



Centre on Integrated Rural Development for Asia
and the Pacific (CIRDAP)



ENTREPRENEURSHIP, PARTNERSHIPS AND VIBRANT AGRI-COOPERATIVES FOR RURAL TRANSFORMATION IN ASIA AND THE PACIFIC

AUTHORS

A. Praveen Reddy
Dr. S. Shanavas
Yuvaraju Atmakuri

EDITORS

Dr. P. Chandra Shekara
Dr. Ganga Dutta Acharya





Entrepreneurship, Partnerships and Vibrant Agri-Cooperatives for Rural Transformation in Asia and the Pacific

EDITORS

Dr. P. Chandra Shekara

Director General at Centre on Integrated Rural Development
for Asia and the Pacific (CIRDAP)

Dr. Ganga Dutta Acharya

Director, Research at Centre on Integrated Rural Development
for Asia and the Pacific (CIRDAP)

AUTHORS

Shri A. Praveen Reddy

Dr. S. Shanavas

Mr. Yuvaraju Atmakuri



Centre on Integrated Rural Development for Asia and the Pacific



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GPO Box 2883, Dhaka-1000, Bangladesh

PABX: +88-02- 41053923, +88-02-41053924, +880-2-41053925

Office of the DG || Phone +88-02-41053920 E-mail: administration@cirdap.org

www.cirdap.org

TABLE OF CONTENTS

TABLE OF CONTENTS	ii
LIST OF ABBREVIATIONS	iv
PREFACE	v
EDITOR'S NOTE	vi
AGRITECH STARTUPS FOR RURAL TRANSFORMATION	2
1.1 TRST01: Climate-Tech Innovation for Sustainable Agriculture	5
1.2 Rukart: Enabling Decentralized Post-Harvest Infrastructure	8
1.3 BomLife: Cultivating Sustainable, Farmer-Centric Organic Ecosystems	11
1.4 Krishitantra: Revolutionizing Soil Intelligence at the Farm Gate	14
1.5 DeltaThings: Affordable IoT-Powered Pest Management for Small-holder Farmer	17
1.6 BharatRohan: Revolutionizing Agri-Diagnostics with Drones	19
1.7 Satyukt: Bringing Space Intelligence to Every Farm	22
1.8 Boomitra: Bringing Soil Carbon Finance to Smallholder Farmers	25
1.9 HeliotAI- Smarter Climate Decisions for Rural India	27
1.10 SATSURE	29
1.11 DeHaat	31
1.12 Cropin	33
1.13 FARM SATHI	35
1.14 Fasal	37
1.15 Waycool	39
1.16 Ninjacart	41
1.17 ZEWA ECOSYSTEMS	43
1.18 AGNEXT	45
CONCLUSION	47
AGRICULTURAL COOPERATIVES AND RURAL TRANSFORMATION: CASE OF MULKANOOR COOPERATIVE SOCIETY	49
2.1 Mulkanoor Cooperative Society: An Introduction	49
2.2 Factors Driving the Success	50
2.1.1. Strategic Alliances with Financial Stakeholders	50
2.1.2. Partnerships with Government, Research, and Academia	54
2.1.3. Value Chain Integration and Marketing	55
2.2 Amplifying Impact	60

2.2.1 The Mulkanoor Women's Cooperative Dairy Union (MWCD)	60
2.2.2. Inclusion of Landless Laborers: Joint Liability Group (JLG) Thrift Cooperatives	60
2.2.3. Supporting Progressive Farmers: Seed Production Cooperatives	61
2.2.4. Public-Private Partnership Models for Sustainable Agriculture	61
CONCLUSION	63
WOMEN'S EMPOWERMENT AND RURAL TRANSFORMATION: THE KUDUMBASHREE INITIATIVE	66
3.1 Introduction	66
3.2 Stories of Change	67
3.2.1 The Transformational Journey of Mrs. Sudha Devadas	67
3.2.2. From Tutor to Trailblazer: The Transformational Journey of Sheeba Jose	68
3.2.3. Breaking the Barriers: The Empowering Journey of Jameela Shamsuddin	70
3.2.4. Rooted in Determination: Life Journey of Mrs. Lillikutty Philip	72
3.2.5. From Crisis to Craft: The Rise of Nanma Food Processing Collective	75
3.2.6. From Farm to Flavor: The Journey of Real Food Products in Vaikom	76
3.2.7. The Empowering Journey of Mrs. Mercy	78
3.2.8. Arya Mushroom & Value Addition Unit: Cultivating Resilience through Farm-Based Entrepreneurship, Theviyodu, Vithura, Thiruvananthapuram, Kerala	80
3.2.9. From Bananas to Brilliance: The Empowerment Journey of Shivam Producer Group, Kallara	82
3.2.10. From Farm to Fragrance: The Rise of Aloe Vera Sparsh from Nilamel	84
CONCLUSION	86

LIST OF ABBREVIATIONS

AI	Artificial Intelligence
API	Application Programming Interface
B2B	Business-to-Business
B2C	Business-to-Consumer
CSR	Corporate Social Responsibility
DAP	Di-Ammonium Phosphate
ESG	Environmental, Social, and Governance
EU	European Union
EUDR	EU Deforestation Regulation
FAO	Food and Agriculture Organization
FPO	Farmer Producer Organization
FYM	Farm Yard Manure
GIS	Geographic Information System
GPS	Global Positioning System
ICT	Information and Communication Technology
ICAR	Indian Council of Agricultural Research
IFPRI	International Food Policy Research Institute
IoT	Internet of Things
IPM	Integrated Pest Management
KVK	Krishi Vigyan Kendra
ML	Machine Learning
MSP	Minimum Support Price
NABARD	National Bank for Agriculture and Rural Development
NGO	Non-Governmental Organization
PMFBY	Pradhan Mantri Fasal Bima Yojana
RKVY	Rashtriya Krishi Vikas Yojana
SaaS	Software as a Service
SHG	Self-Help Group
UAV	Unmanned Aerial Vehicle
UNDP	United Nations Development Programme
USD	United States Dollar

PREFACE

Agriculture in Asia and the Pacific region is not merely an economic activity- it is a livelihood, a legacy, and a landscape of transformation. As the region grapples with the challenges of climate change, environmental degradation and socio-economic inequality, a quiet revolution is underway. From the foothills of the Himalayas to the coastal deltas of the Bay of Bengal, farmers, cooperatives, and innovators are reimagining the future of food, livelihoods, and sustainability.

This book is a curated journey through that transformation.

At its heart are the stories of agri-tech startups, grassroots cooperatives, and women-led enterprises that are redefining rural development. These are not abstract case studies, but are living testaments to resilience, ingenuity, and the power of inclusive innovation. Whether it is a blockchain-powered traceability platform enabling smallholders to access global carbon markets, a solar-cooled storage unit preventing post-harvest losses, or a women's collective turning mushrooms into economic independence, each chapter captures a facet of rural reinvention.

The first section explores how technology-led startups are bridging systemic gaps in agriculture- enhancing productivity, reducing waste, expanding market access, and promoting climate resilience. These ventures are not only disrupting traditional value chains but also democratizing access to finance, data, and decision-making for millions of small and marginal farmers.

The second section delves into the enduring strength of rural cooperatives, with a spotlight on the Mulkanoor Cooperative Rural Credit and Marketing Society, Telangana, India. Here, we witness how strategic alliances, inclusive governance, and value chain integration can create sustainable, community-owned ecosystems that uplift entire communities.

The final section celebrates the transformative spirit of women's empowerment through the Kudumbashree movement and other grassroots enterprises. These narratives remind us that rural development is not just about infrastructure or income- it is about dignity, leadership, and the right to dream.

This book is intended for policymakers, practitioners, researchers, and changemakers who believe in the promise of rural transformation. It is also a tribute to the farmers, entrepreneurs, and community leaders who, against all odds, are cultivating a more equitable and sustainable future.

EDITOR'S NOTE

It is with great pride and purpose that we present this volume, a collective endeavour that reflects the spirit of regional cooperation, scholarly rigor, and grassroots empowerment. Conceived through the collaborative engagements and capacity-building efforts of CIRDAP, this compilation brings together diverse voices, experiences, and insights from across the Asia Pacific region, unified by a shared commitment to rural development and inclusive growth.

Each chapter in this volume stands as a testament to the dedication and expertise of its contributors- practitioners, researchers, and policy advocates- whose work illuminates the challenges and opportunities facing rural communities today. Their narratives, analyses, and case studies offer not only theoretical rhetoric but also practical relevance, bridging the gap between policy discourse and lived realities.

We extend our deepest gratitude to the chapter writers, shri A. Praveen Reddy, Dr. S. Shanavas and Mr. Yuvaraju Atmakuri whose contributions build the intellectual backbone of this publication.

We gratefully acknowledge the invaluable support of our collaborator, NEDAC- Network for Development of Agricultural Cooperatives in Asia and the Pacific. Their partnership with CIRDAP in the international training programme, Startups, Technology, Entrepreneurship and Partnerships for Vibrant Agri Cooperatives, played a pivotal role in facilitating knowledge exchange, strengthening capacity, and fostering regional dialogue. More than a training initiative, this collaboration helped shape the thematic contours and cooperative ethos that underpin this volume. NEDAC's enduring commitment to agricultural cooperatives and rural resilience continues to inspire and guide our shared mission.

As editors, we have endeavoured to curate this volume with clarity, coherence, and inclusivity, ensuring that each contribution is presented with the respect and prominence it deserves. We hope that this publication will serve as a resource for policymakers, development practitioners, scholars, and community leaders alike- sparking dialogue, informing action, and advancing the cause of sustainable rural development. Let this volume stand not only as a record of knowledge but as a call to continued collaboration, innovation, and solidarity across borders.

- The Editors



TECHNOLOGY-LED STARTUPS AND POTENTIAL FOR RURAL TRANSFORMATION



AGRITECH STARTUPS FOR RURAL TRANSFORMATION

Agriculture remains the primary livelihood for much of South Asia, underpinning food security, rural incomes, and economic stability. Despite its pivotal role, the sector has historically been constrained by low productivity, fragmented supply chains, significant post-harvest losses, and limited access to markets and institutional finance ([FAO, 2023](#)). Over the last decade, a rapid expansion of technology-driven agritech startups across South Asia—particularly in India—has sought to address these systemic gaps. By deploying artificial intelligence (AI), the Internet of Things (IoT), machine learning (ML), blockchain, drones, and renewable energy, these enterprises are reshaping agricultural value chains, enhancing resilience, and creating measurable socio-economic impact. Following are some of the promising areas where startups have shaped rural economies

Enhancing Productivity Through Precision Farming

Through the integration of IoT-enabled sensors, geospatial tools, and AI-based analytics, Precision Farming has redefined resource management on farms. It enables:

- It enables real-time soil and weather monitoring via field sensors, informs precise irrigation, fertilizer scheduling, and pest management, reducing input waste.
- AI-driven predictive models used in precision farming, flag potential disease and pest outbreaks, enabling preventive interventions that improve yields and reduce chemical overuse.

Studies show that precision irrigation and nutrient management can reduce water use by 30–40% and raise yields by up to 60–65%, particularly in water-scarce regions ([ICAR, 2022](#)). Unmanned Aerial Vehicles (drones) provide aerial mapping, multispectral imaging, and targeted spraying, which lower labor requirements and optimize chemical application for smallholders (World Bank, 2023). Importantly, vernacular language mobile applications bridge the digital divide, ensuring even marginal farmers can access analytics and advisory services.

Streamlining Supply Chains and Market Access

Post-harvest losses in India account for an estimated 4–18% in cereals and up to 18% in fruits and vegetables ([ICAR-CIPHET, 2022](#)). Agritech startups are mitigating these losses by:

- Building e-marketplaces that link farmers directly to buyers, bypassing intermediaries, and enabling price transparency.
- Implementing blockchain-based traceability, which assures product authenticity (e.g., organic certification) and boosts consumer trust.
- Integrating AI-optimized cold chain logistics—including solar-powered cold rooms—that extend shelf life by 30–50% and significantly lower food spoilage ([FAO, 2023](#)).

These digital platforms are especially valuable for perishable commodities like fruits, vegetables, and dairy, where quick market access directly translates to improved income.

Empowering Farmers with Financial Inclusion and Advisory Services

Historically, farmers' limited access to institutional credit has forced reliance on informal lenders. Startups are responding with digital micro-lending, crop insurance, and embedded credit scoring based on farm data.

- Partnerships with Non-Banking Financial Companies (NBFCs) allow loan approval within minutes on mobile apps, even in remote villages.
- AI-based credit scoring reduces default risk and broadens access to affordable finance (NABARD, 2023).

Complementing finance, startups deliver personalized advisory services through mobile applications, offering real-time guidance on crop management, pest control, and market trends. AI-powered chatbots and in-app support in local languages ensure farmers receive tailored advice, enhancing their ability to adopt sustainable practices. Some startups also provide soil testing and crop health monitoring, enabling farmers to make informed decisions that boost productivity and reduce environmental impact. These services are particularly impactful for small and marginal farmers, who often lack access to traditional agricultural extension services.

Promoting Sustainability and Climate Resilience

Sustainability is a core focus of agritech startups in South Asia, with many developing solutions to address climate change and resource scarcity. Startups are promoting eco-friendly practices like organic farming, crop rotation, and regenerative agriculture, which enhance soil health and biodiversity. For instance, biotechnological formulations that improve photosynthetic efficiency have reduced the need for chemical inputs while increasing yields. Similarly, startups offering drought-resistant crops and smart irrigation systems help farmers adapt to changing climatic conditions, ensuring food security in a region vulnerable to monsoons and droughts. Renewable energy solutions, such as solar-powered irrigation pumps and cold storage, are also gaining traction. These technologies reduce dependence on fossil fuels, lower operational costs, and promote carbon-negative practices. Some startups have introduced innovative models like "Irrigation as a Service," providing automated, pay-per-use irrigation systems that conserve water and improve efficiency. By integrating these solutions, startups are helping farmers achieve sustainable growth while contributing to environmental conservation.

Fostering Rural Entrepreneurship and Employment

Beyond technological interventions, agritech startups are creating new opportunities for rural communities. By training farmers to use digital tools and adopt modern practices, startups are fostering agripreneurship, empowering farmers to become micro-entrepreneurs. Platforms that aggregate demand for agricultural inputs or facilitate direct-to-consumer sales enable farmers to diversify income streams. For example, startups supporting urban farming or micro-farms allow farmers to generate additional revenue with minimal land and labor requirements. These initiatives have led to income increases of up to 100% for some farmers, transforming rural economies.

- Digital literacy and farmer training programs foster agripreneurship, enabling smallholders to transition from subsistence to enterprise models.
- Input aggregation and direct-to-consumer channels diversify income and support urban farming initiatives.
- Evidence suggests digital market integration and value-added processing can increase net farm incomes by 50–100%, transforming rural economies (IFPRI, 2023).

Startups are also creating jobs by building ecosystems that involve logistics, warehousing, and technology development. Collaborations with government initiatives, such as India's Startup India program, have further amplified their impact by providing funding, incubation, and policy support. These partnerships encourage innovation and help startups scale their solutions, reaching millions of farmers across South Asia.

Some specific examples of Agri startups transforming Indian Agriculture sectors are presented below.

1.1 TRST01: Climate-Tech Innovation for Sustainable Agriculture



A major barrier in the Indian agri-system is the absence of verifiable frameworks to quantify and capitalize on climate-smart agricultural practices. Despite growing global emphasis on low-emission food systems, smallholder farmers are often excluded from carbon markets due to lack of data, credible monitoring, and access to carbon registries. TRST01 recognized this gap and built a solution to bridge it.

TRST01 is a Hyderabad-based climate-tech startup revolutionizing the agriculture and allied sectors through blockchain and AI-powered sustainability solutions. Positioned at the intersection of carbon markets, traceability, and ESG compliance, TRST01 empowers farmers, agribusinesses, and cooperatives to measure, monetize, and manage sustainable practices effectively.

Tech-Integrated Solution for Farmers and Cooperatives

TRST01 developed a technology suite that leverages data insights, artificial intelligence, and blockchain to quantify carbon footprints, generate verifiable carbon credits, and enable global market access for sustainable agricultural commodities. At the heart of this innovation is TRST01Chain®, a blockchain-powered traceability platform that delivers real-time transparency, geo-tagged data, and tamper-proof documentation. The platform supports crops like natural rubber, cocoa, coffee, and palm oil, aligning producers with stringent international regulations such as the EU Deforestation Regulation (EUDR).

Through seamless integration with mobile-based data capture tools and geospatial mapping, TRST01 has digitally mapped over 525,000 hectares and onboarded 250,000+ farmers across India and Southeast Asia. A key feature of the model is its deep integration with Farmer Producer Organizations (FPOs), enabling collective verification, data standardization, and equitable benefit sharing. The platform not only enhances income potential through traceability premiums and carbon credit access but also strengthens the digital infrastructure of FPOs and smallholder networks.

Business Model

B2B & B2B2C – works with FPOs, cooperatives, and agribusinesses to provide blockchain traceability, carbon credit access, and sustainability compliance services.

Service Cost

Traceability services cost starts from INR 250 onwards and the Platform subscription/commission from carbon credits and traceability premiums depends on the business volumes and services.

Cost-Benefit Analysis for Farmers

Farmers gain 2x MSP (as in Tandur Dal case), premium pricing via traceability, and carbon credit revenue; minimal upfront cost since FPOs aggregate adoption.

Traction and Strategic Partnerships

TRST01 has built a robust presence across India and South Asia with

- Over 1.2 million acres onboarded
- Benefiting 2 million farmers (direct & indirect)
- Collaborations with state governments and international carbon registries
- Multiple ongoing pilot projects in diverse agro-ecological regions

Real-World Impact: Case Studies

Tandur Dal (Pigeon Pea), Telangana

Using TRST01's OriginTrace platform, farmers at ARS Tandur traced certified seed batches to distribution. This combats against counterfeit seeds transitioned into GI-based traceability for Tandur Dal, enhancing MSP by 2X and benefiting 63,000 farmer families. TRST01's approach underscored integration with Farmer Producer Organizations:

- Yalal FPO was the nodal collective, managing onboarding, quality compliance, and revenue sharing.
- Data capturing via mobile apps and geo-tagged mapping ensured standardized, verifiable records across farmers.
- The QR-blockchain system facilitated traceable branding, empowering the FPO to negotiate better market linkage and pricing for members.

This model enabled a transparent, inclusive digital ecosystem that benefitted both farmers (increased income, brand value) and the cooperative (market visibility, trust, fair



distribution).

Kalanamak Rice, India

Through provenance verification, Kalanamak rice farmers gained access to premium, niche markets while conserving indigenous crop varieties and increasing income through better market linkages.

Coffee, Western Ghats

TRST01Chain enabled farmers in the biodiversity-sensitive Western Ghats to meet EUDR requirements. This ensured **certified, deforestation-free exports** and improved income through sustainable sourcing.

Rubber, Western Ghats

Blockchain-backed traceability provided transparency and access to global buyers focused on ethical sourcing, thereby boosting incomes through premium pricing.

Cocoa (also Coffee & Rubber), Côte d'Ivoire

TRST01 facilitated full traceability for West African farmers, building compliance credentials critical for market entry and enhancing livelihoods through verified sustainable production.

Farmer Engagement and Working Model

At the core of TRST01's success is a collaborative model with Farmer Producer Organizations (FPOs):

- FPOs are onboarded as key ecosystem stakeholders.
- Farmers adopt climate-smart and regenerative practices promoted by TRST01.
- Field-level data is captured, geo-tagged, and verified using mobile and satellite tools.
- Carbon credits and traceability premiums are monetized and revenues are shared with farmers and FPOs.

For more information: <https://trst01.com/>

Contact: prabir@trst01.com

1.2 Rukart: Enabling Decentralized Post-Harvest Infrastructure



India experiences 20%–40% post-harvest losses, particularly in fruits, vegetables, and flowers. The absence of affordable cold chain infrastructure in villages means that perishable produce often spoils within hours of harvest. Most small and marginal farmers are forced into distress sales, selling their produce at throwaway prices or bearing losses. Furthermore, dependency on distant APMCs and middlemen diminishes their control over pricing and market timing. This logistical and infrastructure gap limits both income stability and bargaining power.

Rukart is a Pune-based sustainable technology company on a mission to address India's pressing challenge of post-harvest losses. By designing affordable, off-grid, village-level storage and drying solutions, Rukart empowers smallholder farmers to retain value at the farm gate. Founded by Mr. Vikas Kumar Jha (CEO) and Ms. Sharayu Kulkarni (CTO), the company focuses on decentralized, modular agri-infrastructure, particularly for perishable crops, using clean energy principles. Their innovations like the Subjee Cooler are transforming the way rural India manages its produce after harvest.

Understanding the Need: Decentralizing Control for the Farmer

Rukart's founders recognized that the real solution lay in decentralizing infrastructure, bringing it closer to the farmer instead of relying on distant, capital-intensive cold storage or dryers. The goal was to provide affordable, non-electric, and modular tools that empower farmers to store, manage, and process their produce locally—giving them the flexibility to wait for better market prices, preserve quality, and reduce spoilage. This shift from reactive selling to planned, quality-oriented marketing had the potential to double farmgate value in many cases.

Subjee Cooler: Passive Cold Storage, No Electricity Needed

The Subjee Cooler is Rukart's flagship product—a non-electric, evaporative cooling unit that maintains a temperature of 5–15°C below ambient temperature and 85–95% humidity, ideal for storing vegetables, flowers, and fruits for 3–7 days. It uses double-insulated walls, a simple drip-based hydration system, and ventilation channels to



create a cool environment using just water and basic physics. The unit requires no compressor, batteries, or solar panels, making it ideal for rural deployment.

Technology & Innovation: Designed for India's Last Mile

Rukart's products are built around three core principles:

- *Decentralization*: Designed to work at the hamlet or FPO level, without needing grid connections or complex installation.
- *Affordability*: Modular construction using locally available materials keeps prices low (~₹35,000–₹50,000), and repair manageable.
- *Clean Energy Integration*: Where applicable, Rukart integrates solar panels and passive cooling to keep energy consumption minimal or zero.

These technologies are tailored to India's climate, crop cycles, and smallholder economics. With over 1,500 units deployed, the solutions have proved durable, user-friendly, and high impact.

