Package of Practices on Tuber Crops

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AICRP on Tuber Crops

Department of Vegetable Science

ASPEE College of Horticulture

Navsari Agricultural University

Navsari, Gujarat – 396 450

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University Publication No.: **NAU/02/02/135/2026**

Month & Year: **March, 2026**

Copies: **16**

Scan here for digital copy:

NAVSARI AGRICULTURAL UNIVERSITY

Navsari Agricultural University
Navsari, Gujarat - 396 450

Dr. T. R. Ahlawat
I/c Vice Chancellor
Navsari Agricultural University, Navsari

MESSAGE

Tuber crops occupy an important place in agricultural diversification by contributing to food and nutritional security and providing sustainable income opportunities to farmers. The present 'Package of Practices on Tuber Crops' has been brought out to disseminate scientifically validated and region-specific production technologies. All the recommendations included in this booklet are based on research findings generated at Navsari Agricultural University and under the All India Coordinated Research Project (AICRP) on Tuber Crops and are duly approved by the University.

This publication includes comprehensive and updated crop production practices aimed at enhancing productivity and profitability of tuber crops. I appreciate the dedicated efforts of the scientists and staff associated with AICRP on Tuber Crops and sincerely acknowledge the contribution of Dr. Himani Patel, Assistant Horticulturist and Principal Investigator, for her effective coordination in compiling this booklet. I am confident that this publication will be useful to farmers, extension personnel and other stakeholders.

Date: 24/03/2026
Place: Navsari

(T. R. Ahlawat)

Dr. T. R. Ahlawat
Director of Research & Dean PG Studies
Navsari Agricultural University, Navsari

PREFACE

India's tuber crops occupy a unique and important place in our horticultural and nutritional landscape. Crops such as sweet potato, elephant foot yam, cassava, greater yam, tannia and other tropical tubers contribute significantly to food security, nutritional diversity, income generation and livelihood support, particularly for small and marginal farmers. The present "Package of Practices on Tuber Crops" has been prepared with the objective of providing farmers, extension personnel, students and other stakeholders with a comprehensive, practical and research-based guide for successful cultivation of tuber crops. This booklet compiles the latest recommendations developed through systematic research and field evaluations, covering important aspects such as improved varieties, planting methods, nutrient and water management, harvesting and storage.

I sincerely hope that this booklet will serve as a valuable reference and practical tool for increasing the productivity, profitability and sustainability of tuber crop cultivation. I commend the efforts of the scientists and staff involved in compiling this publication and express my appreciation for their dedication.

Date: 24/03/2026
Place: Navsari

(T. R. Ahlawat)

ICAR - CENTRAL TUBER CROPS RESEARCH INSTITUTE
(ICAR, Ministry of Agriculture and Farmers Welfare, Govt. of India)
Sreekariyam, Thiruvananthapuram
Kerala - 695 017

Dr. G. Byju

Director & Project Coordinator

MESSAGE

Tuber crops represent a group of resilient and resource-efficient crops that fit well into diverse farming systems across India. Their ability to perform under marginal soils, variable rainfall and limited external inputs makes them especially relevant for small and marginal farmers. In addition to their role in household consumption, tuber crops offer significant opportunities for diversification, crop intensification and value-added enterprises. In this context, the present booklet, *Package of Practices on Tuber Crops*, has been developed to provide clear, field-oriented and scientifically validated guidance for improving cultivation practices and overall crop performance.

The recommendations included in this booklet are based on research findings generated under the All India Coordinated Research Project (AICRP) on Tuber Crops and through systematic research conducted at the ICAR–Central Tuber Crops Research Institute (ICAR-CTCRI) and its collaborating centres, including Navsari Agricultural University. I place on record my appreciation for the dedicated efforts of the scientists and technical staff associated with the AICRP on Tuber Crops. I also acknowledge the valuable contribution of Dr. Himani Patel, Assistant Horticulturist and Principal Investigator, for her effective coordination and commitment in compiling this booklet. I am confident that this publication will serve as a practical and reliable reference for farmers, extension personnel, students and all other stakeholders engaged in tuber crop research and cultivation.

