Recommendations or technology developed (2004 to 2025)

Sr. No.	Details of recommendations/Technology developed	Year
Fruit Crops		
Mango		
1	Nurseryman of Gujarat state interested to prepare mango grafts are advised to use the stone of variety Kesar as a root stock for vigorous growth and better survival against salt stress up to EC 2.0 dSm^{-1} of water.	2009
2	*Scientists are advised to keep freshly harvested mature mango fruits cv. Kesar in a small cool chamber at 14^0C with 90 % R.H. to maintain the fruit quality up to 25 days.	2009
3	It is recommended that the freshly harvested mature mango fruits cv. Kesar should be treated with Ethrel @ 750 mg /l of water for 5 minutes and kept it room temperature to enhance the ripening and get maximum ripened and marketable fruits at 9^{th} day.	2010
4	***Effects of climate change on flowering and yield of mango cv. Kesar** It is recommended to scientific community that the climatic parameters like temperature, humidity, rainfall, bright sun shine hours and wind velocity influenced the flowering, fruit setting, fruit dropping, number of fruit per plant and fruit yield. Higher day temperature with lower night temperature as well as more fluctuation in day & night temperature disturb the flowering, pollination and fruit setting process. Similarly, higher humidity, dew, late rain or off seasonal rain during flowering also affects adversely. Mango requires 25-30 ^{0}C day temperature & 15-18 ^{0}C night temperature, 40-45% humidity, no dew formation, lower late rain (September), higher sun shine hours (8-9 hrs.) during floral bud initiation, flowering and fruit setting.	2017
5	***Estimation of effect of growing degree days (GDD) on phenology, flowering and yield on different mango varieties under Saurashtra Agro-climatic condition** It is observed that the growing degree days (GDD) have direct influence on BDS, flowering, fruit set and various fruit development stages, but not for the physical characters of fruits. The GDD requirements of different varieties were found unique and a mango variety Kesar requires low GDD for maturity with higher Heat Use Efficiency.	2018
6	**Effect of polyamines on quality and shelf life of mango (Mangifera indica L.) cv. Kesar.**	2019

	Kesar mango traders are advised to dip freshly harvested mango fruit in Putrescine Dihydrochloride 175 mg/l for 5 minute for increasing shelf life and quality up to 12 days storage at room temperature.	
7	**Effect of fertilizers and paclobutrazol on bearing behavior of rejuvenated mango trees (*Mangifera indica* L.) cv. Kesar** Farmers of South Saurashtra Agro-Climatic Zone having rejuvenated Kesar mango orchard are advised to apply paclobutrazol @ 7.5 g *a.i.* per tree in the month of mid of July in soil and apply 150 per cent RDF in two split from 4th year after rejuvenation (i.e. 150 kg FYM 562.5: 240: 562.5 NPK g/tree as basal and 562.5:0 : 562.5 NPK g/tree at February) for getting higher yield and net return.	2020
8	***Effect of foliar spray of chemicals to induce flowering and fruiting on rejuvenated mango trees cv. Kesar** The scientific community is informed to spray cycocel (CCC) @ 1000 ppm (1 ml in one liter of water) during October and second spray after one month of first spray in rejuvenated Kesar mango orchard for obtaining higher yield and net return.	2020
9	The farmers of South Saurashtra Agro-Climatic Zone growing mango under high-density planting (3 m x 2.5 m) are recommended to spray salicylic acid @ 1500 ppm(1.5 g/l of water) at flower bud initiation stage and at two weeks after fruit setfor obtaining higher yieldand net profit.	2024

Acid lime		
1	Farmers of Saurashtra region growing acid lime cv. Kagzi lime are advised to apply 80 per cent recommended dose of fertilizers for more production and higher income from adult tree. Out of which nitrogen in form of urea 2.6 kg per plant in 12 equal splits should be applied at monthly intervals through drip irrigation, while phosphorus and potash should be applied as soil application in two splits (SSP-3.75 kg & MOP-2.00 kg/tree) in June and October. The drip system should be operated at 0.8 PEF for 3.00 hours daily during October to February and 5.00 hours from March to onwards with 4 drippers, each having 4 lit. discharge per hour (1 kg/cm^2 pressure) keeping dripper 1.0 meter away from trunk of lime plant to save 33.19 per cent irrigation water.	2007
2	Kagzi lime growers of South Saurashtra Agro Climatic Zone are recommended that 20 years old rejuvenated tree through medium pruning (2.00 m height) should apply the half RDF (25 kg FYM , 450g N, 375g P_2O_5&	2009