Farmer & Cooperative Engagement Model: Village-Level Ownership

FPO and SHG-Centric Deployment

- Rukart does not just sell equipment—it builds community ownership. Units are typically purchased and managed by Farmer Producer Organizations (FPOs), cooperatives, or SHGs. These groups act as nodal agencies for:
 - Coordinating unit installation and usage
 - Managing rental services or common storage access
 - Maintaining logs for user rotation and feedback

This decentralized ownership promotes transparency, shared benefit, and easier scaling.

Business Model

Hardware sales + community model. Provides decentralized cold storage (Subjee Cooler) to FPOs, SHGs, and cooperatives; also supports rental/shared usage.

Cost-Benefit Analysis for Farmers

Up to 40% reduction in spoilage; ability to delay distress sales and fetch better prices; payback possible within 1–2 seasons; rental model earns ₹40k/month for SHGs.

Pilots, Traction & Government Collaborations

Rukart has implemented successful pilots and rollouts across six Indian states, supported by government schemes such as NABARD, RKVY, and state horticulture missions. In Odisha, Rukart partnered with the state government to roll out Subjee Coolers with 70% subsidy support to SHGs and FPOs—particularly targeting women farmers. The program aimed to reach over 25,000 rural women and involved training in usage and minor maintenance.

Additionally, institutions like IIT Bombay and IIT Kharagpur have evaluated and supported the designs for energy efficiency and local relevance. Rukart's impact has been featured in media outlets like *The Hindu BusinessLine*, *The Better India*, and *VillageSquare.in*, underscoring the company's innovative, grassroots approach.

Impact on Farmers: Reducing Losses, Increasing Control

Loss Reduction & Better Price Realization

- Farmers using the Subjee Cooler have reported up to 40% reduction in spoilage, particularly during peak seasons. With the ability to store produce for 3–5 days, they gain time leverage—waiting for favorable prices rather than being forced to sell immediately. One example from Maharashtra during the COVID-19 lockdown saw a farmer double his income by storing vegetables for four extra days and selling them at a higher rate.

Enabling Village-Level Entrepreneurship

- Some farmer groups and SHGs have created rental-based storage enterprises, earning ₹40,000 or more per month by charging nominal fees (₹1–₹2 per kg). This revenue is reinvested in training, maintenance, or member services—making post-harvest care a community-run enterprise.

Farmer Training and Capacity Building

Before deployment, Rukart teams conduct hands-on training sessions on Storage best practices, Moisture/humidity management, Maintenance and cleaning, Data logging and usage tracking. This builds local technical literacy, reduces downtime, and ensures long-term adoption.

Rental and Shared Service Models

In many villages, coolers and dryers are run as shared infrastructure:

- Farmers pay nominal fees per use (₹1–₹2/kg)
- Earnings go to FPO or SHG maintenance funds
- In lean periods, units are shared with neighbouring villages

This ensures economic viability while spreading access equitably among members.

Integration with Government Schemes

Many deployments are linked with subsidies from:

- Rashtriya Krishi Vikas Yojana (RKVY)
- NABARD FPO support programs
- State Horticulture Departments: This makes the units affordable for even the most resource-constrained farmers.

Cold-Chain Readiness for Every Hamlet

Rukart's long-term vision is to make every rural hamlet in India cold-chain and processing ready, thus ensuring that farm-to-fork value is retained at the farm gate. The company envisions a future where farmers are no longer price takers, but value managers—capable of controlling, storing, processing, and marketing their produce with dignity and bargaining power.

Rukart exemplifies the power of grassroots innovation—blending sustainability, frugality, and local empowerment. Through cooperative-managed cold storage and drying solutions, Rukart has created a bottom-up model for rural resilience. As India moves toward doubling farmer income and reducing food waste, such decentralized, farmer-driven post-harvest infrastructure will play a central role in building a more equitable and climate-smart agricultural economy.

For more information: <https://rukart.co/>



Contact: +918956341910 / namaste@rukart.org

1.3 BomLife: Cultivating Sustainable, Farmer-Centric Organic Ecosystems



Conventional farming in India heavily depends on synthetic inputs like urea, DAP, and MOP, which degrade soil fertility, pollute water bodies, and threaten biodiversity and human health. Farmers suffer declining yields, increased irrigation demands, and fragile ecosystem resilience under continued chemical use.

BomLife, headquartered in Kolkata and founded in 2020 by Amlan Datta and Manibrata Paul, is a biotech social enterprise dedicated to innovating bio-organic solutions for agriculture, pisciculture, animal husbandry, bio-waste management, and green energy. With proprietary, IP-protected microbial formulations and growth promoters, BomLife aims to replace synthetic chemicals, rejuvenate soil ecosystems, and enhance yields—all while engaging farmers and cooperatives in a collaborative, science-backed conversion to organic practices.

The Need: Empowering Farmers Through Scientific Organic Transition

Recognizing that microbial technologies require precise application schedules and user awareness, BomLife adopted a farmer-first strategy. They knew successful adoption hinged on aligning biological solutions with educational outreach, cooperative networks, and result-proven demonstration—engaging farmers at every step.

Solutions & Innovations: Microbial Empowerment for the Soil

BomLife has developed a holistic suite of microbial and biochemical inputs:

Bom Biomics: A high-concentration biofertilizer (10^7 – 10^8 CFU/g) designed for balanced NPK nutrition, reduced FYM use (to about 20%), lowered irrigation needs (–25%), and consistent fertility.

Bom Shield, Bom Knight1/2, Bom TonicPlus, Bom Grip: Specific foliar or soil-applied agents for pest, disease, and nutritional control, employing nanotech chelators and bio-fungicides.

Bio-Gest.com: A fast-acting compost accelerator and heavy metal detoxifier for waste streams.

Each crop receives a custom “Package of Practices”, detailing timing, dosage, and integration with organic matter ensuring microbial uptake and yield outcomes equivalent or superior to conventional methods.



Pilot Impact: Farmer-Led Success in Uttar Pradesh

In Basti District, UP, BomLife's biofertilizer program, supported by Transform Rural India Foundation (TRIF), helped farmers shift from chemical to organic inputs. One farmer reported a 50–60% increase in paddy yields, with cost payments deferred until post-harvest—demonstrating both economic relief and productivity gains. This success catalyzed adoption by other farmers in the region.

Farmer & Cooperative Engagement Model

Experience Centers: Pilot-to-Community Learning

BomLife partners with **willing farmer groups or FPOs** to set up **Experience Centers**—model hi-tech organic farms (typically 4–10 hectares)—for hands-on training in seed selection, composting, microbial schedules, IP certification, and organic protocols. trained as peer educators then cascade knowledge across adjacent communities.

Cooperative-Based Dissemination & Ownership

Experience Centers are operated by farmer-owners and cooperatives, fostering collective ownership and accountability. Management includes:

- Selecting demonstration crops and varieties
- Coordinating procurement and application of inputs
- Hosting regular training and field visits by local farmers

This establishes a self-sustaining community-led organic hub.

Scientific Guidance and Tailored Scheduling

BomLife supplies **crop-specific packages of practices**, accessible through their website and directly via field staff. These instructions detail seed treatment, transplant, foliar sprays, and nutrient management schedules—transforming farmers into informed partners, not passive recipients.

Cooperative Access & Revenue Alignment

FPOs act as central nodes for:

- Distributing inputs and managing subsidies
- Coordinating microloans or post-harvest payment models
- Aggregating organic produce for market-ready packaging and premium sales

Revenue from yield improvements and quality premiums is shared through FPOs, incentivizing input quality and community governance.

Women & Youth Empowerment

BomLife prioritizes inclusivity: Experience Centers often involve women farmer groups and youth leaders, empowering them with technical training in microbial solutions, organic compliance, composting, and advocacy—building inclusive organic ecosystems.

Scaling & Institutional Support

BomLife is backed by Startup India Seed Fund, AgHub (PJ TSAU), Social Alpha, and WRI India, with an annual revenue around ₹37.6 Lakh as of March 2024. Their grassroots model has been validated across multiple states via FPOs, SHGs, and partner NGOs, proving that scalable impact begins with local capacity.

Business Model

Input sales (bio-fertilizers, bio-pesticides) + cooperative engagement through Experience Centers; FPO-based dissemination.



Product Cost

Bio-input packages sold crop-wise; often pay-after-harvest or subsidized via FPOs.

Cost-Benefit Analysis for Farmers

Farmers reported 50–60% higher paddy yields, reduced irrigation (–25%), and lower chemical costs; organic produce fetches premium prices.

Vision: From Farm Gate to Organic Ecosystem

BomLife envisions transforming villages into eco-model communities by Year 2, and fully self-sustaining organic hubs by Year 3, offering clean produce, value-addition, composting, and packaging—all driven by farmer ownership and cooperative management.

For more information: bomlife.in

Contact: +91 9830049924 / mail@bomlife.in

1.4 Krishitantra: Revolutionizing Soil Intelligence at the Farm Gate



India's traditional soil testing system is mired in inefficiencies. Centralized laboratories often take days to weeks to process samples and return reports. As a result, the majority of India's 140 million farmers skip soil testing altogether. This leads to a dangerous trend of input overuse or misuse, with farmers relying on anecdotal practices or dealer advice. The result is declining soil fertility, unbalanced pH and micronutrient levels, and increasing dependence on costly chemical fertilizers. At a macro level, this also places a huge strain on government fertilizer subsidies and impedes efforts toward sustainable agriculture and climate-smart nutrient management.

Krishitantra is a Karnataka-based agritech startup dedicated to transforming India's soil health landscape through cutting-edge diagnostics and data-driven agronomy. Their flagship product, Krishi RASTAA (Rapid Agro Soil Testing and Advisory Assistant), is a portable, lab-grade soil testing device that delivers nutrient analysis and personalized crop recommendations in under 30 minutes. At its core, Krishitantra envisions a future where soil literacy is universal, and every farmer has access to real-time, data-backed insights to make informed input decisions.

Why It Matters: Real-Time Decisions Need Real-Time Data

Krishitantra recognized that soil testing needs to be fast, accessible, and hyperlocal. They saw that empowering FPOs, cooperatives, and agri-retailers with real-time soil intelligence could radically improve input use efficiency, restore degraded soils, and reduce government subsidy burdens. With growing interest in regenerative farming and precision agriculture, the demand for actionable, digital, and decentralized diagnostics had never been higher.

The Solution: Krishi RASTAA – Portable, Instant, Smart

Krishitantra's Krishi RASTAA is a lab-in-a-box solution that uses advanced spectroscopy, artificial intelligence, and cloud computing to test key macro- and micronutrients in the soil. Unlike conventional systems, it requires no sample transportation or laboratory setup.

Key features include:

- Lab-accurate soil reports in 30 minutes
- AI-generated Soil Health Cards with custom nutrient prescriptions
- A cloud-based dashboard for real-time farm-level soil mapping
- Integration with weather, GIS, and crop databases for future analytics



This plug-and-play device has already **enabled thousands of farmers** to make data-driven fertilizer decisions, reduce input costs, and improve productivity—particularly in horticulture and high-value crops.

Technology & Innovation: Where AI Meets Agronomy

Krishitantra's innovation lies in democratizing complex agronomic science using intuitive design and AI. The Krishi RASTAA device is portable, lightweight, and can be operated by FPO staff, village-level entrepreneurs, or Krishi Mitras with minimal training.

Once a soil sample is analyzed:

- An AI engine processes spectral data
- Recommendations are generated based on crop type, season, and location
- A soil health card is printed or shared digitally
- The data is stored in the cloud, allowing farm-level and region-level soil mapping

This enables temporal analysis, policy-level decision making, and precision extension services at scale.

Farmer & Cooperative Engagement Model

FPO & Agri-Retail-Led Distribution

Krishitantra follows a “Hub-and-Spoke” distribution model, placing devices with:

- FPOs and Farmer Cooperatives
- Agri input retailers and CSCs
- Krishi Vigyan Kendras (KVKs) and Panchayat Centers

These hubs offer testing as a pay-per-use service to farmers, typically costing ₹450–₹500 per report, depending on the region and crop. This allows small and marginal farmers to access lab-grade reports at affordable rates, without travel or delay.

Leasing & Franchise Ownership

FPOs and agri-retailers can lease the device or operate under a franchise model where Krishitantra provides:

- The device and annual calibration services
- Training of local staff and field technicians
- Access to the cloud dashboard and mobile interface
- Technical support and periodic software updates

This model ensures that ownership and accountability rest with the local ecosystem actors, reducing downtime and enhancing community trust.

Collective Advisory through Soil Mapping

A key value-add is the generation of cluster-level soil maps. Once a critical mass of samples is tested in a region:

- Krishitantra helps FPOs aggregate the data
- Customized fertilizer advisory is generated for entire villages or blocks
- Farmers receive group-based procurement guidance, reducing costs

This fosters collective action, optimized input use, and even bulk purchasing of required fertilizers based on real needs, rather than dealer-driven supply.

Integration with Government Schemes

Krishitantra devices have been integrated into government pilots under:

- PMFBY (Pradhan Mantri Fasal Bima Yojana) to assess soil-linked yield variations
- NABARD and RKVY schemes for digitized soil health monitoring
- District-level agri-departments in Karnataka, Andhra Pradesh, and Telangana

Subsidy-based rollouts to FPOs and Krishi Mitras have helped amplify adoption while aligning with the Digital India mission.

Business Model

Device sales/leasing to FPOs, retailers, and CSCs; farmers pay per soil test (₹450–₹500). Cloud SaaS analytics for institutions.

Service Cost

₹450–₹500 per soil health card; device leased to FPOs with service/maintenance fees.

Device cost: INR 1,75,000 + GST

Cost-Benefit Analysis for farmers

20–30% fertilizer cost savings, better yields from optimized nutrient application, improved long-term soil health.

Impact Created: Soil Literacy, Cost Savings, and Ecosystem Resilience

With over 1,000+ devices deployed, Krishitantra has impacted tens of thousands of farmers across India. Immediate results include:

- 20–30% reduction in fertilizer overuse
- Optimized crop-specific nutrient application
- Improved soil health tracking over seasons
- Enhanced awareness of micronutrient deficiencies

In regions like Chikballapur and Raichur (Karnataka) and parts of Telangana, FPOs have used Krishi RASTAA to design cluster-wide fertilizer distribution plans, reducing leakages and improving transparency in government input schemes.

Krishitantra exemplifies how technology can meet tradition to solve one of India's most overlooked agri challenges—soil intelligence. By equipping cooperatives and farmer groups with instant, actionable data, they are not only helping reduce fertilizer waste and increase yields, but also fostering a more transparent, accountable, and farmer-empowered ecosystem. With soil health at the heart of sustainable agriculture, Krishitantra is laying the digital foundation for India's next green revolution—rooted in science, driven by data, and owned by farmers.

For more information: <https://krishitantra.com/>

Contact: info@krishitantra.com

1.5 DeltaThings: Affordable IoT-Powered Pest Management for Small-holder Farmer



Pests remain one of the biggest causes of crop loss in India—particularly in horticulture crops where quality is as important as quantity. Most farmers still depend on visual cues or dealer advice for pest control, which often results in delayed response, over-spraying of chemicals, and increasing input costs. This not only damages crop health but also leads to resistance buildup among pests and environmental degradation. Recognizing these challenges, the founders of DeltaThings focused on creating a low-cost, farmer-centric solution that could provide continuous pest surveillance and scientific guidance right at the farm level, without the need for expensive infrastructure or highly skilled manpower.

DeltaThings, a Hyderabad-based agritech startup, is transforming the way Indian farmers manage pests through affordable, AI-integrated, IoT-powered tools. At the core of their innovation is the iTrapper, an automatic wavelength-changing light trap, designed to attract and monitor specific pest species. Combined with TrapSnap, their AI-based pest identification and advisory platform, DeltaThings empowers farmers with real-time insights, significantly reducing pesticide use, improving yields, and making farms more climate-resilient.

The Solution: iTrapper and TrapSnap

DeltaThings' iTrapper, is a solar-powered, plug-and-play IoT device that uses automated light wavelength switching to attract specific pests based on their behavior. This enables farmers to monitor pest populations more accurately and take timely action. The trap can be customized to target different species like moths, bollworms, and fruit flies, making it especially valuable in horticulture zones and high-value crops.



Complementing the trap is TrapSnap, a simple yet powerful AI tool that uses images of trapped insects to identify pest species and infestation intensity. The results are sent to farmers via SMS, WhatsApp, or a mobile dashboard in their local language, along with advisories on biological or chemical intervention aligned with Integrated Pest Management (IPM) principles. Together, these tools move farmers away from guesswork to data-driven,

environmentally safer decisions, helping them optimize input use, reduce crop damage, and maintain produce quality for premium markets.

Farmer and Cooperative Engagement Model

DeltaThings has adopted a community-led model of adoption that places Farmer Producer Organizations (FPOs), cooperatives, and local agri-entrepreneurs at the center of distribution, deployment, and support. The iTrapper is sold directly to FPOs and farmers at a subsidized, one-time cost of ₹3,500, making it affordable even for smallholders. FPOs often bulk-purchase traps for cluster farming zones, placing them in strategic locations for shared pest surveillance. Advisory services are then disseminated collectively through group meetings, SMS alerts, or extension bulletins, enabling a coordinated, region-specific pest management strategy. In many districts, FPOs lease these traps to members or run a rental model, where farmers pay a nominal monthly fee to access the device and expert guidance. This approach helps de-risk adoption for farmers and promotes long-term behavior change through demonstration plots and shared learning. DeltaThings also provides training programs for FPO staff, agri-graduates, and village-level entrepreneurs to install, monitor, and interpret the data from the traps and TrapSnap. This not only builds local capacity but also creates employment in rural tech services.

Integration with Government and CSR Programs

DeltaThings is actively collaborating with state horticulture departments, Krishi Vigyan Kendras (KVKs), and CSR foundations to deploy their solutions as part of integrated pest surveillance and precision farming pilots. These partnerships help extend reach, create demonstration clusters, and align with government objectives on climate-smart agriculture and digital extension. Their pest analytics are also being used by agri-scientists to map pest migration, predict outbreaks, and design proactive intervention models at a district or zonal level—creating a valuable intersection of ground-level sensing and policy-level planning.

Measurable Impact and Farmer Benefits

With over 10,000 devices deployed across South India, DeltaThings has demonstrated a 30–50% reduction in pesticide usage, improved produce quality, and up to 20% increase in yield across various crops. In chilli belts of Telangana, grape orchards in Karnataka, and cotton zones in Andhra Pradesh, farmers report better marketability, lower input bills, and a stronger understanding of pest behavior—all thanks to the simple iTrapper. Farmers are also experiencing improved trust and collective decision-making as FPOs use aggregated pest data to organize joint procurement of biopesticides, plan common spray schedules, and lobby for price incentives for low-residue produce.

Business Model: IoT device sales + advisory services; works via FPOs and cooperatives with shared/rental models.

Product Cost: ₹3,500 per iTrapper unit; advisory bundled via SMS/WhatsApp.

Cost-Benefit Analysis for farmers

30–50% reduction in pesticide use, up to 20% yield increase; lower input costs and higher quality for premium markets. Delta Things aims to scale the deployment of iTrappers and TrapSnap across one million farms by 2027, making real-time pest intelligence as common as weather forecasts. The startup's broader ambition is to embed its systems into India's pest advisory infrastructure, linking sensor data with crop insurance, traceability, and export certification workflows. By equipping cooperatives and farmers with this affordable technology, DeltaThings is not just enabling pest control it is empowering a new culture of anticipation, resilience, and digital inclusion in agriculture.



For more information: <https://www.deltaiot.in/>

Contact: +91 9390158160 / info@deltathings.com

1.6 BharatRohan: Revolutionizing Agri-Diagnostics with Drones



In traditional farming practices, crop stress—whether from pests, diseases, or nutrient deficiencies—often goes undetected until it becomes visible to the naked eye. This delayed detection leads to irreversible damage, especially in high-value crops like turmeric, pomegranate, and chillies. By the time symptoms become apparent, pesticides are usually the only solution, often leading to excessive use and chemical residues. This reactive approach is costly and inefficient, contributing to higher pesticide consumption, market rejections, and lower farmer incomes. BharatRohan recognized that in order to reduce losses, farmers needed access to early-stage diagnostics and predictive tools that could detect stress in crops before it's too late.

BharatRohan is a forward-thinking agri-diagnostics company that harnesses the power of drones (UAVs) and hyperspectral imaging to offer early disease detection, pest prediction, and crop advisory services. By providing real-time, proactive crop health insights, BharatRohan empowers farmers to detect stress before visible symptoms appear, thereby reducing crop losses and improving productivity. With a keen focus on high-value crops, BharatRohan's technology enables precision agriculture, improving both farm profitability and sustainability.

Hyperspectral Imaging and AI for Precision Diagnostics

BharatRohan offers an innovative solution using drone-mounted hyperspectral cameras and AI-driven analysis to detect early signs of crop stress. Their technology works by:

- Flying drones equipped with hyperspectral cameras over fields to capture detailed spectral data that identifies even subtle changes in crop health.
- The data collected is analyzed by proprietary AI models, which process the spectral information to map out areas with potential disease or pest risks, allowing farmers to act preemptively.
- The results are delivered via a mobile dashboard, offering localized advisories, disease and pest predictions, and suggestions for preventive treatments or integrated pest management (IPM) techniques.

This system provides farmers with a clear advantage: the ability to monitor large expanses of land rapidly, making it affordable for smallholders while eliminating the guesswork and reducing dependence on pesticides.

Technology / Innovation: High-Tech Agri-Diagnostics

- **Hyperspectral Imaging on UAVs:** BharatRohan utilizes a **proprietary hyperspectral camera** mounted on drones, capable of capturing data across numerous wavelengths. This advanced imaging technology allows farmers to identify **crop stressors** before they are visible to the naked eye.
- **AI-Driven Analysis:** The spectral data captured by drones is processed using advanced AI algorithms to detect **disease hotspots**, **pest infestations**, and **nutrient imbalances**. This enables **early interventions** and precise crop management.
- **Farmer-Friendly Mobile Dashboard:** The data is delivered to farmers through a **mobile dashboard**, which provides **easy-to-understand alerts**, field-specific recommendations, and visual disease and pest maps for targeted action. This dashboard simplifies farm management and decision-making.



Progress & Traction: Scaling Precision Diagnostics Across India

- 1,00,000+ acres under monitoring in multiple states, particularly in turmeric, chillies, pomegranate, and mint farming regions.
- BharatRohan is collaborating with Krishi Vigyan Kendras (KVKs), agricultural universities, and pesticide companies to integrate their services into national farming initiatives.
- The company has partnered with Farmer Producer Organizations (FPOs) and aggregators to scale their impact, ensuring that smallholder farmers across India can benefit from advanced diagnostics.