23/3/26

Date: 23/03/2026
Place: Thiruvananthapuram

(G. Byju)

Dr. Alka Singh

Principal & Dean

ASPEE College of Horticulture

Navsari Agricultural University, Navsari

MESSAGE

Tuber crops hold immense potential in strengthening food and nutritional security while enhancing farmers' income across diverse agro-climatic conditions. The "Package of Practices on Tuber Crops" has been developed to serve as a comprehensive and reliable guide for farmers, extension personnel and students, providing need-based and scientifically validated production technologies. The recommendations compiled in this publication are grounded in systematic research carried out at ASPEE College of Horticulture, Navsari Agricultural University, as well as through the All India Coordinated Research Project (AICRP) on Tuber Crops. This booklet reflects the University's continued commitment to effective technology dissemination and the promotion of improved and sustainable agricultural practices.

I sincerely acknowledge the valuable technical contributions of the scientists associated with the AICRP on Tuber Crops. Special appreciation is extended to Dr. Himani Patel, Assistant Horticulturist and Principal Investigator, for her dedicated efforts, coordination and commitment in bringing out this publication. I am confident that this booklet will serve as a guiding resource, inspiring progressive adoption of improved practices and contributing meaningfully towards increased productivity, profitability, and sustainability of tuber crop cultivation. At Navsari Agricultural University, we believe that meaningful research finds its true value only when it reaches the farmer's field and transforms livelihoods. This publication is a step forward in that direction.

Date: 23/03/2026

Place: Navsari

(Alka Singh)

NAVSARI AGRICULTURAL UNIVERSITY

Department of Vegetable Science
ASPEE College of Horticulture
Navsari Agricultural University
Navsari, Gujarat - 396 450

ACH
Let's Bloom Human Fruition NAU

Dr. Darshan R. Bhanderi
Professor & Head
Department of Vegetable Science
ASPEE College of Horticulture
Navsari Agricultural University, Navsari

MESSAGE

Tuber crops are an important group of horticultural crops with wide adaptability and significant scope for diversification and sustainable farming. The present 'Package of Practices on Tuber Crops' has been compiled to provide concise, updated and location-specific recommendations for farmers, students and extension personnel. The technologies included in this booklet are based on systematic research carried out at Navsari Agricultural University and under the All India Coordinated Research Project (AICRP) on Tuber Crops.

The booklet aims to facilitate effective dissemination and adoption of improved tuber crop production technologies to enhance yield and profitability. I appreciate the sincere efforts of the scientists and staff associated with AICRP on Tuber Crops and acknowledge the contribution of Dr. Himani Patel, Assistant Horticulturist and Principal Investigator, for her dedicated coordination in bringing out this publication. I hope this booklet will serve as a practical guide for scientific tuber crop cultivation.

Date: 23/03/2026
Place: Navsari

(D. R. Bhanderi)

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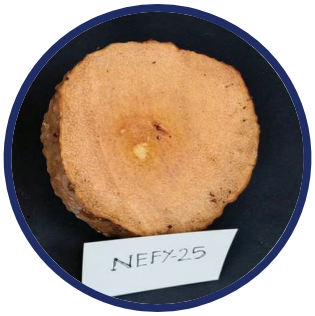


Gujarat Elephant Foot Yam - 2 (GEFY-2): Dangi Suran

Gujarat Elephant Foot Yam - 1 (GEFY-1): Swagata

Gujarat Greater Yam - 1 (GGy-1): Hemlata

Gujarat Sweet Potato - 1 (GSP-1): Navsari Gaurav

Collection 71 (Endorsed)

Bhu Kanti (Endorsed)

