STATUS REPORT

2012-2013

OFFICE

RESEARCH SCIENTIST (HORT.)
AGRICULTURAL RESEARCH STATION (FRUIT CROPS)
JUNAGADH AGRICULTURAL UNIVERSITY
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Agricultural Research Station (Fruit Crops)
Junagadh Agricultural University
Mahuva, Dist..Bhavnagar
364 290, Gujarat State

INTRODUCTION:

This farm was started in 1852 by His Highness Late Shree Bhavsinhiji of Bhavnagar State having area of 1529 acre. Thus, this farm may be one of the biggest and the oldest farm of our state. In 1947 this farm was handed over to Agriculture Department, Government of Gujarat for extension and nursery activities to bring more and more coastal area under coconut plantation through supplying the best selected coconut seedlings to the growers. In 1972, this farm was transferred to Gujarat Agricultural University to conduct the research activities on coconut and other fruit crop. From 2004 and onwards, this farm belongs to Junagadh Agricultural University.

Mandate:

- To evolve high yielding variety of coconut.
- To find out suitable plant protection measure against coconut pest and disease.
- To determine most suitable and effective, eco friendly and low cost agronomical practices for the production of coconut and fruit crop.
- To introduce new fruit and plantation crops for the region.
- To supply the true to type planting materials of coconut and fruit crops to the farmers.

Objectives:

- Collection evaluation and maintenance of indigenous and exotic germplasm of coconut and fruit crops.
- To generate germplasm for developing biotic and abiotic stress resistant high yielding varieties of plantation and fruit crops.
- To test and develop new production technology for plantation and fruit crop.
- To produce and distribute seedling of coconut of varieties D x T (Mahuva) among the farmers.

- **INFRASTRUCTURE:**

Total area of farm	**:**	451 ha
Farm area shaded under Malan reservoir water	**:**	125 ha
Farm area under Horticultural crops	**:**	110 ha
Area under Agricultural Crops	**:**	15 ha
Area under waste land (Problematic soil)	**:**	100 ha
Area under fisheries research	**:**	75 ha
Newly developed soil under cultivation	**:**	10 ha
Area under structure/buildings/pond	**:**	16 ha
Irrigation Sources**:** Tube well –18, Nicol & Malan bandhara Channels		

*** COMPARATIVE EVALUATION OF FARM CONDITIONS:**

Sr. No.	**Components**	**Farm Condition**	
		Before 20 years	**At Present (2010-11)**
1	Name of the Agro-climatic Zone	South Saurashtra Agro-climatic zone – VII	South Saurashtra Agro-climatic zone – VII
2	Rainfall	The annual rainfall of this region for the last five years with an average precipitation of 600-800 mm.	The annual rainfall of this region for the last five years from with an average precipitation of 400-500 mm.

3	Soil	The soil of the farm is Medium black to sandy loam in texture, poor in organic carbon, medium in available potash. Most of the micro-nutrients are up to sufficient level in the soil and soil is highly fertile and productive.	The soil of the farm is Medium black to sandy loam in texture, poor in organic carbon, medium in available potash. Most of the micro-nutrients are not up to sufficient level in the soil and soil became saline with poor drainage, less fertile and low productive.
4	Water	Water table was very high and irrigation facility of good quality water was available through out the year as Malan river was running through the year and well water was also of good quality.	Irrigation facility of good quality water is dependent on rain fall but not available through out the year as the flow of Malan river is restricted and well water became salty because of ingress of sea water.
5	Well depth	Water level at 12 m.	Water level at 75 m.
6	Temperature	Sub tropical with humid climate, mean monthly minimum temperature varying from 15 ^{0} C to 22 ^{0} C and maximum temperature varies from 23 ^{0} C to 32 ^{0} C.	Sub tropical with humid climate, mean monthly minimum temperature varying from 15 ^{0} C to 22 ^{0} C and maximum temperature varies from 23 ^{0} C to 37 ^{0} C.
7	Geographical details		
	Climate	Subtropical,	Subtropical,
	Latitude	21.5' N	21.5' N
	Longitude	71.5' E	71.5' E
	Altitude	24 mt. MSL	24 mt. MSL

8	Soil properties	Medium black to sandy loam, highly fertile & productive, responsive to fertilizers and not completely saline.	Medium black to sandy loam, poor in fertility & productivity, low responsive to fertilizers and most of the land under cultivation became saline.
9	Fruit crops	Horticultural crops like Mango, Coconut, Areca nut, Banana and sapota were cultivated.	Horticultural crops like Mango, Areca nut and Banana destroyed totally; only coconut and sapota which are moderately tolerant against salinity are existing with poor bearing and inferior fruit quality.

*** REASONS FOR DEGRADATION OF SOIL:**

The object to establish this farm was to bring fellow land of coastal area under horticulture crops like mango, coconut arecanut chiku, banana, etc. This farm also situated on bank of Malan river, and there was ample source of sweet irrigation water at that time and because of that large area of farm, it was covered under coconut, mango, chiku, arecanut etc crops. Equable humid climate of coastal area and evergreen with many horticultural orchards in the city and surrounding area this Mahuva city was well known as a Kashmir of Saurashtra. This status was maintained till 1975 and during this time, two dames were constructed on Malan river. But insufficient and uneven rainfall stopped the flow of Malan river which was running throughout the year. This has resulted in acute shortage of irrigation water. As farmers lifted more ground water for irrigation, ultimately resulted in brackish water and now it has became totally saline.

