



Climate - Smart Fruit Farming through Crop Diversification



Dr. G Karunakaran
Principal Scientist
ICAR-Indian Institute of Horticultural Research,
Bengaluru, Karnataka, India
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Harnessing High value Fruit Crops for Sustainable Diversification



Diversification

- Shift from low-return staple crops to high value fruits
- Encourage region specific cultivation for sustainable income
- Integrate exotic fruits in mixed orchards and homestead systems



Atmanirbhar Bharat

- Promote domestic cultivation of exotic fruits
- Strengthen nursery networks & quality planting materials
- Foster innovation, entrepreneurship & local value addition



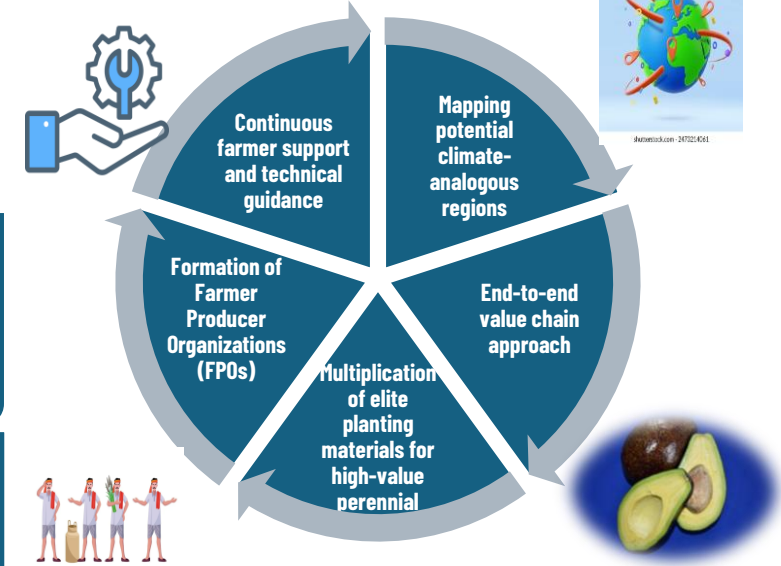
Nutrition & Health Security

- Enrich diets with vitamins, minerals and antioxidants
- Combat malnutrition through nutrient fruits
- Link horticulture diversification with public health



Agro-processing and value addition

- Growth of the agro-processing industry, offering opportunities for value addition, employment generation, and rural entrepreneurship
- Encourage value added products (juices, powders, oils, nutraceuticals)



Strategies for Import Substitution

Import substitution

- Cut Rs 300 crore fruit import bills
- Develop domestic clusters for production & processing
- Introduce climate resilient crops like dragon fruit, avocado, passion fruit
- Strengthen export competitiveness through certification & branding



ICAR-IIHR- Commercialization model

linking jackfruit bio-diversity for livelihood & nutritional security

Farmers Jackfruit varieties

- ICAR-IIHR identified two elite jackfruit varieties “**Siddu**” conserved by Mr. S. S. Paramesh & “**Shankara**” conserved by Mr. Shankariah, Tumakuru, Karnataka.
- Attractive coppery red flakes rich in carotenoids and antioxidant potential.