	250g K_2O) in which 25 kg FYM with half dose of N i.e. 225 N g, 375 g P and 250g K per tree should be at the onset of monsoon and remaining half dose of Nitrogen i.e. 225 g N in the month of March for getting higher net return along with higher yield and quality of fruits.	
Papaya		
1	For remunerative cultivation of papaya cv. Madhubindu under organic farming in South Saurashtra Agro-climatic conditions farmers are advised to apply only vermicompost @ 12 kg/pl at the time of transplanting to obtain economic return and quality fruits as compared to chemical fertilizers and FYM.	2005
2	Papaya growers of Saurashtra region are advised to grow Madhubindu variety for maximum papain production. Further they are advised to extract papain from papaya at 80 days old fruits for getting maximum fresh and dry weight of latex (crude papain).	2007
3	Papaya growers of Saurashtra region are advised that the fresh harvested fruits of papaya cv. Madhubindu should be dip for five minutes in the solution of GA_3 100 ppm (100 mg/lit) followed by packing in perforated polythene bag which enhanced shelf life, marketability and quality of fruits up to six days of storage.	2007
4	Farmers of South Saurashtra Agro-climatic Zone growing papaya (Madhubindu) crop are advised to apply 25 per cent N from FYM (6 kg FYM), and remaining 75 per cent N (150 g), 200g P and 250g K per plant from chemical fertilizers during 2nd, 3rd and 4th month after transplanting in equal splits for getting higher yield and net return.	2015
5	Farmers of South Saurashtra Agro-climatic Zone are advised to spray micronutrients *viz.*, zinc sulfate 24.0 g (Zn 0.5 %) and Borax 10.0 g (B 0.1 %) per liter of water during 2nd and 4th month after transplanting for getting higher yield and net return in papaya cv. Madhubindu.	2015
6	**Study on efficacy of different insecticides against white fly in papaya** Two sprays of acetamiprid 20 SP 0.006% (3 g/10 l of water) OR thiamethoxam 25 WG 0.01% (4g/10 l of water), first at nymphs and adults infestation and second at 15 days after first spray found effective against whitefly (*Bemisia tabaci*) infesting papaya.	2020
Custard apple		
1	Farmers of Saurashtra region are advised that the fresh fruits of custard apple should be dipped in the solution of 0.5% carbendazim for 10 minutes and then packing in polyethylene beg of 30 x 20 cm size having six	2005

	vents with $KMnO_4$ coated silica gel for enhancing post-harvest life, marketability and quality of fruits up to six days.	
2	Farmers of South Saurashtra Agro-climatic zone are advised to apply 200gN+100gP_2O_5+50gK_2O and Azotobacter and Phosphobacter bio-fertilizer each @ 30 g by mixing with 15 kg FYM/plant at onset of monsoon to get maximum fruit yield and net profit in six year old custard apple cv. Sindhan orchard.	2008
3	Farmers of South Saurashtra agro- climatic zone are advised to apply 100g N + 50g P_2O_5 + 25g K_2O + 2.5 kg castor cake per adult custard apple tree cv. Sindhan at first rainfall in monsoon to get maximum fruit yield and net profit.	2010
4	*The climatic parameters like temperature, humidity and rainfall influence the flowering, fruit setting, fruit retention percentage, fruit yield and disease-pests incidence. More humidity and off seasonal rain during March-April insist the first and second reproductive flush and adversely affects the third flush. Optimum temperature and rain leads to more fruit set. Heavy rain during fruit set also tends to more drop with less fruit retention percentage. Mealy bug population is decreasing with increasing rain, whereas, black spot decreases when wind speed is less. Custard apple requires 30-35 ^{0}C temperature during flowering and fruit setting, 75-90% humidity and 600-1400 mm even distributed rainfall. Off seasonal rain disturbs the flowering pattern and adversely affects the crop.	2012
Sapota		
1	South Saurashtra Agro-climatic zone growing sapota cv. Kalipatti are advised to apply 900 g N or 450g N plus 8.00 kg castor cake per adult tree along with recommended dose of 50 kg FYM, 450g each of P_2O_5 and K_2O to obtained higher yield and better quality of fruit. One half dose of nitrogen and full dose of caster cake, FYM, P_2O_5 and K_2O should be applied in June and remaining half dose of nitrogen in September.	2008
2	Fruit processors are advised to dry the sapota slices of 0.5 cm thickness in solar dryer up to 33 per cent recovery to maintain quality in storage up to six months at room temperature.	2015
Banana		
1	Farmers of South Saurashtra Agro - climate Zone cultivating banana cv. Grand Naine are advised to apply total 300g nitrogen and 4kg vermicompost per plant in four equal split at 2nd, 3rd, 4th and 5th month after planting; along with recommended dose of phosphorus 90g and 200g potash per plant at 3rd month after transplanting, while 5 kg FYM as basal dose at transplanting for getting good quality, higher yield and higher return.	2016