Thus, irrigation water of this area is totally saline (5-12 Ec) which resulted great setback on development and yield potentiality of orchard. Crops like mango and arecanut are totally destroyed; only coconut and sapota which are moderately tolerant against salinity are existing with poor bearing and inferior fruit quality. The nearest city and railway station is Mahuva 3 km away and nearest district place and aerodrome is Bhavnagar, 100km away from mahuva.

*** IMPACT OF NICOL and MALAN BANDHARA/RESERVOIR ON FARM**

Government of Gujarat, Salinity Control Board, Gandhinagar in the year 2001-2002 constructed Nicol Bandhara (Reservoir constructed by restricting water flow of river to sea) and the reservoir water made available to the farm for irrigation purpose by means of under ground R.C.C. pipe lines of 700 meter length. In the same way in year 2009-10, Government of Gujarat, Salinity Control Board, Gandhinagar constructed Malan Bandhara (Reservoir constructed by restricting water flow of river to sea). This led to increase the irrigation water availability/sources for farm and efforts are under progress to utilize this water for irrigation purpose when ever it is available. Because of this, the water availability is up to February to March, when these reservoir are over flowed (sufficient rain fall). But in case of insufficient rainfall, the water availability is up to December. This led to reduction in mortality of existing palm up to ten per cent and increased the production and improved nut quality; ultimately resulted in annual farm income which is generated through auction of coconut palms of our station. Irrigation facility also increased the nursery production of quality seedlings of coconut. This has also benefited the on going research work at this station as planting of different fruit crops could be possible by utililizing the bandhara water in proper way.

* **Research Recommendations for the Farmers:**

AGRONOMY:

- To get vigorous coconut seedling growth, the farmers of South Saurashtra regions are advised to apply 90 kg Nitrogen per hectare in form of urea and 90 kg nitrogen per hectare in form of castor cake in coconut nursery during fifth month after nut sowing (1993).
- After 1 month opening of the inflorescence in cultivar West coast Tall four sprays of 20 ppm 2 – 4 D at weekly interval are recommended to minimised the nut shedding (1995).
- Coconut growers of South Saurashtra are advised to apply 47 liters Water / palm / day in summer (March to June) and 30 liters water / palm / day during winter (October to February) in adult plantation (40 to 50 Years Old) of West coast Tall variety through four droppers / palm at one meter distance from trunk, saves 47 % of water (1996).
- Coconut growers of Saurashtra region are advised to apply irrigation 22 days interval during winter and summer 15 days interval to the 40-50 years old coconut orchard of virility W.C.T. having basin size 4x4 sq. meter or in 2.50 meter radius circumferences. The machining was not found beneficial in this type of old plantation (1997).
- Sapota growers of South Saurashtra regions are advised to apply 72 liter water / tree / day in summer (March to June) and 52 liter water / tree / day in winter (October to February) in adult sapota tree (15 to 20 years old) through keeping four drippers / tree as it is saving 32.6 % of water without any statistically reduction in yield (2007).

- The coconut growing farmers of South Saurashtra Agro-climatic region are advised to apply half dose of recommended chemical fertilizers i.e. N.P.K. 200-160-750 g per palm per year along with 5 kg castor cake in two equal splits (June & October) to coconut cultivar West Coast Tall to increase the nut yield with improvement in nut quality and soil fertility (2009).
- The nursery growers of south Saurashtra agro climatic zone producing coconut seedlings are advised to grow coconut seed nut in month of june under low cost net house (50 % shed net) to get higher quality seedling and net return as compared to open field (2010).
- Onion growers of South Saurashtra Agro climatic zone having sodic soil and brackish irrigation water condition are advised to apply Gypsum 5 t / ha with 50 % recommended dose of chemical fertilizer (N-P-K 37.5-30-25 kg/ha) and Neem Cake 900 kg /ha to get maximum yield and net return of onion cv. Talaja Red (2010).
- Vegetable growers of south Saurashtra Agro Climatic Zone, growing Bottle gourd under sodic soil and brakish irrigation water condition are advised to apply FYM 5 t/ha/year along with 50 % Reccomanded dose of chemical fertilizer (NPK@50,25,25 kg/ha)and Poultry Manure 3.34 t/ha to get maximum yield and net return of Bottle gourd cv. Pusa Naveen (2011).
- Sapota growers of south Saurashtra Agro Climatic Zone, are advised to apply half the recommended dose of nitrogen fertilizer (NPK @ 450, 450, 450 g/plant/year) along with 11.25 kg castor cake and 100 g Azatobacter per plant per year to get higher fruit yield and net return of cv. Kalipati (2011).

- The coconut growing farmers of South Saurashtra Agro-climatic region are advised to apply full recommended dose of chemical fertilizer (1500, 750, 1500 NPK @ g/palm/year) and 400 ml of nutrient solution (urea and murate of potash each @10 g, zinc sulphate @ 5 g, Ferrous sulphate, magnesium sulphate, Manganese sulphate and Borex each @ 2 g, Copper sulphate @1 g, Sodium molybdate and citric acid each @ 10 mg and NAA 460 mg (Planofix 10 ml) dissolved in one liter of water) through root feeding to get higher nut yield and net return in coconut cv. D x T (mahuva) (2011).