Gujarat Tannia - 1 (G. Tannia-1): Navsari Pari

Elephant Foot Yam

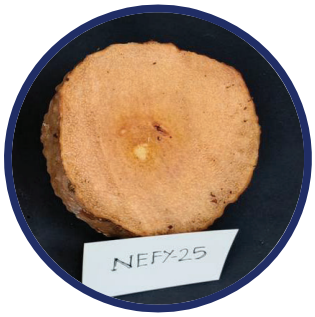
Variety	:	**Gujarat Elephant Foot Yam - 2 (GEFY-2): Dangi Suran**
Suitability of the variety for the area	:	Elephant Foot Yam growing areas of Gujarat
Selection of field/ land preparation	:	Two to three ploughing followed by planking then digging of pits (20 cm deep, 20 cm length and 20 cm width) for planting of corms
Seed treatment	:	Dithane M - 45 or Redomil or *Carbendazim* @ 2.0 g per litre of water for 1 kg corm or *Trichoderma* @ 5.0 g in 1.0 kg of fresh cow dung slurry for 1.0 kg of seed corm
Planting time	:	15th May to 15th June (onset of monsoon) during *kharif* for rainfed crop and 15th February to 15th April during summer for irrigated crop
Seed corm rate (kg/ha)	:	60 to 70 q/ha depending on spacing, having 200 - 250 g corm weight
Spacing (cm)	:	60 cm × 60 cm
No. of seed corm/ pit	:	One whole corm/ one piece corm
Thinning/ Gap filling	:	Gap filling is required after germination of corms. Planting of corms should be done in plastic bags (30 cm deep, 30 cm length and 30 cm width) at same date on which planting is carried out in the main field and gap filling should be done with those plants grown in plastic bags
Fertilizer	:	Recommended dose of fertilizers: FYM @ 20 t/ha 80:60:100 N:P:K kg/ha (Full dose of FYM/Compost, P, K & 1/2 dose of N to be applied in pits before planting and remaining dose of N to be applied during intercultural operation and earthing up on 45 days after planting in ring)
Weed management	:	Pre-emergence weedicide Metribuzin @ 0.25 kg ha^{-1} should be applied on 1 - 2 days after planting with 2 intercultural operations at 30 & 45 days after planting and one hand weeding in later stage
Irrigation	:	As per requirement
Plant protection	:	**Pest:** • **Mealybug (storage pest):** Harvested corm treatment (dip/ spray) with cow dung slurry (2 kg cow dung in 1 litre of water) or clay slurry (1 kg of clay in 1 litre of water) or salt (NaCl) solution (1,000 ppm) or dimethoate (0.05 %) and methyl parathion (0.05 %) **Disease:** • ***Phytophthora* leaf blight:** Spray (four times) the crop with Mancozeb (0.2 %) or Metalaxyl (0.05 %) twice a month starting from September (rainfed) or June (summer) • **Collar rot:** Soil drenching with Captan (0.2%) and Ridomil MZ (0.2%)
Harvesting	:	170 - 180 days after planting when the plants become yellow, wilted and dry
Expected yield	:	45 - 50 t/ha

Note: These are standard package and practices which may vary with location & environmental fluctuations.

Varieties Released by Navsari Agricultural University

(1.) Gujarat Elephant Foot Yam - 2 (GEFY-2): Dangi Suran
Year of Release (SVRC): 2024
Year of Notification (CVRC): 2025

The Elephant Foot Yam genotype NEFY-25 is recommended for Elephant Foot Yam growing areas of Gujarat as GEFY-2 (Dangi Suran) during *kharif* season. Elephant Foot Yam genotype NEFY-25 recorded 48.98 t/ha mean corm yield in Gujarat, which is overall 30.61 and 17.49 per cent superior over national check Gajendra and state variety Swagata, respectively. Its light orange fleshed corm is reported to have higher amount of starch, protein, crude fibre, total phenol, antioxidant, vitamin A and C, potassium, calcium, iron and zinc in comparison to national and state check. The corms are devoid of acridity while consumption. The proposed genotype showed field resistance against collar rot and moderate resistance against *Phytophthora* leaf blight.

(2.) Gujarat Elephant Foot Yam - 1 (GEFY-1): Swagata
Year of Release (SVRC): 2020
Year of Notification (CVRC): 2024

Elephant foot yam genotype NEFY-7 recorded 44.84 t/ha mean corm yield in Gujarat, where it exhibited overall 26.10 per cent corm yield superiority over national check Gajendra. Its light orange fleshed corm is reported to have appreciable amount of starch, dietary fiber, carbohydrate content, protein, vitamin A, iron, manganese, zinc and calcium in comparison to national check. The acridity feels same like “Gajendra” while consumption. The proposed genotype showed resistant reaction against collar rot disease. Elephant foot yam variety NEFY-7 is recommended for elephant foot yam growing areas of Gujarat as GEFY-1 (Swagata).


