Vadamalai Media Group

Agriculture & Industry Survey

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India's Leading Business Magazine for Agriculture

Mr Praveen Sharma

A Vertical Farming Expert and Founder of Flora Consult, Pune, Maharashtra

Sustainable Vertical Farming Technology: A Vision for the Future of Agriculture

Dr Priyanka Singh

Senior Scientific Officer, U.P. Council of Sugarcane Research, Shahjahanpur, UP

Discussed the strategies for profitable sugarcane farming.

Mr Mayank Manoj Sharma

Director, Technical, Mayank Aquaculture Pvt Ltd, Surat, Gujarat

Tells us about the entrepreneur opportunities in aquaculture especially shrimp farming.

Ms. Shobana Uthayashankar

Founder, Innogle Technologies Pvt Ltd, Chennai, Tamil Nadu

Discusses about ocean technology solutions.

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Trump policies whether it affects Indian farming in any manner

Donald Trump's policies during his presidency had some indirect effects on Indian agriculture, primarily through trade relations, economic shifts, and global market trends. While Trump's policies did not directly target Indian farmers, certain actions influenced sectors tied to Indian agriculture.

One significant area of impact was trade. Trump's "America First" approach led to stricter trade tariffs and renegotiated trade deals with several countries, including China. This indirectly affected Indian agriculture by shifting global demand patterns. For instance, when the United States imposed tariffs on Chinese goods, China responded by reducing imports of American agricultural products such as soybeans. This created new export opportunities for Indian farmers to supply these markets.

Additionally, Trump's tightening of H-1B visa policies had some indirect consequences. Indian students, researchers, and agricultural experts faced more challenges in accessing American institutions and research collaborations. This slowed the exchange of agricultural knowledge and innovation between the two countries, which could have otherwise benefited Indian farmers.

The U.S.-India trade relationship also saw disputes during Trump's tenure. Higher tariffs imposed by the U.S. on Indian steel and aluminum led India to impose retaliatory tariffs on certain American agricultural products, such as almonds and apples. While this protected Indian producers in the short term, it also limited access to affordable imports, affecting businesses and consumers alike.

In terms of global economic stability, Trump's unpredictable trade decisions created uncertainties in global markets. Indian farmers who depended on stable export demand for crops like cotton, spices, and pulses faced price fluctuations as trade dynamics shifted.

Despite these challenges, Trump's focus on promoting alternative energy sources and reducing dependence on oil indirectly benefited India. Lower global oil prices reduced production costs for Indian farmers, particularly for fertilizers, transport, and machinery.

While Trump's policies did not directly target Indian agriculture, their influence on global trade, economic stability, and research collaboration indirectly shaped the environment in which Indian farmers operated. These effects underscore the interconnectedness of global agricultural markets and the importance of stable international trade policies.

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SHIVRAJ SINGH CHOUHAN URGES STATE GOVTS TO ENSURE NO PURCHASE OF AGRICULTURAL PRODUCE BELOW MSP

Union Agriculture Minister Shivraj Singh Chouhan reaffirmed the Modi government's commitment to farmers' welfare, stressing that no agricultural produce will be purchased below the Minimum Support Price (MSP). In a press briefing, Chouhan highlighted the government's ongoing efforts to ensure fair pricing for farmers' crops and provide them with the necessary support to enhance their livelihoods.

Chouhan urged state governments to ensure that no agricultural produce is purchased below MSP. He said, "Our aim is to benefit the farmers, and we will leave no stone unturned to fulfill this noble objective."

Chouhan provided an update on the ongoing procurement operations, noting that the procurement of crops at MSP is currently underway through the National Agricultural Cooperative Marketing Federation of India (NAFED) and the National Cooperative Consumer Federation (NCCF). States such as Andhra Pradesh, Gujarat, Karnataka, Maharashtra, and Telangana are actively participating in these efforts. As of March 25, 2025, approximately 2.46 lakh metric tonnes of Tur (Arhar) had been procured, benefiting over 1.7 lakh farmers across these states.