PLANT BREEDING:

- Farmers of South Saurashtra region are advised to grow Gudajali (Dwarf green) variety of coconut for drinking water purpose (1982).
- Hybrid variety (D x T Mahuva) of coconut is released for coconut growers of Gujarat State (1995).
- Hybrid variety (T x D Mahuva) of coconut is released for coconut growers of Gujarat State (2006).

PLANT PROTECTION:

- For effective control of bud rot of coconut, spray Bordeux mixture 4:4::50 or mancozeb 0.2% in 5 liters of water / palm, first spray is to be carried out before onset of monsoon and 2nd and 3rd spray at the in furred of two months to be applied at one months interval after 1st spray and remaining 3 sprays month interval (1984).
- For effective mechanical control of rat in coconut orchard use galvanized or aluminum sheet of 30 cm. width (20 gauge) belt / bell shape to fix on coconut trunk at 2.5 meter height (1985).
- For effective chemical control or rat in coconut orchard apply bromodeolone 0.005% candy (50 gm/tree) or 2% zinc phosphide (1985).

- For effective control of black headed caterpillar in coconut palm of below and above 15 years age apply, monocrotophose 40% @ 5ml /palm and 10 ml /palm with equal quantity of water, respectively by root absorption method (1986).
- For the control of black headed caterpillar in coconut, spray 0.7% endosulphan or 0.07% phosalone of 0.05% monocroptophose (1986).
- For effective control of scale insect to apply phosphamidon 0.03% or Monocrotophose 0.05% by foliar spray or monocrotophose 10ml/palm with equal quantity of water through root absorption (1996).
- For effective and economical management of eriophyid mite in coconut, root feeding application of azadiracatin 2.5 % @ 15 ml with equal water quantity per palm at two months interval throughout the year is recommended under south saurashtra agro climatic zone (2010).
- For the effective and economical management of Eriophyid mite in hybrid coconut (DxT Mahuva), application of half recommended dose of chemical fertilizer (NPK- 0.750, 0.375, 0.750 kg/palm/year) with 50 kg FYM, 1.5 kg gypsum and 0.075 kg borax per palm per year in June and remaining half dose of recommended chemical fertilizer (NPK-0.750, 0.375, 0.750 kg/palm/year) in October, is recommended under south Saurashtra agro climatic zone (2011).

AWARD RECIEVED

- This station won the Sardar Patel Research Award for the development and release of Coconut Hybrid D x T (Mahuva) variety in 1997.

* **Research Recommendations for Scientific Community:**

❖ From the survey of five districts of South Saurashtra and South Gujarat region, it was observed that only 14.29 % farmers are growing hybrid coconut varieties (D x T and T x D) and 63.81 % farmers preferred seedlings from nursery of university as well as horticulture departments of state Government. While, 38.10 % farmers are growing coconut as per recommended spacing and 50 % farmers follow recommended dose of fertilizers. It was also observed that only 10 % farmers adopt the recommended irrigation practices and none of the farmers is using drip irrigation and plant protection measures in their orchards. Therefore, it is suggested that the extension functionaries are required to motivate the farmers to adopt recommended cultivation practices for coconut (2011).

❖ **Transfer of technologies**

The technologies developed at this research station is being disseminated to the various extension agencies, N.G.O's, farmers and students by Organizing farmers day / agril. fair at the station, by participating in the ' Krushi Mela ', farmers days and Agril. Exhibition organized by University or other agencies, educating students during Kendra Nivas and to farmers during visit of this station. Through TV, Radio broadcasting, literature, press note, personnel / spot field diagnosis and letter etc the extension activities is carried out.

ON GOING EXPERIMENTS (20012-13)

1) Research in fruit crops – (B.H.-5014):

Horticulture:

1: Integrated nutrient Management in Mango cv. Jamadar

Bio control:

1: Study on seasonal activity of *Opisina arenosella* W. and its parasites.
2: Mass rearing and field release of *Goniozus nephantidis*.
3: Mass rearing and field release of *Brachymeria Spp*.

2) Scheme Center of Excellence for Soil & Water Management Technology (B.H.-10101/04):

1: Effect of soil amendment with organic materials on yield and quality of Tomato (Cv. Junagadh Tomato-3) under sodic soil & brackish water condition.

3) Scheme Establishment of New Research Center on Onion Crops Sub-Center-Mahuva (B.H. 10931):

1: Large Scale Varietal Trial on White Onion.
2: Large Scale Varietal Trial on Red and Dark Red Onion.
3: Large Scale Varietal Trial on Garlic.

4) Strengthening of research in Plantation and Fruit Crops at ARS, Mahuva (B. H. 10586):

1: Testing of seasonal forage / fodder crop as an intercrop in coconut orchard Cv. T x D.
2: Testing of forage / fodder crop as an intercrop in coconut orchard Cv. T x D.
3: Intercropping of spice / vegetable crops in coconut plantation Cv. T x D.
4: Effect of green manuring on yield of coconut cv. T x D and soil properties.
5: Effect of different levels of soil moisture regimes on yield of coconut cv. T x D.

