associated factors among under -five year children in Amirgadh taluka, Banaskantha, Gujarat **Revised title:** Analysis of nutritional status and its associated factors among under-five year children in Amirgadh taluka, Banaskantha, Gujarat	**Accepted with the following suggestions:** 1. Revise the title of the study into 'Analysis of nutritional status and its associated factors among under-five year children in Amirgadh taluka, Banaskantha, Gujarat'. **2.** Remove the word 'under' from the second objective. *(**Action:** Professor & Head, Dept. of Agril. Stat, CPCA, SDAU, Sardarkrushinagar)*
18.9.3.84	Identification of suitable model for prediction of area, production and productivity of mustard (*Brassica Juncea*)in North Gujarat **Revised title:** Comparison of different forecast models for predicting area, production and productivity of mustard in North Gujarat	**Accepted with the following suggestions:** 1. Reframe the title of the study as 'Comparison of different forecast models for predicting area, production and productivity of mustard in North Gujarat'. *(**Action:** Professor & Head, Deptt. of Agril. Stat, CPCA, SDAU, Sardarkrushinagar)*
18.9.3.85	Identification of suitable model for prediction of Price of mustard (*Brassica Juncea*) crop in Banaskantha district **Revised title:** Comparison of different forecast models for predicting mustard prices in	**Accepted with the following suggestions:** 1. Reframe the title of the study as 'Comparison of different forecast models for predicting mustard prices in Banaskantha district'. *(**Action:** Professor & Head, Deptt. of Agril. Stat, CPCA, SDAU, Sardarkrushinagar)*

NTP No.	NTP Title	Suggestions
	Banaskantha district	
18.9.3.86	Estimation of optimum plot size and shape from uniformity trial data of ajwain (*Trachyspermum ammi*) **Revised title:** Estimation of optimum plot size and shape from uniformity trial data of ajwain,	**Accepted with the following suggestions:** 1. Remove the scientific name "*Trachyspermum ammi"* from the title. ***(Action:** Prof. & Head, Department of Social Science, College of Horticulture, Jagudan)*

Proceedings of 18th Meeting of Combined AGRESCO meeting of SAUs and Kamdhenu University (Virtual Mode) (May 04-18, 2022)

PLENARY SESSION

WELCOME SESSION –I

Date: 18/05/2022 **Time: 09.00 hrs onwards**

Welcome address by Chairman	:	Prof. (Dr.) N. K. Gontia, Hon'ble VC, JAU, Junagadh
Co-chairman	:	Dr. K. B. Kathiria, Hon'ble VC, AAU and GOAU, Anand
President	:	Shri Raghavjibhai Patel, Hon'ble Minister, Agriculture, Animal Husbandry and Cow Breeding, Government of Gujarat, Gandhinagar
Rapporteurs	:	Dr. K. B. Parmar, ADR, JAU Dr. S. N. Shah, ADR, AAU Dr. Lalit Mahatma, ADR, NAU Dr. L. D. Parmar, ADR, SDAU
Vote of Thanks	:	Dr. D. R. Mehta, Director of Research, JAU, Junagadh

On the occasion of the plenary session of 18th Combined Meeting of Agricultural Research Council (AGRESCO-2022) of SAUs and KU; Prof. (Dr.) N. K. Gontia, Hon'ble Vice Chancellor, JAU, Junagadh welcome our well-regarded President of this meeting Hon'ble Shri Sh. Raghavjibhai Patel, Minister of Agriculture, Animal Husbandry and Cow Breeding, Government of Gujarat, Gandhinagar; Co-chairmen Dr. K. B. Kathiria, Hon'ble Vice Chancellor, AAU and GOAU, Anand; Dr. Z. P. Patel, Hon'ble Vice Chancellor, NAU, Navsari; Dr. R. M. Chauhan, Hon'ble Vice Chancellor, SDAU, Sardarkrushinagar and Dr. N. H. Kelawala, Hon'ble Vice Chancellor, KU, Gandhinagar. He also welcome to Directors of Research & Dean PGS, Directors of Extension Education, Deans, Directors, ADRs, Conveners, rapporteurs and all the faculty members of various technical sub committees of all the sister universities, learned professors and scientists of SAUs & KU. In his welcome address, he briefed about outcome of results of recommendations and new technical programmes critically discussed and approved in respective sub committees of **18th Combined AGRESCO meeting. Total 21 new varieties comprising, 4 from JAU, 5 from AAU 6 NAU and 6 from SDAU were recommended for approval. Further, 202 technological recommendations for farming communities comprising 34 from JAU, 64 from AAU, 44 from NAU, 59 from SDAU and 1 from KU; 162 for scientific communities comprising 29 from JAU, 71 from AAU, 34 from NAU, 24 from SDAU and 4 from KU were also approved. In addition, 502 new technical programs compring 56 from JAU, 151 from AAU, 116 from NAU, 94 from SDAU and 85 from KU** for solutions of the applied and basic problems of agriculture and allied field were also approved in different sub committees meetings.