Impact Created: Reducing Input Costs and Increasing Quality

BharatRohan's drone-based diagnostic approach is making a tangible difference in the field:

- Up to 40% reduction in pesticide usage due to early detection and targeted interventions.
- Farmers are witnessing improved crop quality with residue-free produce, which boosts their ability to access premium export markets.
- Preventive actions driven by AI-based insights are improving farm yields and contributing to sustainable farming practices.
- **Farmer & Cooperative Engagement Model**

Cluster-Based Drone Scanning

BharatRohan's model is built around cluster-based drone scanning, where drones fly over farming areas every 7–10 days. This approach allows for comprehensive monitoring of large

tracts of land, ensuring that no part of the farm is left unmonitored. The group advisory model ensures that even small-scale farmers benefit from the system as part of a larger cooperative or FPO.

FPOs and Aggregators

- Group advisories are sent to FPOs (Farmer Producer Organizations) or aggregators, who then share the insights with their member farmers.
- FPOs play a crucial role in disseminating information, organizing field visits, and providing access to treatment options, ensuring that rural cooperatives act as the conduit for technology transfer to grassroots farmers.
- BharatRohan also offers helpline support for farmers to clarify any doubts or seek advice on treatment protocols based on drone scans.

Localized Training and Support

- BharatRohan organizes **training sessions** for FPO members and cooperatives to ensure that farmers are equipped with the knowledge to interpret data and act on it.
- The team also provides **ongoing support**, ensuring that farmers can continue to make data-driven decisions and implement precision agricultural practices effectively.

Technology at Scale: Empowering Smallholders

By focusing on cluster-based models, BharatRohan ensures that their cutting-edge technology is accessible even to smallholders, empowering them to make informed decisions, reduce losses, and increase income. The integration of drone-based diagnostics into FPO networks provides a cost-effective solution for large-scale data collection while helping farmers adopt sustainable and efficient farming practices.

Business Model

Service model – drone-based crop diagnostics for FPO clusters; B2B with cooperatives, agri-input firms, and exporters.

Product Cost: Charged per acre or per scanning cycle via FPO contracts.

Cost-Benefit Analysis for farmers: Up to 40% reduction in pesticide costs, residue-free crops for premium export markets; collective adoption lowers per-farmer cost.

Vision: Leading the Future of Agri-Diagnostics in India

BharatRohan aims to become India's leading aerial agri-diagnostics company by expanding its fleet of drones and AI models tailored to specific crops and diseases. By scaling their crop-specific AI models across diverse agricultural regions, they hope to achieve:

- Nationwide crop-specific diagnostics powered by drones and AI, expanding beyond the current crop portfolio of turmeric, chillies, pomegranate, and mint.
- Further collaboration with government initiatives to integrate drone-based diagnostics into national farming support programs.

BharatRohan is revolutionizing the way Indian farmers protect their crops by offering early-stage diagnostics, predictive pest and disease forecasting, and real-time, actionable insights through drones and AI. Their cluster-based model ensures that even small farmers have access to cutting-edge technology, enabling them to reduce pesticide use, improve yields, and produce residue-free crops for global markets. As BharatRohan expands its footprint, it is setting new benchmarks in precision agriculture for the future of Indian farming.

For more information: <https://bharatrohan.in/>

Contact: +91 92059 91785 / sales@bharatrohan.in



1.7 Satyukt: Bringing Space Intelligence to Every Farm



Despite India's large agricultural base, many smallholder farmers still operate with minimal access to field-level data. Most farming decisions—whether on irrigation, fertilization, or crop protection—are made through guesswork or anecdotal advice. The situation worsens in remote and marginal areas where extension services are thin, leading to inefficiencies, overuse of resources, poor yields, and vulnerability to weather extremes. This lack of granular data also affects farmer collectives, insurers, and agri-input firms, who struggle to offer personalized services or risk assessments. Satyukt identified this gap and set out to solve it by leveraging satellite remote sensing for precision decision-making.

Satyukt Analytics Pvt. Ltd., founded by Dr. Sat Kumar Tomer and Dr. Yukti Gill, is a space-tech startup using satellite remote sensing, AI, and cloud analytics to empower farmers, cooperatives, agri-enterprises, and governments with timely, hyper-local agricultural intelligence. Their core product, Sat2Farm, democratizes access to near real-time field-level data, helping farmers make smarter decisions around sowing, irrigation, nutrient application, and pest control. Driven by the belief that space technology shouldn't be limited to governments and researchers, Satyukt is pioneering a new wave of affordable, accessible agri-intelligence for millions of small and marginal farmers.

Sat2Farm - Precision Farming from Space

Sat2Farm, Satyukt's flagship platform, transforms satellite imagery and AI-based analytics into actionable insights at a 10-meter spatial resolution, with data refreshed every 2–3 days. The system offers:

- **Soil Moisture Monitoring:** Helps farmers time irrigation precisely, avoiding overwatering and water stress.
- **Crop Health Alerts:** Identifies stress before visual symptoms appear, enabling timely action.
- **Water Stress and Nutrient Imbalance Warnings:** Guides input application and improves resource efficiency.
- **Yield Estimation and Forecasting:** Enables better financial planning and procurement coordination.
- **Weather-Adaptive Recommendations:** Supports climate-resilient crop practices.

All insights are delivered via mobile apps, SMS alerts, and web dashboards, translated into local languages to enhance accessibility for farmers and FPOs across India.

Technology and Innovation

Satyukt combines satellite remote sensing with AI and machine learning to convert big data into usable farm-level intelligence. The platform pulls data from multiple satellites, including microwave and multispectral sensors, to ensure coverage even under cloud cover or during monsoons.

Key innovations include:

- **Sat2Farm (SaaS Platform):** A subscription-based, multilingual platform delivering custom alerts to individual farmers or institutions.
- **Sat4Risk and Sat2Credit:** Tools developed for insurers and banks to assess farm risk, default probability, and productivity without physical inspections.
- **White-label API Solutions:** Allowing agri-startups, cooperatives, and NGOs to integrate satellite analytics into their own platforms.

This infrastructure enables predictive, scalable, and hyper-localized insights, supporting all stakeholders in the agri-value chain.



Progress and Traction

Satyukt has made impressive strides in scale and validation:

- 1.5 million+ hectares monitored across India and parts of Africa and Southeast Asia.
- Integration with PMFBY (Pradhan Mantri Fasal Bima Yojana) pilots for satellite-based claim assessment.
- Clients include input companies, agri-insurers, government agencies, and NGOs.
- Recognized and funded by NABVENTURES, with backing from incubators like NSRCEL at IIM Bangalore.
- In 2024, Satyukt expanded Sat2Farm's language support to include 8 Indian languages, making it usable by smallholders across regional belts.

Farmer & Cooperative Engagement Model

FPO-Led Dashboard Access and Training

Satyukt engages directly with Farmer Producer Organizations (FPOs) and cooperatives by offering dashboard-based access to Sat2Farm. FPO managers receive training on interpreting satellite insights and translating them into crop-specific group advisories. The FPOs then disseminate this information to their members via local meetings, WhatsApp groups, or SMS.

Personalized Farm Maps and Mobile Alerts

Each registered farmer's field is geo-tagged, and customized crop health alerts, moisture warnings, and irrigation guidance are sent directly to their mobile devices. This personalized satellite advisory approach brings powerful data to even remote farms.

Group-Level Decision Making and Input Optimization

Using Sat2Farm's aggregated insights, cooperatives can plan synchronized sowing, bulk input procurement, coordinated irrigation, and pest management drives—reducing duplication and inefficiencies. It enables FPOs to act as data-driven extension units, leading to cost savings and improved yields for the collective.

White-Label Satellite Intelligence

Satyukt offers white-labeled versions of Sat2Farm, allowing cooperatives, agri-startups, and rural NGOs to brand and integrate the platform into their own extension services. This model increases adoption and ensures community ownership.

Product Cost

Subscription-based (cost not disclosed), delivered via mobile app and FPO dashboards.

Cost-Benefit Analysis for farmers

Up to 40% reduction in pesticide costs, residue-free crops for premium export markets; collective adoption lowers per-farmer cost. 20–25% yield increase, 10–15% input cost reduction, 30% irrigation efficiency gains; faster insurance claims via satellite proof.

Impact: Smarter Farming, Better Incomes

The platform has helped thousands of farmers make timely decisions that reduce losses and increase returns:

- **30% improvement** in irrigation efficiency.
- **20–25% increase** in crop yields in monitored regions.
- **10–15% reduction** in input use, thanks to optimized fertilization and pest management.
- Enhanced **crop resilience** in rainfed and water-scarce regions.
- **Quicker crop damage assessments**, enabling faster insurance claims and relief payouts.

FPOs using Sat2Farm have reported improved negotiation power in markets due to predictable output quality and evidence-based practices.

Satyukt is transforming the agricultural landscape by putting satellites to work for farmers. Their unique combination of AI, satellite imagery, and cooperative-led models makes agri-intelligence not just a tool for the privileged, but a necessity for every farmer.

By delivering timely, actionable insights through FPOs, mobile apps, and dashboards, Satyukt is ensuring that space-tech reaches the grassroots, ushering in a new era of precision, equity, and resilience in farming.

For more information: <https://satyukt.com/>

Contact: +91-897-070-0045 / contact@satyukt.com

1.8 Boomitra: Bringing Soil Carbon Finance to Smallholder Farmers



Historically, soil carbon programs have favored large-scale farms due to high MRV (Measurement, Reporting & Verification) costs and technical demands. Smallholders—who represent the majority in emerging economies—have been largely shut out. Boomitra recognized that regenerative practices like no-till, cover cropping, and composting were not only climate-positive but could also improve yields—if farmers were included in carbon finance systems. Boomitra, meaning “friend of the earth” in Sanskrit, is a global agri-tech innovator revolutionizing how farmers participate in soil carbon markets. Founded in 2016 by Caltech alumnus Aadith Moorthy, Boomitra combines satellite remote sensing, AI modeling, and regenerative agriculture to make carbon finance accessible to even small-scale farmers and cooperatives—without upfront costs or physical soil sampling.

Satellite-Based Carbon Measurement

Boomitra developed a fully remote, **hardware-free MRV stack** that combines:

- Data from 100+ multispectral satellites
- AI models calibrated with ground truth
- No soil sampling needed, operating at 10 m resolution with <1% error

This enables transparent, third-party certified carbon credits (VERs), most of whose proceeds go directly to farmers—typically ~70% of the sale value

Adoption Model: Farmer-First & Community-Centric

Boomitra works through a dense network of 150+ local partners, including FPOs, cooperatives, NGOs, and agricultural experts. These partners:

- Conduct training and behavior change programs
- Guide farmers through free soil and agri-stacks
- Encourage adoption of regenerative practices
- Inspire in situ residue management—stubble incorporation versus burning

Farmers receive continuous agronomic guidance via Boomitra’s mobile app, which is staffed by partner agronomists.

Verified Impact: From Small Farms to Global Scale

Boomitra is already making a measurable difference:

- Over 150,000 farmers across 5 million+ acres engaged in India, Africa, Latin America, Australia, and Mongolia

- Sequestered more than 10 million metric tons of CO₂ to date.
- In India alone, 500,000 acres restored, 80,000+ farmers enrolled, and 300 kt CO₂ removed—along with a 15-quintal increase in sugarcane yield for Vertika from Uttarakhand.

Farmers earn approximately ₹1,400 per acre per year through carbon credits, funding deeper regenerative adoption.

Cooperative & Community Engagement: Scaling Through Trust

Boomitra's success hinges on cooperative-led scaling. FPOs and cooperatives:

- Aggregate small plots into verifiable project areas
- Facilitate training in no-till, cover crops, composting
- Use Boomitra's platform to track soil moisture, carbon gains, plant health
- Collect and distribute carbon revenues transparently

This inclusive model enables small and marginalized farmers to participate without risk and gain equitable access to global carbon finance.

Global Expansion and Partnerships

- Awarded the 2023 Earthshot Prize and named one of TIME100 Most Influential Companies
- Works with global agribusinesses and credit buyers like DP World, Terra Carbono (Brazil), Mongolian government, and Alquería (Colombia)
- Present in over 10 countries—India, Kenya, Mexico, Paraguay, Argentina, Brazil, Colombia, Namibia, Botswana, Mongolia, targeting tens of millions of acres by 2030.

Business Model: Carbon credit monetization – farmers adopt regenerative practices; platform aggregates and sells credits, farmers keep ~70% revenue.

Product Cost: No upfront cost to farmers; revenue-share from verified carbon credits.

Cost-Benefit Analysis for farmers: ₹1,400 per acre/year income from carbon credits; improved yields from regenerative practices; additional, risk-free revenue stream.

Vision: A Gigaton-Scale Soil Carbon Movement

Boomitra's ambition is to sequester 1 gigatonne of CO₂ by 2030. As part of this mission, they plan to:

- Offer carbon-finance plus agronomic services
- Expand reach into new emerging markets
- Build a global network of regenerative “carbon farmers”
- Enable cooperatives and startups via white-label tools and extensions

Their farmer-first ethos ensures regenerative agriculture is economically viable and climate-impactful—from India's sugarcane fields to Mongolia's grasslands. Boomitra is pioneering a model where advanced satellite AI, regenerative farming, and cooperative networks combine to deliver climate impact and farmer prosperity. By removing technical barriers and connecting smallholders to carbon markets at scale, Boomitra empowers farmers to become climate agents, all while restoring soils, boosting incomes, and building resilient ecosystems—truly a global movement rooted in community and science.

For more information: <https://boomitra.com/>



1.9 HeliotAI- Smarter Climate Decisions for Rural India



Smallholder farmers across India face unpredictable climate patterns—too much rain when they don’t need it, not enough when they do. Traditional advisories are broad-brushed and delayed, making it hard for farmers to plan, insure, or protect their crops in time. The founding team—closely connected to farming backgrounds—wanted to fix this. They set out to build a system that gives farmers real-time, hyperlocal insights tailored to their own fields. HeliotAI is an AI-powered climate intelligence platform built by alumni of IIT Bombay and BITS Pilani. With deep roots in farming communities, the startup was founded to ensure that rural India doesn’t stay in the blind spot when it comes to weather intelligence. Their vision? To be the “Google Maps of Agriculture”—a go-to layer for every decision-maker in rural India.



Tech-Integrated Solution for Farmers and Cooperatives

HeliotAI blends science and simplicity. Its platform delivers crop-stage intelligence using:

- **Satellite data**, on-ground **IoT weather stations**, and public weather feeds
- **AI models trained across 40+ crop cycles**
- **APIs** tailored for agri-input companies, insurers, and FPOs

These insights reach farmers through multiple channels:

- Vernacular **mobile app**
- **SMS/IVR** alerts
- Embedded tools within FPO and ag-retailer systems

Traction and Strategic Partnerships

- Deployed across **4 Indian states**
- Integrated with **leading agri-insurance firms**
- Pilots launched in **climate-vulnerable belts** and smart farming zones
- Recognized in **startup challenge platforms and incubators**
- Collaborations with **state governments, FPOs, and private ag-input players**

Business Model

AI-powered climate intelligence sold as SaaS to insurers, agri-input firms, and FPOs; farmers access via mobile app/SMS.

Product Cost

Not disclosed; likely subscription/licensing with free farmer-facing alerts via partners.

Cost-Benefit Analysis for farmers

32% income increase, 35% resource savings, better climate risk resilience; minimal/no direct cost for farmers in pilots.

Real-World Impact: Case Study – Muthampet, Telangana

In the tribal belt of Muthampet (Asifabad District), HeliotAI's Climate Resilient Agriculture Program reached **1,500+ smallholder farmers**. Farmers received:

- Real-time microclimate data
- Timely agronomic and crop advisory
- Early warning alerts

Results

- 32% increase in farmer income
- 35% savings in resources & inputs
- 35% reduction in manual labour effort

Case Studies & Pilots

Amaravati, Andhra Pradesh: Advanced weather stations now help monitor and manage local farming risks, improving decision-making in banana and chilli belts.

Asifabad Tribals were given access to Weather data through installed Automated weather stations in support with Vijaya Vahini Foundation supported by Tata Trusts

Farmer Engagement and Working Model

- HeliotAI takes a grassroots-first approach:
- Mobile app & SMS/IVR in **local languages**
- Integrated with **FPO tech systems**
- Works through **agri-input retailers** for last-mile delivery
- Builds **micro-enterprise opportunities** through local operators maintaining devices and onboarding farmers

For more information: <https://heliot.ai>

Contact: +91-7207608280 / hello@heliot.ai

1.10 SATSURE



SatSure is a Bengaluru-based deeptech company using satellites, geospatial intelligence, and AI to tackle some of the toughest challenges in agriculture, banking, and infrastructure. In India's rural heartland, credit and crop insurance often suffer due to a lack of visibility. Banks and insurers rarely have real-time, on-ground data about sowing, crop health, or harvest cycles. This leads to:

- Delayed or denied claims
- Poor credit underwriting
- Limited financial inclusion for smallholder farmers

The SatSure team saw an opportunity to solve this—not with boots on the ground, but with eyes in the sky. With its roots in space science and its eyes set firmly on rural transformation, SatSure builds tools that help institutions make informed, timely decisions—whether it's about crop loans, insurance claims, or even forest management.

Tech-Integrated Solution for Farmers and Cooperatives

SatSure delivers a robust, end-to-end **geospatial intelligence platform** that combines:

- **Multi-layer satellite analytics**
- **AI-based models** for crop classification, yield forecasting, and disaster alerts
- **SaaS dashboards** for banks, insurers, and governments

The result: better planning, faster response, and smarter decisions at scale.

Business Model

B2B SaaS – sells satellite intelligence and analytics to banks, insurers, governments, and agribusinesses; indirect benefits to farmers.

Service Cost: Not disclosed; SaaS pricing for enterprises, farmers benefit indirectly via institutions.

Cost-Benefit Analysis for farmers

Faster credit, more accurate insurance payouts, improved subsidy targeting; indirect benefits rather than direct costs.

Traction and Strategic Partnerships

- Serving **top 5 private banks in India**
- Government collaborations across **multiple Indian states**
- Projects running in **8 countries** globally
- Secured **\$5M+ in VC and institutional grants**
- Strategic equity partnership with **TransUnion CIBIL (2024)** for credit-linked agri insights

Real-World Impact: Case Studies

1. ***Telangana Crop Registry Digitisation***
In April 2022, SatSure helped the Telangana government digitise its crop registry. By integrating satellite data with on-ground records, farm planning became more transparent, efficient, and inclusive.
2. ***Forest Monitoring – Rajasthan***
SatSure partnered with the Forest Department to create a live dashboard tracking forest health, fire risk, plantation progress, and wildlife activity—blending conservation with cutting-edge tech.
3. ***Farm Credit Boost – TransUnion CIBIL CCFR***
In April 2024, SatSure and TransUnion launched a Crop & Credit Report, combining land, weather, and financial data to ease agri-loan processes. This gave banks deeper confidence in lending and improved farmer access to formal credit.

Other Case Studies

Multi-Sensor Agri Digitisation – with Cisco

SatSure and Cisco collaborated in December 2022 to digitise fertiliser supply chains, combining ground and satellite data to fine-tune distribution and field-level application.

Scale at a Glance

- **1M+ sq. km** monitored weekly
- **2M+ farm loans** enabled
- **500K+ insurance claims** settled

Farmer Engagement and Working Model

SatSure operates primarily through a **B2B2C model**, empowering:

- **Banks** with data for loan disbursement
- **Insurers** with real-time crop health updates
- **Governments** with macro planning tools

While farmers may not interact directly with SatSure, they benefit at scale—through faster credit access, more accurate insurance, and smarter farm advisories. In several projects, SatSure also partners with **FPOs for ground-truthing**, ensuring data meets real-world realities.

For more information: <https://www.satsure.co>

Contact: info@satsure.co

1.11 DeHaat



For decades, smallholder farmers have operated in fragmented systems. Inputs often come from unreliable sources, crop advice is inconsistent, and market access is controlled by layers of middlemen. This leads to poor yields, low profitability, and a lack of trust in the system.

The founders of DeHaat—having seen these gaps firsthand—set out to simplify and strengthen this journey for farmers by removing friction at every step.

DeHaat is a full-stack agri-tech platform on a mission to transform farming in rural India. By bringing together agri-inputs, advisory, financial services, and market access into one seamless ecosystem, DeHaat offers end-to-end support for farmers—delivered through a mobile app and a dense network of rural micro-entrepreneurs.

Tech-Integrated Solution for Farmers and Cooperatives

DeHaat built a digitally enabled, asset-light model that bridges the gap between rural demand and organized agri-support systems. The platform offers:

- **AI-powered crop advisory and pest alerts** based on local weather and crop data
- **DeHaat Centers** run by local micro-entrepreneurs who act as rural service nodes
- **A backend tech stack** that includes CRM tools, logistics tracking, and farmer profiling

Together, these ensure timely delivery of inputs, personalized support, and fair market linkages.

Business Model

Full-stack B2B2C platform – offers agri-inputs, advisory, financial services, and market access through app + rural micro-entrepreneurs.

Service Cost

Input prices comparable to market; advisory bundled free; earns via commissions, margins on inputs/outputs, and partnerships.

Cost-Benefit Analysis for farmers

Higher yields, fair market prices, lower dependency on middlemen; farmers save on inputs and get better realization for produce.

Traction and Strategic Partnerships

- Operating across **11 states**, impacting over **2 million farmers**
- **11,000+ micro-entrepreneurs** managing DeHaat Centers
- Raised **\$100M+ in funding** from prominent global investors, enabling rapid scale and infrastructure development
- Partnered with agri-input companies, banks, and institutional buyers to strengthen each step of the value chain

Real-World Impact: Case Studies

Eastern India Success Model:

In Bihar, Jharkhand, and Odisha, DeHaat worked closely with over **5,000 smallholder farmers**. These farmers were supported end-to-end—receiving inputs, crop-stage guidance, and direct market access through DeHaat’s aggregated produce-selling model. As a result, farmers reported **higher yields, improved margins**, and significantly reduced dependence on middlemen.

Other Case Studies

In states like **Uttar Pradesh, Madhya Pradesh, and Maharashtra**, DeHaat has replicated this model with consistent outcomes. Micro-entrepreneurs running DeHaat Centers are building local trust, while farmers are empowered with data-backed decisions, access to credit, and reliable post-harvest sales channels.

