

Research



Chapter-IV





4.1 AGRICULTURAL RESEARCH COUNCIL

The Agricultural Research Council was constituted according to the provision of the Gujarat Agricultural Universities

Act-2004 in exercise of the power vested under Section 62(1) in pursuance of Section 17(5). The members of Agricultural Research Council during 2007-08 were as under.

No.	Name	Designation
1.	Dr. B.K. Kikani	Vice Chancellor (Chairman)
2.	Dr. D. B. Kuchhadiya	Director of Research & Dean PG Studies (Secretary)
3.	Dr. A.M. Parakhia	Director of Extension Education
4.	Dr. H.J. Vyas	Associate Director of Research
5.	Dr. I.U. Dhruj	Associate Director of Research
6.	Dr. D.R. Padmani	Associate Director of Research
7.	Dr. P.G. Butani	Dean, Agriculture Faculty
8.	Dr. N.C. Patel	Dean, Agril. Engineering & Technology Faculty
9.	Dr. A.Y. Desai	Dean, Fisheries Science Faculty
10.	Dr. V.K. Poshiya	Research Scientist (Chickpea)
11.	Prof. B.A. Kunadia	Research Scientist (Groundnut)
12.	Dr. C.J. Dangaria	Research Scientist (Millet)
13.	Dr. K.L. Dobaria	Research Scientist (Sugarcane)
14.	Dr. K.L. Jetani	Research Officer (Fisheries)
15.	Dr. P.U. Gajbhiye	Research Scientist (Animal Genetics)
16.	Dr. G.R. Sharma	Research Scientist (Agril. Engg.)
17.	Dr. V.D. Khanpara	Professor & Head, Agronomy
18.	Prof. J.B. Savani	Professor & Head, Farm Machinery & Power
19.	Dr. R.L. Shiyani	Professor & Head, Agricultural Economics
20.	Dr. P.M. Chauhan	Professor & Head, Renewable Energy & Rural Engg.
21.	Dr. B.A. Golakiya	Professor & Head, Biochemistry

4.2 BRIEF REPORT OF RESEARCH ACTIVITIES

The Junagadh Agricultural University comprises of seven districts covering 32.82 per cent area of the state. The university is functioning in a typical arid and semi-arid situation where frequent droughts, erratic rainfall, low fertility, salinity ingress are the major constraints

for productivity and prosperity of agriculture in this region. The university represents two agro-climatic zones *viz.*, North and South Saurashtra Agro-climatic Zones.

Junagadh Agricultural University has five colleges and 30 research stations including multidisciplinary main research stations, sub centers on various crops



and testing centers spread over in North Saurashtra Agro-climatic Zone and South Saurashtra Agro-climatic Zone. These research stations are working in the field of Agriculture, Agricultural Engineering, Animal Sciences and Fisheries for catering the needs of farmers, artisans, livestock holders, fishermen and rural masses for their upliftment. Scientists are working hard with sincere efforts for development of high yielding varieties, new improved agronomical practices and eco-friendly strategies for pest & diseases management at these research stations. The research work is also undertaken on natural resource management (bio-diversity, land & water uses), improved farm equipments, post harvest processes and renewable energy. Research efforts are continuing for improvement of cattle breeds, nutritive cattle feeds, fisheries and allied industries. Apart from this, agricultural information is disseminated through five *Krishi Vigyan Kendras* of the University. The research activities, achievements, research accomplishments and recommendations made by the Junagadh Agricultural University during 2008-09 are given herein.

I. PLANT BREEDING & GENETICS

Two new varieties, Gujarat Junagadh Okra Hybrid-2 (GJOH-2) and Gujarat Junagadh Custard Apple-1 (GJCA-1) were recommended for cultivation to the farmers during 2008-09.

The variety Gujarat Junagadh Okra Hybrid-2 (GJOH-2) showed 23.33 and 39.92



Gujarat Junagadh Okra Hybrid-2 (GJOH-2)

per cent higher green fruit yield over GOH-1 and Pusa Sawani, respectively at Junagadh during *kharif* 2003-2008. In AICRP, it showed 20.71 and 41.95 per cent higher yield, respectively over Parbhani Kranti and Pusa Sawani at Anand and Junagadh centers. The variety has been recommended by AICRP and same is endorsed for the Gujarat state.

The average yield of the fruit is 148.36 q/ha.



Gujarat Junagadh Custard Apple-1 (GJCA-1)

The variety, Gujarat Junagadh Custard Apple-1 (GJCA-1) registered 45.86, 22.59 and 23.21 per cent higher fruit yield as compared to checks Sindhan and selection 11 & 12, respectively. The variety possessed

more number of fruits per tree than the checks, less number of seeds per fruit and higher pulp content. The variety was accepted for release in Saurashtra region.

The average yield of the fruit is 26.81 kg/tree.

II. NATURAL RESOURCE MANAGEMENT

This group has released 15 farmers' and two scientific recommendations which are given below.

1. Nutrient Management

Pearl millet *kharif*

The framers of North Saurashtra Agro-climatic Zone (AES-X) growing *kharif* pearl millet are advised to apply 50 per cent RDF (40:20 NP kg ha⁻¹) along with 2.5 t ha⁻¹ compost and 500 kg castor cake ha⁻¹ for obtaining higher yield and net realization.