Dr. K. B. Kathiria, Hon'ble Vice Chancellor, AAU and GOAU, Anand said that the purpose of today's meeting is very important as it is to finalize all the recommendations and new technical programmes. Gujarat state has performed very well in Agriculture sector for the last few years. All the universities have done very well even after getting divided from a single Gujarat Agricultural University in 2004. This type of the combined meeting is a rare type of event which is followed in only Gujarat among all the SAUs and Kamdhenu University. There

are total **21** varieties in different crops proposed in this Combined Agresco meeting. There were total **364 Recommendations and 502 New Technical Programmes** proposed by four SAUs and Kamdhenu University in direction of solving the problem of farmers. Mango variety developed by AAU is a variety which can be considered at par with leading varieties of mango in Gujarat like Kesar. Ornamental Okra is a very unique type of variety released this year, which is for the first time in the country that an ornamental variety has been developed through distant hybridization in okra, which has a very unique attribute of producing the flowers throughout the year. Similarly, groundnut variety proposed by JAU, Junagadh, being rich in oleic acid is good for human health, cotton variety by JAU, Junagadh; sorghum by NAU, Navsari and bajra, mustard, green gram and wheat by SDAU, SKNagar are newly developed verities from the SAUs of Gujarat. He further added that the varieties in various crops like GCH-4, GCH-7 in castor and GW 496 are more popular in states like Rajasthan, Madhya Pradesh and Rajasthan. He emphasized that there is a need to bring more area under natural farming for its promotion. There are 19 NTPs proposed by four SAUs of Gujarat focusing nano fertilizers. There has been started a portal for breeder seed indent for getting the demand for breeders seed in time. It may help in production of quality foundation seed and certified seed can be provided to farmers. There are many AICRP operational in SAUs of Gujarat and various recommendations have been made for the farmers. He added that it is matter of great pleasure that the FGI award of this year has been awarded to AAU, Anand for working on methylotropic bacteria on 14/05/2022. Urea coded castor seeds is also a good innovative work done at SDAU. Jamnagar Centre of pearl millet of JAU has been adjudged as the best centre. At the last, he expressed his gratitude to all the Scientists, Deans, Directors and researchers for being instrumental in realizing this goal.

Shri. Raghavjibhai Patel, Hon'ble Minister of Agriculture, Animal Husbandry and Cow Breeding, Gujarat State, Gandhinagar highlighted the present scenario of productions of field crops, cash crop, horticultural crops, seed spices, animal husbandry and fisheries in his presedintial address. He also narrated agricultural related government schemes and their contribution in growth and development of agriculture and allied sector in Gujarat. He has appriciated all the scientists and staff of SAUs and KU for development of varieties in different crops, farm implement, generation of production technologies for benefit of farming community of Gujarat, information for scientific community and approval of sizable new technical programme. However, he suggested some points for addressing through R & D on priority basis.

1. Promotion of organic/ natural farming.
2. Sustainable crop production against climate change.
3. Farm mechanization / Automization / drone technologies.
4. Development of tolerant variety against pest-disease, climate by use of biotechnology tools / plant tissue culture.
5. Promotion of soil and water conservation, water harvesting and MIS systems.
6. Enhancement of value addition, storage etc.
7. Increase the availability of improved seeds, bioagent, biorational, quality planting material, simen doses of animal breed, organic inputs for the farmers.
8. Arrange front line demonstartion of newly developed varieties and other technologies for speedy transfer among the farmers.

At last, he also instructed to all staff of SAUs and KU to work better way end team spirit by use of avilable resources for betterment of stakeholders.

