

JUNAGADH AGRICULTURAL UNIVERSITY

RESEARCH RECOMMENDATIONS FOR FARMERS COMMUNITY

III. HORTICULTURE AND AGRO FORESTRY

Total 48 research recommendations developed by Horticulture and Agroforestry disciplines as described below.

Year: 2004-05

Standardization of preservation methods for custard apple and guava

The farmers of Saurashtra region are advised that the fresh fruits of custard apple and guava should be dipped in the solution of 0.5 per cent carbendazim for 10 minutes and then packing in polyethylene bag of 30 x 20 cm size having six vents with KMnO₄ coated silica gel for enhancing post-harvest life, marketability and quality of fruits up to six days.

(Department of Horticulture, CoA, JAU, Junagadh)

Year: 2005-06

Fertigation in coconut hybrid (cv. D x T)

The farmers of South Saurashtra Agro-climatic Zone growing coconut hybrid (D x T) are advised to apply 270 g urea/plant at monthly interval through drip irrigation. The drip system should be operated for one & half hour daily during October to February and two & half hour from March onwards with four drippers, each having 8 liters discharge/hour (1.1 kg / cm² pressure), keeping drippers one meter away from palm trunk to save 47 per cent irrigation water without affecting yield.

(Department of Horticulture, CoA, JAU, Junagadh)

Effect of NPK fertilization in coconut hybrid (cv. D x T) under saline irrigation

The coconut hybrid (D x T) growers of coastal area of South Saurashtra Agro-climatic Zone are advised to apply 2 kg nitrogen, 1 kg phosphorus, 2 kg potash per plant/year in two equal split i.e., June and October for getting higher nut yield and higher net return in saline (14 EC) irrigation water.

(Fruit Research Station, JAU, Mangarol)

Year: 2006-07

Relative performance of banana varieties

The farmers of South Saurashtra Agro-climatic Zone growing banana are advised to grow variety "Gandevi Selection" for higher yield and income per hectare.

(Department of Horticulture, CoA, JAU, Junagadh)

Study of papaya varieties for quality parameters

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).

(Department of Horticulture, CoA, JAU, Junagadh)

Effect of growth regulators on yield and quality of papaya

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 GA₃ 100 ppm (100 mg/lit.) followed by packing in perforated polyethylene bag which enhanced shelf life, marketability and quality of fruits up to six days of storage.

(Department of Horticulture, CoA, JAU, Junagadh)

Fertigation in kagzi lime

The 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 thorough 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 onward with 4 drippers, each having 4 lit. discharge per hour (1 kg/cm²

pressure) keeping dripper 1.0 meter away from trunk of lime plant to save 33.19 per cent irrigation water.

(Department of Horticulture, CoA, JAU, Junagadh)

Fertigation in sapota

Sapota (cv. *Kalipatti*) growers of South Saurashtra region are advised to apply 72 litres water/tree/day (0.6 PEF) in summer (March to May) and 52 litres water/tree/day in winter (October to February) to adult tree (15 to 20 years old) through drip irrigation system which can save up to 32.6 per cent of water without reduction in yield. The drip system should be operated 4 hours and 30 minutes in summer and the 3 hours 15 minutes in winter, with 1 kg / sq.cm² pressure keeping four drippers/tree having capacity of 4 LPH. The drippers should be kept one meter away from the trunk of the tree.

(Agricultural Research Station (Fruit Crop), JAU, Mahuva)

Year: 2007-08

Nutrient management in guava cv. Sardar

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 P₂O₅ and 60 g K₂O 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 P₂O₅ and 300 g K₂O per tree) for obtaining economical production. One half dose of nitrogen and full dose of FYM, P₂O₅ and K₂O should be applied in June and remaining half dose of nitrogen in September.

(Department of Horticulture, CoA, JAU, Junagadh)

Effect of manures and fertilizers on bearing trees of chiku cv. Kalipatti

The farmers of South Saurashtra Agro-climatic Zone growing sapota cv. Kalipatti are advised to apply 900 g N or 450 g N plus 8.00 kg castor cake per adult tree along with recommended dose of 50 kg FYM, 450 g each of P₂O₅ and K₂O to obtain higher yield and better quality of fruit. One half dose of nitrogen and full dose of castor cake, FYM, P₂O₅ and K₂O should be applied in June and remaining half dose of nitrogen in September.

(Department of Horticulture, JAU, Junagadh)

Effect of bio-fertilizers on custard apple cv. Sindhan

The farmers of South Saurashtra Agro-climatic Zone are advised to apply 200 g N + 100 g P₂O₅ + 50 g K₂O and *Azotobacter* and *Phosphobacter* bio-fertilizers each @ 30 g by mixing with 15 kg FYM per plant at onset of monsoon to get maximum fruit yield and net profit in six year old custard apple cv. Sindhan orchard.