Source: https://ddnews.gov.in

IN 7 DECADES, AGRICULTURE'S SHARE IN HIMACHAL'S GSDP FALLS FROM 70% TO 14%

Himachal Pradesh has seen a significant shift from agriculture to industries and services in the last seven decades. Himachal Pradesh's economy, once primarily dependent on agriculture, has undergone a significant transformation over the last seven decades, with a marked shift towards the service and manufacturing sectors in terms of their contribution to the Gross State Domestic Product (GSDP). The agriculture sector's share of the GSDP has declined from 70.37 percent in the financial year (FY) 1950-51 to merely 14.74 percent in FY 2023-24.

However, the Economic Survey 2024-25, released on Thursday, highlights that despite this decline, 53.98 percent of the state's population remains engaged in the primary sector for employment. Agriculture, horticulture and tourism formt he backbone of thjs sector.

Source: https://indianexpress.com

BILL TO BAR 'OUTSIDERS' FROM BUYING AGRICULTURAL LAND IN UTTARAKHAND GETS ASSEMBLY NOD

In the current amendment, the government has removed the provision allowing the transfer of excess land – more than 12.5 acres as mandated in the principal Act – to anyone for tourism, industry, agriculture, and other uses.

The Uttarakhand Assembly passed the Uttarakhand (Uttar Pradesh Zamindari Abolition And Land Reforms Act, 1950) Amendment Bill, 2025, which bans people from outside the state from buying agricultural and horticultural land in 11 of the state's 13 districts.

Source: https://indianexpress.com

BIHAR BOOSTS MENTHA FARMING: A GAME-CHANGER FOR FARMERS!

Bihar's Mentha Boom: The Fragrant Revolution Set to Transform Agriculture

Bihar is stepping up its game in aromatic farming! With mentha, khus, tulsi, and lemongrass cultivation expanding rapidly, farmers in the state are set to benefit from increased subsidies and investment. But what makes Bihar's mentha and khus stand out? Let's dive into the details of this thriving industry.

Bihar's Mentha and Khus: A Hidden Goldmine

According to the Central Medicinal Plant Research Institute, Bihar produces the highest quality mentha and khus in India. Their fragrance is 7% stronger than those grown in other states, making them highly sought after by processing companies. As a result, many firms now engage in contract farming with Bihar's farmers, ensuring better prices and consistent demand.

Expanding Cultivation: The Government's New Plan

The Bihar agriculture department plans to increase the acreage of aromatic crops through structured planning and subsidies. Currently, the state grows:

• Mentha: 5,000 hectares (Darbhanga, Siwan, Gopalganj, Chhapra, Saran, Muzaffarpur, Samastipur)

• Khus: 500 hectares (Saharsa, Rohtas, Aurangabad, Kaimur, Bhojpur, Samastipur, Begusarai)

• Tulsi: 100-150 hectares

• Lemongrass: 100 hectares

With government support, these numbers will rise significantly, making Bihar a major hub for aromatic crop production.

Source: https://www.linkedin.com

ODISHA GOVERNMENT AND ISB ROLL OUT 'GREEN SHAKTI' LEADERSHIP INITIATIVE TO EMPOWER WOMEN-LED FOREST ENTERPRISES

The Department of Mission Shakti, Government of Odisha, in collaboration with the Bharti Institute of Public Policy, Indian School of Business (ISB) has launched the 'Green Shakti Producer Company Business Enterprise Leadership Cohort.'

This joint initiative is dedicated to empowering 30 women-led, forest-based enterprises across six districts of Odisha: Mayurbhanj, Keonjhar, Rayagada, Nabarangpur, Koraput, and Malkangiri. Under this initiative, 30 forest producer companies are being established, forming a robust network of 300 women leaders. This network will continue expanding through structured programme sprints until August 2025.As part of the joint initiative, a three-day intensive planning and orientation workshop was held recently at the Mission Shakti Bhawan in Bhubaneswar, gathering over 170 board members to strategise on developing a responsible forest economy. Designed around an innovative pedagogical approach, the leadership programme offered comprehensive training in financial literacy, leadership, business management, and sustainable resource utilisation.