Future Thrust

- Land development activity will be on priority by removing babool kant in about 30 ha. area of the land using machineries to bring fellow land under cultivation.
- Rain Water Harvesting by making farm pond/ small check dam and canal construction.
- Establishment of field gene bank of indigeneous/exotic germplasm of plantation and fruit crops for future breeding.
- Introduction of new fruit/plantation crop adapted to problematic land. Screening of available germplasm of plantation and fruit crops like Coconut, Aracanut, Mango, Sapota, Guava and Ber for problematic land.
- Development of model for water harvesting, organic farming and reclamation of the problematic soil.
- To develop sustainable and low cost Integrated Pest, Disease and Nutrient management model for plantation and fruit crops.
- To establish processing and value addition unit.
- To find out irrigation technique and methodology for use of saline water in plantation and fruit crops without affecting the yield.
- Strengthening of nursery activities and supply of good quality planting materials.
- Till date farm has near about 131 ha. of problematic soil and priority is given to reclaim the same using appropriate measures in the next five years.
- Planting of mango and coconut will be done in 20 ha. land.

Obstacles:

Low man power, Saline Soil and Water and Problems of wild animals are the major problems.

ON GOING RESEARCH PROJECTS:

At present there is eight research projects are being implemented as main centre, with that one schemes on Onion as a sub research centre for testing of different varieties in multi location trial centre. Apart from this, two projects of RKVY are also approved and implemented at this station. The details of the research projects are as under.

DETAILS OF ONGOING RESEARCH PROJECTS (2011-12):

Sr. No.	Project Name	B.H.	Starting Year	Objectives and total No. of Experiment
1	Research in Fruit Crops (Non Plan)	5014	1985	- To find out most suitable and low cost production technology in fruit crops. **4**
2	Strengthening of Agro meteorology at JAU (Sub Center) (Plan)	10907	1999	- Establishment of Weather Laboratory at Coastal area for recording weather parameters.
3	Establishment of new centre on Onion Crop (Plan)	10931	2001	- To find out appropriate low cost production technology for onion. Varietal testing for onion and garlic. **3**
4	Centre of excellence for soil and Water Mgt. technology (Sub Centre) (Plan)	10101-04	2005-06	- To determine most effective and low cost water harvesting and irrigation system. **1**
5	Mega Seed Production	18804-03	2006-07	- Production of good quality planting materials and supply to the growers.
6	Strengthening of research in Plantation and Fruit Crops. (Plan)	10586	2008-09	- To find out suitable inter crop for coconut, Introduction of new fruit crops, in situ collection and conservation of Fruit/plantation crops Germplasm.**6**
7	Establishment of the Elite Seed Farm for Coconut D x T (M) Seed Nut Production. (Plan)	18247-14	2010-11	- To produce large scale D x T seed nut and seedlings of coconut and supply to the growers.

8	Smart Farming For Increasing Agricultural Production In Sodic Soils of Coastal Area of Saurashtra. (Plan)	18247-13	2010-11	- To test FarmLinc, Aqua Phyd and AEM-1 product and to develop/demonstrate remote monitoring and control of farm resources.
9	Agro Based I.T.I. for Bhavnagar District. (Plan)	10116-00	2011-12	- Training to farmers for use of micro irrigation system and storage and value addition of Onion.
10	Establishment of Aqua Based Research and Training centre in coastal area of Saurashtra. (Plan)	10016-00	2011-12	- Research and Training on Fisheries.

Seed /Quality Seedling Production (2006-07 to 2010-11)

Sr. No.	Name of Crop/Varieties	2007-08	2008-09	2009-10	2010-11	2011-12
1	**Groundnut (kg)**					
	1) G.G.2 (Breed.)	-	-	-	-	-
	2) G.G.7 (Breed.)	-	-	-	-	-
	3)GAUG.10 (Br.)	-	-	-	-	-
	4) G.G.20 (Gen.)	-	-	-	4166	2410
2	**Wheat (kg)**					
	Lok-1 (General)	-	-	-	11800	4990
3	**Coconut Seed nut (No.)**					
	1) Dwarf Green					
	2) D x T (M.)					
	3) Others cv.					
4	**Coconut Seedling (No.)**					
	1) Dwarf Green	6235	18000	3600	5200	4224
	2) D x T (M)	3000	5400	3914	3340	1238
	3) Others cv.	3200	4500	4194	3000	2392

Projected Seed/Quality seedling Production (2012-13 to 2017-18)