2	**Effects of different doses of N and K with split application through fertigation system on yield and quality of banana (Musa paradisiaca L.) cv. Grand Naine** Banana growers of South Saurashtra are cultivating in paired row system (1.2 x 1.2 x 2.4 m) are advised to apply 150 g each at N & K2O per plant (325 g urea + 250 g muriate of potash) through fertigation with 30 splits at 7 days interval along with 5 kg FYM as a basal and 90 g/plant phosphorus (560g single super phosphate) in three equal splits at 3rd, 4th and 5th months after planting for getting higher yield and net return.	2019
3	**Effect of different mulching and integrated liquid organic nutrients on growth, yield and quality in banana cv. Grand Naine** Farmers of Saurashtra growing organic banana Cv. Grand Naine are recommendedto apply 25 micron silver mulch with drenching of Jivamrut @ 500 l/ha through fertigation ten times with one month interval plus spraying of sea weed extract @ 3% (300 ml/10 lit. of water) in six time with tow month interval starting from 2^{nd} month after transplanting along with FYM @ 10 kg per plant for getting good quality, higher yield and net return.	2021
Guava		
1	Farmers of Saurashtra region are advised that the fresh fruits of guava should be dipped in the solution of 0.5 per cent carbendazim for 10 minutes and then packing in polyethylene beg of 30 x 20 cms size having six vents with KMnO4 coated silica gel for enhancing post harvest life, marketability and quality of fruits up to six days.	2005
2	The farmers of South Saurashtra Agro-climatic zone growing guava cv. Sardar are advised to apply 10 kg FYM along with 120 g N, 60 g P_2O_5 and 60 g K_2O per tree at the age of one year which should be increased in equal quantity every year up to fifth year (50 kg FYM, 600 g N, 300 g P_2O_5 and 300 g K2O per tree) for obtaining economical production. One half dose of nitrogen and full dose of FYM, P_2O_5 and K_2O should be applied in June and remaining half dose of nitrogen in September.	2008
3	Farmers of Saurashtra region growing guava cv. Bhavnagar Red (6 years and above old tree) for *mrug bahar* crop are advised to apply 1.0 kg urea per plant through drip irrigation and 0.4 kg MOP per plant in soil in four equal splits during June, August, October and December, while, phosphorus (SSP-1.5 kg) as a basal dose with drip system operating for 3.00 hours daily during October to December and 4.00 hours during January to March with 4 drippers per tree, each having discharge 4.00 lit per hour keeping dripper 1.00 meter away from trunk of tree, which will save 40.69% irrigation water for higher production and income.	2012

4	Fruit Processors are advised to use 20 % pulp with 0.3 % acidity and 17 % TSS to prepare a good quality of guava nectar (RTS) stored up to 150 days.	2013
5	The farmers of South Saurashtra Agro-climatic Zone who are growing guava cultivar Lucknow-49 are advised to apply either vermicompost @ 10 kg along with 75% recommended dose of fertilizers (450 g nitrogen, 225 g phosphorus and 225 g potash) per tree or FYM 75 kg + 25% RDF (150 g nitrogen, 75 g phosphorus 75 g potas) + PSB (20 g per tree) +*Azospirilium* (20 g per tree), in which half dose of nitrogen, full dose of phosphorus, potash and vermicompost should apply at the onset of monsoon and remaining half dose of nitrogen in first week of October to get higher yield and net return.	2013
6	**Evaluation of different varieties of guava and its genotypes under HDP** The farmers of Saurashtra growing guava under high-density planting (3.0 m x 1.5 m) are recommended to grow variety L-49 or Lalit or Shweta for obtaining higher yield and net return.	2021
Gunda		
1	The farmers of South Saurashtra Agro-climatic Zone are advised to prune 75% length of one year old branches of *gunda* from all sides of the tree in 1st week of June to get higher yield and economic return.	2010
2	Fruit processors are advised that the freshly harvested fruits of lasora should be dipped either in Brine 30% + $CaCl_2$ 2% (LR grade) or sea water @ 35 ppt (collected from 1 km inside the sea shore) for enhancing storage life up to 180 days with good quality fruit.	2013
Pomegranate		
1	**Standardization of severity of pruning and crop load on yield and quality in pomegranate (*Punica granatum* L.) var. Bhagwa.** Farmers of south Saurashtra preferring *hast bahar* in pomegranate are advised to prune branches at 30 cm from top after 45 days of resting from withdrawal of monsoon and retain 50 fruits load per plant for getting higher yield and net return.	2019
2	**Integrated nutrient management in pomegranate (*Punica granatum* L.) cv. Bhagwa** The farmers of South Saurashtra Agro-Climatic Zone growing pomegranate cv. *Bhagwa* are advised to apply ½ dose of 75% RDNK *i.e.* 188 g/plant Nitrogen and Potash (K_2O) with full dose of Phosphorus (P_2O_5) *i.e.* 250	2020