At the end of the Session-I, Dr. D. R. Mehta, Director of Research & Dean, PG Studies, JAU, Junagadh proposed vote of thanks. He pays his gratitude for President of the meeting Hon’ble Sh. Raghavjibhai Patel, Minister of Agriculture, GoG, Gandhinagar for sparing his valuable time for the AGRESCO meeting. He thanked all the Vice Chancellors of their support and co-operation for conducting the AGRESCO meeting. He also thankful to all DRs, DEEs, Deans, Conveners of avarious subcommittes and scientists for remaining present and active participations in the AGRESCO.

TECHNICAL SESSION-II

Date: 18/05/2022 **Time: 10.00 hrs onwards**

Chairman	:	Prof. (Dr.) N. K. Gontia, Hon'ble VC, JAU, Junagadh
Co-Chairmen	:	Dr. K. B. Kathiria, Hon'ble VC, AAU & GOAU, Anand Dr. Z. P. Patel, Hon'ble VC, NAU, Navsari Dr. R. M. Chauhan, Hon'ble VC, SDAU, Saradarkrushinagar Dr. N. H. Kelawala, Hon'ble VC, KU, Gandhinagar
Rapporteurs	:	Dr. K. B. Parmar, ADR, JAU Dr. S. N. Shah, ADR, AAU Dr. Lalit Mahatma, ADR, NAU Dr. L. D. Parmar, ADR, SDAU
Vote of Thanks	**:**	Dr. K. B. Parmar, Associate Director of Research, JAU, Junagadh

Following the welcome session, the presentation of proceeding of each sub committees by the respective conveners was made, wherein recommendations and new technical programmes of different sub committees were approved by the house.

Dr. Dr. R. B. Madaria, Convener, Crop Improvement, JAU presented the summary of Crop Improvement AGRESCO sub-committee. Out of the 21 release proposals of improved crop varieties/hybrids, 21 entailing 4, 5, 6 and 6 from JAU, AAU, NAU and SDAU, respectively, were approved. Besides variety released, one recommendation for farming community and two for scientific community from SDAU; one recommendations for scientific community from JAU, were proposed; out of which one recommendation each for farmer and scientific community from SDAU were approved. Total eight new technical programmes were approved.

(**Action:** Concerned Conveners of SAUs)

Dr. R. K. Mathukia, Convener, Crop Production, JAU presented the summary of Crop Production and Natural Resource Management sub-committee. Total 82 and 19 recommendations for farming and scientific community were proposed respectively; out of which 78 and 14 recommendations for farming and scientific community were approved by the house. Total 94 new technical programmes were also approved.

(**Action:** Concerned Conveners of SAUs)

Dr. M. F. Acharya, Convener, Crop Protection, JAU presented the summary of the Plant Protection/Crop Protection subcommittee. He presented that of the 39 and 48 proposals for farming and scientific community respectively; 32 and 48 recommendations for farming and scientific community approved. Total 88 new technical programmes from all SAUs also were also approved.

(**Action:** Concerned Conveners of SAUs)

Dr. D. K. Varu, Convener, Horticulture and Forestry, JAU presented the proceeding of Horticulture and Forestry research sub-committee of SAUs. Out of 47 and 5 proposal for farmer

and scientific respectively, the committee approved 45 recommendations for farmers and all the 5 recommendations for scientific community. Total 70 new technical programmes were also approved.

(**Action:** Concerned Conveners of SAUs)

Dr. V. K. Tiwari, Convener, Agricultural Engineering, JAU presented the recommendations and new technical programmes finalized by Agricultural Engineering and AIT sub-committee. He presented 10 and 7 recommendations for farming community and scientific community, respectively and all were approved. Total 25 new technical programmes from all SAUs were also approved.

(**Action:** Concerned Conveners of SAUs)

Dr. B. D. Savaliya, Convener, Animal Science, JAU presented the summary of Animal Health, Animal Production and Fisheries Science sub-committee. Total 20 recommendations for farming and 39 for scientific community were proposed; out of which, 17 recommendations for farming and 38 for scientific community were approved. Total 82 new technical programmes from all SAUs and Kamdhenu University were also approved.

(**Action:** Concerned Conveners of SAUs)

Dr. S. S. Kapdi, Convener, Dairy Science, JAU, presented the recommendations and new technical programmes finalized by Dairy Science and Food Processing Technology & Bio-energy sub-committee and new technical programmes. He presented 20 recommendations for farming and 11 for scientific community; out of which 19 recommendations for farming and 11 for scientific community were approved. Apart frrm recommendations, 27 new technical programmes were approved by the house.