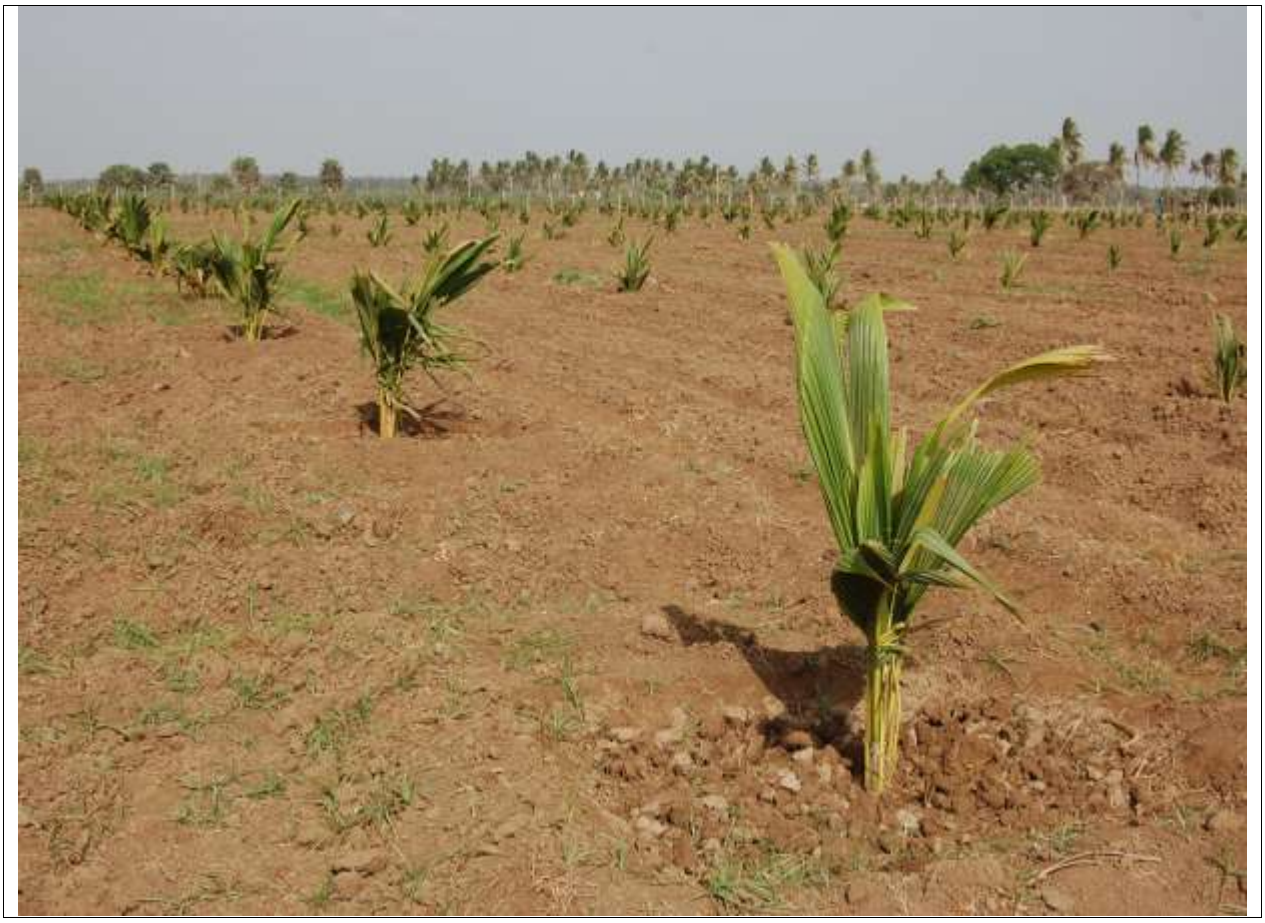
Ten per cent increase in each type coconut seed nut/seedlings production is estimated for each consecutive year, considering previous year as the base for next five year. It will be need based for other field crops.

Significant Achievements: year 2010-2012.

1: Establishment of Elite Seed Farm:

To fulfill the demand of hybrid coconut a project Under RKVY 2009-10, "Establishment of Elite Seed Farm for Coconut D x T (Mahuva) seed nut Production" for large scale production of D x T (Mahuva) seed nut and seedlings successfully established at this station. Under this project total 1570 plants of coconut cv. Dwarf Green as female and 700 plants of coconut cv. West Coast Tall as Male has been planted during July-2011 and protection has been done by means of cement pole, barbed wire and galvanized iron wire chain link. It is estimated that this farm will produce 50,000 hybrid nuts per year from year 2016 and onwards.

Planting of Male and Female Coconut Palm in Elite Farm:



2: Smart Farming Project:

A project under RKVY-2009-10 “Smart Farming for Increasing Agricultural Production in Sodic soils of Coastal area of Saurashtra” is implemented at this station during 2010. Major activities of the Project are as under.

i. To measure reduction in soil EC and effects on soil pH.
ii. To demonstrate resource savings, that is water, energy, and labour.
iii. To assess Techno-Economic feasibility of the developed technology.
iv. To demonstrate and disseminate the technology among the farmers Preferably using indigenous components.
v. To develop an innovative, integrated, and affordable solution that will Allow remotely monitoring, managing and controlling resources from Farms anywhere, anytime.

Brief note on smart farming:

Smart farming is a unique project of its type as it is first time introduced in India, particularly by Junagadh Agricultural University at Mahuva. The basic objective of the project is reclamation of saline soil and use of automation in agriculture that ultimately serves to the farming community. Under smart farming, ground nut and cotton crop tested in summer and kharif of 2011, respectively and groundnut was also tested using drip irrigation during summer 2012 and cotton will be tested during kharif 2012. Apart from this field crops, horticultural crops like sapota and coconut planted in kharif 2011 and other crops will be tested in saline soil using the reclamation measures. Drip irrigation system was installed in total 20 ha. of land for field crop and automization will be done.