Source: https://www.en.krishakjagat.org

ANDHRA'S NATURAL FARMING PILOT PROJECT GAINS TRACTION IN ZAMBIA

The programme, led by T Vijay Kumar and Lakshma Naik, has garnered attention for its success in improving soil health and crop productivity without chemical fertilisers.

Zambian farmers are embracing the benefits of chemical-free, climate-resilient farming, thanks to a pilot programme spearheaded by Andhra Pradesh's Rythu Sadhikara Samstha (RySS).

Launched in September 2024, the initiative aims to introduce sustainable farming practices at Valponasca Learning Farm (Luwingu) and Kasisi Agricultural Training Centre (Lusaka).

The programme, led by T Vijay Kumar and Lakshma Naik, has garnered attention for its success in improving soil health and crop productivity without chemical fertilisers. Crops grown in natural farming plots have shown 100% germination, minimal pest damage, and high resilience without irrigation, while control plots struggled with poor germination and pest issues. The use of bio-stimulants like Beejamrutham and Jeevamrutham has enhanced soil microbial activity.

It has gained praise from local leaders, with Modester, Director at Valponasca. Fr Claus from Kasisi emphasised the initiative's role in regenerating soil and enhancing biodiversity, which could have far-reaching effects on food security in Zambia. The programme is involving students from agricultural colleges and PhD scholars from institutions like the University of Zambia and Wageningen University. On March 12, 2025, farmers from Congo and Northern Zambia visited the fields and were impressed by the quality of the produce.

Source: https://www.newindianexpress.com

NATIONAL AGRICULTURE DAY 2025

I, DONALD J. TRUMP, President of the United States of America, by virtue of the authority vested in me by the Constitution and the laws of the United States, do hereby proclaim March 18, 2025, as National Agriculture Day.

I encourage all Americans to observe this day by recognizing the preeminent role that agriculture plays in our daily lives, acknowledging agriculture's continuing importance to rural America and our country's economy, and expressing our deep appreciation of farmers, growers, ranchers, producers, national forest system stewards, private agricultural stewards, and those who work in the agriculture sector across the Nation.

Source: https://www.whitehouse.gov

CHINESE BUILT SHIPS AND A NEW FEE FOR THEM IS CAUSING ALARM BELLS IN U.S. AGRICULTURE

The Chinese built ships calling in U.S. ports with cargo could be charged up $1.5 million per vessel entry. The issue aims to bolster the U.S. ship building industry by countering China's significant position in the global building industry.

However, the U.S. ag industry is expressing concerns over the measure.

Experts warn the proposed fees will impact the farm economy. The farm sector would be hit with increased shipping fees which would eventually be passed on in the basis number.

Source: https://www.farmprogress.com

FARMER PLANTING DECISIONS FOR 2025 TAKING SHAPE IN CANADA

As farmers across Canada prepare for the 2025 crop year, Statistics Canada says their planting decisions reflect a complex mix of factors including moisture conditions, crop rotation considerations, and market prices.

Nationally, farmers are expected to plant more wheat, corn for grain, oats, and dry peas, while the area seeded to canola, soybeans, barley, and lentils is set to decrease compared to 2024.

Source: https://m.farms.com

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Dr. BSR Reddy is a Senior Lead Scientist at ITC LIMITED in Rajahmundry, Andhra Pradesh. To know more view https://bit.ly/3krVI9Z

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Dr. Devesh Thakur is an Assistant Professor at CSKHPKV Palampur in Himachal Pradesh. To know more view https://bit.ly/3B8LlJg

Efficacy of biofertilizer for sustainable crop production" - By Minakshi pandey
Ms. Minakshi Pandey is a Researcher at GPS Institute of Agricultural Cultural Management in Bengaluru, Karnataka.