Farmer Engagement and Working Model

DeHaat’s approach is deeply rooted in rural realities. Their hybrid engagement model includes:

- **Physical DeHaat Centers** where micro-entrepreneurs assist farmers with advisory, inputs, and aggregation
- **Mobile App** that offers real-time, vernacular support—crop calendars, alerts, financing tools, and more

DeHaat also ensures that farmers’ produce reaches large institutional buyers—creating a dependable, transparent market linkage and maximizing farmers' returns.

For more information: <https://agrevolution.in>

Contact: 1800 1036 110 / contact@agrevolution.in

1.12 Cropin



CropIn, founded in 2010 and based in Bengaluru, is one of India's earliest and most influential agri-tech platforms. Agriculture has long suffered from an information gap. Large agribusinesses lacked visibility into upstream supply chains. Farmers worked without reliable forecasts. Buyers struggled with inconsistent quality and unclear provenance. CropIn's founders saw this disconnect and recognized the growing urgency around food safety, sustainability, and climate resilience. That's where their digital-first approach stepped in.

With a vision to digitize global agriculture, CropIn empowers stakeholders across the agri-value chain—from farmers and exporters to banks and policymakers—by providing deep, actionable intelligence on what's happening at the farm level.

Their promise? Traceability from farm to fork, and data-backed decisions from seed to shelf.

Tech-Integrated Solution for Farmers and Cooperatives

CropIn built a suite of smart SaaS platforms to digitize, monitor, and predict everything that happens in a field. Their key offerings include:

- SmartFarm – digitizes farm operations and enables real-time monitoring
- SmartRisk – assesses risks, yield potential, and creditworthiness using AI/ML
- AcreSquare – bridges communication between agri-businesses and farmers

These tools create digital twins of farms, blending satellite data, weather insights, and field-level inputs into one dashboard. The goal: empower better decision-making for everyone in the value chain.

Business Model

SaaS – provides digital farm management and traceability solutions to agribusinesses, governments, and insurers; farmers benefit via partners.

Service Cost

Not disclosed; enterprise subscription/licensing; farmers typically don't pay directly.

Cost-Benefit Analysis for farmers

Better access to loans, optimized inputs, traceable produce fetched premium markets; improved yields and reduced losses.

Traction and Strategic Partnerships

- Digitized 28+ million acres across 92 countries
- Supported 7 million farmers globally
- Partnered with 250+ agribusinesses across 13 verticals
- Recognized by UNDP, FAO, BMGF, and other global institutions
- Collaborated with NVIDIA to scale AI inference and build CropIn LLM—an agriculture-specific large language model for data accessibility

Real-World Impact: Case Studies

ADPC (Bangladesh & Sri Lanka)

Digitized over 3,200 farms, integrated satellite alerts, and improved climate resilience—leading to a 30% yield boost, 23% loss reduction, and a 92% farmer satisfaction rate.

PepsiCo – Potato Supply Chain

Helped streamline contract farming operations, optimize irrigation, and improve yield quality—ensuring better price realization for farmers and consistency for PepsiCo.

Loacker (Italy) – Hazelnut Traceability

Enabled complete farm-to-shelf traceability in Loacker's hazelnut supply chain, boosting transparency and farmer accountability.

Other Case Studies

Rabobank (India): Used CropIn data to underwrite loans, reducing credit risk and accelerating disbursal

Global Seed Producer (8 countries): Centralized data across 500 seed varieties, helping 170+ agronomists make faster, more informed decisions

PMFBY (India): Under the world's largest crop insurance scheme, CropIn digitized 250,000 panchayats, reducing fraud and speeding up claims with satellite-linked sampling

Farmer Engagement and Working Model

CropIn works through agribusinesses, NGOs, and FPOs, enabling wide deployment at the grassroots level. The approach is blended:

Farmers are trained to input and maintain field data

They gain access to personalized crop advisories, compliance tools, and digital records

Agri-enterprises use the insights to offer financing, ensure quality compliance, and build traceable supply chains

For more information: <https://cropin.com>

Contact: +91 98863 69634 / marketing@cropin.com

1.13 FARM SATHI



WeBot 6.0

Fully Electric and Remote Control Robot with
Multiple Implements.



FARM SATHI

Despite policy push and funding from institutions like SFAC and NABARD, most FPOs in India continue to operate without structured systems. Key challenges include:

- Lack of digital tools to track member data, transactions, or inventory
- Limited capacity to manage finances or provide timely farmer services
- Weak coordination in input procurement or collective marketing

This disconnect hampers the very objective of FPOs—ensuring collective strength and profitability for farmers.

Farmsathi is an agri-tech platform dedicated to strengthening the backbone of Indian agriculture—Farmer Producer Organizations (FPOs). The startup offers a simple, modular tech solution that helps FPOs streamline operations, boost transparency, and deliver better services to their member farmers.

Farmsathi's mission is grounded in one idea: if FPOs thrive, farmers thrive.

Tech-Integrated Solution for Farmers and Cooperatives

Farmsathi developed a modular, easy-to-use digital platform designed specifically for rural producer collectives. The offering includes:

- FPO ERP System to manage operations, procurement, and sales
- Mobile onboarding tools for digitizing farmer membership
- Analytics dashboard to track input distribution, crop cycles, and financial health

The solution is plug-and-play, field-tested, and built to meet the exact needs of grassroots FPO managers.

Business Model

B2B SaaS for FPOs – provides ERP, dashboards, and digital onboarding tools to cooperatives; indirect benefit to farmers.

Service Cost: Subscription/service fees paid by FPOs; cost not disclosed.

Cost for product purchase: Starting from 3.5 Lakhs INR

Cost-Benefit Analysis for farmers

Better transparency, collective market access, timely subsidies, and reduced leakages; indirect farmer cost savings.

Traction and Strategic Partnerships

Active with 300+ FPOs across Jharkhand, Bihar, and Odisha

Integrated into government-supported projects by SFAC and NABARD

Platform has supported over 1 lakh farmers through its partner FPOs

Trusted by regional development programs, FPO promotion agencies, and incubators

Real-World Impact: Case Studies

In Eastern India, Farmsathi partnered with FPOs formed under SFAC to digitize farmer records, input purchases, and procurement cycles.

The results were clear:

Better transparency in transactions

Higher member participation due to improved service delivery

Faster access to collective market opportunities, especially for perishable produce

The system also reduced manual record-keeping errors and improved access to financing by making operational data visible and auditable.

Other Case Studies

Several NABARD-backed FPOs adopted Farmsathi's solution to digitize their annual planning and financial workflows. This resulted in:

Clearer pricing and cost visibility

Timely disbursement of subsidies and input support

Stronger member engagement due to better communication

Farmer Engagement and Working Model

Farmsathi doesn't engage with individual farmers directly, but works through FPOs to scale impact. The model includes:

Digital onboarding of farmers into the system

Group access to inputs and equipment

Training and knowledge sessions on collective procurement and sales

End-to-end support managed by local FPOs using the Farmsathi platform

The startup acts as a digital backbone- quietly powering operations, decision-making, and growth from behind the scenes.

For more information: <https://farmsathi.netlify.app>

Contact: +91-9154159635 / sales@farmsathi.com

1.14 Fasal



Traditional farming practices often depend on intuition. Farmers decide when to irrigate or spray based on habit, hearsay, or outdated calendars—not data. This leads to:

- Over-irrigation and water waste
- Excessive pesticide use
- Yield losses and poor-quality produce

Fasal’s founders recognized this inefficiency and set out to give farmers the one thing they were missing—real-time, farm-level intelligence.

Fasal is a precision farming startup that helps farmers grow more with less water, fewer chemicals, and reduced guesswork. Using AI-powered IoT devices and a user-friendly mobile app, Fasal delivers timely insights on irrigation, disease management, and crop health, tailored to each farm’s microclimate. The goal is simple: empower Indian farmers with smart, sustainable tools that make every drop and decision count.

Tech-Integrated Solution for Farmers and Cooperatives

Fasal’s solution is built around easy-to-use hardware and powerful software. The system includes:

- **Plug-and-play IoT devices** that monitor soil moisture, humidity, leaf wetness, rainfall, and more (12+ parameters)
- **AI-driven advisory** for irrigation, pest prevention, and yield forecasting
- A **mobile app** that sends personalized alerts in local languages

The devices are solar-powered and require minimal maintenance—making them ideal for remote farms. Farmers get timely advice that’s both hyperlocal and actionable.

Business Model

Subscription model – farmers/FPOs pay for IoT devices + AI advisory service; partnerships with exporters and agri-enterprises.

Service Cost: Not disclosed precisely; farmers typically buy/rent IoT devices with ongoing subscription fees.

Cost-Benefit Analysis for farmers

20–25% water saving, 40% chemical use reduction, 10–15% yield increase; strong ROI especially in high-value crops.

Traction and Strategic Partnerships

- Technology deployed across **50,000+ acres** in India
- Serving farmers growing **high-value crops** like grapes, apples, and pomegranates
- Integrated with the supply chains of **agri-exporters and FPOs**
- Partnering with industry leaders to scale precision farming in underserved regions

Real-World Impact: Case Studies

In grape-growing regions of Maharashtra and pomegranate farms in Karnataka, Fasal's solution has transformed outcomes:

- Water use reduced by 20–25%
- Chemical use cut by 40%
- Yield improvement of 10–15%
- Better quality produce, meeting the demands of export markets

One standout stat: on 10,000 acres alone, Fasal helped save over **3 billion liters of water**—without compromising crop health.

Other Case Studies

- Across **80,000 hectares** of deployment, Fasal-enabled farms have saved an estimated **82 billion liters of water**, reduced **CO₂ emissions by 54,000 tonnes**, and avoided the use of **127 tonnes of chemicals**
- Fasal's insights have helped exporters standardize quality, reduce residue levels, and improve traceability for international buyers

Farmer Engagement and Working Model

Fasal operates on a **subscription model** where farmers or institutions pay for the device and ongoing advisory services. The platform works through:

- **Direct farmer onboarding**, supported by Fasal's field team
- **Partnerships with FPOs and agri-exporters** who integrate the system into their ecosystem
- **Localized support and training**, ensuring every farmer understands the insights and can act on them in real time

The result: smarter farming without overwhelming the farmer.

For more information: <https://www.fasal.co>

Contact: connect@wolkus.com

1.15 Waycool



India's agricultural supply chain—especially for perishables like vegetables, fruits, and staples—is riddled with inefficiencies:

- 20–30% of produce is lost between farm and shelf
- Farmers have little visibility into pricing or demand
- Retailers face unpredictable supply and inconsistent quality

WayCool's founders saw this gap not just as a logistics problem, but as an opportunity to re-engineer the entire chain from soil to shelf.

WayCool is a food and agri-supply chain company with a sharp focus on efficiency, transparency, and fairness. By leveraging technology across sourcing, storage, and distribution, WayCool connects farmers directly to retailers—bridging one of India's most fragmented and wasteful supply chains.

The model is built for scale but grounded in one core belief: a stronger supply chain can lift farmer incomes, reduce waste, and ensure better food for all.

Tech-Integrated Solution for Farmers and Cooperatives

WayCool has built an end-to-end supply chain platform that combines physical infrastructure with deep tech. The solution includes:

- **AI-driven demand forecasting** to align procurement with real-time market needs
- **Cold-chain integration** and digitally monitored storage for perishables
- **Route optimization algorithms** and logistics automation for timely, efficient delivery
- **Digital quality grading**, traceability, and integrated ERP systems from farm gate to retail outlet

It's not just about moving produce—it's about moving it smartly.

Business Model

Agri-supply chain platform – B2B2C; revenue from procurement, logistics, and retail supply. Farmers sell produce directly to WayCool clusters.

Service Cost: No direct cost for farmers; WayCool earns margin on produce procurement and sales.

Cost-Benefit Analysis for farmers

Reduced post-harvest loss (from 18% to 2%), stable demand, and better price realization; income stability via direct market linkage.

Traction and Strategic Partnerships

- Moves 1,000+ tons of produce daily across its network
- Serves over 50,000 retailers in 100+ cities
- Partnered with SAP, leveraging SAP S/4HANA to digitize operations end-to-end
- Raised \$100M+ in capital and grants from marquee investors and impact funds
- Collaborated with international funders like the Huruma Fund, securing \$11.6M to expand farmer engagement

Real-World Impact: Case Studies

Tomato Farmers – Karnataka

In a pilot involving tomato growers, WayCool helped reduce post-harvest losses from **18% to just 2%** within one season by aligning procurement to actual demand and digitizing the sorting process. Farmers earned more, wasted less.

Staple Distribution – Tamil Nadu

By deploying predictive analytics, WayCool reduced food spoilage across warehouses and helped retailers maintain stock with near-zero wastage—cutting **food loss by over 96%**.

Other Case Studies

- Onboarded over **85,000 farmers** and helped them access stable markets with better pricing
- Impact-focused growth: **4x revenue growth** while remaining climate-conscious and cost-efficient
- Reduced **CO₂ impact** and carbon miles per kg of produce through intelligent routing and planning

Farmer Engagement and Working Model

WayCool's farmer engagement model rests on three pillars:

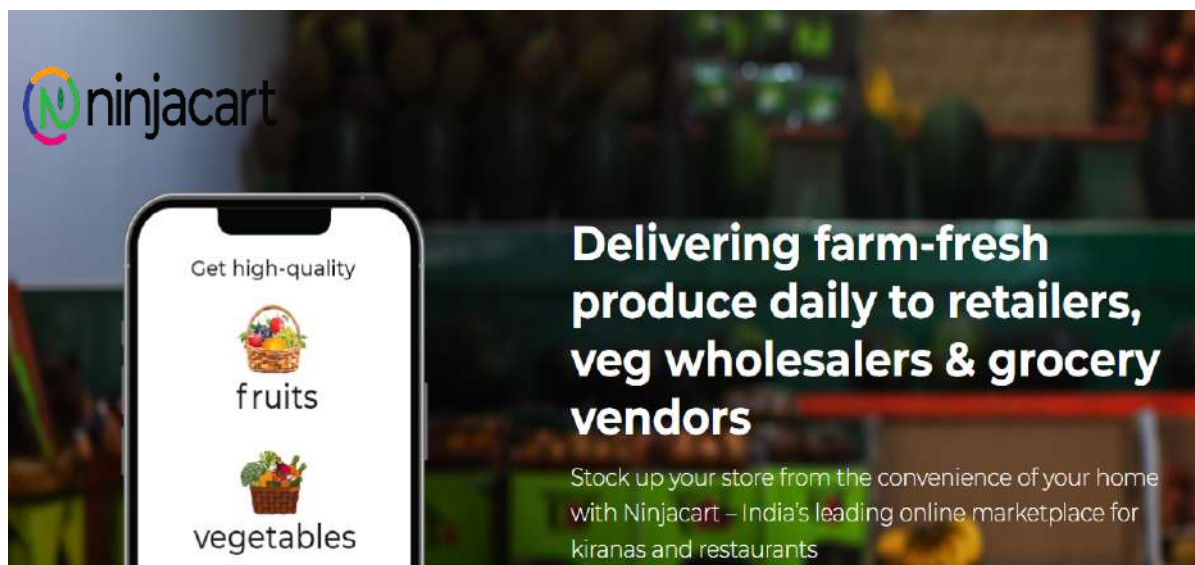
- **Direct procurement** from farmer clusters and FPOs to eliminate middlemen
- **Demand insights** shared with farmers so they can plan harvests based on market signals
- **Post-harvest management**—including grading, cold storage, and aggregation—is handled by WayCool, ensuring quality and fair returns

The result is a supply chain that's not only lean and tech-driven, but also human-centered—designed to serve both the grower and the end consumer.

For more information: <https://waycool.in>

Contact: connect@waycool.in

1.16 Ninjacart



Ninjacart is India's leading B2B agri-supply chain platform, transforming how fresh produce travels from farms to retail shelves. India's traditional fresh produce system relies on mandis, middlemen, and manual processes. This leads to:

- Delayed payments and volatile pricing for farmers
- Lack of quality control and supply unpredictability for retailers
- 30%+ wastage due to inefficient handling and logistics

Ninjacart saw a chance to redesign this value chain using technology, transparency, and time efficiency. With a highly optimized logistics and tech stack, Ninjacart enables farmers to sell directly to retailers, eliminating inefficiencies and ensuring produce reaches stores in under 12 hours. At the heart of Ninjacart's model is a simple idea: connect the dots between farmers and kirana stores—faster, fairer, and fresher.

Tech-Integrated Solution for Farmers and Cooperatives

Ninjacart offers a full-stack solution built around precision and speed:

- **Demand forecasting tools** to plan daily procurement
- **Real-time inventory and order management** through a mobile app
- **IoT-enabled cold chain**, warehouses, and fleet for handling perishables
- **Digital interfaces for farmers and retailers** to track prices, schedules, and payments

Their platform ensures produce is picked up from farms, sorted, and delivered to urban stores—all within hours.

Business Model

Tech-enabled supply chain platform connecting farmers directly with retailers, eliminating middlemen.

Cost: Free for farmers (no commissions or logistics fee). Ninjacart earns from margins/marketplace.

Cost-Benefit for Farmers

20–30% higher income, faster payments, 3–4× lower wastage.

Traction and Strategic Partnerships

- Serving over **1,00,000 retailers** across 7 cities
- Onboarded **50,000+ farmers** with guaranteed procurement
- Raised over **\$250 million** from investors like **Tiger Global, Walmart, and Accel**
- Partnered with logistics players, e-grocery firms, and farmer collectives for scaling operations

Real-World Impact: Case Studies

Farmer Income Boost

- By eliminating middlemen, farmers working with Ninjacart earn **15–20% more** per kilogram of produce. Payments are processed within **24–48 hours**, improving cash flow and confidence.

Waste Reduction

- Through data-driven logistics and optimized routing, Ninjacart reduced **post-harvest losses from 30% to under 4%**, while still ensuring produce reaches kiranas in under 12 hours.

COVID-19 Response – “Harvest the Farms”

- During lockdowns, Ninjacart launched a rescue initiative to collect unsold produce directly from farmers and deliver it to consumers—preventing massive losses and keeping supply chains running.

Other Case Studies

- A survey found that **79% of farmers, 81% of retailers, and 91% of traders** reported income and quality-of-life improvements after engaging with Ninjacart.
- Export-grade produce from Ninjacart’s model has enabled retailers to offer better-quality food at stable prices to end consumers.

Farmer Engagement and Working Model

Ninjacart’s approach to farmer engagement is both structured and scalable:

- **Direct procurement from partner villages** with clear schedules
- **Transparent pricing shared in advance** through digital platforms
- **Guaranteed pickups and fast payments**, typically within 48 hours
- Regular engagement through field officers and village collection centres

This model reduces uncertainty, ensures fair remuneration, and builds long-term trust with the farming community.

For more information: <https://ninjacart.com>

Contact: +91-8069155666 / info@ninjacartservices.com

1.17 ZEWA ECOSYSTEMS



Years of chemical-intensive farming have left Indian soils exhausted—low in organic carbon, stripped of microbial life, and fragile in the face of climate shocks. This degradation has made farming more input-dependent and less profitable. Zewa’s founders, shaped by a deep understanding of permaculture and sustainable systems, saw the need for a scientific yet scalable path to regenerate soils at the grassroots.

Zewa Ecosystems is a regenerative agriculture startup on a mission to heal India’s soils. With science-backed natural inputs and digital soil health tracking, Zewa helps farmers rebuild soil fertility, boost microbial life, and transition toward resilient, chemical-free agriculture.

At its heart, Zewa is about restoring balance—between the land and the farmer, nature and nutrition, waste and value.

Tech-Integrated Solution for Farmers and Cooperatives

Zewa offers a holistic toolkit for regenerative transitions:

- **Biofertilizers, microbial teas, compost accelerators**, and insect-based amendments designed to revive soil biology
- A **mobile soil health tracker** that helps farmers monitor microbial activity and soil parameters
- Integration with **yield forecasting and climate models** for more informed decision-making
- Support for **on-farm composting** using innovative technologies like **Black Soldier Fly-based bioconversion**

Together, these tools restore soil as a living system—reducing chemical dependency and increasing resilience.

Business Model

Produces insect-based protein feed for poultry, fish, pets, and livestock using IoT + biotech.

Cost

From INR 500 onwards (varies from feed type and volume)

Cost-Benefit for Farmers

Sustainable, high-protein feed with potential for better yields and lower environmental impact; actual cost savings not clear yet.

Traction and Strategic Partnerships

- Pilots active with over **100 farmers** across Telangana, Maharashtra, and Tamil Nadu
- **Recognized by the Ministry of Rural Development** for innovation in agroecological practices
- Partnered with **Kerala Startup Mission, UNDP**, and local panchayats to scale decentralized composting and soil regeneration
- Collaboration with **FPOs and farmer clusters** for large-scale demonstrations

Real-World Impact: Case Studies

Thrissur Pilot – Food-to-Feed Circular Economy

In July 2022, Zewa launched a pilot insect-based feed and composting facility in Thrissur. Using **Black Soldier Fly larvae**, Zewa converted local organic waste into:

- **High-protein animal feed** for fish, poultry, and pets
- **Organic compost** for nearby farming communities
- A **carbon-negative cycle** that reduces deforestation tied to conventional protein sources

Local Panchayat Partnership

With the support of local governments, Zewa distributed **ZewaPod units**—mini composting and feed production modules—to panchayats, turning biowaste into regenerative farm inputs.

Other Case Studies (Product Innovations)

- Developed **insect-based feed lines** for ornamental fish and birds, enhancing immunity while cutting CO₂ emissions per kg of feed
- Reduced dependence on traditional feed resources like soy and fishmeal, which are often linked to deforestation and overfishing

Farmer Engagement and Working Model

Zewa works closely with FPOs and local institutions to lead regenerative transitions:

- **Farmer training** on soil food web dynamics, composting, and microbiome care
- **Microbial labs and input hubs** set up in rural clusters
- Use of **digital tools** for monitoring, feedback, and guidance on farm-specific soil strategies

The result is a system where farmers regain control of their land's health—guided by microbes, data, and nature.

For more information: <https://zewaecosystems.com>

Contact: +91 9496642259 / info@zewafeeds.com

1.18 AGNEXT



Agricultural procurement has long been plagued by inefficiencies and mistrust. Manual quality checks are:

- Time-consuming and inconsistent
- Subjective and open to dispute
- Unsuitable for high-speed, high-volume trade

This leads to delayed payments, rejected consignments, and strained relationships between producers, buyers, and processors. AgNext is a deeptech startup transforming the way India evaluates food quality. AgNext's founders saw a clear gap—there was no scalable, scientific, and field-ready way to assess quality in real time and offered this solution

With advanced AI and computer vision, the company enables real-time, chemical-free quality assessment for a wide range of agri-commodities—from grains and spices to milk and tea. At the core of AgNext is a bold idea: make agri-trade faster, fairer, and more transparent by putting the power of instant quality analysis into every procurement center.