(**Action:** Concerned Conveners of SAUs)

Dr. H. P. Gajera, Convener, Basic Science, JAU presented the proceeding of Basic Science and Humanity, Plant Physiology, Biochemistry and Biotechnology. One recommendation for farming community from JAU was proposed, which was not approved. Total 24 recommendations for scientific community as well as 27 new technical programmes were proposed and all were approved.

(**Action:** Concerned Conveners of SAUs)

Dr. N. B. Jadav, Convener, Social Science, JAU presented the proceedings of Social Science sub-committee. Total 16 recommendations for the Scientific community/ Policy Makers/ Message for Extension Agencies and 86 new technical programmes were proposed from which 14 scientific recommendations and 81 new technical programmes were approved.

(**Action:** Concerned Conveners of SAUs)

CONCLUDING REMARKS:

Dr. K. B. Kathiria, Hon'ble Vice Chancellor, AAU & GOAU, Anand emphasized for multi-disciplinary research that the NTPs to be formulated as per the needs of farmers, small entrepreneur and multidisciplinary through brain storming. He also mentioned that patent and out comes should be taken into consideration while formulating new experiments. He suggested to strengthen the Basic Science considering the physiological aspect of Germplasm, chemical, biochemical and quality parameters. He congratulated to team of JAU for organizing the 18th Combined AGRESCO through virtual mode.

Dr. Z. P. Patel, Hon'ble Vice Chancellor, NAU, Navsari in his speech expressed his view that farmers adoption study on recommendations should be taken up by social science group. He also appreciated all the scientists for their commendable work during the entire programme of 18th AGRESCO.

Dr. N. H. Kelawala, Hon'ble Vice Chancellor, Kamdhenu University, Gandhinagar in his address appreciated the efforts of scientific faculty for bringing recommendations to the farming and scientific communities and also suggested to churn the new technical programmes. He also mentioned the vital role of Animal Husbandry, Fisheries science and dairy technology and its prospects.

Prof. (Dr.) N. K. Gontia, Hon. Vice Chancellor, JAU, Junagadh expressed thanks to all the Hon. Vice chancellors for the cooperation for the online mode of presentation and timely completion of all the subcommittee meetings and finally the plenary session of 18th Combined AGRESCO.

The meeting ended with vote of thanks to the Chair and the esteemed members of the 18th Combined AGRESCO of SAUs and Kamdhenu University by Dr. K. B. Parmar, Associate Director of Research (Research), JAU, Junagadh.

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18th Combined AGRESCO Meeting of SAUs and Kamdhenu University of Gujarat

Organized through virtual mode during May 04-18, 2022

Summary of the approved Recommendations and New Technological Programmes

Name of University	Crop Improvement	Crop Production/ Natural Resource Management	Plant Protection/	Horticulture & Forestry	Agriculture Engineering and AIT	Animal Health, Animal Prod. and Fisheries Science	Dairy Science and FPT&BE	Basic Science & Humanities	Social Science	Total
Varieties and Farmer Recommendations-										
JAU	04*	14	04	03	07	06	-	00	-	**04*+34**
AAU	05*	22	14	09	00	03	16	-	-	**05*+64**
NAU	06*	16	04	16	02	05	01	-	-	**06*+44**
SDAU	06*+01	26	10	17	01	03	01	-	-	**06*+59**
KU	-	-	-	-	-	00	01	-	-	**01**
Total	**21*+01**	**78**	**32**	**45**	**10**	**17**	**19**	**00**		**21*+202**
Scientific Recommendations										
JAU	00	04	05	00	04	08	-	06	02	**29**
AAU	00	08	27	00	02	15	08	07	04	**71**
NAU	00	02	08	04	00	10	00	05	05	**34**
SDAU	01	00	08	01	01	04	00	06	03	**24**
KU	-	-	-	-	-	01	03	-	-	**04**
Total	**01**	**14**	**48**	**05**	**07**	**38**	**11**	**24**	**14**	**162**
New Technical Programmes										
JAU	01	13	15	04	06	06	-	04	07	**56**
AAU	05	30	51	09	09	00	08	03	36	**151**
NAU	00	22	09	49	07	00	03	08	18	**116**
SDAU	02	29	13	08	03	01	06	12	20	**94**
KU	-	-	-	-	-	75	10	-	-	**85**
Total	**08**	**94**	**88**	**70**	**25**	**82**	**27**	**27**	**81**	**502**

* Indicate No. of crop varieties released