Organic farming : Opportunities and certification" - By Sachin Palkar
Mr. Sachin Palkar is the Founder of SAP Agro Services in Mumbai, Maharashtra

Cultivation and value addition in Sarpagandha" - By Sudhakar Pandagre
Mr. Sudhakar Pandagre is a Training Faculty and Head, (Medicinal & Aromatic Plants Division) at Centre for Entrepreneurship Development Madhya Pradesh (CEDMAP) in Bhopal, Madhya Pradesh.

What is agricultural ecosystem digitization, and how does it benefit farmers?- Palat Vijayaraghavan
Mr. Palat Vijayaraghavan is the Founder and CEO of Lawrencedale Agro Processing India Private Limited (LEAF) in Ooty, Tamil Nadu.

Tomato processing project - Ketchup, sauce, puree and paste - By Pankaj Sharma
Mr. Pankaj Sharma is the CEO of Packaging Solution in Ghaziabad, UP

Papaya farming, cultivation, marketing & economics" - By Jigar patel
Mr. Jigar Patel is the Proprietor of Shreeji Biotech in Anand, Navli, Gujarat.Gangtok in Sikkim.Bengal.

Integrated Pest management strategies and approaches- By Dr M Rajashekhar
Dr. M.Rajashekhar, Scientist -Entomology at PJTAU, Institute of Biotechnology in Hyderabad, Telangana.

Chia the super food and the super income crop for the farmers - By Dr Digvijay Singh Rathore
Dr. Digvijay Singh Rathore is a Project Advisor at Amritanjali Ayurved (Opc) Pvt. Ltd. in Udaipur, Rajasthan.

Production technologies in high density guava cultivation - By Dr. C. Madhumathi
Dr. C. Madhumathi is a Principal Scientist (Hort.) & Head at Dr YSR Horticultural University in Venkatagiri (M), Andhra Pradesh.

Lime cultivation and value addition - By Dr C Madhumathi
Dr. C. Madhumathi is a Principal Scientist (Hort.) & Head at Dr YSR Horticultural University in Venkatagiri (M), Andhra Pradesh

Soyabean cultivation, economics and marketing opportunities - By Sopan Kanchan
Mr. Sopan Kanchan is the President of Confederation of Indian Horticulture / Grape Grower Association of India

NABARD'S role in FPO - By Mr. Mrinal Kanti De
Mr. Mrinal Kanti De is the General Manger at NABARD Mumbai, Maharashtra. To know more view https://www.linkedin.com/in/mrinal-ka...

How can an individual farmer make success in Teak farming? - By Dr. Bolla Joseph
Dr. Bolla Joseph is a Retired Senior Professor(Agronomy) of Jayashankar Telangana State Agricultural University and currently working as an Honorary Professor at Sri Konda Laxman Telagana State Horticultural University in Telagana.

Value addition through solar drying - By Mr. Aman Agrawal
Mr. Aman Agrawal is the Founder of Future Agronomists at Harda, Madhya Pradesh.

Current advance technologies used in Netafim irrigation - By Mr. Sanket Belgudri
Mr. Sanket Belgudri, Marketing Manager, Netafim Irrigation (I) Pvt. Ltd., Hyderabad, Telangana is a Post-Graduate in Agribusiness Management from MANAGE (National Institute of Agriculture Extension Management).

Lemon grass farming - By Mr. Sameer Chadha
Mr. Sameer Chadha is the Co-Founder of Chadha Aroma Farms in Lucknow, Uttar Pradesh.

Nano technology for successful agriculture - By Dr. Venkatesh Devanur
Dr. Venkatesh Devanur is the CEO of Agri Life in Sangareddy District, Telangana.

Boosting climate resilience through conservation agriculture- Dr Tannishtha Bardhan
Dr. Tannishtha Bardhan is an Young Professional at G20 Agriculture Working Group, International Cooperation Division, Ministry of Agriculture and Farmers Welfare in New Delhi.

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Mr. Sham Dilip Gangurde Co-founder at N R Farm Product in Nashik, Maharashtra.

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Mr. Ravisankar M R is the President at Neighborhood Community Network at Anantapur District, Andhra Pradesh.