Recommendations by Navsari Agricultural University

(1.) High Density Planting in Elephant Foot Yam (Year: 2025)

A spacing of **60 x 60 cm** for Southern Plateau and Hills (Tamil Nadu), East Coast Plains and Hills (Andhra Pradesh), Southern Plateau and Hills (Telangana), Middle Gangetic Plains (Bihar), Eastern Plateau and Hills (Jharkhand), Western Himalayan Region (Himachal Pradesh), West Coast Plains and Hills (Karnataka), West Coast Plains and Hills (Kerala), East Coast Plains and Hills (Odisha), **Gujarat Plains and Hills (Gujarat)**, West Coast Plains and Hills (Maharashtra), Eastern Plateau and Hills (Chhattisgarh); 90 x 60 cm for Islands (Andaman and Nicobor Islands) and Eastern Himalayan Region (Tripura) and 75 x 60 cm for Lower Gangetic Plains (West Bengal) are recommended for high density planting in elephant foot yam.

(2.) Yield loss assessment in Elephant foot yam due to collar rot (Year: 2024)

Early infection with collar rot at 5th month in Elephant foot yam caused more yield loss (24.64 to 79.37 %) across different centres than later infections, so precautions should be taken in the early stage of the crop for better management of Collar rot in Elephant foot yam.

(3.) Validation of organic farming technologies in Elephant Foot Yam (Year: 2020)

The farmers of South Gujarat Heavy Rainfall Zone, intending to grow Elephant Foot Yam cv. Gajendra organically are recommended to use organic treatment as per below mentioned management:

- Raise green manure of cowpea with 20 kg ha^{-1} seed rate and incorporate it at 45 - 60 days before planting of elephant foot yam.
- Take organically produced planting material of 500 g weight and treat it with bucket full of cow dung slurry containing 1 - 2 kg neem cake and *Trichoderma harzianum* (5 g per kg seed corm) and then dry under shade before planting.

- At the time of planting, apply FYM: Neem Cake Mixture (in 10:1 ratio) @ 36 t ha^{-1} incorporated with *Trichoderma harzianum* @ 2.5 kg per t of FYM neem cake mixture along with neem cake @ 1 t ha^{-1} in pits.
- Raise green manure cowpea again with 20 kg ha^{-1} seed rate in - between fallow space of Elephant Foot Yam plants and incorporate at 45 - 60 days in pits along with 3 t ha^{-1} of ash.


(4.) Integrated weed management in Elephant Foot Yam (Year:2020): For scientific community

The scientists are informed that spraying of post emergence herbicide-Glyphosate 41 % S. L. 1 kg *a.i.*/ha at 30, 60 and 90 DAP in-between row space of elephant foot yam cv. Gajendra for effective weed management.


(5.) Site specific nutrient management study of Elephant Foot Yam (Year: 2016)

The peasantry of south Gujarat Heavy Rainfall Agro - Climatic Zone - I (AES III), growing Elephant Foot Yam cv. Gajendra in the soil having deficient N and sufficient P and K are advised to apply 100:45:75 NPK kg/ha in two splits. Apply first dose of 50:45:37.5 NPK kg/ha at 45 days after planting and second dose of 50:00:37.5 NPK kg/ha one month after application of first dose for obtaining higher income. At the time of planting application of 25 tonne FYM per hectare is advisable.


(6.) Effect of plant density and sett size on growth and dry matter partitioning of Elephant Foot Yam (Year: 2014)

The farmers of south Gujarat heavy rainfall Agro - Climatic Zone growing Elephant Foot Yam cv. Gajendra are advised to plant Elephant Foot Yam at the distance of 60 cm × 60 cm by using seed corm sett of 250 g weight for obtaining higher BCR. By this way, farmers can obtain higher yield and save the seed corm cost.



(7.) Organic production of Elephant Foot Yam (Year: 2012)

The farmers of south Gujarat intending to grow Elephant Foot Yam (cv. Gajendra) through organic farming are advised to apply vermicompost (1.21% N) @ 5 t/ha + *Azospirillum* @ 5 kg/ha + *Phosphobacteria* 5 kg/ha + ash @ 5 t/ha to get good quality produce and improving soil health. The vermicompost should be applied in two equal splits *i.e.,* at sowing and one month after sowing.

Detail management:

i. Prepare the pit at a distance of 90 cm × 90 cm and sow 500 g tuber in each pit. Before sowing treat the tuber with slurry of 10% cow dung, 2% cow urine and 0.5% each of *Trichoderma* and *Pseudomonas*. Apply 2.5 t/ha vermicompost, 5 t/ha ash and 5 kg/ha each of *Azospirillum* and *Phosphobacteria*.
ii. After one month of sowing, apply 2.5 t/ha vermicompost.
iii. After two months, spray 1.5% each of cow urine and butter milk and 0.5% each of *Trichoderma*, *Pseudomonas* and jaggery.