Tech-Integrated Solution for Farmers and Cooperatives

AgNext built a future-facing, AI-powered platform that delivers:

- **30-second quality assessments** using spectroscopy and machine vision
- **No chemicals, no lab, no waiting**—just real-time grading
- **Edge-AI devices** like *Qualix*, easily deployed at mandis, FPOs, or factories
- **Cloud-based analytics dashboards** to support traceability and compliance

Farmers, traders, and buyers can now operate with confidence—backed by instant, objective data.

Traction and Strategic Partnerships

- **500+ procurement centers** using AgNext devices
- Clients include **ITC, Cargill, NAFED**, and FPO federations
- **Patented technologies** and **\$20M+ in funding** raised
- Reported **₹202 crore (~\$24M) annual revenue** in FY 2024
- Powering over **\$300M worth of agri-trade** across 500,000+ tonnes of produce

AgNext has become a trusted quality gatekeeper in both domestic and international agri supply chains.

Business Model

B2B SaaS + hardware – provides AI-powered quality assessment of agri-produce to agribusinesses, exporters, and cooperatives.

Service Cost

Charges per test/device subscription to enterprises.

Cost-Benefit Analysis for farmers

Ensures fair price realization through objective quality checks; reduces disputes with buyers; better access to premium markets.

Real-World Impact: Case Studies

Madhya Pradesh Pilot – Procurement Made Smart

In a pilot deployment across multiple procurement points in MP, AgNext's *Qualix* platform:

- Reduced quality disputes by **over 80%**
- Improved procurement efficiency by **40%**
- Enabled instant, transparent grading of wheat and pulses

Result: Farmers got faster payments and better pricing; buyers gained operational speed and reduced rejections.

Other Case Studies (at Scale)

- **Milk cooperatives** are using AgNext tools for **real-time fat and SNF testing**, reducing pilferage and improving farmer trust
- **Tea estates** are grading leaf quality using spectral tools, leading to better export alignment
- **Spice processors** are ensuring residue compliance and standardized grades across chili, turmeric, and coriander value chains

Farmer Engagement and Working Model

- **Deployed via FPOs and cooperatives** at key procurement points
- **Farmers present their produce** for instant quality testing using AgNext devices
- **Data-backed results** help in price negotiation and build confidence
- All data is **digitally logged**—supporting traceability, certification, and market access

For farmers, it's a shift from uncertainty to empowerment—no more waiting, guessing, or being short changed.

For more information: <https://www.agnext.com>

Contact: +91 8047185818 / contact@agnext.com

CONCLUSION

The stories of agritech startups profiled in this chapter illustrate the profound potential of innovation to address longstanding challenges in South Asia's agricultural landscape, particularly for smallholder farmers. From TRST01's blockchain-enabled traceability and carbon credit monetization to Rukart's decentralized post-harvest solutions, BomLife's microbial bio-inputs, Krishitantra's rapid soil diagnostics, DeltaThings' IoT pest management, BharatRohan's drone-based crop monitoring, Satyukt's satellite intelligence, Boomitra's soil carbon finance, and HeliotAI's climate advisory, these ventures demonstrate how technology can enhance productivity, promote sustainability, reduce waste, and foster financial inclusion. By integrating AI, IoT, drones, blockchain, and renewable energy, they bridge gaps in market access, resource efficiency, and climate resilience, often through collaborative models with Farmer Producer Organizations (FPOs) and cooperatives. Collectively, these startups not only boost farmer incomes—through cost savings of 20–50%, yield increases of up to 60%, and new revenue streams like carbon credits—but also empower rural entrepreneurship, create jobs, and build resilient ecosystems. As South Asia navigates environmental pressures and economic inequities, these technology-led initiatives serve as scalable blueprints for rural transformation, underscoring the need for continued policy support, investment, and partnerships to democratize innovation and ensure no farmer is left behind.

A photograph of a rural agricultural scene. A blue tractor is pulling a red trailer loaded with several large, rectangular hay bales. A person is visible on the trailer, possibly managing the load. The scene is set in a dry, open field with some trees in the background. The text 'AGRI-COOPERATIVES FOR RURAL TRANSFORMATION' is overlaid in the center of the image.

AGRI-COOPERATIVES FOR RURAL TRANSFORMATION

AGRICULTURAL COOPERATIVES AND RURAL TRANSFORMATION: CASE OF MULKANOOR COOPERATIVE SOCIETY



2.1 Mulkanoor Cooperative Society: An Introduction

The Mulkanoor Cooperative Rural Credit and Marketing Society, established in 1956, in Mulkanoor village of today's Telangana state of India, stands as a beacon of rural transformation. Post-independence, Shri A.K. Vishwanatha Reddy- a freedom fighter- envisioned a better future for farmers. His vision materialized through the formation of the Mulkanoor Cooperative Society, initially with 373 members and a modest share capital of ₹2,300. The society has now grown to encompass 7,650 members, ₹18 crores in share capital, and ₹45 crores in thrift deposits, and offers a wide spectrum of services:

- Credit for agriculture and allied activities
- Agri-input services
- Procurement, value addition, and marketing of agri-produce
- Consumer services
- Welfare and social development initiatives

At Mulkanoor, every loan is a story of dignity, as the farmer members have relied on their own cooperative rather than moneylenders for decades. With 35 types of loans processed within 24-48 hours, the society facilitated ₹220 crores in credit last year alone- affordable, timely, and with minimal paperwork. Seasonal agricultural loans are supported by the State Bank of India, while all other loans are financed from the cooperative's own funds. Insurance partnerships further protect members, their families, employees, vehicles, stocks, and properties.

As trust deepened, so did the society's commitment. It began supplying quality seeds, farm equipment, fertilizers, agrochemicals, and bio-fertilizers- all under one roof and at fair prices.

By eliminating middlemen, the cooperative built a resilient supply chain that prioritized farmers, ensuring availability and affordability even during market disruptions.

Today, the society boasts 56,334 MT of storage capacity across its 18 villages, supported by two rice mills, a cotton ginning mill, and seven seed processing units. These facilities, developed with support from National Cooperative Development Corporation (NCDC), enabled the creation of premium brands- “Mulkanoor Seeds” and “Mulkanoor Rice”- which reach markets across states via dealers, retail outlets, and cooperatives.

Each season, the society procures nearly 2 lakh quintals of paddy and 30,000 quintals of cotton, paying the higher of market price or MSP. Profits are shared with members through bonuses, dividends, and interest on thrift and fixed deposits.

In the 2000s, the society invested in customized MIS software, boosting productivity and scaling turnover without increasing workforce. Encouraged by this success, it now explores farm automation and frontier agri-tech solutions through tech startups.

With an annual turnover of ₹400 crores across just 18 villages, Mulkanoor exemplifies deep-rooted member trust and effective cooperative governance.

Inspired by this success, the society promoted women’s dairy and thrift cooperatives, and men’s thrift cooperatives. Today, the women-led dairy procures 80,000 litres of milk daily, achieving ₹180 crores in turnover. The thrift federation has grown to 2.6 lakh members, with ₹500 crores in own funds across 574 village-level cooperatives.

Welfare programs include crop loan waivers, health camps, free cataract surgeries, pensions, funeral expenses, and training programs. Sustainable agricultural projects further ensure a better future. Mulkanoor has proven that when farmers own the system, they own their future.

2.2 Factors Driving the Success

Following are some of the key factors that have driven Mulkanoor’s success.

2.1.1. Strategic Alliances with Financial Stakeholders

Founded in 1956 under the visionary leadership of Shri A.K. Vishwanatha Reddy, the Mulkanoor Cooperative Society began as a Primary Agricultural Cooperative Society (PACS), affiliated with the District Central Cooperative Bank and the State Cooperative Bank. Its initial mission was to provide timely, affordable credit to farmers at subsidized interest rates, reducing dependence on moneylenders.



However, as agricultural activities expanded and member needs evolved, the limitations of the traditional credit structure became evident. Delays and inadequacies in accessing sufficient credit hindered progress.

In 1969, the society made a bold move: it shifted its credit partnership to the State Bank of India (SBI), ensuring timely and adequate financing. Today, Mulkanoor receives ₹150 crores annually from SBI for crop loans, term loans for livestock and machinery, and pledge loans for agri-produce. Remarkably, there are no NPAs—members repay loans promptly, and the society repays SBI on schedule.

Currently, SBI supports only seasonal agri-loans, while all other loans are financed from the cooperative's own funds. The society also facilitates government schemes like the Interest Subvention Scheme and loan waivers. To date, ₹42 crores in loans have been waived by the Telangana government, and ₹2 crores in interest subvention from the central government have been passed on to members. From humble beginnings, Mulkanoor's journey is one of resilience, adaptability, and collective action- transforming rural economies and uplifting farmers' socio-economic status.

Life Insurance for Members and Staff

Long before insurance reached rural India, Mulkanoor's leadership recognised the irreplaceable value of the family breadwinner. In 1978, the society became a corporate agent of the Life Insurance Corporation of India (LIC), extending coverage to both members and staff with pioneering foresight.



Today, the cooperative manages the entire process- premium collection, policy administration, and claim settlement-sparing families any bureaucratic burden during grief. Members access standard and high-value policies seamlessly.

Key metrics (as of today):

- Annual premium: ₹9,06,535
- Lives covered: 3,477
- Last 5 years: ₹56,77,640 in premiums paid; 122 claims worth ₹94,01,250 settled

Every member now carries the quiet assurance that their cooperative stands with them in life's toughest moments.

Safeguarding Critical Assets through National Insurance Company (NIC)

To protect vital infrastructure and member assets-godowns, plant & machinery, vehicles, warehouse inventory, office equipment, electric motors, and livestock-the society partners with National Insurance Company (NIC).

- **Annual premium:** ₹12–15 lakhs
- **Sum assured:** ~₹40 crores
- **Livestock coverage:** 4% of cattle value as premium; full market value paid on tagged animal's death

This alliance guarantees operational continuity against fires, natural disasters, or accidents.

Accidental Coverage through IFFCO-Tokio

For vehicular protection, the society collaborates with IFFCO-Tokio General Insurance, insuring tractors, harvesters, and other farm vehicles against accidents, theft, or damage.

Additional personal accident safeguards include:

- **Group policy:** ₹5,25,213 annual premium for 7,181 members; ₹2 lakhs coverage each
- **Individual employee policy:** ₹2 lakhs hospitalization / ₹6 lakhs accidental death
- **Workmen compensation:** ₹2,40,000 premium for 100 daily-wage labourers

Through these strategic financial and insurance partnerships, Mulkanoor Cooperative Society has woven a comprehensive safety net- shielding members, assets, employees, and labourers alike. It proves that cooperatives are not mere lenders, but lifelong pillars of rural resilience.

Leveraging the Power of Partnerships

The Mulkanoor Cooperative Rural Credit and Marketing Society exemplifies how collective effort, strategic partnerships, and a shared vision can empower farmers and build resilient rural economies. Over the years, the society has cultivated a robust network of collaborations with cooperatives, agri-input companies, and allied organizations.

Partnerships with Cooperatives and Agri-Input Companies

To counter artificial shortages and speculative practices in fertilizer markets, Mulkanoor has established strategic partnerships with leading fertilizer suppliers such as Indian Farmers' Fertilizer Cooperative Limited (IFFCO), Krishak Bharati Cooperative Limited (KRIBHCO), and Cooperative Marketing Federation (MARKFED) since 1971.

By securing wholesale dealership and membership, Mulkanoor procures fertilizers well in advance of peak demand, ensuring timely availability at affordable prices. These fertilizers are delivered directly to farmers in their villages, reducing transportation costs and uncertainty. Each year, 5,820.27 MT of fertilizers worth ₹5 crores are supplied to members.



Direct Procurement from Agri-Input Companies

To protect farmers from exploitation by traders and wholesale dealers, the society forged direct partnerships with trusted agri-input companies including SPIC, FACT, IPL, MFL, Pioneer, Mahyco, Kaveri, Bayer, DuPont, Dhanuka, Nagarjuna, FMC, and IFFCO MC. These collaborations ensure uninterrupted access to high-quality fertilizers, pesticides, and seeds at

fair and stable prices. Annually, ₹8.84 crores worth of seeds, fertilizers, bio-stimulants, and agrochemicals are facilitated to farmer members.

Cooperative Seed Marketing

As a member of Bhartiya Beej Sahkari Samiti Limited (BBSSL), a national-level seed marketing cooperative, Mulkanoor engages in seed production, procurement, and packaging for paddy and sorghum crops under the BBSSL brand. This partnership exemplifies “cooperation among cooperatives,” reinforcing mutual trust and shared growth.

Export Linkages: Partnership with NCEL

To tap into international trade opportunities, Mulkanoor became a member of the National Cooperative Exports Limited (NCEL). This strategic alliance enables the cooperative to export commodities such as rice, broken rice, and cotton bales, with guidance and support from NCEL-strengthening its global competitiveness.

Partnership with PACS for Marketing

Through partnerships with Primary Agricultural Credit Societies (PACS), Mulkanoor facilitates bulk procurement, timely supply, and transparent pricing of inputs and outputs. These collaborations embody the cooperative principle of mutual aid, demonstrating that when cooperatives unite, they build a better future for all.

Partnership with IOCL for Fuel and Energy Access

In 1980, the society obtained a dealership from Indian Oil Corporation Limited (IOCL) to supply petrol and diesel, addressing the lack of nearby fuel stations. This outlet has consistently ranked among top performers for quality fuel supply. In 2000, recognizing the health risks associated with firewood, the society secured a Bharat Gas dealership to provide safe cooking fuel. To date, 4,649 gas connections have been issued to members.

2.1.2. Partnerships with Government, Research, and Academia

In an era of agri-innovation, policy reform, and climate urgency, Mulkanoor has built robust partnerships with government bodies, research councils, and academic institutions to bridge the gap between grassroots realities and formal systems.

Partnership with NCDC for Infrastructure Development

Since 1966, support from the National Cooperative Development Corporation (NCDC) has enabled Mulkanoor to secure ₹27 crores out of ₹39 crores in project costs for storage and processing infrastructure. This includes:

- ₹7.5 crores in subsidies
- ₹19.95 crores in loans
- ₹11.5 crores from society's own funds

As a result, 56,334 MT of storage capacity has been established across 18 villages, including rice mills, cotton ginning units, and seed processing plants. These facilities empower farmers to retain and manage their produce post-harvest, ensuring control over agricultural output. The disciplined use of funds reflects in the society's robust infrastructure and its ability to distribute bonuses to members.

Research Collaborations

For over 50 years, Mulkanoor has supported agricultural research institutions by multiplying breeder seeds of paddy, maize, sorghum, groundnut, and sunflower. For PJTSAU, 300 quintals of certified maize seed are produced annually.

Training programs are regularly conducted in collaboration with ICAR, IIMR, State Agricultural Universities (SAUs), Krishi Vigyan Kendras (KVKs), and Regional Agricultural Research Stations (RARS). These sessions cover:

- Crop rotation
- Pest and disease management
- Soil health improvement
- Input cost optimization
- Frontier agri-tech solutions

Last year alone, 500 farmers were trained, bringing the total to over 4,500.

Partnership with NDDB for Fodder Seed Production

Under the National Livestock Mission, Mulkanoor partnered with the National Dairy Development Board (NDDB) to produce and pack fodder-jowar and maize seeds. In the last four years, 35,200 MT of seeds were produced and distributed to 11 lakh dairy farmers via 85 dairy unions. Farmers receive 15% higher rates than market prices.

Partnership with Telangana Seeds Development Corporation

Mulkanoor produced and supplied three varieties of seeds for Telangana Seeds Development Corporation Ltd (TG Seeds), ensuring quality seeds at fair prices. A total of 120 MT was produced, sufficient for 1,450 hectares.

Partnership with FCI and CCI for Custom Milling and Ginning

Each year, Mulkanoor undertakes custom milling and ginning for the Food Corporation of India (FCI) and Cotton Corporation of India (CCI). In the last five years:

- 52,000 MT of paddy (₹103 crores) milled
- 35,100 MT of rice delivered to FCI
- 700 MT of cotton (₹4.5 crores) processed and delivered to CCI

These activities generate profits through commissions and byproducts.

Academic Collaborations

Mulkanoor collaborates with institutions like IRMA, MANAGE, VAMNICOM, NIRD, DMI Patna, and ICM for staff and board training. Students visit Mulkanoor to study grassroots best practices, and case studies are developed for classroom learning in MBA programs.

2.1.3. Value Chain Integration and Marketing

Mulkanoor Cooperative has adopted a high-end value chain integration strategy, transforming from a traditional cooperative into a modern agri-business leader.

Mulkanoor Seeds: A legacy of Quality



Since 1968, Mulkanoor has been a trusted name in seed production. Premium-grade seeds are distributed across five states through an extensive dealer network.

The process involves:

- Breeder seeds → Foundation seeds → Certified seeds
- Supervised by 6 technical officers and 10 assistant agricultural officers
- Processed in 7 fully automated cooperative-owned units

Initially, breeder seeds procured from university/research centers are multiplied to foundation seeds which are further multiplied to truthful/certified seeds by our members. These seeds are processed in 7 cooperative owned fully automated processing and packing units. Each year, Mulkanoor produces 20,000 MT of seeds from 5,200 hectares of land, that covers 3.2 lakh hectares land of 4.5 lakh farmers. Members benefit through bonuses, high yields, and premium prices.

Mulkanoor Rice: From Paddy to Premium



To counter exploitation in transport, weighing, and payments in early days, Mulkanoor established their own rice mills -starting with 1 ton/hour, and later expanding to 4 tons/hour automated units. In 2004, “Mulkanoor Rice” was launched in two outlets. Now, there are 50 franchise outlets and 4,500 MT of premium rice is sold annually worth ₹30 crores in revenue. Member farmers are encouraged to grow fine rice varieties as they can fetch higher prices for their produce and at the same time profits from the sales of premium rice are also passed on to the farmers in the form of bonuses. The success of Mulkanoor Rice brand reflects its quality and the cooperative’s strategic partnerships across the value chain—from production to retail. Today, the Mulkanoor brand is synonymous with quality—built by and for farmers over six decades in paddy seed and rice.

Retail and Distribution Network

Mulkanoor operates 50 rice outlets and partners with over 500 seed dealers. This extensive network reaches nearly 200,000 farmers and countless rice consumers. All outlets prioritize customer feedback, resolving complaints promptly to build lasting trust. The direct-to-customer model eliminates middlemen, boosts farmer incomes, and empowers farmers with greater control over production. Beyond its own outlets, the cooperative expands reach through PACs, FPOs, local enterprises, and wholesale dealers.

Strategic technology partnerships for value addition

Mulkanoor partners with Fowler Westrup for advanced seed processing machinery and Satake,

Milltek company for getting fully automated rice milling equipment along with automatic color sorting machine for getting high quality fine rice. These machines are operated continuously for value addition to agricultural produce, forming a critical part of our integrated value chain model.

Farm Automation and Precision Agriculture

Mulkanoor Cooperative Society has taken proactive steps to promote farm automation and enhance agricultural productivity. A cornerstone initiative was the establishment of **Custom Hiring Centre** in 1976–77, which provided affordable rental access to essential machinery—including sprayers, dusters, crop threshers, tractor-mounted ploughs, and chaff cutters—greatly reducing the financial and logistical burden on small and marginal farmers. Additionally, the Cooperative owns and operates a drilling machine to install bore wells, enabling farmers to tap groundwater for irrigation. It also coordinates with the Electricity Board to ensure reliable power supply to agricultural fields, facilitating the use of pump sets. These efforts significantly improved early-stage crop yields and reduced dependence on rain-fed farming.

Support for Farm Mechanization and Self-Employment

As members gained financial stability, the Cooperative began offering loans for purchasing advanced agricultural machinery, including:

- Tractors
- Harvesters
- Paddy planters
- Power sprayers, tillers, weeders, level blades, trailers, rotovators, shellers, chaff cutters, round balers, and milking machines.

These investments boosted farm productivity and created self-employment opportunities for local youth skilled in operating and maintaining equipment. This dual impact modernized farming practices while strengthening the rural economy through job creation and improved livelihoods. To support this program, the Cooperative provides machinery loans to the farmers and has forged partnerships with leading machinery dealers, including John Deere, Mahindra, Swaraj, Kubota, and New Holland. Total ₹17.59 crores in loans over last five years supported 643 members in acquiring farm machinery including tractors and harvesters.

Support for enhancing Irrigation Efficiency

Irrigation is vital for modern agriculture, delivering a consistent and reliable water supply—especially in regions with unpredictable rainfall. The Cooperative provides loans and technical support for advanced, water-efficient systems, including:

- Sprinkler irrigation
- Drip irrigation
- Pump sets
- Pipeline networks

These technologies significantly enhance water use efficiency, boost crop yields, and promote long-term agricultural sustainability.

Drone-Based Services and Precision Farming

To boost productivity and modernize farming, the Cooperative Society has launched **drone services** through its Custom Hiring Centre. These drones perform:

- **Precision spraying** of fertilizers and pesticides
- **Real-time crop health monitoring**

This technology reduces input costs, cuts labor dependency, ensures uniform application, and promotes sustainable practices. It is especially valuable for small and marginal farmers, who gain affordable access to advanced tools they could not otherwise afford. IFFCO Kisan drones are used for spraying and crop monitoring, enhancing precision farming. The Cooperative partnered with Agri Bridge to pilot satellite-based crop monitoring on 100 acres of maize. The system detected early signs of disease and pest attacks, enabling timely advisories on preventive and corrective measures. The pilot delivered strong results, though further refinements are needed. With advancing technology, this approach will become more accurate and scalable—laying a solid foundation for integrating next-generation digital tools to benefit the broader farming community.

Box: Integration of Technology and Cooperative Growth

The Mulkanoor Cooperative Society has been serving its members since 1956—providing credit, input supply, produce procurement, and welfare services. With increasing operational complexity and frequent member interactions, the society launched its digitization initiative in 2000, during the wave of industrialization, to improve staff performance and service delivery.

From Manual to Digital Transformation

Mulkanoor's technological journey is rooted in its evolution. Founded with ₹2,300 in share capital and 373 members, the cooperative has grown to 7,600 members, ₹18 crores in share capital, and ₹45 crores in thrift deposits.