	g/plant as basal dose (in the form of DAP- 543 g, Urea-195 g, Muriate of Potash - 313 g/plant), *Azotobacter* and Potassium Solubilizing bacteria (KSB) each @ 5.0 ml/plant in the month of October. Apply remaining ½ dose of Nitrogen and Potash (408 g urea and 313 MOP g/plant) in the month of February for getting higher yield and net return.	
3	**Effect of bio stimulants and bio fertilizers on flowering, fruiting, yield and quality of pomegranate (*Punica granatum* L.) cv. Bhagva** Farmers of Saurashtra growing pomegranate are recommended to apply Humic acid 1% (100 ml/10 lit. of water) in two spray at full bloom stage and at 15 days after fruit set stage with drenching of bio fertilizer *Azotobacter* + PSB + KSB each @ 5 ml/plant of full bloom stage in addition to RDF for getting higher yield and net return.	2021
Black Jamun		
1	**Preparation and storage studies of Jamun Juice** Farmers/ Food processors are advised to heat the Jamun juice at 67ºC temperature for 13 minutes and add 0.03% (w/w) sodium benzoate at little warm state to preserve its nutrients. The Jamun juice, thus, prepared packed in 1 litre PET bottle, can safely be stored up to 30 days in the refrigerator (7 + 2ºC).	2020
Coconut		
1	Farmers of South Saurashtra Agro Climatic conditions growing coconut hybrid (D x T) are advised to apply 270 g urea per plant at monthly intervals through drip irrigation and the drip system should be operated for 1 hour and 30 minutes daily during October to February and for 2 hours and 30 minutes from march onwards with 4 drippers, each having 8 liters discharge per hour (1.1 kg/cm^2 pressure), keeping drippers 1 m away from trunk of palm to save 46.82% irrigation water without affecting yield.	2006
2	**Effect of boron and NAA on flowering, fruit set and yield of coconut cv. DxT.** Farmers of South Saurashtra having mature coconut (cv. D x T) plantation are advised to spray on palm inflorescence with sodium borate (20.50 B) 0.4 % (4g/ litre) at monthly intervals from January to June for getting higher nut yield and net return.	2019
Floriculture		
Gladiolus		

1	Farmers of South Saurashtra agro climatic zone who are interested to grow gladiolus cv. American Beauty under poly house are advised to treat the corms of gladiolus with thiourea 1g/liter for 10 hrs before planting for getting maximum number of spikes with good quality, vase life and to get highest net return.	2011
2	Farmers of South Saurashtra agro climatic zone who are interested to grow gladiolus cv. American Beauty under poly house are advised to treat the corms of gladiolus with GA_3 0.05g/liter for 10 hrs before planting for getting maximum number of corms and to get highest net return.	2011
Carnation		
1	**Effect of pinching methods on different varieties of carnation under protected condition** Farmers of Gujarat are interested in flower cultivation under protected structure (Fan and Pad cooling poly house) are recommended to grow carnation with single and half pinching to get higher yield and net return.	2021
Spider lily		
1	**Effect of de-leafing and graded multi micronutrients on growth, flowering and flower yield of spider lily (*Hymenocallis litterolis* L.) cv. Local** Farmers of Saurashtra growing spider lily are recommended to do de-leafing during *Kharif* (at the end of June) with spray of multi-micronutrient grade IV @ 1 % (100 g./10 lit. water) in three equal splits at 15 days before de-leafing and 30 and 45 days after deleafing to get higher yield and net return.	2021
Tuberose		
1	The farmers of Saurashtra region growing tuberose are recommended to apply four foliar spray of *panchgavya* @ 3% (300ml/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	2022
Vegetable		
Tomato		
1	Farmers of Saurashtra region interested to grow tomato in protected condition are advised to grow indeterminate variety in 60 % white shade net house for getting higher yield and net return.	2019
Cucumber		

1	**Evaluation of cucumber variety under net house and poly house condition** Farmers of Gujarat are cultivating cucumber under protected condition are recommendedto grow cucumber in 50 % white shade net instead of poly house to get higher yield and net return.	2021
Drumstick		
1	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.	2022
Cucumber		
1	The farmers of Gujarat growing parthenocarpic cucumber under greenhouse are recommended to apply fertilizer 8.0-5.0-5.0 kg NPK/1000 m2 as a basal + panchgavaya 3% with three sprays at 30, 40 and 50 days after sowing to obtain higher yield and net return	2023