(8.) Fertilizer application in Elephant Foot Yam (Year: 1994)

Farmers of south Gujarat heavy Rainfall Zone - I (AES - I) growing *Suran* cv. 'Local' are advised to apply 100 kg N/ha, 50 kg P_2O_5 and 150 kg K_2O/ha. Half dose of nitrogen and full doses of P_2O_5 and K_2O are to be applied at the time of planting and the remaining half dose of nitrogen should be applied 45 DAP to obtain higher yield and economic return.


Technologies Certified by ICAR (Year: 2024)

(1.) Management of post - harvest rot in Elephant Foot Yam corms stored for seed purpose

Single application of combination fungicide containing Mancozeb + Carbendazim 0.2% by dipping the corms in the solution for 1 - 2 minutes followed by shade drying for 12 - 24 hours and storage in layers for a period of 3 months is recommended for inclusion in package of practices.


ICAR HS-CTCRI-Technology-2024-018

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

Certified that

S.S. Veena
(Lead Developer)

Associate Developers
M.L. Jeeva, G. Byju, J. Sreekumar, S. Sunitha
Sheriful Alam, S. Sengupta, J. Tarafdar
D. Veera Suresh, Ashish Narayan,Himani Patel
K. Mamatha, Biswajith Das

of

ICAR-CTCRI, Thiruvananthapuram

has developed the technology

Integrated management package for minimizing postharvest rot in elephant foot yam

16th July, 2024
New Delhi

(Vishaw Bandhu Patel)
Assistant Director General (F&PC)

(Sanjay Kumar Singh)
Deputy Director General (HS)

(2.) Organic management of post - harvest rot in elephant foot yam corms stored for seed purpose

Trichoderma @ 5g/kg of corm in cow dung slurry is recommended for inclusion in package of practices.


ICAR-HS-CTCRI-Technology-2024-019

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

Certified that

S.S. Veena
(Lead Developer)

Associate Developers
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(Sanjay Kumar Singh)
Deputy Director General (HS)

Greater Yam

Variety	**:**	**Gujarat Greater Yam - 1 (GGy-1): Hemlata**
Suitability of the variety for the area	**:**	Greater yam growing areas of Gujarat
Field preparation	**:**	Two to three ploughing followed by planking than digging of pits (60 cm × 60 cm × 60 cm). For planting, sprouted tubers are desirable
Seed tuber rate	**:**	3200 kg/ha
Seed tuber treatment	**:**	Dithane M - 45 or *Carbendazim* @ 2.0 g per litre of solution + Cow Dung Slurry 200 litre helpful for early sprouting
Seed tuber treatment with bio - fungicides	**:**	*Trichoderma asperellum* @ 5 g in fresh cow dung slurry per kg of tubers.
Time of planting	**:**	Last week of May to first week of June
Spacing	**:**	90 cm × 90 cm
Fertilizer dose	**:**	Fertilizer dose: 80:60:80 N:P:K kg ha^{-1} for high tuber yield and FYM: 20 t /ha
Irrigation	**:**	Immediately after planting, 14^{th} & 20^{th} week → critical, once in 10 days
Staking	**:**	Height of 3 m, after a month crop
Weed management	**:**	Use of non - selective herbicide before planting and 2 Intercultural operations and one hand weeding
Gap filling	**:**	Gap filling required after germination of tubers or 20 - 30 days when rain showers observed
Plant protection	**:**	Need based
Harvesting of tubers	**:**	At physiological maturity stage on pale yellow and after drying of leaves/petioles (7 - 8 months after planting)
Tuber yield	**:**	18.48 t/ha
Special care during planting		Planting should be done under the trenches and mulching is required with plant stubbles or straw for better yield.

Note: These are standard package and practices which may vary with location & environmental fluctuations.