Tower with PTZ camera, Monitoring unit and Data Logger for *Wireless Sensors, Wi-Fi Internet, etc.*

Wireless Sensor Module for Soil Moisture & Temp Sensors

Office at the Farm Site

Field and Horticultural Crops under Smart Farming

Sapota Kharif 2011

Coconut Kharif 2011

Cotton Kharif 2011

Groundnut Summer 2012

3: Establishment of Aqua Based Research and Training centre in

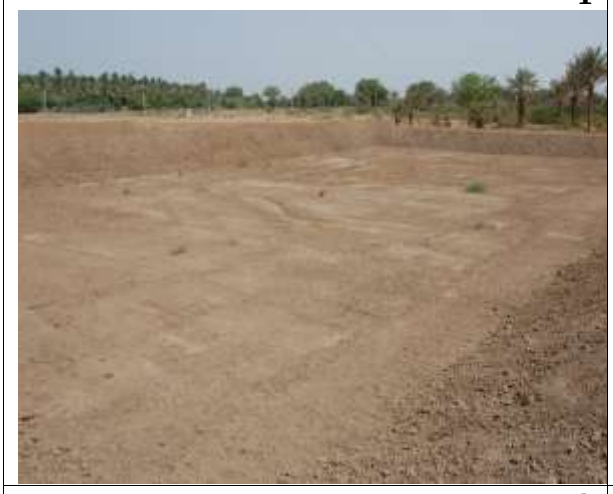
coastal area of Saurashtra.

A new fisheries scheme entitled "Fisheries Research and Training Centre in coastal Saurashtra at Mahuva" B.H. 10016 was approved by Govt. of Gujarat during year 2011-12. Total fifty ha. of land was allotted for this scheme in which two reservoirs and four brackish water fish and shellfish culture ponds are made.

The objective of this project is to conduct research on freshwater as well as brackish water aquaculture aspects and impart training to the local interested fishermen community and private entrepreneurs. Research on aqua-farming and training will be useful for generating employment opportunities in this coastal area.

Fish and shellfish culture pond

1



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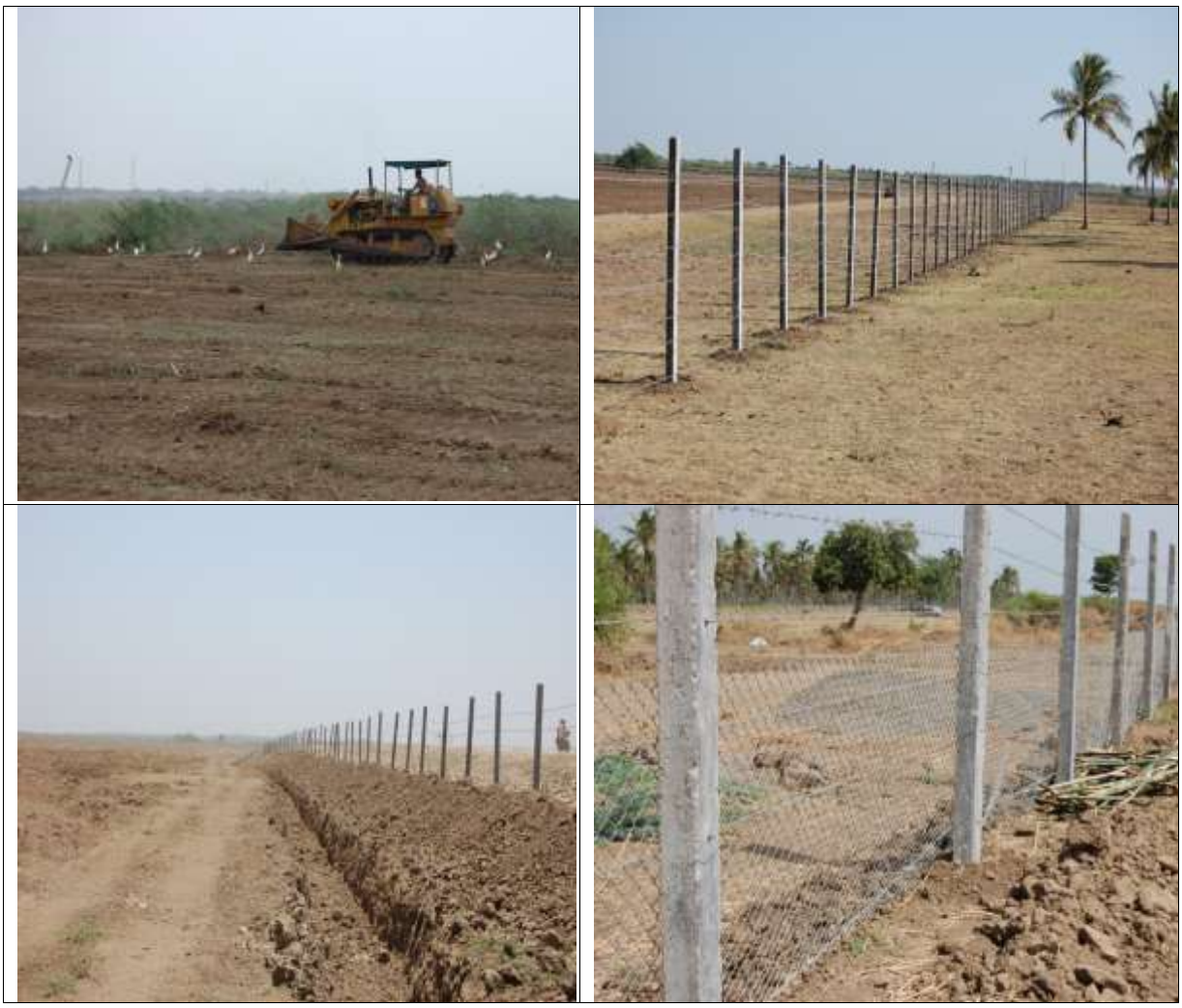
3