(Department of Horticulture, CoA, JAU, Junagadh)

Year: 2008-09

Standardization of root stock in mango against salt stress

Nurserymen 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.

(Department of Horticulture, JAU, Junagadh)

Effect of organic manure and chemical fertilizers on growth and yield of acid lime cv. Kagzi lime

Kagzi lime growers of South Saurashtra Agro-climatic Zone are recommended that 20 years old rejuvenated tree through medium pruning (2.00 m height at ground level) should apply the half recommended dose of fertilizer (25 kg FYM, 450g N, 375g P₂O₅ & 250g K₂O) in which 25 kg FYM with half dose of nitrogen i.e. 225 g N, 375 g phosphorus and 250g potassium per tree should be at the onset of monsoon and remaining half dose of nitrogen i.e. 225g N in the month of March for getting higher net return along with higher yield and quality of fruits.

(Department of Horticulture, CoA, JAU, Junagadh)

Year: 2009-10

Pruning trail on gunda (*Cordia dichotoma*)

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.

(Department of Horticulture, CoA, JAU, Junagadh)

Integrated nutrient management in custard apple cv. Sindhan

The farmers of South Saurashtra Agro-climatic Zone are advised to apply 100g N + 50g P₂O₅ + 25g K₂O + 2.5 kg castor cake per adult custard apple tree cv. Sindhan at first rainfall in monsoon to get higher fruit yield and net profit.

(Department of Horticulture, CoA, JAU, Junagadh)

Post harvest treatment for enhancement of ripening of Kesar mango

It is recommended that the freshly harvested mature mango fruits of cv. Kesar should be treated with ethrel @ 750 mg /l of water for 5 minutes and kept at room temperature to enhance the ripening and get maximum ripened and marketable fruits at 9th day.



(Department of Horticulture, CoA, JAU, Junagadh)

Nutrient management in coconut through organic manures

The coconut growing farmers of South Saurashtra Agro-climatic Zone are advised to apply half dose of recommended chemical fertilizers i.e. NPK 200:160:750 g per palm per year along with 5 kg castor cake in two equal splits (June & October) to coconut cv. West Coast Tall to obtain higher nut yield with improvement in nut quality and soil fertility.

(Agricultural Research Station (Fruit Crop), JAU, Mahuva)

Evaluation of Chrysanthemum (*Chrysanthemum morifolium* R.)

The farmers of South Saurashtra Agro-climatic Zone interested to grow flower crop of chrysanthemum are advised to grow variety IIHR-6 for getting higher yield and maximum monetary return.



(Department of Horticulture, CoA, JAU, Junagadh)

Year: 2010-11

Comparison of open and low cost net house nursery for seed germination and dynamic growth of coconut seedling cv. D x T (Mahuva)

The nursery growers of South Saurashtra Agro-climatic Zone producing coconut seedlings are advised to grow coconut seed nut in the month of June under low cost net house (50 % shed net) to get higher quality seedling and net return as compared to open field.



(Agricultural Research Station (Fruit Crop), JAU, Mahuva)

Effect of soil amendments with organic materials on yield and quality of onion cv. Talaja red under sodic soil and brackish water condition

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 per cent 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.



(Agricultural Research Station (Fruit Crop), JAU, Mahuva)

Effect of plant growth regulators on gladiolus cv. American Beauty in protected condition for spikes

The 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 the highest net return.



(Department of Horticulture, CoA, JAU, Junagadh)

Effect of plant growth regulators on gladiolus cv. American Beauty in protected condition for corms

The 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 GA₃ 0.05g/liter for 10 hrs before planting for getting maximum number of corms and to get the highest net return.



(Department of Horticulture, CoA, JAU, Junagadh)

Year: 2011-12

Fertigation system in guava cv. Bhavnagar Red

The farmers of Saurashtra region growing guava cv. Bhavnagar Red (6 years and above old tree) for *Mrig 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 lit. per hour keeping dripper 1.0 meter away from trunk of tree, which will save 40.69% irrigation water for higher production and income.



(Department of Horticulture, CoA, JAU, Junagadh)

Varietal evaluation of gerbera (*Gerbera jamesonii*) under green house

The farmers of South Saurashtra Agro-climatic Zone, interested to cultivate gerbera flower crop under green house are advised to grow varieties Pink Elegance (pink), Savannah (red) and Dana Allen (yellow) for obtaining higher yield and income with good quality of cut flowers.