Variety Released by Navsari Agricultural University

(1.) Gujarat Greater Yam - 1 (GGy-1): Hemlata
Year of Release (SVRC): 2019
Year of Notification (CVRC): 2024

Greater yam variety NGy-7 had recorded 18.48 t/ha average tuber yield which was 28.24 % higher than national check Da-199 (Sree Karthika). The purple flesh tuber of this clone is rich in total soluble sugar, crude fibre, anthocyanin, phosphorus, potassium, ferrous, zinc and copper content and low in anti-nutritional factor Diosgenin compared to national check Da-199 (Sree Karthika). The proposed genotype showed moderately resistant to anthracnose disease. The variety NGy-7 is recommended for cultivation in Gujarat as "GGy-1 (Gujarat Greater Yam-1): Hemlata".

(2.) Chhattisgarh Ratalu-1 (IGDa-2)

Chhattisgarh Ratalu-1 (IGDa-2) is also recommended for Gujarat from CVRC in the year 2018.

Recommendations by Navsari Agricultural University

(1.) High density planting in greater yam (Year: 2025)

A spacing of **60 x 60 cm** for West Coast Plains and Hills (Kerala), East Coast Plains and Hills (Odisha), Eastern Plateau and Hills (Chhattisgarh), Central Plateau and Hills (Rajasthan), Eastern Himalayan Region (Manipur), **Gujarat Plains and Hills (Gujarat)** is recommended for high density planting in greater yam.

(2.) Influence of sett size and spacing on growth and yield of Greater Yam (*Dioscorea alata* L.) (Year: 2023)

The farmers of South Gujarat Agro climatic zone growing Greater Yam (Hemlata) are recommended to use 250 g tuber size and planting the Greater Yam at 90 cm × 60 cm spacing to get higher yield and net realization.

(3.) Performance of Greater Yam (*Dioscorea alata* L.) under different stacking systems (Year: 2015)

The farmers of south Gujarat heavy rainfall agroclimatic zone (AES III) growing Greater Yam cv. Local Round are advised to plant Greater Yam at the distance of 90 cm × 90 cm with Elephant Foot Yam cv. Local as a live stacking crop in - between two rows of Greater Yam at a distance of 90 cm × 90 cm and train the vines of Greater Yam on the plants of elephant foot yam with application of 15 tonnes of FYM and 120:90:120 kg NPK/ha to obtain higher yield and net return.

(4.) Effect of land configuration, soil conditioner and fertilizer on Greater Yam cv. Local Round (Year: 2012)

The farmers of south Gujarat, Heavy Rainfall Zone - I, AES - III, growing Greater Yam (*Dioscorea alata* L.) cv. Local Round are advised to plant the crop on ridge furrow of 30 cm height at 90 cm × 90 cm distance and fertilized with FYM @ 20 t/ha along with recommended dose of fertilizer @ 80:60:80 NPK kg/ha. Full dose of FYM, P_2O_5 and half dose of N and K_2O applied at planting then remaining half dose of N and K_2O should be applied in two equal splits at 90 and 135 days after planting for getting higher tuber yield and maximum economic return.

(5.) Effect of different organic manures on growth, yield and quality of yam (Year: 2012)

The farmers of south Gujarat intending to grow Greater Yam through organic farming are advised to apply 75 per cent of 80 kg recommended N/ha through vermicompost (1.21% N) and remaining 25% of N through castor cake (4.31% N) @ 500 kg/ha to get good quality produce and improvement in soil health. The organics should be applied in two equal splits *i.e.,* at sowing and one month after sowing.

Detail management

i. Prepare the pit at a distance of 90 cm × 90 cm and sow 100 g tuber in each pit. Before sowing treat the tuber with slurry of 10% cow dung, 2% cow urine and 0.5% each of *Trichoderma* and *Pseudomonas*. Apply 2500 kg/ha vermicompost and 250 kg/ha castor cake.

ii. After one month of sowing, apply 2500 kg/ha vermicompost and 250 kg/ha castor cake and provide bamboo stacking and tie four plant in one bamboo.

iii. After two months, spray 1.5% each of cow urine and butter milk and 0.5% each of *Trichoderma*, *Pseudomonas* and jaggery.

(6.) Fertilizer application in Greater Yam (Year: 1994)

Farmers of south Gujarat region growing yam cv. 'Local Round' are advised to apply 80:120:80 kg/ha NPK and FYM @ 10 t/ha to obtain higher yield. Half doses of nitrogen through fertilizer and full dose of P_2O_5, K_2O and FYM should be applied at the time of planting and the remaining half dose of nitrogen through chemical fertilizer should be applied 45 DAP as top dressing.