Soul Urban Farming role in agriculture- By Mr. Aneesh Sharma
Mr. Aneesh Sharma is an Urban Farm Operations Executive at Soul Urban Farming in Mohali, Punjab. To know more view / aneesh-sharma-81b6351b8

Technical support and marketing of orchids - By Mr. Kishor Sutar
Mr. Kishor Kumar Sutar is the Chief Executive Officer of Orchid Biotech in Odisha and has 16 years experience of being a horticulture project expert and has introduced many new and exotic crops in various states.

Agriculture education in context of NEP(National Education Policy), 2020 - By Dr. Jayanta Deka
Dr. Jayanta Deka, Dean, Faculty of Agriculture, Assam Agricultural University, AAU, Jorhat, Assam is specialized in weed science and has a long working experience in different aspects in this field.

Will floriculture flourish in Indian market- By Dr. Mam Singh
Dr. Mam Singh is the Principal Scientist at ICAR- Indian Agricultural Research Institute in New Delhi. To know more view https://bit.ly/3HTvfq9

Value based dairy products - By Mr. Vijay kumar
Mr. Vijaykumar is an Asst. Professor at Dairy Science College, Mahagaon Cross, Kalaburagi, Karnataka.

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Mr. Sriram S is the Chairman and Managing Director of Tuticorin Hindustan Bio Plant Pvt. Ltd. in Tuticorin, Tamilnadu.

How we assist the farmers on natural farming and support them in marketing - By Parthasaradhi Nara
Mr. Parthasaradhi Nara, Founder of Organic Anantha Products LLP in Ananthapuram District, Andhra Pradesh

Value addition in small millets - By Dr Sarita Srivastava
Dr. Sarita Srivastava from Rudrapur, Uttarakhand is the Director Suvernada Foundation; Retd. Professor and Head, Department of Foods and Nutrion, GB Pant University of Ag and Tech, Pantnagar, Uttarakhand.

Leading freshwater aquaculture technologies - By Mr. Sagar Vitthal Shinde
Mr. Sagar Vitthal Shinde is a Ph.D. Scholar in Aquaculture at Central Institute of Fisheries Education (CIFE) in Mumbai, Maharashtra. To know more view https://www.linkedin.com/in/sagar-shi...

Controlled Environment Growing Technologies - By Mr. Mohan Urs
Mr. Mohan Urs is the Chief Operating Officer of Triangle Farms Pvt. Ltd. in Zaheerabad, Telangana. His interest is operation and implementation of new generation technologies in agri sector. To know more view https://bit.ly/36qlAHl

How drones are used for agriculture spraying - By Mr. Mughilan Thiru Ramasamy
Mr. Mughilan Thiru Ramasamy is the CEO/Cofounder of Skylark Drones in Bengaluru, Karnataka.

Value based dairy products- By Mr. Vijay Kumar
Mr. Vijaykumar is an Asst. Professor at Dairy Science College, Mahagaon Cross, Kalaburagi, Karnataka.

Optimizing dairy production and practices in a 5-Acre cow-based farming system- Mallinath Hemadi
Mr. Mallinath Hemadi is a trainer and consultant for organic farming, cow based enterprises. Author of books on organic farming.

Moringa cultivation and marketing - By Shajath Ali M K
Mr. Shajath Ali M.K. is the Chief Executive Officer of Salem Organic Farmers Organization in Salem, Tamilnadu.

My experience with middlemen and mandis - By Arnab Vohra
Mr. Arnab Vohra is the Managing Director of Urban Growers LLP in New Delhi.

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TALKING TO

Mr Praveen Sharma

A Vertical Farming Expert and Founder of Flora Consult, Pune, Maharashtra

Sustainable Vertical Farming Technology: A Vision for the Future of Agriculture

Introduction

This article offers a comprehensive understanding of sustainable vertical farming technology and its significant importance in the face of growing global challenges. As the world population continues to increase rapidly, the scarcity of food has become an increasingly pressing issue. Vertical farming presents a promising solution to these challenges, revolutionizing traditional agricultural practices with a focus on sustainability, efficiency, and innovation.