(Department of Horticulture, CoA, JAU, Junagadh)

Integrated nutrient management in Sapota cv. Kalipatti

The farmers of South Saurashtra region growing sapota cv. Kalipatti are advised to apply full recommended dose of phosphorus and potash (450 g/plant P & K each) along with half dose of nitrogen (11.25 kg castor cake) and 100 g *Azotobacter* per plant during onset of monsoon and half recommended dose of nitrogen i.e. 450 g/plant during October to get higher fruit yield and net return.



(Agricultural Research Station (Fruit Crops), JAU, Mahuva)

Application of nutrients through root feeding of coconut cv. D x T (Mahuva)

The coconut growers of South Saurashtra Agro-climatic Zone are advised to apply full recommended dose of chemical fertilizer (1500, 750, 1500 NPK g/palm) and two dose each of 400 ml of nutrient solution in June and October [10 g each urea and muriate of potash, 5 g zinc sulphate, 2 g ferrous sulphate, magnesium sulphate, manganese sulphate and borax each, 1 g copper sulphate, 10 mg sodium molybdate, 10 mg citric acid and 460 mg NAA (10 ml Planofix) dissolved in one liter of water] through root feeding to get higher nut yield and net return in coconut cv. D x T (Mahuva).



(Agricultural Research Station (Fruit Crops), JAU, Mahuva)

Effect of soil amendment with organic materials on yield and quality of bottle gourd cv. Pusa Naveen under sodic soil and brackish water condition

Vegetable growers of South Saurashtra Agro-climatic Zone growing bottle gourd cv. Pusa Naveen under sodic soil and brackish irrigation water condition are advised to apply FYM 5 t/ha along with half recommended dose of chemical fertilizer i.e. 50:25:25, N:P:K kg/ha and poultry manure 3.3 t/ha to get maximum yield and net return.



(Agricultural Research Station (Fruit Crops), JAU, Mahuva)

Year: 2012-13

Evaluation of guava fruit varieties for processing into nectar beverage

Fruit processors are advised to use 20 % pulp of cv. Allahabad Safeda with 0.3 % of acidity and 17 % TSS to prepare a good quality of guava nectar (RTS) which can be stored up to 150 days.



(Department of Horticulture, CoA, JAU, Junagadh)

Integrated nutrient management in guava cv. 'Lucknow-49' under Saurashtra region

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 and 75 g potash) + PSB (20 g per tree) + *Azospirillum* (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.

(Department of Horticulture, CoA, JAU, Junagadh)

Preparation and preservation of lasora in different brine preservatives

Fruit processors are advised that the freshly harvested fruits of lasora should be dipped either in Brine 30% + CaCl₂ 2% (LR grade) or sea water @ 35 ppt (part per thousand, collected from 1 km inside the sea shore) for enhancing storage life up to 180 days with good quality fruit.



(Department of Horticulture, CoA, JAU, Junagadh)

Testing of seasonal forage/fodder crops as a inter cropping in coconut orchard cv. T x D

Coconut growers of South Saurashtra Agro-climatic Zone are advised to grow sorghum cv. *Gundari* for green and dry fodder or maize cv. African Tall for dry fodder purpose as an

intercrop in adult plantation of coconut hybrid T x D to get additional net return without decreasing coconut yield.



(Agricultural Research Station (Fruit Crops), JAU, Mahuva)

Testing of forage/fodder crops as a inter cropping for coconut orchard cv. T x D

Coconut growers of South Saurashtra Agro-climatic Zone are advised to grow either multi cut sorghum cv. SSG-59-3 or multi cut Napier grass cv. APBN-1 (hybrid Napier) for green fodder purpose as an intercrop in adult plantation of coconut hybrid T x D to get additional net return without decrease in coconut yield.



(Agricultural Research Station (Fruit Crops), JAU, Mahuva)

Year: 2013-14

Effect of green manuring on yield of coconut cv. T x D and soil properties

Coconut growers of South Saurashtra Agro-climatic Zone are advised to grow Sunhemp or *Dhaincha* as green manuring crop in adult coconut plantation (T x D hybrid) for improving soil fertility and to get more yield and net return.



(Agricultural Research Station (Fruit Crops), JAU, Mahuva)

Effect of different concentration of ethephon application on gum production from *Acacia senegal* (L.) Willd (Gorad)

The farmers of North Saurashtra Agro-climatic Zone are recommended to apply 5 ml of 900 ppm ethephon [2.25 ml Ethrel (40%) in 1 liter of water] by drilling 5 cm hole of 1 cm diameter on stem at 1 m height above the ground of about five year age of *Acacia senegal* (Gorad) during first week of March for getting higher gum production and maximum net return.



(Grassland Research Station, JAU, Dhari)

Year: 2014-15

Effect of different sources of nitrogen with graded levels of inorganic fertilizer on papaya cv. Madhubindu

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.