This exponential growth—especially post-2000, amid liberalization and globalization—demanded a shift from legacy systems to technology-enabled operations. Initially, all transactions, ledgers, and reports were maintained manually, resulting in delays and inefficiencies. Even after introducing computers for data entry, core processes remained labor-intensive and error-prone.

To overcome operational bottlenecks, the society partnered with the technology startup Co Options to develop a customized cooperative management software. This strategic collaboration marked a turning point—reducing administrative overhead, improving data accuracy, and enhancing decision-making. The impact was transformative: turnover increased 25-fold since 2000, with nearly the same workforce, reflecting a dramatic rise in operational efficiency.

With the legacy system nearing obsolescence, the society has now embarked on a new phase of digital advancement— a cloud-based, fully integrated ERP solution tailored for cooperative operations.

Key Functional Upgrades: Integrated & Automated Operations

The new ERP system is designed to:

- Achieve 100% automation in accounting, inventory, and member transactions
- Integrate inventory tracking with financials for real-time decision-making
- Reduce operational costs by 20–30% through enhanced efficiency
- Enable scalable workflows to support future growth

The implementation strategy includes continuous skill development for staff, ensuring seamless adoption and integration of technology into daily operations.

Outcomes & Impact: Evidence-Based Growth

The digital transformation has yielded measurable results. Performance dashboards and analytics reveal:

- Faster service delivery
- Significant cost savings
- Enhanced member satisfaction

These outcomes demonstrate the power of strategic technology adoption in cooperative ecosystems.

Lessons & Further Opportunities

Mulkanoor's journey offers valuable insights for emerging cooperatives:

- Early-stage cooperatives should prioritize technology aligned with their operational scale
- Customized digital solutions yield higher ROI than generic software in complex cooperative environments
- Strategic tech partnerships can accelerate transformation and unlock exponential value

The Road Ahead

Mulkanoor's story is a testament to how technology—when customized and strategically implemented—can amplify the potential of cooperatives. With digital transformation as its

backbone, the society is not only future-proofing its operations but also setting a replicable model for cooperatives across the country.
“Innovation in service of community upliftment is the true essence of cooperative spirit.”

2.2 Amplifying Impact

The Mulkanoor Cooperative Society stands as a beacon of how grassroots movements- driven by vision, innovation, and community participation- can transform rural livelihoods. Founded to uplift farmers, the society has evolved into a nationally recognized model for rural development. Inspired by its success, several initiatives were launched to promote the welfare of women, landless laborers, and progressive farmers.

Under the visionary leadership of MCRCMS and with support from the Cooperative Development Foundation (CDF), new cooperatives were formed- most notably the Mulkanoor Women’s Cooperative Dairy Union (MWCD), village-level thrift Cooperatives for men and women, and Seed Production Cooperatives.

2.2.1 The Mulkanoor Women’s Cooperative Dairy Union (MWCD)

One of the most inspiring works was the establishment of MWCD in 2000- the first women-led dairy cooperative in India. Designed to provide rural women with sustainable income, independence, and social recognition, MWCD now includes 23,827 women members across 203 village dairy cooperatives, making it one of the largest women-led cooperatives in the country.

Each village cooperative elects its own president and board, who in turn elect the MWCD board of directors and president. From its modest beginnings with 68 societies, 8,500 members, and ₹2.01 lakhs in share capital, MWCD has grown to:

- 23,827 members
- 203 village-level societies
- ₹5.5 crores in share capital
- ₹3 crores in development thrift

Starting with just 1,400 liters of milk per day, MWCD now collects approximately 80,000 liters daily. With an annual turnover of ₹181 crores, it has become a pillar of the local economy. More importantly, it has empowered thousands of women with income, dignity, and leadership.

MWCD maintains ₹23.74 crores in own funds and distributes ₹11 crores annually in bonuses—equivalent to ₹6.24 per liter of milk. Additional member benefits include:

- ₹100/bag subsidy on cattle feed
- ₹50/case subsidy on artificial insemination
- 50% subsidy on veterinary medicines and fodder seed
- 100% subsidy on vaccination and deworming
- Milch animal insurance and accidental coverage
- Training and skill development programs

MWCD’s impact was nationally recognized with the Best Cooperative Award, presented by the Hon’ble President of India- affirming its role in advancing rural women’s empowerment.

2.2.2. Inclusion of Landless Laborers: Joint Liability Group (JLG) Thrift Cooperatives

Recognizing that landless laborers are often excluded from formal financial systems, Mulkanoor leadership and CDF pioneered the formation of thrift cooperatives based on the Joint Liability Group (JLG) model. These village-level cooperatives, formed for both men and women, enable landless workers to pool resources, access credit, and build savings collectively.

Key features of the JLG thrift model include:

- Monthly savings of ₹100
- Loan eligibility after 2 years, up to 3× total savings
- 6% annual interest on savings
- Special loans of ₹10,000–₹60,000 for consistent repayment
- Welfare services such as funeral expense support and loan waivers upon member demise

JLGs reduce dependence on informal moneylenders and foster a culture of mutual trust and financial inclusion. Today, the movement has grown to:

- 236 men's thrift cooperatives with 1,10,797 members and ₹234.86 crores in own funds
- 338 women's thrift cooperatives with 1,53,730 members and ₹254.89 crores in own funds

This inclusive financial ecosystem empowers even the most vulnerable to build secure, dignified futures.

2.2.3. Supporting Progressive Farmers: Seed Production Cooperatives

To promote innovation and sustainability in agriculture, Mulkanoor's success encouraged progressive farmers to form seed production cooperatives. These cooperatives focus on:

- Developing high-quality seeds
- Adopting scientific farming methods
- Utilizing modern agricultural technologies

By giving farmers control over seed production and distribution, these cooperatives reduce reliance on commercial seed companies and foster self-reliance. Their contributions have led to:

- Increased crop yields
- Enhanced food security
- Improved farm incomes

Seed cooperatives exemplify how farmer-led innovation can strengthen agricultural ecosystems and ensure long-term sustainability.

2.2.4. Public-Private Partnership Models for Sustainable Agriculture

Sustainable Rice Cultivation: A Collaborative Initiative by JPAL, Government of Telangana, and Mulkanoor Cooperative Society

In response to growing concerns around unsustainable water use, climate change, and farmer income instability, a pioneering partnership has emerged in Telangana. JPAL South Asia, the Government of Telangana, and the Mulkanoor Cooperative Credit and Marketing Society have joined forces to promote sustainable rice cultivation through a public-private partnership (PPP) model that integrates scientific innovation, institutional support, and grassroots engagement.

This initiative focuses on two climate-smart practices: Alternate Wetting and Drying (AWD) and Direct Seeded Rice (DSR). These methods aim to replace traditional flood irrigation, which consumes excessive water and contributes to methane emissions. By adopting AWD and DSR, farmers can reduce water usage, enhance productivity, and minimize environmental impact.

Approximately 200 farmers will participate in the pilot during the upcoming Kharif season. Implementation is supported by satellite-based crop monitoring systems operated by Carbon Farms, a climate-tech startup. This technology ensures accurate, transparent tracking of sustainable practices on the ground.

A standout feature of the project is its performance-based payment system. Farmers who successfully adopt water-saving techniques will receive direct financial incentives. Additionally, the environmental benefits—particularly reduced methane emissions—will be quantified into carbon credits. Once certified, these credits can be traded in national and international carbon markets, offering farmers a new, sustainable income stream and connecting them to the global climate finance ecosystem.

The Mulkanoor Cooperative Society plays a pivotal role in ensuring grassroots success. It facilitates farmer outreach, supports engagement throughout the crop cycle, manages data collection, and oversees timely disbursement of payments. As a trusted institution, it bridges the gap between scientific bodies, government agencies, and individual farmers.

Technical guidance and training are provided by experts from Professor Jayashankar Telangana State Agricultural University and the Krishi Vigyan Kendra (KVK) at Jammikunta, ensuring farmers are equipped to implement these sustainable practices effectively.

This PPP model delivers multidimensional benefits:

- **Economic:** Financial stability through incentives and carbon credit revenue
- **Environmental:** Groundwater conservation, reduced electricity subsidies, and climate mitigation
- **Strategic:** Positions Telangana as a leader in sustainable agriculture and enhances its ability to attract global climate finance

By integrating public policy, private innovation, and community participation, this initiative offers a scalable blueprint for sustainable agriculture in India—promising long-term gains for both people and the planet.

Watershed Development in Partnership with NABARD

In a determined effort to enhance soil and water conservation in rural Telangana, the Mulkanoor Cooperative Society partnered with NABARD and DHAN Foundation (as the Resource Support Organization) to implement a comprehensive Watershed Development Program. Spanning three villages and covering 3,100 hectares, the initiative was executed in three structured phases: Capacity Building, Project Implementation, and Monitoring & Evaluation.

The project began with a detailed feasibility study assessing topography, hydrology, and community readiness. The Capacity Building Phase focused on mobilizing local communities and raising awareness about sustainable resource use. A Watershed Development Committee was formed, comprising a President and core members, to lead planning, fund management, and implementation—ensuring community ownership from the outset.

To deepen local involvement, the Mulkanoor Cooperative Society promoted the A.K. Vishwanatha Reddy Rural Development Society, which played a key role in outreach and coordination. Conservation, efficient resource use, and long-term sustainability were central themes driving community engagement.

In 2012, the project treated approximately 300 hectares with an investment of ₹15 lakhs, implementing a range of drainage line interventions, including:

- Stone gully plugs
- Sunken ponds
- Loose boulder structures
- Rock-fill dams
- Gabion structures
- Water harvesting systems
- Mini percolation tanks

These interventions significantly improved groundwater recharge, soil moisture retention, and erosion control—laying the foundation for a resilient agro-ecosystem.

The final implementation phase, completed by 2015, delivered transformative results:

- Groundwater levels rose, enabling better irrigation
- Fodder availability for livestock improved
- Crop productivity increased noticeably

The total project cost of ₹2.2 crores was fully funded by NABARD.

Key Impacts of the Watershed Programme

- Improved water security across all villages
- Enhanced agricultural productivity and farmer incomes
- Strengthened livestock sustainability through better fodder resources
- Deepened community ownership via active local governance
- Built institutional capacity for long-term resilience

This initiative showcases the power of partnerships- between financial institutions, technical experts, and community-based organizations- and highlights the effectiveness of cooperative-led rural development. Through its deep grassroots connections, the Mulkanoor Cooperative Society ensured that development reached those who needed it most, in ways that were inclusive, practical, and sustainable.

As we look to the future, this watershed model offers valuable lessons in climate-resilient rural transformation. It reminds us that when people, institutions, and purpose align, meaningful change is not only possible—it's inevitable.

CONCLUSION

The Mulkanoor Cooperative Rural Credit and Marketing Society exemplifies the transformative potential of farmer-owned institutions in achieving sustainable rural prosperity. From its founding in 1956 with ₹2,300 in share capital and 373 members, it has evolved into a ₹400 crore enterprise serving 7,650 members across 18 villages, delivering ₹220 crores in annual credit, procuring 2 lakh quintals of paddy and 30,000 quintals of cotton, and generating premium brands like Mulkanoor Seeds and Mulkanoor Rice that reach markets nationwide.

This success stems from a robust foundation of strategic partnerships—with SBI for zero-NPA crop financing (₹150 crores annually), NCDC for ₹27 crores in infrastructure subsidies and loans enabling 56,334 MT storage capacity, and agri-input giants like IFFCO and KRIBHCO for timely supply of 5,820 MT fertilizers worth ₹5 crores yearly. Integrated value chains, from seed multiplication on 5,200 hectares covering 3.2 lakh hectares of farmland to automated rice milling yielding ₹30 crores in branded sales, eliminate middlemen and return profits via bonuses and dividends.

Technological foresight—custom MIS since 2000 driving 25-fold turnover growth without workforce expansion, and emerging ERP for 100% automation—ensures scalability, while farm mechanization loans (₹17.59 crores over five years for 643 members) and drone precision services modernize operations for smallholders.

Mulkanoor's success amplify impact: the women-led MWCD procures 80,000 liters of milk daily with ₹181 crores turnover and ₹11 crores in bonuses; JLG thrift cooperatives empower 2.6 lakh landless members with ₹500 crores in funds; and PPPs with JPAL and NABARD promote climate-smart rice and watershed development across 3,100 hectares, enhancing water security and incomes.

Mulkanoor proves that cooperatives, rooted in member trust, governance discipline, and inclusive innovation, can eradicate moneylender dependence, build resilient supply chains, and foster socio-economic dignity. As a replicable model, it calls for policy support to scale such institutions nationwide, ensuring rural areas thrive through collective ownership and shared prosperity.

A background image showing a large group of women, many wearing colorful saris, with their right fists raised in a gesture of protest or solidarity. The image is slightly faded to allow the text to be prominent.

WOMEN EMPOWERMENT AND RURAL TRANSFORMATION

WOMEN'S EMPOWERMENT AND RURAL TRANSFORMATION: THE KUDUMBASHREE INITIATIVE

3.1 Introduction

Kudumbashree, is the flagship poverty eradication and women's empowerment programme, of the Government of Kerala, and is one of India's most successful community development missions. Launched in 1998 by the Government of Kerala in collaboration with NABARD and the Government of India, Kudumbashree operates through a unique three-tier community network that connects millions of women across the state. Its model- built on economic empowerment, social inclusion, and participatory governance- has become a benchmark for women-led development both nationally and internationally.

At the foundation of Kudumbashree lies its grassroots structure: the Neighbourhood Group (NHG) of 10–20 women; the Area Development Society (ADS) at ward level; and the Community Development Society (CDS) at the panchayat level. This federated network enables women to mobilize savings, access credit, participate in local governance, and collectively undertake livelihood and social initiatives. Over the years, the Mission has evolved into a powerful movement that integrates poverty alleviation with dignity, self-reliance, and leadership.

Kudumbashree's interventions cover three broad pillars: microfinance, livelihood promotion, and social development. Through microfinance, millions of women engage in thrift and credit activities that strengthen financial literacy and independence. In livelihoods, Kudumbashree supports collective farming, microenterprises, producer groups, and value addition, enabling women to move from informal labour to organized entrepreneurship. In social development, the Mission promotes gender equality, education, health, housing, and active citizenship.

A defining feature of Kudumbashree is its emphasis on convergence—linking community networks with government departments, financial institutions, and research organizations. This ensures access to training, technology, and market linkages, making women's enterprises competitive and sustainable. Initiatives such as Joint Liability Groups (JLGs) in agriculture, microenterprises in food processing, and Producer Groups for value addition have demonstrated how women can lead economic change from the ground up.

Over two decades, Kudumbashree has grown to encompass more than 45 lakh women organized in nearly 3 lakh NHGs. Its model has inspired replication across several Indian states and influenced national programmes, including NRLM. Beyond economic outcomes, Kudumbashree has catalyzed a silent social revolution—women who once hesitated to speak in public meetings now lead local governance, manage enterprises, and mentor others.

The stories that follow exemplify this transformation. Each woman and collective featured here represents the strength of Kudumbashree's approach—how access to opportunity, training, and solidarity can unlock limitless potential. From farming to technology, from food processing to enterprise, these narratives illustrate how women's collectives are not only earning livelihoods but also shaping Kerala's journey toward inclusive and sustainable development.

3.2 Stories of Change

3.2.1 The Transformational Journey of Mrs. Sudha Devadas

The story of Mrs. Sudha Devadas from Eravathur Desam in Kuzhur, Thrissur district, Kerala, stands as a compelling testament to how Kudumbashree's grassroots interventions can elevate an ordinary homemaker into a nationally recognized symbol of women's empowerment and innovation. Her journey exemplifies how Kudumbashree's model anchored in collective strength, financial inclusion, enterprise development, and capacity building nurtures leaders who inspire both their communities and the nation.

A New Beginning: Joining Kudumbashree

Sudha's transformation began in 2011 when she joined a Kudumbashree Neighbourhood Group (NHG). What seemed like a modest decision soon became a turning point in her life. The NHG introduced her to the world of collective savings, mutual support, and women-led development. Through weekly meetings and peer learning, she gained financial literacy and, more importantly, began to rediscover her own potential as a leader. Kudumbashree's philosophy of empowerment through thrift and credit laid the foundation for her evolution beyond the confines of domestic life.

Cultivating Change: Entering Collective Farming

Recognizing her passion for agriculture, Kudumbashree encouraged Sudha to join the Prakruthi Joint Liability Group (JLG), an initiative promoting women's participation in collective farming. She received training in modern cultivation techniques, crop management, and sustainable practices. With Kudumbashree's support, her JLG undertook the ambitious task of cultivating 22 acres of paddy, eventually harvesting 50 tonnes of rice—a remarkable feat for women who had once been limited to kitchen gardens.

Equally transformative was Kudumbashree's facilitation of market linkages. By connecting the group to Kerala's Supplyco procurement system, Kudumbashree ensured fair pricing and direct access to consumers. This eliminated middlemen, stabilized income, and instilled a sense of security and bargaining power among the women farmers.

A Leap into Technology: The Drone Revolution

Kudumbashree's commitment to aligning rural livelihoods with innovation opened a new chapter in Sudha's journey. Under the Namo Drone Didi Programme, a flagship initiative supported by the Government of India, Sudha was trained and certified as a drone operator for precision agriculture. In a field traditionally dominated by men, this was a groundbreaking achievement.

By introducing drone-based spraying and monitoring in local farms, Sudha improved resource efficiency and placed her community at the forefront of climate-smart agriculture. Her pioneering role earned her national recognition, culminating in an interaction with the Hon'ble Prime Minister of India, Shri Narendra Modi. In that moment, Sudha stood not just as an individual achiever, but as a representative of the collective strength of Kudumbashree women across Kerala.



Broadening Horizons: Diversification and Enterprise

Empowered by national recognition and Kudumbashree's continued mentorship, Sudha expanded her agricultural pursuits to include banana, yam, and vegetable cultivation—diversifying income sources and mitigating risks. Under her leadership, the number of NHGs in her locality grew from 8 to 25, and JLGs expanded to 32, demonstrating how one empowered woman can catalyze community-wide transformation.

Sudha also ventured into rural enterprise development. With Kudumbashree's support, she helped establish oil mills, tailoring units, and food processing ventures, creating sustainable livelihoods for other women in her village. These initiatives not only generated income but also fostered a culture of self-reliance and entrepreneurship.

Strengthening Cooperatives and Digital Linkages

In alignment with Kudumbashree's vision of building robust community institutions, Sudha played a pivotal role in forming women-led Farmer Producer Organisations (FPOs). These collectives, supported by Kudumbashree, enhanced women's bargaining power and opened doors to value-added processing.

Kudumbashree's efforts to integrate rural products into digital platforms like ONDC further expanded market access. By embracing digital tools, Sudha and her peers positioned their enterprises to thrive in both institutional and online marketplaces, ensuring long-term sustainability.

Beyond Livelihoods: Social Empowerment

Sudha's impact extended far beyond economic gains. With Kudumbashree's support, she led efforts to convert fallow land into productive farms, facilitated housing for marginalized families through the Ashraya Bhavanam scheme, and served as a community counselor promoting gender equality and participatory governance. Her work reflects Kudumbashree's holistic approach to empowerment—one that encompasses dignity, equity, and leadership in public life.

A National Symbol of Inclusive Development

Today, Mrs. Sudha Devadas is more than a successful farmer or entrepreneur—she is a national symbol of women-led development, inclusive growth, and resilience through collective action. Her journey embodies the spirit of Atmanirbhar Bharat and showcases Kudumbashree's capacity to nurture grassroots leadership that resonates on a national stage.



Sudha's story is living proof that when women are provided with institutional support, training, and opportunity, they can achieve the extraordinary. From paddy fields to drone technology, from NHGs to national platforms, her path reflects how Kudumbashree continues to transform lives and inspire a nation—through the enduring power of women's collective strength.

3.2.2. From Tutor to Trailblazer: The Transformational Journey of Sheeba Jose

In the tranquil green landscapes of Ayampuzha Panchayat in Kerala's Ernakulam district, a quiet revolution began inside a modest home. It didn't start with land, machinery, or capital—but with a weekly contribution of ₹10 to a Kudumbashree Neighbourhood Group

(NHG). For Sheeba Jose, a graduate homemaker bound by family responsibilities, this small act planted the seed of a transformation that would eventually inspire her entire community. What began as a desire to support her family blossomed into a journey of empowerment, leadership, and integrated farming innovation—all made possible through the Kudumbashree collective.

First Steps: Learning to Stand on Her Own

In 2002, Sheeba's daily routine revolved around caring for her young children. Though educated, she couldn't pursue a formal career. One day, a neighbor noticed her patient teaching style and asked if she could tutor their child. That simple request marked the beginning of her first livelihood activity. Soon, Sheeba's home became a small classroom, welcoming nearly 20 students for regular tuition. For her, this wasn't just income—it was her first taste of financial independence and the confidence that she could contribute meaningfully.

Her weekly savings in Kudumbashree gave her a sense of belonging to something larger than herself. The NHG became her second family, encouraging her to dream beyond the four walls of her home.

From Kitchen to Cultivation: Stepping into Collective Farming

In 2005, Sheeba's Kudumbashree unit made a bold move—they formed a Joint Liability Group (JLG) and ventured into agriculture. A local family offered them a piece of unused land, where they cultivated Chinese potato. Their first harvest was profitable. Encouraged, they leased more land to grow bananas, supported by an agricultural loan from Canara Bank. With Kudumbashree's interest subsidy schemes, repayment was smooth, and their confidence grew.

This marked the beginning of Sheeba's deep connection to the soil. What started as an experiment in collective farming soon became her life's calling.

Expanding Horizons: Integrated Farming with Kudumbashree's Support

Sheeba's spirit of innovation didn't stop with bananas. She gradually diversified her activities, drawing on Kudumbashree's training, financial linkages, and unwavering support. Without relying on her husband's income, she established:

- A poultry unit with 1,000 birds
- A goat shed housing 50 goats
- An apiary with 10 beehive boxes
- Jasmine cultivation, mushrooms, vegetables, and country chickens

With linkage loans facilitated by Kudumbashree, Sheeba managed her farm operations efficiently. Surplus produce ensured timely loan repayments. Her home evolved into a vibrant hub of integrated farming, alive with livestock, crops, and value-added activities.

Sheeba also pursued knowledge with determination. She attended regular trainings at the Kudumbashree District Mission and Mannuthy Agricultural College, and supplemented her learning through agricultural books and magazines—proving that self-education can overcome formal limitations.