Sweet Potato

Variety	**:**	**Gujarat Sweet Potato - 1 (GSP-1): (Navsari Gaurav)**
Suitability of the variety for the area	**:**	Sweet potato growing area of Gujarat
Field preparation	**:**	Two to three ploughing followed by planking is to be carried out. For planting, 20 - 30 cm long vine cutting, having at least 3 to 4 nodes are desirable
Planting material (per ha)	**:**	83,333 vine cuttings/ha (20 to 30 cm long cutting)
Vine treatment	**:**	Dipping the vine cuttings in Chlorpyriphos or Dimethoate @10 ml in 10 litre of water for 10 to 15 minutes
Time of planting	**:**	*Rabi*: October - November
Spacing	**:**	60 cm × 20 cm
Fertilizer dose	**:**	FYM: 10 t /ha and Fertilizer dose: 75:50:75 N:P:K kg ha^{-1}
Irrigation management	**:**	Immediately after planting, once in a week during rest of the time
Weed management	**:**	Use of non - selective herbicide before planting and 2 Intercultural operations and one hand weeding
Plant protection	**:**	Need based
Harvesting of tuber	**:**	100 - 120 days after planting
Tuber yield	**:**	30 - 35 t/ha
Quality characteristics of the variety, if any	**:**	High Dry matter (%), Total sugar (%), Fibre (%) and Protein (%) and Antioxidant activity (%) in tuber as well as good cooking quality

Note: These are standard package and practices which may vary with location & environmental fluctuations.

Varieties Released by Navsari Agricultural University

(1.) Gujarat Sweet Potato - 1 (GSP-1): Navsari Gaurav
Year of Release (SVRC): 2025
Year of Notification (CVRC): Pending in 2026

The farmers of Gujarat are recommended to grow sweet potato variety Gujarat Sweet Potato 1 (Navsari Gaurav) during *rabi* season. The proposed variety gave 27.00 t/ha marketable tuber yield which is 102.83 and 33.30 per cent higher than check varieties Gouri (NC) and Bhu Kanti (SC). Spreading type of this variety has medium maturity and tuber of this variety has pinkish skin colour and white flesh. Tuber of this genotype contains higher amount of total sugar (4.28 %), protein (1.54 %), fiber (2.93 %) and antioxidant (18.00 %) as compared to check varieties *viz.,* Gouri (NC) and Bhu Kanti (SC). It showed moderately resistant reaction against sweet potato weevil under field condition.

(2.) Collection 71 (Year of release: 1996) (Endorsed)

This variety is high yielder (28 t/ha). Skin colour is red and flesh colour is white. Infestation of major disease and pest was not observed. Consumer preference is more. Recommended for cultivation in Gujarat as “C 71”.

(3.) Bhu Kanti (Year of release: 2018) (Endorsed)

Sweet potato CIP-440127 (Bhu Kanti) had recorded 23.32 t/ha tuber yield which was 95.64 and 83.97 % higher than national check Gauri and Local check, respectively. This clone is rich in β-carotene content compared national check Gauri and Local check. Infection of major diseases of sweet potato was not observed. This clone may be useful as combating food in nutritional crises for backward areas. The variety CIP-440127 is recommended for cultivation for the farmers of Gujarat region as "Bhu Kanti".

Recommendations by Navsari Agricultural University

(1.) Validation of customized fertilizers in sweet potato (Year: 2023): For scientific community

It is informed to scientific community that soil application of "customized fertilizer" (325 kg/ha) two times as basal and 1 month after planting as well as foliar application of "micronol sweet potato" (5 ml/lit) three times on 15, 30 and 45 days after planting should be done for getting higher yield in sweet potato.