(Department of Horticulture, CoA, JAU, Junagadh)

Effect of micro nutrients on growth, yield and quality of papaya cv. Madhubindu

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.



(Department of Horticulture, CoA, JAU, Junagadh)

Dehydration of sapota slices

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.



(Department of Horticulture, CoA, JAU, Junagadh)

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

The farmers of South Saurashtra Agro-climatic Zone growing *Rabi* Tomato (JT-3) under sodic soil (EC 1.48 dS/m, pH 7.81, ESP 21.84 %) and brackish water (EC 4.34 to 4.88 dS/m) condition are advised to apply FYM 5 t/ha + 50 per cent R.D.F. (37.5+18.75+ 31.25NPK kg/ha) + poultry manure (3700 kg/ha) for securing higher yield and net return.



(Agriculture Research Station (Fruit Crop), JAU, Mahuva)

Year: 2015-16

Effects of chemical fertilizers and vermicompost on yield and quality of banana (*Musa paradisiaca* L.) cv. Grand Naine

Farmers of South Saurashtra Agro-climate Zone cultivating banana cv. Grand Naine are advised to apply total 300 g nitrogen and 4 kg vermicompost per plant in four equal split at 2nd, 3rd, 4th and 5th month after planting; along with recommended dose of phosphorus 90 g and 200 g 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.



(Department of Horticulture, CoA, JAU, Junagadh)

Feasibility of organic farming in coconut (*Cocos nucifera*) under saline water irrigation condition

The farmers of South Saurashtra Agro-climatic Zone interested organic cultivation of coconut cv. West Coast Tall (WCT) are advised to apply FYM @ 60 kg per tree under saline irrigation (EC 10-14 dSm⁻¹) condition for obtaining higher return and improving soil fertility.



(Fruit Research Station, JAU, Mangrol)

Year: 2016-17

Varietal evaluation of strawberry under polyhouse

Farmers of South Saurashtra Agro-climate Zone, interested in strawberry cultivation, are advised to grow cv. Winter Queen under protected structure (Fan-pad Cooling Poly House) for getting higher yield and net return.



(Department of Horticulture, CoA, JAU, Junagadh)

Evaluation of small to medium sized varieties of mango

Farmers of Saurashtra region growing small to medium size mango (150 to 250 g) are advised to grow variety Kesar and as alternate of Kesar variety, hybrid variety Amrapali for better yield from thirteen years old tree. Both varieties possess medium sized fruits with attractive colour, flavor, aroma and good taste.



(Department of Horticulture, CoA, JAU, Junagadh)

Evaluation of medium to large sized varieties of mango

Farmers of Saurashtra region growing medium to large sized mango (250 to 500 g) varieties for getting higher yield are advised to grow mango hybrid Sonpari or Rajapuri. The variety possesses good quality with attractive and large sized fruits.



(Department of Horticulture, CoA, JAU, Junagadh)

Performance of leafy vegetables purpose coriander under different shed net in summer season

The farmers of Saurashtra region interested to grow coriander for green coriander purpose in summer season are advised to use 75 % white shed net in low cost shed net house for securing higher yield and net return.



(Agricultural Research Station, JAU, Mahuva and Dept. of Horticulture, CoA, JAU, Junagadh)

Performance of leafy vegetables purpose fenugreek under different shed net in summer season

The farmers of Saurashtra region interested in green vegetable purpose fenugreek in summer season are advised to use 75 % white shed net in low cost shed net house for securing higher yield and net return.

(Agricultural Research Station, JAU, Mahuva and Department of Horticulture, CoA, JAU, Junagadh)

Integrated nutrient management in mango cv. Jamadar

The farmers of South Saurashtra Agro-climatic Zone interested to grow mango cv. Jamadar are recommended to apply fertilizers as per following schedule for securing higher yield and net return.

Age of tree (Year)	Poultry manure (kg/plant)	N (g/plant)	P (g/plant)	K (g/plant)
4 th year	20	160	64	232
5 th year	25	200	80	290
6 th year	30	240	96	348
7 th year	35	280	112	406



(Agril. Research Station (FC), JAU, Mahuva and Dept. of Horticulture, CoA, JAU, Junagadh)

Year: 2017-18

Evaluation of tomato varieties under poly house and net house condition

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.



(Department of Horticulture, CoA, JAU, Junagadh)

Effect of organic manures in sapota [*Manilkara achras* (Mill)] cv. Kalipatti under saline water irrigation condition

Farmers of Saurashtra region interested to organic cultivation of sapota are advised to apply FYM @ 90 kg/tree (8 year) per year during June-July under saline irrigation water (EC 10-14 dSm⁻¹) for obtaining higher yield with net return and for improving soil fertility and microbial status of soil.



(Fruit Research Station, JAU, Mangrol)