The Growing Challenge of Global Agriculture

The world's agricultural landscape faces several critical challenges, the most prominent being the reduction of arable land. With only 8 billion hectares of agricultural land available, urbanization and development are further diminishing this valuable resource. Additionally, agriculture consumes 80% of the world's water, yet 60% of it is wasted due to inefficient water application methods. Incorrect irrigation practices and suboptimal water use exacerbate this issue, calling for the adoption of better irrigation techniques and crop-growing methods.

The rural-to-urban migration trend adds another layer of complexity. As people move to urban areas, it becomes essential to devise methods to use urban land effectively for food production. This is where vertical farming technology steps in as an innovative and viable solution to produce food in urban spaces.

The Need for Vertical Farming

In India, approximately 800,000 hectares of cultivable land have been surrendered to urban development. As the agriculture community confronts this challenge, there is a pressing need to maximize food production in the available space. Additionally, many developing countries face the issue of urban-grown vegetables being contaminated with sewage water, which often contains harmful elements that pose health risks. Studies have revealed high levels of heavy metals, pesticides, and other contaminants in urban vegetables, prompting a shift towards more controlled farming methods, such as vertical farming.

Vertical farming, also known as 3D farming, adds a third dimension to traditional agriculture. Initially pioneered on a large scale in the USA with the support of venture capitalists, vertical farming has evolved into a highly automated and controlled agricultural system. In India, this innovative farming method holds promise to address the challenges posed by urbanization, environmental concerns, and food scarcity.

Classification of Vertical Farming

Vertical farming can be classified into two main categories: Canopy Type and Technology Type.

A. Canopy Type Vertical Farming
Vertical farming under the canopy type can be further divided into various models:

Open Field: Cultivating crops vertically in open fields.

Naturally Ventilated Greenhouse: Crops are grown vertically in a greenhouse with natural ventilation.

Climate-Controlled Greenhouse: This type of greenhouse provides optimal climate conditions for vertical farming.

Totally Environmental Controlled Agriculture (TCEA): This involves indoor farming where all parameters (temperature, humidity, CO_2 levels, and light) are precisely controlled to ensure ideal growth conditions.

The Hybrid TCEA model: This integrates natural parameters, reducing energy costs by utilizing sunlight while maintaining environmental control. Vertical farming in naturally ventilated greenhouses can increase crop productivity by 5-7 times, depending on the product and crop type.

B. Technology Type Vertical Farming
The technology type of vertical farming focuses on various innovative techniques:

- Vertical Stack NFT System
- Vertical A-frame NFT (Nutrient Film Technique) System
- Vertical Aeroponic Grow Towers
- Revoponics System: A highly advanced technique in vertical farming, Developed by Flora Consult.

In the A-frame NFT system, crops grow vertically, allowing for a denser plant arrangement of up to 25 plants per square meter compared to the typical 17-18 plants per square meter in horizontal farming. While this system requires specific design considerations (such as solar orientation), it increases productivity and space utilization.

The Vertical NFT System involves vertically stacked NFT towers, which are particularly efficient in growing green leafy vegetables, as well as other crops such as strawberries, tomatoes, and chilies. This system is energy-efficient, water-efficient, and supports faster crop growth with minimal manpower.

Revoponics Definition: Revoponics is an energy-efficient vertical farming method using rotating grow towers where plants are suspended and periodically showered with nutrient-rich water. It adapts to various climates and growth stages, making it versatile for greenhouses, glasshouses, and indoor farming. The rotating towers provide uniform light exposure and optimal micro-climate conditions, especially in greenhouses with natural sunlight or fully controlled indoor settings. This method ensures high energy efficiency, low operational and capital costs, and maximizes space utilization, allowing for higher plant density and productivity compared to other vertical farming techniques.

The technique developed by Mr. Praveen Sharma, Flora Consult. This method has been successfully applied in projects such as growing strawberries in the Middle East.