Customized Fertilizer (%):

N	P	K	Ca	Mg	Zn	B
11	7	11	6	3	0.4	0.1

Micronol sweet potato (%):

Zn	Cu	B	Fe	Mn
2	0.6	0.2	0.5	0.25

Tannia

Variety	**:**	**Gujarat Tannia - 1 (G. Tannia-1): Navsari Pari**
Suitability of the variety for the area	**:**	Tannia growing area of Gujarat
Field preparation	**:**	Two to three ploughing followed by planking then digging of pits (60 cm × 60 cm × 60 cm). For planting, sprouted corms are desirable
Seed corm rate (per ha)	**:**	Mother corm: 1800-2500 kg/ha Daughter corm: 600-1000 kg/ha
Seed corm treatment	**:**	Dithane M - 45 or *Carbendazim* @ 2.0 g per litre of solution + Cow Dung Slurry 200 litre helpful for early sprouting
Time of planting	**:**	*Kharif*
Spacing	**:**	90 cm × 90 cm
Fertilizer dose	**:**	FYM: 20 t /ha and Fertilizer dose: 80:60:80 N:P:K kg ha^{-1}
Irrigation management	**:**	Immediately after planting, once in a week during rest of the time
Weed management	**:**	Use of non - selective herbicide before planting and 2 intercultural operations and one hand weeding
Plant protection	**:**	Need based
Harvesting of leaves	**:**	The leaves are harvested 60 DAP in the field
Harvesting of corms	**:**	At physiological maturity stage on pale yellow and after drying of leaves/petioles (9-10 months after planting)
Leaves yield (without petiole)	**:**	7.96 t/ha
Corm yield	**:**	10.02 t/ha
Quality characteristics of the variety, if any		High amount of leaves starch (8.15 %) and low fibre (1.65 %) as well as good cooking quality

Note: These are standard package and practices which may vary with location & environmental fluctuations.

Variety Released by Navsari Agricultural University

(1.) Gujarat Tannia - 1 (G. Tannia-1): Navsari Pari

Year of Release (SVRC): 2023

Year of Notification (CVRC): 2025

The farmers of Gujarat state are recommended to grow Gujarat Tannia 1(G. Tannia 1: Navsari Pari) during *kharif* season. The proposed variety recorded average green leaves yield of 7.96 t/ha and after 270 days of planting, corm and cormel yield 10.02 t/ha in south Gujarat which was 31.1and 14.8 per cent higher over national check variety Konkan Haritparni, respectively. The variety also having higher starch (8.15%) and low fibre content (1.65%) with value added traits. This variety has found lower population of aphid as well as less prevalence of *phytophthora* leaf blight and corm rots as compared to check.

Cassava

Suitability of the crop for the area	**:**	Cassava growing area of Gujarat
Field preparation	**:**	Two to three ploughing followed by planking then ridge and furrow should be prepared for planting
Setts rate (per ha)	**:**	8 to 10 months old disease and insect free, (mature) healthy stem. Setts or stakes of 20 cm (Optimum) length, 3 cm width (diameter- thickness) having 5 to 6 nodes. 12,345 setts per ha at 90 x 90 cm spacing and 17,777 setts per ha at 75 x 75 cm spacing required
Sett treatment	**:**	*Carbendazim* 1 g / l of water for 15 minutes. Basal end of the setts is dip in a solution of *Azospirillum* culture and PSB culture each @ 30 g / l of water for 20 minutes
Time of planting	**:**	*Kharif*
Spacing	**:**	90 cm x 90 cm → For branching / Semi- branching type; 75 cm x 75 cm → For non branching / erect branching type
Fertilizer dose	**:**	FYM: 12.5 t /ha and Fertilizer dose: 75:75:75 N:P:K kg ha^{-1}
Irrigation management	**:**	Immediately after planting, once in a week during rest of the time
Weed management	**:**	Use of non - selective herbicide before planting and 2 intercultural operations and one hand weeding.
Plant protection	**:**	Need based
Harvesting of tubers	**:**	At physiological maturity stage on pale yellow and after cracking of soil around the base of the plant (10-11 months after planting); Stack the stems vertically in well-aerated shady places for subsequent planting
Tuber yield	**:**	30-40 t/ha

Note: These are standard package and practices which may vary with location & environmental fluctuations.

Recommendation by Navsari Agricultural University

(1.) Standardization of fertilizer dose and spacing in tapioca (Year: 1985)

The tapioca variety H165 should be planted in first week of April at 90 cm × 90 cm spacing. The crop should be manured at the rate of 12.5 tons FYM/ha as basal while land preparation and fertilized at the rate of 75:75:75 kg/ha N: P_2O_5: K_2O for higher production of tubers. The fertilizers are to be applied in two equal splits *viz.,* first half at the time of planting and the remaining half at two months after planting.

Package of Practices on Tuber Crops

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Package of Practices on Tuber Crops

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