Recognition and Resilience

Sheeba's dedication began to attract attention. Articles about her work appeared in Karshakashree and Karshakan magazines. Local families sought her out to buy chicks, goat

kids, eggs, and honey. Even the Ernakulam Krishi Vigyan Kendra (KVK) partnered with her for chick supply. She mastered both traditional and mechanized incubation techniques, contributing to the region's livestock ecosystem.

Her journey, however, was not without challenges. Sheeba underwent six major surgeries, each testing her physical and emotional strength. Yet, true to the Kudumbashree spirit, she never gave up. Even during recovery, she planned new initiatives and ensured her farm continued to thrive.

From Farmer to Kudumbashree Leader

Kudumbashree became more than Sheeba's economic backbone—it became her platform for leadership. She took on roles as ADS president, CDS member, MGNREGS mate, and Jeeva master trainer. After receiving training in nursery management, she launched an organic nursery with Revolving Fund support from the District Mission. Her hybrid seedlings and vegetable saplings found a steady market.

When high rental costs forced her to scale down nursery operations, Sheeba adapted once again. She launched "Seeds Corner," an online venture selling hybrid seeds—demonstrating her ability to blend traditional farming with modern technology.

A Symbol of Sustainability

In 2023, Sheeba was honored with the Best Integrated Farmer Award by her Panchayat. The Krishi Bhavan supported her with a dryer machine, enabling her to process jackfruit, cassava, butterfly pea, meat, and nutmeg into value-added products. This shift from raw production to processing marked her evolution from farmer to agri-entrepreneur. Despite ongoing health challenges, Sheeba continues to manage 500 BV 380 hens, online seed sales, and value-added production. Though her pace has slowed, her determination remains unwavering.

Beyond Money: A Legacy of Empowerment

For Sheeba, financial independence means more than income—it means dignity and freedom. She proudly funded her children's overseas education, built her home, and managed her medical expenses— all through her own earnings. Today, she is celebrated not just as a tutor, farmer, or entrepreneur, but as a living embodiment of Kudumbashree empowerment. Her journey inspires other women in Ayampuzha Panchayat to believe that with collective strength and persistence, they too can transform their lives.



Sheeba's story is not merely about sowing crops—it is about sowing resilience, harvesting dignity, and cultivating change. Through Kudumbashree, she grew not only as a farmer but as a trailblazer of rural empowerment.

Contact: Mrs. Sheeba Jose (+91 94972 42050)

3.2.3. Breaking the Barriers: The Empowering Journey of Jameela Shamsuddin

In the quiet hillsides of Kavalangad Panchayat in Kerala's Ernakulam district, the remarkable journey of Jameela Shamsuddin unfolds—a woman who turned the soil beneath her feet into a foundation of empowerment. Her story is one of resilience, courage, and collective strength, demonstrating how Kudumbashree transforms women's lives from the margins of subsistence to the forefront of leadership and social change.

Roots of Strength: Childhood and Early Exposure

Born into a traditional Muslim farming family, Jameela absorbed the rhythms of agricultural life from a young age, working alongside her mother and siblings in the fields. These early experiences were more than chores—they were lessons in perseverance and patience, quietly shaping her future.

Marriage brought her into another farming household. Though life was stable, raising three children intensified financial pressures. Realizing that her husband's income alone was insufficient, Jameela took her first independent step—leasing 50 cents of land to cultivate cassava. That small field became her testing ground. When buyers arrived directly at her farm, she saw clearly that agriculture could be more than survival—it could be a path to dignity and independence.

The Kudumbashree: Turning Point

In 2002, Jameela and 11 other women formed the Kudumbashree Neighbourhood Group (NHG) 'Chaithanya' in Thenkod Ward. What began as weekly savings meetings soon evolved into a platform for solidarity and knowledge-sharing. Through Kudumbashree, she gained access to exposure visits, training sessions, and guidance from agricultural officers.

Empowered by this support, Jameela expanded her farming to 2.5 acres, cultivating ginger, turmeric, and cassava. These crops symbolized her shift from dependency to self-reliance. Her identity was no longer confined to "wife" or "mother"—she had emerged as a woman farmer in her own right.

Stepping into Leadership and Public Life

In her conservative community, it was rare to see Muslim women in public roles. But Jameela, fortified by Kudumbashree's encouragement, began participating actively in panchayat and community activities. Her commitment and visibility earned recognition, and she was soon elected as a Ward Member. Balancing her roles as mother, farmer, and social worker was never easy. Yet Jameela met each challenge with quiet determination. When financial demands grew, she ventured into rubber tapping—a male-dominated sector. With training and perseverance, she successfully managed nearly 300 rubber trees, proving once again that women can break barriers in any field.

Strength in Solidarity: Joint Liability Group "Unarvu"

As her journey unfolded, Jameela discovered the transformative potential of collective farming. Together with five other women, she established the Joint Liability Group (JLG)-Unarvu, cultivating three acres of land through shared effort and vision. Their approach—intercropping cassava, bananas, and vegetables— not only optimized yields but also minimized agricultural risks. This choice was both innovative and deeply pragmatic. For smallholder farmers, intercropping offered economic resilience; for women like Jameela, it meant securing livelihoods while nurturing a spirit of mutual support and empowerment.

As Jameela's roles expanded—from tending crops to leading within her community—new challenges emerged, mobility being a significant one. Undeterred, she learned to ride a scooter—a bold and symbolic act in her conservative setting. More than a means of transport, it was a declaration: women, too, have the right to freedom of movement and autonomy.

Harvesting Dreams: Education Through Agriculture

The greatest fruits of Jameela’s labor were not measured in tons of cassava or banana bunches, but in her children’s education. Through her farming income, she financed the studies of all three children. Today, both her sons are pursuing Chartered Accountancy, and her daughter is preparing for her CA finals.

Every harvested crop was an investment in her family’s future—a future built on dignity, self-reliance, and education.

Recognition and Continued Growth

Jameela’s dedication was widely acknowledged. She received the Best Farmer Award from her Panchayat and rose to serve as Chairperson of the Kudumbashree Community Development Society (CDS), becoming a mentor and guide to many women.

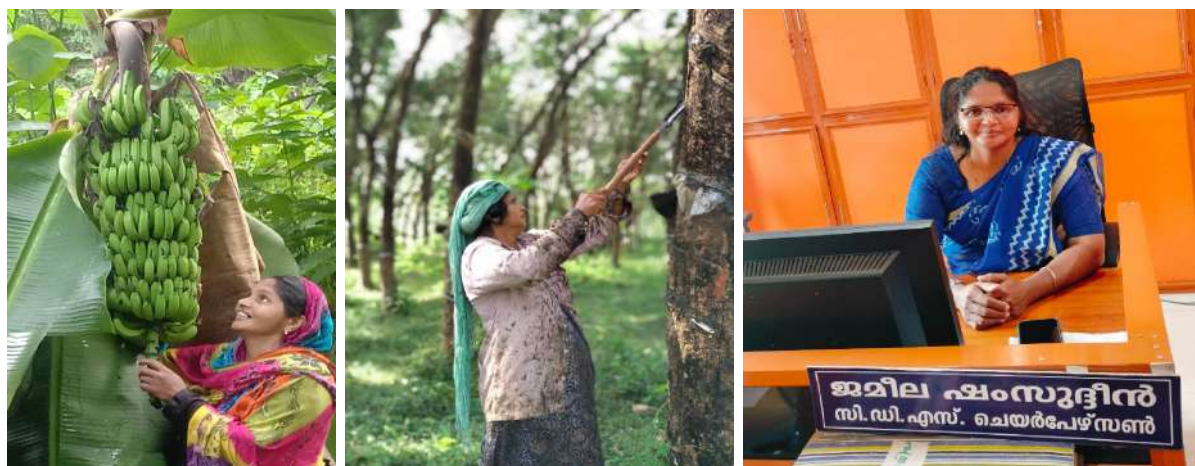
Even while handling administrative responsibilities, she remained deeply engaged in farming. During the last Onam season alone, she cultivated 3,000 banana plants along with seasonal vegetables and flowers. Her ability to balance governance and agriculture reflects the multidimensional leadership nurtured through Kudumbashree.

With her children’s education nearing completion, Jameela is now saving to build her own home. She is also exploring value addition in farming—seeking new ways to enhance income and sustainability.

A Legacy of Strength and Service

Jameela’s story is not just personal—it is collective. Behind her journey stands the support of her family, the Kudumbashree network, Panchayat administration, and agricultural officers. Together, they created an enabling environment where her determination could flourish.

Her legacy lies not only in the fields she cultivates but, in the inspiration, she offers to other women. She has shown that barriers—social, cultural, or economic—can be broken with courage, solidarity, and persistence.



In Kavalangad Panchayat, her name is spoken with pride. For many women, Jameela Shamsuddin is proof that empowerment is not a distant dream—it is a harvest that grows with every seed of effort sown through Kudumbashree’s collective spirit.

3.2.4. Rooted in Determination: Life Journey of Mrs. Lillikutty Philip

In the hilly landscapes of Mylapra village in Kerala’s Pathanamthitta district, the remarkable journey of Smt. Lillikutty Philip unfolds—a woman who transformed agriculture into a pathway of empowerment. Her story is not just about farming; it is about courage,

innovation, and collective strength. From humble beginnings in mushroom cultivation to leading a producer group focused on value-added enterprises, Lillikutty's success is deeply intertwined with Kudumbashree's mission of women-led development.

Planting the First Seeds: Small Steps with Big Impact

Lillikutty has been an active member of Kudumbashree since its early years, participating in her local Neighbourhood Group. Like many rural women, her initial ventures into income generation were modest. She began with mushroom cultivation and small-scale aquaculture in her backyard. These efforts provided just enough income to support household expenses—but more importantly, they gave her the confidence to earn, save, and stand on her own feet.

Her participation in Kudumbashree meetings introduced her to the concept of collective farming. In 2015, determined to expand beyond backyard ventures, she joined hands with four other women to form the Shanti Joint Liability Group (JLG). They leased just 25 cents of land and began cultivating vegetables organically. Their first harvest was bountiful—bringing both income and pesticide-free produce to their homes, reinforcing the idea that farming could nourish both family and community.

Growth through Collective Spirit

Encouraged by their initial success, Shanti JLG expanded cultivation to over an acre. They diversified into bananas, tuber crops, and seasonal vegetables, ensuring year-round harvests. To enhance sustainability, they established a polyhouse over 5 cents of land and adopted drip irrigation for water efficiency. Crops like beans, cowpeas, and gourds thrived in this scientific setup, demonstrating how women farmers could embrace innovation while remaining eco-friendly.

Their efforts soon made Shanti JLG the leading vegetable supplier at the Mylapra CDS's weekly "Nattuchantha" (local market). Customers appreciated their fresh, chemical-free produce, while the women gained steady income and visibility. This was more than farming—it was women taking the lead in strengthening local food systems and redefining their roles in agriculture.

From Farmer to Agripreneur: Leadership through Kudumbashree

Lillikutty's leadership journey did not stop at farming. Her natural ability to lead found expression within Kudumbashree. She became actively involved in farmer producer collectives and now serves as the Secretary of Haridra Agri Producer Group, officially registered in April 2025.

Under her guidance, Haridra transitioned from selling raw produce to value-added processing. The group began producing jackfruit-based snacks, grain flour, and other processed goods—diversifying income streams and reducing dependence on single crops. This marked a significant leap: from farmers to agripreneurs, from selling at the farm gate to shaping products for broader markets.

Simultaneously, Lillikutty embraced integrated farming. She cultivated fruits, reared poultry, and practiced beekeeping—creating a resilient livelihood model that balanced risks. Her ability to blend traditional methods with modern technology earned her respect among peers and recognition from agricultural officials.

Empowering Family and Community

For Lillikutty, farming was never just about profit—it was about uplifting her family and inspiring her community. With the income earned from agriculture, she financed her children’s education and supported their marriages. She proved that farming, when approached with planning and innovation, could be as reliable as any salaried profession.

Her dedication did not go unnoticed. She received Best Farmer awards from the Mylapra Krishibhavan and Konni Block authorities—recognitions that reflected both her hard work and her role in making women farmers visible in local agriculture.

Beyond the Field: A Mentor and Role Model

What makes Lillikutty’s story truly transformative is not just her personal success, but the ripple effect she created. Younger women in her village often seek her guidance in farming. She shares her experiences generously, encourages experimentation with crops, and connects them to Kudumbashree’s training programs. Through her mentorship, she has helped build confidence among rural women that agriculture can be a dignified and empowering livelihood.

As Secretary of Haridra Producer Group, she serves as a bridge between farmers, institutions, and markets. She advocates for climate-resilient practices, promotes organic farming, and insists that women should not only cultivate—but also lead—rural enterprises.

Looking Ahead: A Vision Rooted in Soil

Today, Lillikutty continues her work with quiet determination. She is exploring value addition at scale and seeking ways to make farming more climate-smart. Her dream is to expand Haridra’s processing unit so that more women farmers can benefit from collective marketing and product branding. For her, agriculture is more than a livelihood—it is a mission of empowerment. By nurturing the soil, she has nurtured dignity in her family, resilience in her group, and inspiration in her community.

A Living Example of Kudumbashree’s Mission

Smt. Lillikutty Philip’s journey exemplifies what happens when women, supported by platforms like Kudumbashree, take control of their future. From a backyard mushroom shed to a leadership role in a producer group, her path reflects perseverance, innovation, and collective strength.



She is more than a farmer—she is a rural leader, an agripreneur, and a role model. Her story is proof that when women sow determination, they harvest empowerment—not just for themselves, but for generations to come.

Contact: Mrs. Lillikutty Philip (+91 97453 64270)

3.2.5. From Crisis to Craft: The Rise of Nanma Food Processing Collective

The story of the Nanma Food Processing Collective in Wayanad district, Kerala, is a shining example of Kudumbashree's ability to transform women's resilience into sustainable enterprise. What began as a modest initiative to meet household needs has blossomed into one of Kerala's most successful women-led micro-enterprises- employing fifteen women and inspiring countless others. This transformation was made possible through Kudumbashree's structured support in training, finance, market access, and institutional handholding.

The Spark of an Idea: Kudumbashree as Catalyst

Nanma's journey began in 2016, when financial hardship prompted Mrs. Naseema, a homemaker from Pozhuthana in Wayanad, to seek income-generating opportunities. At a Kudumbashree Neighbourhood Group (NHG) meeting, she shared her challenges and received encouragement to start something small. With support from her NHG peers, Naseema and a few fellow members began making banana chips, using the abundant local produce from nearby Pinangode.

Their first marketing effort was simple yet bold—they fried and packed just ten packets of chips and sold them by waving down passing vehicles on the Kalpetta–Mananthavady road. This marked their first step from subsistence to enterprise, with Kudumbashree standing firmly behind them.

Building an Enterprise Against the Odds

Buoyed by initial sales, the women reinvested their modest profits. Kudumbashree helped formalize the venture by providing training in food safety, packaging, and enterprise management. Equipped with new skills, they expanded their product line to include vegetable chips, pickles, squashes, and baked goods. Kudumbashree also supported the construction of a small shed beside Naseema's house to streamline production.

Over time, the group registered as a Kudumbashree micro-enterprise, gaining institutional recognition and access to government schemes. This status enabled them to secure loans, subsidies, and market linkages. Nanma's catalogue grew to include innovative snacks made from yam, ivy gourd, beetroot, and bitter gourd—showcasing Kudumbashree's emphasis on local resources and traditional knowledge.

Weathering the COVID-19 Storm

The COVID-19 pandemic brought severe disruptions. Production halted, unsold inventory piled up, and financial losses mounted. While many small enterprises collapsed, Kudumbashree ensured Nanma's survival. In 2021, the Mission facilitated a critical Onam kit order for 64,000 packets of sharkkaravaratti (jaggery-coated banana chips). This bulk order acted as a lifeline, helping the group repay debts and resume operations.

This intervention exemplifies Kudumbashree's commitment not only to creating enterprises but also to sustaining them through crises. By connecting Nanma to institutional buyers and state-level programs, Kudumbashree safeguarded livelihoods when support was most needed.

Scaling Up with Kudumbashree's Backing

Post-pandemic, Kudumbashree guided Nanma in mechanizing operations. With a ₹4.5 lakh investment—₹2 lakh of which came as a subsidy—the group acquired advanced machinery for slicing, sealing, and packaging. This reduced manual labor, improved efficiency, and enhanced product quality. Kudumbashree also facilitated their move to a larger production space and supported the opening of a retail outlet at Kalpetta’s bus stand, increasing visibility among tourists and locals.

Today, Nanma produces:

- 15 varieties of vegetable chips
- 5 types of savory mixtures
- Over 40 varieties of pickles
- Bakery products, squashes, and preserved fruits

Their monthly turnover exceeds ₹7 lakhs, and they have received accolades such as the Best Enterprise award at the district level. None of this would have been possible without Kudumbashree’s integrated support in credit, training, market access, and enterprise governance.

From Business to Movement

Nanma has evolved beyond a successful business—it is now a training center for women aspiring to enter food processing. Visitors from across Kerala and beyond come to learn from their model. This reflects Kudumbashree’s vision of creating replicable grassroots enterprises that multiply impact across communities.

Nanma’s journey—from waving down cars with ten packets of chips to managing lakhs in turnover—is a testament to Kudumbashree’s mission of empowering women through collective action, innovation, and resilience. It proves that with the right resources, institutional support, and confidence, women can rise from crisis to craft thriving enterprises that uplift families, communities, and the local economy.

Kudumbashree’s Role in the Bigger Picture

Nanma’s success illustrates that Kudumbashree’s model goes beyond poverty alleviation—it enables women to lead in emerging rural industries. By blending tradition with modern entrepreneurship, Kudumbashree ensures that enterprises like Nanma contribute to Kerala’s food security, cultural heritage, and women’s empowerment.



Nanma is not merely a business unit; it is the living embodiment of Kudumbashree’s vision—transforming courage into collective strength, sustaining women through adversity, and helping them scale to inspire others. It is a declaration of possibility, a promise that when women are trusted with opportunity, they rise to transform not just their households, but their entire communities.

3.2.6. From Farm to Flavor: The Journey of Real Food Products in Vaikom

In the lush heartlands of Vaikom, Kerala—where the aroma of nutmeg mingles with the sweetness of jackfruit—a quiet yet powerful transformation was taking root. This was not merely a story of farming or food; it was about dignity, livelihoods, and women shaping their own destinies. At the heart of this change stood four determined Kudumbashree members—Smt. Sumi Reji, Smt. Raji, Smt. Asha, and Smt. Divya Mol—who together built Real Food Products, a thriving enterprise that has made a mark on Kerala’s food sector.

Planting the Seeds of Possibility

Like many women in their village, the four founders began as members of Kudumbashree’s Joint Liability Groups (JLGs), engaging in collective farming. While farming provided income, it also offered insights—into consumer preferences, evolving food habits, and the untapped potential of Kerala’s agricultural bounty. They observed a growing demand for native, chemical-free, preservative-free foods. This sparked a question: why should the journey of farm-fresh produce end at harvest? Why not extend it to value addition, branding, and enterprise?

This vision might have remained a dream if not for Kudumbashree’s support. Through its Farm Livelihoods vertical, the Mission provided multiple rounds of capacity-building training in food processing, hygiene standards, packaging, and enterprise management. Exposure visits and hands-on sessions transformed their confidence. From homemakers and farmers, they began to see themselves as entrepreneurs.

Pooling their savings, they availed a Community Enterprise Fund (CEF) loan and later secured a ₹5 lakh grant from the District Panchayat for machinery. What began as a modest unit evolved into Real Food Products—an enterprise rooted in tradition and geared toward modern markets.

Blending Tradition and Innovation

Real Food Products stands out for its diverse catalogue—a blend of heritage recipes and inventive twists. Their offerings include:

- Banana peel and nutmeg rind pickles—ingenious creations that turn discarded ingredients into delicacies
- Frozen cutlets, jams, and squashes—convenient yet wholesome options for busy households
- Cassava and jackfruit flour—nutritious alternatives that revive Kerala’s culinary heritage
- Flattened rice and roasted rice flour—staples reimaged with a focus on hygiene and quality
- Traditional snacks like unniyappam and jaggery-coated banana chips—bringing the taste of Kerala’s kitchens to wider audiences

By prioritizing local sourcing, chemical-free preparation, and preservative-free production, the group carved a niche in a competitive market. Their products gained the trust of local households and diaspora communities abroad, who longed for authentic Kerala flavours.

Expanding Horizons

A major breakthrough came when Real Food Products showcased their items at the Lakshadweep Expo organized by Krishi Vigyan Kendra (KVK), Kumarakom. This exposure brought visibility and validation. Visits to research institutions like ICAR-CTCRI further strengthened their understanding of food safety and standardization. They realized that entrepreneurship required not just recipes, but systems, branding, and consistency.

Their products soon moved beyond neighbourhood sales to local supermarkets, Kudumbashree weekly markets, trade fairs, and online platforms. They began customizing masala mixes and snack packs for schools, canteens, and community kitchens- making their enterprise relevant to both institutions and households.

Building Sustainability

Real Food Products' steady growth was anchored in Kudumbashree's ecosystem. Regular marketing support, trade fair participation, and exposure to market linkages ensured momentum. Transparent governance—reflecting Kudumbashree's ethos of democratic decision-making—fostered equal ownership among members.

Through strategic reinvestment and community-driven planning, the unit achieved financial sustainability. Today, each member earns an average monthly income of ₹25,000—transforming their households from economic insecurity to stability. Beyond finances, the women gained social recognition, decision-making power, and respect within their communities.

More Than Food: A reliance

Their success is not measured solely in revenue or product lines, but in the inspiration they offer to other women in Vaikom and beyond. Their courage to innovate—whether through banana peel pickles or new marketing strategies—demonstrates that women can lead the way in blending tradition, sustainability, and enterprise.



Looking Ahead

The group continues to dream forward. Their plans include:

- Expanding their product range with millet-based snacks and health mixes
- Exploring international branding to reach Malayali communities abroad
- Creating employment opportunities for other Kudumbashree women, transforming their enterprise into a collective hub for food-based livelihoods

In their own words, they are not just “making food”—they are “making change.” They are preserving culture, creating livelihoods, and redefining women's roles in Kerala's economic landscape.