Sesame

The farmers of North Saurashtra Agro-climatic Zone growing sesame (G.Til 3) in *kharif* are advised to apply RDF (50:25 NP kg ha⁻¹) as 25 kg N +25 kg P₂O₅ ha⁻¹ as basal and 25 kg N ha⁻¹ as top dressing to sesame for getting higher yield and net return.

The farmers of North Saurashtra Agro-climatic Zone growing sesame (G.Til 2) during *kharif* are advised to apply 1.0 t castor cake ha⁻¹ or 7.5 t FYM + 750 kg castor cake ha⁻¹ for getting higher yield and net return.

The farmers of North Saurashtra Agro-climatic Zone growing sesame (G.Til 2) in summer are advised to apply 25 kg N + 25 kg P₂O₅ ha⁻¹ as basal and 25 kg N ha⁻¹ as top dressing at 30 DAS for getting higher yield and net return.

Sunflower

The farmers of North Saurashtra Agro-climatic Zone growing sunflower (G. Sunflower 1) in *kharif* are advised to apply 40 kg S ha⁻¹ through gypsum besides application of chemicals fertilizers (NP 90:50 kg ha⁻¹).

The farmers of North Saurashtra Agro-climatic Zone growing Sunflower (G. Sunflower 1) in *kharif* are advised to apply 45 kg N + 60 kg P₂O₅ ha⁻¹ as basal and 45 kg N ha⁻¹ as top dressing for getting higher yield and net returns.

Castor

The farmers of South Saurashtra Agro-climatic Zone growing castor in medium black calcareous soil deficient to marginal in K and Zn availability are advised to apply 50 kg K₂O + 50 kg ZnSO₄ ha⁻¹ as basal in addition to recommended fertilizer dose (NP 75:50 kg ha⁻¹) for getting higher yield and net return.

Castor (*rabi*)-Groundnut (*kharif*)

The farmers of South Saurashtra Agro-climatic Zone adopting castor (*rabi*)-groundnut (*kharif*) crop sequence are advised to treat the castor seed with *Azospirillum* and PSB cultures in addition to 100 per cent RDF (NP 75:50 kg ha⁻¹) for obtaining higher yield and net return.

Wheat-Groundnut

The farmers of South Saurashtra Agro-climatic Zone adopting wheat - groundnut crop sequence in medium black calcareous soils (low to marginal in available K and Zn) are advised to apply 80 kg K₂O + 25 kg ZnSO₄ ha⁻¹ to wheat crop only as basal in addition to RDF (NP 120:60 and 12.5:25 kg ha⁻¹ to wheat and groundnut,



respectively) for getting higher yield of crops in wheat-groundnut sequence.

Cotton

The farmers of South Saurashtra Agro-climatic Zone growing hybrid cotton in medium black calcareous soil are advised to apply recommended dose of nitrogen in form of urea only.

2. Package of Practices

Groundnut

The farmers of South Saurashtra Agro-climatic Zone are recommended to cultivate their field by cultivator followed by harrowing and sow rainfed groundnut (GG 20) on broad bed and furrow method (90 cm width followed by 30 cm wide and 15 cm deep furrow) for getting higher yield and net return.

Groundnut-Pigeon pea

The farmers of South Saurashtra Agro-climatic Zone growing pigeonpea as a relay crop in groundnut are advised to treat pigeonpea seed with *Rhizobium* culture prior to sowing @ 25 g kg⁻¹ and apply 75 per cent RDF (20:37.5 NP kg ha⁻¹). The N should be applied in two equal splits i.e. first at time of sowing and the second at the time of earthing up i.e. before first irrigation for getting higher yield and net return.

Onion seed

The farmers of South Saurashtra Agro-climatic Zone growing *rabi* onion (Gujarat White Onion 1) for seed production are recommended to plant bulbs on ridges by keeping spacing of 30 cm x 30 cm for getting higher seed yield and net profit.

Castor

The farmers of South Saurashtra Agro-climatic zone having irrigation water

salinity up to 2 dSm⁻¹ are advised to prefer castor variety GC3.

3. Water Management

Tomato

The farmers of South Saurashtra Agro-climatic Zone growing tomato (Gujarat Tomato-1) in *rabi* season are advised to irrigate the crop with drip system at 1.0 PEF for getting higher yield and net realization.

Farmers are also advised to apply recommended dose of fertilizer i.e. 75.00:37.50:62.50 NPK kg ha⁻¹ along with FYM @ 10 t ha⁻¹ for getting more net realization.

The system details are:

1. Lateral spacing = 90 cm
2. Dripper spacing = 60 cm
3. Dripper discharge = 4lph
4. Operating time = 1 hour and 45 minutes at alternate day.
5. Operating pressure = 1.2 kg cm⁻²

Recommendation for Scientific Community

Okra

In South Saurashtra Agro-climatic Zone, summer okra (Gujarat Okra-2) irrigated by drip system at 1.0 PEF gives 11 per cent higher net return. Moreover, application of recommended dose of fertilizer (100:50:50 NPK kg ha⁻¹) and FYM @ 10 t ha⁻¹ further increases yield by 26 per cent and net realization to the extent of 100 per cent.

The system details are:

1. Lateral spacing = 60 cm
2. Dipper spacing = 60 cm
3. Dipper discharge = 4lph
4. Operating time = 1 hour and 45