Industrial Grow Towers
Flora Consult's sister concern Globe Florex offers models like the AGT 108, AGT 42, AGT 48, and AGT 60 grow towers, which can accommodate a high number of plants per square meter, providing versatility for both small-scale and large-scale farming. The Revoponics Grow Tower system, for example, can host up to 174 plants, ideal for warehouses and indoor farming settings.

Advantages and Challenges

Advantages of Vertical Farming:
Increased Plant Density: Vertical farming allows for better utilization of available space, enhancing plant density and productivity.

Energy Efficiency: Advanced vertical farming techniques, such as aeroponics and Revoponics, reduce energy consumption by optimizing light and temperature conditions.

Water Efficiency: Vertical farming systems like NFT minimize water usage, making them highly sustainable and suited for regions with water scarcity.

Uniform Climate Control: Indoor vertical farming systems offer the ability to control all environmental factors, ensuring consistent crop growth and higher yields.

Challenges:

Energy Costs: One of the major challenges facing vertical farming is the high energy consumption for climate control and lighting.

However, the integration of solar panels through Agrivoltaics and Hortivoltaics can offset these costs, making the system more sustainable.

Initial Setup Costs: The establishment of vertical farming systems, especially fully controlled indoor farms, can be capital-intensive. However, these costs can be mitigated over time through increased yields and efficient resource use.

The Role of Renewable Energy in Vertical Farming

An exciting development in vertical farming is the concept of Hortivoltaics, which integrates solar power into farming systems. By generating renewable energy through solar panels while growing crops, this approach aims to achieve carbon neutrality. The combination of solar energy and vertical farming techniques enhances sustainability, reducing both energy costs and the carbon footprint of food production.

Research and Development

The Flora Consult's Centre for Innovation and Training for Vertical Farming in Pune plays a critical role in advancing research in this field. Continuous research is essential to improving vertical farming practices, particularly in nutrient management, adaptability, and post-harvest techniques. Through the use of IoT-enabled portable units, that monitors and manages key factors such as CO_2 levels, temperature, humidity, pH, and EC, ensuring optimal conditions for crop growth.

Conclusion

Vertical farming represents a revolutionary shift in agricultural practices, providing a sustainable solution to the challenges posed by urbanization, climate change, and food scarcity. With innovations such as Revoponics, Hortivoltaics, and advanced grow tower technologies, vertical farming is poised to play a significant role in feeding the growing global population. As research and development continue to evolve, vertical farming has the potential to reshape the future of food production, ensuring a more sustainable and resilient agricultural system for generations to come.

Through training programs and partnerships, the vertical farming community is poised to equip farmers with the knowledge and skills necessary to succeed in this emerging field, promoting a more sustainable and efficient way to feed the world

QUESTION AND ANSWER SESSION: INSIGHTS INTO SUSTAINABLE VERTICAL FARMING

1. What type of crops are best suited for cultivation in vertical farming systems?

Vertical farming is particularly suitable for growing leafy greens and herbs, which include lettuce, basil, thyme, oregano, mint, rosemary, and chives. These crops thrive in the controlled environment of vertical farms. Around the world, most vertical farms focus on leafy greens. However, newer techniques are making it possible to grow strawberries, which have become increasingly popular in the USA and UK. Strawberries are traditionally high in pesticide residues, but indoor vertical farming has helped produce cleaner and safer strawberries. Additionally, other crops such as cherry tomatoes, jalapenos, chilies, and okra can also be cultivated using vertical farming methods.

2. Can you explain the main components required for setting up sustainable Vertical-farming systems?

There are several factors to consider when setting up a sustainable vertical farming system. As an investor, it is important to assess the location where the farm will be established. Key steps include:

• Market Analysis: Understanding the demand and pricing for the crops you plan to grow.

• Farm Setup: Depending on the climate and location, you may choose between a naturally ventilated greenhouse, a climate-controlled greenhouse, or a fully controlled warehouse.

• Key Components:

* Canopy in Greenhouse: For shading and protection.

* Aeroponics or Hydroponic Grow Towers: For efficient crop growth.