The Journey of Empowerment

For Sumi, Raji, Asha, and Divya Mol, Real Food Products is more than a business—it is a platform for identity and empowerment. From homemakers confined to domestic roles, they have emerged as entrepreneurs, leaders, and changemakers. Their journey reflects Kudumbashree's mission: enabling women to step into spheres of leadership and self-



Contact: Smt. Sumi Reji (+91 7510170052)

3.2.7. The Empowering Journey of Mrs. Mercy

In the tranquil village of Vaniyamkulam in Palakkad district, Kerala, lives Mrs. Mercy—a woman whose life exemplifies how Kudumbashree transforms quiet homemakers into dynamic changemakers. Her journey into farming and enterprise began in 2004, when she took a seemingly small step by joining the Pournami Neighbourhood Group (NHG). That decision sparked a chain of opportunities that would redefine her life and inspire countless others in her community.

Rooted in Collective Effort

Kudumbashree's philosophy is grounded in the power of collective action, and Mercy's journey began precisely there. Alongside three other women, she ventured into group farming, leasing just 45 cents of land. What started as a modest initiative soon expanded into over five acres of cultivation, steadily increasing crop diversity and productivity.

They began with cucurbits—snake gourd and ivy gourd—but soon diversified into ridge gourd, chow-chow, pumpkin, passion fruit, ash gourd, and green chillies. Each season brought new lessons: pest management, irrigation during water scarcity, and most importantly, the strength of unity. Kudumbashree provided access to land, credit, and—crucially—confidence to lead in a field traditionally dominated by men.

Moving Beyond Farming: The Power of Value Addition

Mercy's keen observation revealed a recurring challenge: seasonal surplus often led to waste or distress sales. Kudumbashree's training in food processing and value addition opened a new path. Mercy learned to transform jackfruit, mango, and other fruits into jams, powders, and preserves—nutritious, chemical-free, and aligned with modern health-conscious consumers.

Her micro-enterprise, branded "Haritha," was born. Under this banner, she began producing a range of food and bio-pharmacy items. Haritha's uniqueness lies in its blend of traditional Kerala recipes with modern quality standards—making the products both flavorful and trustworthy. Kudumbashree's support in packaging, labeling, and participation in community fairs gave Haritha visibility and credibility.

Equipping for Agricultural Excellence

Mercy's strength lies in her eagerness to learn. Through Kudumbashree, she attended trainings in agricultural mechanization—a domain many women hesitate to enter. She mastered the use of weeding and ploughing machines, reducing labor costs and improving efficiency. She even trained herself in coconut tree climbing, a skill rarely pursued by women in Kerala. Each new skill made her more self-reliant and positioned her as a role model. Her journey extended beyond crops. To build resilience, she adopted an integrated farming model—venturing into beekeeping and fish farming. This approach stabilized her income and reduced risk, proving that women farmers can innovate and adapt as effectively as any commercial enterprise.

Recognition and Reach

A major milestone came when one of Mercy's products was selected among the top 25 under Kudumbashree's Agri Business Networking Project. This recognition was more than an

award—it was a gateway to new markets. Her brand, Haritha, found a place on digital platforms, enabling her to reach customers beyond her village and district.

Today, her products are sold through Kudumbashree's community markets, regional fairs, and online networks. Competing with larger players while staying rooted in local resources and traditions, Mercy has become the face of a recognized agri-brand—a role she wears with pride. Mercy's annual income from her diversified ventures now exceeds ₹7 lakh—a far cry from her modest beginnings. Yet, the true measure of her success lies in the confidence she radiates, the leadership she embodies, and the inspiration she offers to other women.

Kudumbashree has been her anchor, providing:

- Capacity building through training in farming, mechanization, and value addition
- Credit linkages to scale operations
- Exposure visits to learn from successful enterprises
- Enterprise-building support in branding, packaging, and market access

Mercy acknowledges that without Kudumbashree, she might have remained confined to her home. Instead, she now does mentor other women farmers, encouraging them to dream beyond subsistence and embrace entrepreneurship.

The Kudumbashree Spirit

Mercy's story is more than personal success—it reflects the essence of Kudumbashree's mission: empowering women, strengthening communities, and building local economies. By stepping out of her comfort zone, she redefined her identity and challenged societal perceptions of what rural women can achieve.

Her brand Haritha, her farming enterprise, and her leadership stand as symbols of resilience, innovation, and collective strength. For the women of Vaniyankulam, Mercy is not just an entrepreneur—she is living proof that when women are given opportunity, training, and a supportive ecosystem, they can transform their lives and uplift their communities.

Mercy's journey reminds us that empowerment is not built on grand gestures, but on small, consistent steps supported by collective will. From a homemaker in 2004 to a thriving agri-entrepreneur today, she embodies the promise of Kudumbashree: a promise of dignity, livelihood, and empowerment for every woman in Kerala.

3.2.8. Arya Mushroom & Value Addition Unit: Cultivating Resilience through Farm-Based Entrepreneurship, Theviyodu, Vithura, Thiruvananthapuram, Kerala

In the tranquil village of Theviyodu, nestled amidst the verdant landscapes of Vithura Gramapanchayat in Thiruvananthapuram, four women from the Navajyothi Neighbourhood Group embarked on a transformative journey. Their shared aspiration was simple yet profound: to earn a stable livelihood through farming, without leaving the comfort of their community. What began as a modest experiment in mushroom cultivation has since flourished into the Arya Mushroom & Value Addition Unit—a thriving Kudumbashree-supported enterprise that stands as a testament to women's resilience, ingenuity, and entrepreneurial spirit.

From Setback to Success: Planting the Seed of Determination

The journey was sparked by Smt. Bindu, a determined homemaker who first attempted mushroom cultivation at home. Like many first-generation entrepreneurs, she faced early setbacks—poor yields and limited know-how threatened to derail her efforts. But instead of surrendering to failure, Bindu and her peers chose perseverance. They reached out to Kudumbashree and Krishi Vigyan Kendra (KVK), institutions that champion second chances.

Through intensive hands-on training, they learned the science behind successful cultivation—temperature regulation, hygiene protocols, and substrate preparation. This technical foundation transformed their approach. Their next harvest yielded not only mushrooms but also renewed confidence. What began as thrift savings soon evolved into seed capital, laying the groundwork for a sustainable enterprise.

Turning Spoilage into Strength: The Power of Value Addition

With cultivation mastered, a new challenge emerged—selling fresh mushrooms before spoilage set in. The short shelf life led to post-harvest losses, threatening profitability. Yet the group saw opportunity where others might see defeat. With KVK's guidance, they trained in value addition techniques and began crafting innovative products:

- Spicy mushroom pickles, a hit among homemakers
- Ready-to-cook mushroom curry mixes
- Crispy mushroom snacks for children
- Dehydrated mushroom powders with extended shelf life

These products not only addressed spoilage but unlocked new markets. In fact, their value-added items often outsold raw mushrooms—proving that necessity can indeed be the mother of innovation.

Kudumbashree's Role: From Handholding to Market Leadership

Kudumbashree played a pivotal role—not as a passive supporter, but as an active enabler. The mission helped the women evolve from informal cultivators to structured entrepreneurs by:

- Mobilizing thrift savings and facilitating microloans for working capital
- Conducting Group Orientation Training (GOT) and Entrepreneurship Development Programs (EDP) to build managerial confidence
- Providing marketing platforms through weekly markets, food festivals, and Saras fairs
- Offering mentorship and visibility that positioned Arya Mushroom as a leading venture in Thiruvananthapuram

Through these interventions, the women learned not only to grow mushrooms but to grow markets, networks, and a distinct entrepreneurial identity.

Financial Assistance & Institutional Support: Building a Strong Backbone

Arya Mushroom's growth was further fortified by a blend of financial schemes and public programmes:

- Agri Business Venture (ABV) Subsidy via Kudumbashree, reducing investment risks
- Loan assistance under ABV to strengthen operations

- PMFME Loan (Prime Minister Formalization of Micro Food Processing Enterprises) for modern equipment
- Workshed support under MGNREGS, providing infrastructure for scalable growth

This synergy of grassroots savings, institutional credit, and targeted subsidies gave the unit the resilience to weather uncertainties and expand with confidence.

Looking Ahead: Scaling with Purpose and Vision

Arya Mushroom's story is not just about present success—it's about a bold vision for the future. The group is committed to:

- Launching their products on e-commerce platforms to reach customers across Kerala and beyond
- Developing export-ready mushroom powders and pickles to tap into global markets
- Establishing a high-tech, automated cultivation and processing facility—setting new standards for women-led agribusiness

Their ambitions go beyond profit. They aim to create employment for other rural women, proving that true empowerment lies in uplifting others.

More than a Business: A Movement of Empowerment

Today, Arya Mushroom & Value Addition Unit is celebrated not merely as a business but as a beacon of rural innovation and women's empowerment. With a steady monthly income securing their families' futures, these women have become role models in their community. Their children now see them as entrepreneurs, decision-makers, and leaders—challenging traditional gender norms.

Above all, their journey embodies Kudumbashree's ethos: when women are equipped with tools, training, and trust, they can transform setbacks into thriving enterprises. Arya Mushroom proves that empowerment is cultivated not in boardrooms, but in village sheds—through collective will and community spirit.



From the cool sheds of Vithura to the vibrant stalls of food festivals, Arya Mushroom's journey reminds us that resilience, when nurtured, blossoms into opportunity. And in the heart of Thevayodu, four women stand tall—showing the world how determination, supported by Kudumbashree, can turn a humble mushroom into a powerful symbol of transformation.

3.2.9. From Bananas to Brilliance: The Empowerment Journey of Shivam Producer Group, Kallara

In the verdant village of Kallara, nestled within Kerala's Vamanapuram Block, a quiet revolution has been unfolding. It isn't marked by fanfare or grand declarations, but by the determined footsteps of five women who chose to rewrite their destinies. Together, they formed the Shivam Producer Group—transforming hardship into hope, and humble harvests into a thriving enterprise. This is not merely a tale of bananas turned into powders and mixes; it is a story of resilience, courage, and Kudumbashree's vision of empowerment through collective action.

A Shared Struggle, A Collective Dream

More than a decade ago, these five women were like countless others in Kerala's rural heartlands—tillers of soil, caretakers of families, and quiet warriors against an unforgiving agricultural economy. Their primary crop was bananas, promising in yield but precarious in profit. Market volatility, middlemen exploitation, and inadequate storage meant their hard work often translated into meagre returns.

Amid this uncertainty, they came together as a Joint Liability Group (JLG) under the Kudumbashree Mission. What began as a survival strategy gradually evolved into a shared dream—to build something enduring, something that could liberate them from cycles of vulnerability and dependence.

A Turning Point: Knowledge Meets Support

Their journey took a transformative turn when they attended a value-addition training programme conducted by Krishi Vigyan Kendra (KVK). For the first time, they saw bananas not just as raw produce but as a gateway to high-value products. With guidance from Kudumbashree and KVK mentors, they learned how traditional crops could be reimaged using modern techniques—creating nutritious, market-ready items that appealed to both households and institutions.

Inspired by Kudumbashree's field team and supported by their Community Development Society (CDS) in Kallara, they formally registered as the Shivam Producer Group. Their resolve was met with timely institutional backing. Through Kudumbashree's Farm Livelihood and Agri Business Venture (ABV) schemes, they received ₹1.5 lakh worth of essential machinery—dryers, slicers, pulverizers, sealing machines, and refrigeration units. An additional ₹1 lakh in working capital gave them the confidence to begin production without financial strain.

Innovation Rooted in Tradition

Equipped with new skills and technology, the women began converting bananas into a range of nutritious products. Their banana health mix and raw banana powder quickly became household staples. They later expanded into jackfruit puttu powder, tapping into another beloved ingredient from Kerala's culinary heritage.

What set their products apart was the seamless blend of tradition and innovation. These were not unfamiliar items—they were deeply rooted in Kerala's food culture—but now offered in modern, convenient, and health-conscious formats. This unique positioning earned them a loyal customer base across local markets, Kudumbashree's Naattuchantha (weekly farmers' markets), and community fairs.

Within a few years, their monthly turnover reached ₹75,000, providing each member with a dignified income and reinforcing their identity as entrepreneurs.

Anchored in Local Economies

One of the most inspiring aspects of Shivam Producer Group is their commitment to local sourcing. Instead of relying on distant suppliers, they procure bananas and jackfruits from their own farms and other Kudumbashree JLGs in the region. This has fostered a circular economy, ensuring that the benefits of their enterprise ripple outward—supporting not just five women, but an entire network of women farmers. This model strengthens community bonds, reduces operational costs, and guarantees the quality of raw materials—giving their products a distinct competitive edge.

A Model of Convergence and Empowerment

The success of Shivam Producer Group is no accident—it is the result of strategic convergence between grassroots collectives, scientific institutions, and policy support. Their growth was enabled by:

- Capacity building and mentoring from Kudumbashree and KVK
- Entrepreneurial orientation and technical training
- Access to infrastructure and machinery through Kudumbashree schemes
- Market visibility via exhibitions, fairs, and institutional linkages

This holistic ecosystem empowered the women to evolve from marginal farmers into confident agri-entrepreneurs.

A Vision for the Future

Looking ahead, the members of Shivam Producer Group envision scaling their operations. They aspire to introduce their products to regional and national markets, forge partnerships with organic food retailers, and diversify into more health-focused value-added items. Their vision is rooted in growth—but also in staying true to their community and values.

An Emblem of Grassroots Resilience

Shivam Producer Group is more than a successful enterprise—it is a symbol of what happens when women are trusted, equipped, and supported. Through Kudumbashree, these five women have not only transformed their own lives but have become beacons of possibility for others in their village.

Their journey—from uncertain banana cultivators to confident



food entrepreneurs—embodies the essence of Kudumbashree: empowerment through collective strength, innovation through convergence, and resilience through community solidarity.

In the end, the brilliance of Shivam lies not just in the powders they produce, but in the lives they've uplifted.



3.2.10. From Farm to Fragrance: The Rise of Aloe Vera Sparsh from Nilamel

In the serene hills of Nilamel, nestled within Chadayamangalam Block of Kerala's Kollam district, a quiet transformation was waiting to bloom. For years, women in the region worked silently—cultivating crops, nurturing families, and sustaining their communities. Yet within this silence, seeds of aspiration were sown. Among them was Smt. Prabha, a member of the Kingini Neighbourhood Group (NHG), who envisioned a future beyond subsistence farming. She believed that the land's bounty—aloe vera, tulsi, papaya, and other herbs—could be transformed not just into food, but into livelihood, dignity, and opportunity.

What began as a dream gradually took shape as Aloe Vera Sparsh, a soap-making initiative that today embodies Kudumbashree's vision: women-led, locally rooted, and globally relevant.

Planting the Seeds of Change

Prabha's life, like that of many Kudumbashree women, was deeply tied to agriculture. As a member of the Thali Joint Liability Group (JLG), she tilled the soil, harvested crops, and contributed to her family's modest income. Yet her gaze often lingered on the brightly packaged soaps in local shops—products priced far above the raw herbs she cultivated. She wondered: Why couldn't women like her, who nurtured these plants, also create value-added products?

Though she had no prior knowledge of soap-making, Prabha saw Kudumbashree not just as a safety net, but as a springboard. With its training programs, support systems, and solidarity networks, she felt empowered to take the first step.

Learning Together, Growing Together

Prabha's idea soon became a shared mission. Eleven women from four JLGs, bound by friendship and common dreams, came together to learn the art and science of soap-making. With Kudumbashree's support, they trained at the Kottarakkara Extension Training Centre. What began as tentative experiments soon evolved into confident craftsmanship.

They formed a Producer Group under Nilamel CDS and named their brand Aloe Vera Sparsh—symbolizing purity, gentleness, and a connection to nature. Using aloe vera as the base, they experimented with natural additives: tulsi for healing, papaya for radiance, butterfly pea flower for its soothing properties, and goat's milk for nourishment. These were more than soaps—they were stories of local ingredients meeting women's hands, blending tradition with innovation.

Packaging Hope, Selling Dignity

Initially, their soaps were sold to neighbours, friends, and relatives. The turning point came when Kudumbashree's Farm Livelihoods Block Coordinator guided them in branding and packaging. Professional wrapping and labels transformed their handmade bars into market-ready products.

With improved presentation, they gained access to supermarkets, Kudumbashree weekly markets, and trade fairs. Their soaps stood out—not just for quality, but for the story they carried: women reclaiming control over production, branding, and income. Word spread, and customers returned—choosing Aloe Vera Sparsh over mass-produced alternatives.

An NHG loan provided initial working capital. Their disciplined approach helped them qualify for the Producer Group Scheme, securing ₹2.5 lakhs. With this, they purchased moulds, cutters, and essential equipment—ensuring consistent production and reducing physical strain.

Building a Business, Empowering Lives

From humble beginnings, Aloe Vera Sparsh now earns an annual turnover of ₹2.5 lakhs. But beyond financial success, the journey has transformed its members. Once homemakers with limited mobility, they now travel to exhibitions, negotiate with buyers, and manage accounts. Their self-confidence has grown, as has their respect within families and communities.

Each bar of soap is more than a product—it is a symbol of empowerment. It carries the sweat of women who refused invisibility, the scent of herbs grown with care, and the strength of collective learning.

For Prabha, the transformation is deeply personal. Once hesitant to speak in public, she now proudly shares the story of Aloe Vera Sparsh as proof of what women can achieve when

given the right platform. Her children, too, see her not just as a mother, but as an entrepreneur.

A Continuing Journey of Possibility

The future of Aloe Vera Sparsh holds promise. The group is developing new variants, exploring eco-conscious packaging, and venturing into online sales. More importantly, their success is inspiring other Kudumbashree groups in Kollam to pursue similar paths.

Their journey demonstrates how women can move from cultivating raw materials to creating value-added products—multiplying both income and dignity. It highlights Kudumbashree’s role as a catalyst, offering not just loans or training, but belief in women’s capacity to innovate, market, and thrive.



For Prabha and her team, each batch of soap is not merely a business activity—it is a testament to collective resilience and hope. From farm to fragrance, their journey reminds us that empowerment is not an abstract policy goal, but a lived reality—shaped daily by women who dare to dream and act together.

Contact: Smt. Prabha (+91 97458 49113)

CONCLUSION

The Kudumbashree Mission of the Government of Kerala, India stands as a transformative force in Kerala’s journey toward inclusive rural development through women’s empowerment. With its unique three-tier structure, it has enabled millions of women to transcend traditional roles and emerge as leaders, entrepreneurs, and change-makers. The stories of Mrs. Sudha Devadas, Sheeba Jose, Jameela Shamsuddin, Lillikutty Philip, and the Nanma Collective exemplify how access to institutional support, financial inclusion, and community solidarity can unlock extraordinary potential. From collective farming to drone technology, from integrated agri-enterprises to digital platforms, Kudumbashree has redefined empowerment- not as charity, but as capacity-building rooted in dignity, resilience, and innovation. These narratives affirm that when women are given the tools to lead, they not only uplift themselves but also transform their communities and shape the future of rural communities.

EDITORS/AUTHORS



Dr. P. Chandra Shekara has more than 35 years of experiences towards integrated rural development especially in the areas of Agricultural Extension Management, Agri-Entrepreneurship Development, Agricultural Marketing Management and Public-Private-Partnership. He is one of the leading professionals in the field of agricultural and rural development and headed three premier National Institutions under the Ministry of Agriculture and Farmers Welfare, Government of India during his more than three and a half decade long professional carrier: Director General of CCS National Institute of Agricultural Marketing (CCS NIAM), Director General of National Institute of Plant Health Management (NIPHM) and Director General of National Institute of Agricultural Extension Management (MANAGE).



Dr. Ganga Dutta Acharya is an accomplished development professional with more than 30 years experience working with rural communities and policy stakeholders in Nepal and the South Asia. With a Ph.D. in Rural Development from Australia, and a strong foundation in socio-economic policy research, he has published over 30 research outputs, including papers in national/international journals, reports, policy documents, and book chapters. He worked as the editor of the SAARC Journal of Agriculture during 2022-2024, and currently holds editorial responsibility for the Asia-Pacific Journal of Rural Development- a biannual academic journal- which is a flagship publication of CIRDAP and published by SAGE Publication. Dr. Acharya is currently working as Director Research at the CIRDAP Secretariat.



Shri A. Praveen Reddy is a senior cooperative leader and agricultural development practitioner from Telangana State, India, with over three decades of continuous service in the cooperative and rural development sectors. Since 1987, he has served as the President of the Mulkanoor Cooperative Rural Credit and Marketing Society Ltd. (MCRC&MS), one of India's most recognized and longstanding primary cooperative institutions. Shri Reddy has previously served as an elected Member of the Legislative Assembly (MLA) of Telangana (2009–2014) and as Director of IFFCO, New Delhi (2009–2019). Through his long-standing engagement in cooperative leadership, policy formulation, and grassroots development, Mr. Reddy continues to advance inclusive, gender-responsive, and sustainable models of rural development.



Dr. S. Shanavas is ICAR- CTCRI (CENTRAL TUBER CROPS RESEARCH INSTITUTE) scientist and an accomplished development professional. With a Ph.D. in Life Sciences and a strong foundation in biochemistry and food processing, he has published over 40 research outputs, including papers in national/international journals and book chapters. Dr. Shanavas is currently serving as the State Programme Officer- Farm Livelihood at Kudumbashree Mission, Government of Kerala. He leads women-led, climate-resilient agricultural and enterprise models across all 14 districts of Kerala, integrating agriculture, animal husbandry, and allied sectors.



Mr. Yuvaraju Atmakuri is a Technology Management and Innovation Leader with over 14 years of diverse experience spanning corporate innovation, startup incubation, social impact, corporate finance, and international development. Currently, he is working as Chief Operating officer at Navariti Innovation, an IoT based startup in Agriculture and Industries providing multiple solutions for energy, water and environmental management. Previously, as Chief Operating Officer at MANAGE-CIA (Ministry of Agriculture & Farmers Welfare, Government of India), he spearheaded one of the largest national agri-innovation programs, supporting 330+ startups and 1,000+ entrepreneurs. Mr. Atmakuri holds a Bachelor's Degree in Electrical and Electronics Engineering from Osmania University and an MBA from the Indian Institute of Management.



CENTRE ON INTEGRATED RURAL DEVELOPMENT FOR ASIA AND THE PACIFIC (CIRDAP)

Chameli House, 17 Topkhana Road, GPO Box 2883, Dhaka-1000, Bangladesh
PABX: +88-02- 41053923, +88-02-41053924, +880-2-41053925
Office of the DG || Phone +88-02-41053920 E-mail: administration@cirdap.org

 www.cirdap.org



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