Siddu jackfruit was released during 2017



Shankara jackfruit was released during 2019



Recognition and protection of Siddu & Shankara by PPV & FRA

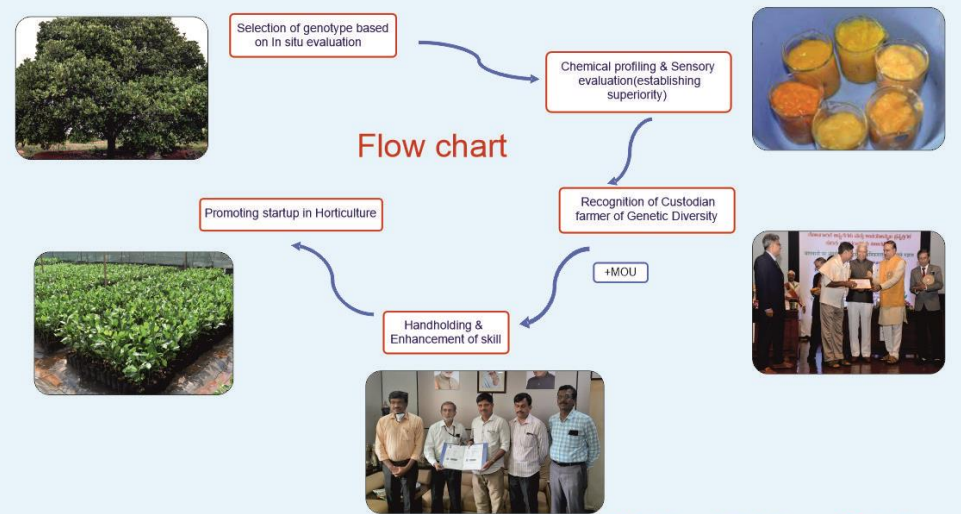


Siddu and shankara Jackfruit variety protected by PPV FRA during 2023



•As on March 2024, about 1,62,000 plants of both Siddu and Shankara was produced and sold to farmers. About 31,000 farmers adopted the technology in about 2340 acres

A Model Concept : Linking Biodiversity Conservation with Livelihood Security & Promoting Startups in Perennial Fruit Crops



Model Concept, Illustrations and Design By
G. Karunakaran, M R Dinesh
Pritee Singh, Kanupriya, C., Arivalagan, M and Ruchitha, T

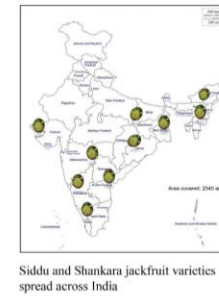
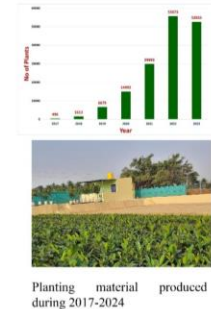
Siddu Jackfruit farmer is earning about 76 lakhs over the period of 2018-2024 in handholding with ICAR-IIHR. In addition, under the benefit share model, ICAR-IIHR deposited about 39 lakhs over the period of five years. His earlier income from the jackfruit was only 8000/yr before ICAR-IIHR intervention.

Area Spread: 2360 acres

Model farm: Shri Ashok Kumar- 20 acres

PPV & FRA protected Farmer varieties :

**Jackfruit-Siddu, shankara,
Tamarind-lakshmana
Jamun: Nirathara Jamun**



Intervention by ICAR-IIHR



Siddu jackfruit farmer received plant genome saviour award



Siddu & Shankara jackfruit farmer awarded with a cheque of Rs. 5.00 lakhs each



IARI Best farmer award received



Project title

Climate - Smart Fruit Farming through Crop Diversification



Lead organization : ICAR-Indian Institute of Horticultural Research, Bengaluru, Karnataka, India

Associations: KVK, Tumakuru & Gonikoppal & KEFA

Problem statement and justification:

- ✓ Monocropping pattern especially Coconut & Arecanut; coffee & pepper-challenges in sustainability of the income
- ✓ Climate change output fall drive pepper prices up 40% in 2 years (Source TOI, March 04th, 2025)
- ✓ Biotic and Abiotic stress-coconut-Spiraling white fly, root rot and arecanut-yellowing

Reasons for selecting fruit tree species/varieties or cultivation model:

The proposed fruit crops are high value, provides nutritional security and economic returns

Need of proposed research: Crop diversification, additional income and nutritional security

To address the challenges of climate change and price fluctuation faced by local farmers

Project Objectives



1. To implementation of high value fruit crops in monocropping system under varying climatic condition



2. To develop and integrate diversified fruit-based cropping systems for sustainable income



3. To build awareness and capacity among farmers through training programs on integration crop diversification in framing system

Methodology and implementation approach(1):



Stage I : (0-6months)

- ✓ Survey and identification of locations and farmers prevailing in 2 different agroclimatic condition
- ✓ Target area: Tumakuru, Coorg region of Karnataka - 50 farmers
- ✓ Suitable combinations of fruit crops will be integrated into diversified cropping models majorly mixed cropping

Stage II: (7-12 months)

- ✓ planning and Establishment

Location 1: Tumakuru region- Dragon fruit, Avocado, Jackfruit & Jamun

- ✓ Dragon fruit: Coconut, tamarind, aonla and sandalwood
- ✓ Avocado: Coconut, sandalwood and backyard
- ✓ Jackfruit: jackfruit & Jackfruit, border crop in coconut and arecanut
- ✓ Jamun: backyard/Longan

Varieties:

Dragon fruit: CHES D1

Jackfruit-Siddu, Shankara, V.ealr and Lalbagh Mudhura

Avocado: Arka supreme & Ravi; Pinketon and Lamb Hass

Jamun: Jamun J I/1 & Longan



Not only productivity & Nutritional content/unit area



Model implementation: 25 farmers

Area to covered per farmer: 0.5acre

Methodology and implementation approach(2):

Location 2: Coorg region- Avocado, Rambutan, Passion fruit

- ✓ Avocado: coffee and Pepper; monocrop and backyard
- ✓ Rambutan: coffee and Pepper; monocrop and backyard
- ✓ Passion fruit/longan: border and backyard

Stage II : (7-12 months)

- ✓ planning and Establishment

Stage III: (13-24months):

- ✓ Monitoring and documentation

Stage IV : (25-36months):

- ✓ Monitoring and documentation
- ✓ Training programs to disseminate knowledge on crop diversification
- ✓ Awareness climate-resilient fruit crop cultivation will be organized

Varieties: Avocado: Arka supreme & Ravi; Pinketon and Lamb Hass
 Rambutan: Arka Coorg Arun and Rongrien and N 18
 Passionfruit: Kaveri Hybrid

Model implementation: : 25 farmers
 Area to covered per farmer: 0.5 acre



Project outcomes/Impact:



Production Model Development

Sustainable, scalable fruit production models specifically designed for climate resilience and long-term sustainable viability.



Integrated Cropping Systems

Design and implementation of proven integrated fruit-based cropping system models that optimize resource use and enhance farm-level resilience.



Scientific Recommendations

Evidence-based, region-specific guidelines for fruit crop selection tailored to local climate conditions, soil types, and production constraints.



Livelihood improvement and by adopting models

sustainable income and year-round employment-generation
Fruit consumption pattern- enhanced



Local Capacity Building

Strengthened community to effectively mitigate and adapt to climate variability in fruit production systems.

Environmental and Climate advantages



Strengthens Climate Resilience

Hardy fruit species withstand extreme weather patterns and temperature fluctuations, creating robust agricultural systems that adapt to changing climate conditions.



Soil health restoration

- ❖ Deep perennial root systems anchor soil & prevent erosion
- ❖ Increases organic matter accumulation

Promotes Biodiversity Conservation

- ❖ Multi-layered canopy structures in diversified orchards
- ❖ Critical habitat for pollinators, birds, and beneficial insects



Supports Long-Term Environmental Sustainability

Improves land productivity while maintaining ecological balance—creating regenerative systems that benefit both agriculture and natural ecosystems for generations.

Scaling and Sustainability



Scalability

- ❖ Adaptable across diverse agro-climatic zones - Expansion beyond pilot locations
- ❖ Low-input, low-cost orchard models ensure accessibility
- ❖ Replicable Diversified Orchard Models
- ❖ Strong Potential for Market-driven Scaling

Sustainability

- ❖ Long-Term Environmental Sustainability
- ❖ Economically profitable with stable long-term returns- Consistent income across years, Reduced risk due to diversified species
- ❖ Institutional Sustainability - Builds local expertise; Strengthens community -based extension
- ❖ Promotes soil, water, and biodiversity conservation- Climate-resilient varieties

Budget summary and risk and mitigation strategy



Details	2025-26	2026-27	2027-28	Total (US\$)
Pay and allowances for SRF* (1Nos.)	6750	6750	7000	20500
Field research and experimental setup	5000	10000	2000	17000
Consumables	3000	3000	0	6000
Transport Allowance	2000	2000	1000	5000
Organizing Trainings, field visit	750	1500	1500	3750
Publications	0	1200	1000	2200
Contingencies	500	500	0	1000
Total	18000	24950	12500	55450

Risk and Mitigation strategy

Socio-Economic and Adoption Risks

Risk: Low farmer Adoption and behavioral resistance

Total Budget: 55450, 1st year -18000, 2nd year-24950, 3rd year-12500

Mitigation:

- ✓ Demonstration showcasing successful models-farmers field
- ✓ Extensive training and capacity
- ✓ building Encourage FPOs for collective decision making



**Policy Paper on
Harnessing Exotic Fruit Crops for
Sustainable Diversification**

G Karunakaran
T Suresh Kumar
M Sankaran
P Naveen Kumar
B M Muralidhara
Ruchitha T
Chandrakala R
E Sreenivasa Rao



Sri Konda Laxman Telangana Horticultural
University, Mulugu, Telangana, India

**Join hands with Fruitful India
Make Horticulture venture nutritional and livelihood Security**

Thanks