4

4: Farm Development and Farm Protection:

Land Development activity was started from year 2009 and the aim was to bring out the waste land under cultivation. Total 125 ha. of land was made favorable for cultivation by removing babool kant and leveled using dodger and other machineries. Along with this, farm protection activity started and all opened area was protected by means of digging an open canal, cement pole, barbed wire and galvanized iron chain link to avoid problems of wild animals. Near about 6 km boundary area protection has been done and remaining near about 6 km boundary area protection will be done as early as possible.

Farm Development Activities



5: Strengthening of Irrigation facilities:

As this centre is mainly working on plantation crop like coconut and other horticultural crops like mango and sapota, “irrigation facilities through out the year” is the pre requisite for establishment of new planting and maintenance of existing old plantation. Because of Nikol and Malan bandhara (reservoir), there is increase in water availability surroundings to the farm. Hence intensive efforts have been made to utilize this water for irrigation more conveniently. After doing preliminary survey, some points are identified which will supply irrigation water by lifting through out the year from the reservoir water depending on rain fall. Construction of canal, sump and near about 1000 m network of pipe line was planned and being used to get irrigation water throughout the year easily, economically and permanently. Apart from this, care has been taken for water conservation and water harvesting by making farm pond.

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Strengthening of irrigation by farm pond, canal, sump and lift irrigation.

Agricultural Research Station (Fruit Crops)
JAU, Mahuva, Dist. Bhavnagar.

Office Staff Position as on 01-07-2012

Sr. No.	Name of Post Sanctioned	No. of Post Sanctioned	No. of Post Filled	No. of Post Vaccant
B.H. : 5014 Research in Fruit Crops (Non Plan)				
1	Assoc. Res. Sci.	1	0	1
2	Asstt. Res. Sci.	1	0	1
3	Agril. Officer	3	1	2
4	Agril. Supervisor	2	0	2
5	Agril. Assistant	6	4	2
6	Head Clerk	1	0	1
7	Senior Clerk	1	0	1
8	Junior Clerk	2	2	0
9	Tractor Driver	2	1	1
10	Peon	1	1	0
11	Mali/Watch man	2	0	2
12	Untrained worker	1	0	1
13	Guard	3	2	1
14	Farm Labour	8	3	5
15	Khet Majdoor	77	40	37
	Total	**111**	**54**	**57**
B.H. : 10586 Strengthening of Research in Plantation and Fruit crops (Plan)				
1	Research Scientist	1	1	0
2	Asstt. Res. Sci.	4	3	1
3	Agril. Officer	3	2+1*	0
4	Agril. Assistant	1	1	0
5	Mali and Peon(2+1)	To be filled by out sourcing		
	Total	**9**	**8**	**1**

* Officer working in other office

Financial Requirement and Farm Development Activity

Sr. No.	Details of work to be done	Area/No.	Approx. Cost (Rs. In Lakhs)

1	Land cleaning/development activity by removal of babool kant to bring out fellow land under cultivation.	**30 ha.**	**5.00**
2	Land leveling and grading of opened land to make 5 ha. Plots suitable for cultivation.	**80 ha.**	**10.00**
3	Reclamation of problematic soil (sodic/saline, fellow, sticky soil).	**131 ha.**	**30.00**
4	Development of irrigation facilities i.e. pipe lines, electric motor, construction of sump, canal, pond etc.	**200 ha.**	**50.00**
5	Construction of approach roads with in different farm area.	**200 ha.**	**20.00**
6	Farm boundary/farm protection work using cement pole, barbed wire and galvanized chain link fencing.	**200 ha.**	**50.00**
7	**Agricultural Equipments/Implements**		
	1) Tractor 55 H.P.	**2.00**	**15.00**
	2) Four wheel trailer	**3.00**	**6.00**
8	**Civil work/Construction**		
	1) Implement Shed (Size: 50 x 20 f.)	**1**	**10.00**
	2) Rat proof store (Size: 50 x 20 f.)	**1**	**20.00**
	3) Tractor/vehicle shed (Size: 50 x 10 f.)	**1**	**5.00**
9	**Vehicle**		
	1) Four wheeler	**1**	**7.00**
	2) Two wheeler	**1**	**0.60**

Agricultural Research Station (Fruit Crops)
Junagadh Agricultural University, Mahuva, Dist. Bhavnagar.

Statement showing Expenditure (Rs.) of last five years (2007-08 to 2011-12)

Sr. No.	Year	Budget Head										Total (Rs.)
		5014	5002	10931	10101-04	18804-03	10586	9510-J13	18004-10	10116	10016	
1	2007-08	9351676/	1281488/	264869/	431857/	190064/	-	5206181/-	-	-	-	16726135/
2	2008-09	9597370/	1730638/	369931/	818566/	27337/	3705345/	152425/-	-	-	-	16201612/
3	2009-10	11044007/	1694226/	259987/	262953/	231218/	3334652/	-	-	-	-	16827043/
4	2010-11	14200328/	2616557/	298608/	349615/	347273/	2762924/	-	-	-	-	20575305/
5	2011-12	13806987/	1933773/	295212/	274053/	256236/	6471014/	1640000/	1376631/	199901/	1378362/	27632169/

Statement showing Income (Rs.) of last five years (2007-08 to 2011-12)

Sr. No.	Year	Budget Head										Total (Rs.)
		5014	5002	10931	10101-04	18804-03	10586	9510-J13	18004-10	10116	10016	
1	2007-08	2022067-	8556/-	4883/-	1104/-	33385/-	-	-	-	-	-	2069995/-
2	2008-09	1061455/-	14200/-	3989/-	2598/-	605144/-	2850/-	797864/-	-	-	-	2488100/-
3	2009-10	761225/-	44471/-	6311/-	1075/-	312609/-	2985/-	254000/-	-	-	-	1382676/-
4	2010-11	1540486/-	36483/-	7435/-	4369/	195809/-	2118/-	757500/-	-	-	-	2544200/-
5	2011-12	921848/	43075/	7206/	4166/	669717/	1400/	1723456/	00/00	00/00	00/00	3370860/-

Note: Income and Expenditure are up to “March End” for the respective year.

ACHIEVEMENTS:

VARIETIES RELEASED/RECOMMENDED and IRRIGATION CANAL CONSTRUCTION

DWARF GREEN 1982

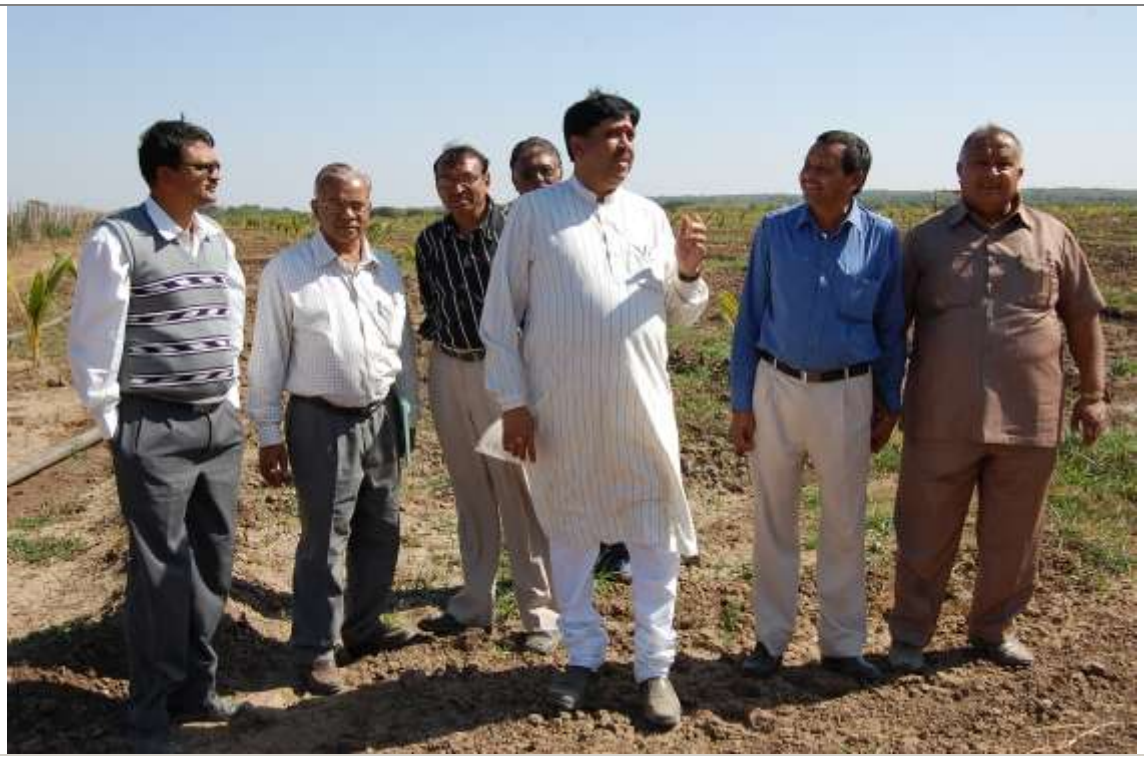
D X T (MAHUVA) 1995

T X D (MAHUVA) 2006

NICOL BANDHARA CANAL 2001

Significant Events

Visit of Agri. Minister at ARS, Mahuva



Visit of Vice Chancellor at ARS, Mahuva

Farmers Training, ARS, Talaja

Farmers Training, ARS, Mahuva