* Thermal Controllers: To regulate temperature and humidity.

* Light Controllers: To manage light spectrum and duration. The technology chosen will determine the farm's energy efficiency and crop productivity.

3. Are there any limitations

and challenges in implementing sustainable vertical farming technology? Can you provide examples of successful projects?

One of the primary challenges of vertical farming is its capital intensity. Even a basic naturally ventilated greenhouse with traditional NFT can cost around ₹7,500 per square meter, while a vertical farming system may cost ₹14,000 per square meter—almost double the investment. However, vertical farming offers a much higher return on investment with:

• 5 times higher productivity

• 70% energy efficiency

• 40% savings on manpower

Despite these benefits, marketing remains a challenge in some regions. For example, green leafy vegetables grown in vertical farms may struggle to fetch competitive prices in certain markets. However, there are successful projects around Pune, India, where vertical farms are performing well, demonstrating the potential of this technology.

4. Please tell us about your background and what inspired you to become a Flora Consult.

Mr. Praveen Sharma, a Master's degree holder in Agriculture Engineering, has had a diverse career in the agricultural sector since 1986. He began his journey by managing 800 hectares of orchards in Saudi Arabia, where he dealt with challenges like nutrient and water management in desert conditions. His subsequent work in India at IARI Pusa, Gujarat's Agriculture University, and East Africa, where he helped set up export-oriented flower projects, further deepened his expertise. Returning to India as Vice President of a Dutch company, he provided technology to Indian promoters before founding Flora Consult. Flora Consult's first project involved setting up a hydroponic farm for growing roses in 1991, and it has since expanded to focus on large-scale farming operations in India and Africa. The rise of exotic vegetables led to an exploration of vertical farming, which Flora Consult is actively pursuing globally since 2012.

Flora Consult has been instrumental in setting up large scale export-oriented hydroponics projects in East Africa, India and Middle East. Flora Consult is actively working in North America to set up sustainable vertical farms.

5. What strategies or techniques do you apply to assess and manage flora-related issues? How do you collaborate with local communities, government agencies, and other stakeholders?

Managing a vertical farm requires constant monitoring and observation. Key strategies include:

• Daily Crop Monitoring: Ensuring crops are healthy and growing under optimal conditions.

• Nutrient Management: Providing the right amount of nutrients at the right time.

• Climate Control: Managing temperature, humidity, and radiation levels.

• Water Management: Ensuring accurate water measurements and efficient use.

• Training: Ensuring the farm team is well-trained to carry out all operations to international standards. Collaboration with local stakeholders is essential. This includes working with municipal corporations for urban farms, panchayats in rural areas, and addressing infrastructure issues like water and electricity supply.

6. What are the economic implications of adapting sustainable vertical farming technologies for farmers and communities? Are there any government subsidies?

The economic implications of adopting vertical farming can be significant. Looking at the high capital cost, vertical farming is suitable for bigger business houses, and MSME's who wish to set up AgTech based projects. The ROI is 3 Years.

While there are some government subsidy schemes under formulation for vertical farming, they are still in the early stages. The government is currently studying this new field to develop policies that can support the growth of vertical farming, helping farmers access funding and resources for implementation.

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Dr Priyanka Singh

Senior Scientific Officer, U.P. Council of Sugarcane Research, Shahjahanpur, UP

Discussed the strategies for profitable sugarcane farming.

STRATEGIES FOR PROFITABLE SUGARCANE FARMING

Sugarcane is a vital crop, playing a crucial role in the agricultural economy. Its cultivation requires thoughtful planning and innovative approaches to ensure sustained success and profitability. This chapter explores key strategies that enhance productivity, ensure sustainability, and maximize profits in sugarcane farming.

Over the past five years, sugarcane productivity has shown a steady increase. This improvement is largely due to the adoption of sound agricultural practices and technological advancements in sugarcane cultivation. A SWOT analysis helps in understanding the strengths, weaknesses, opportunities, and threats in sugarcane farming. The strengths of sugarcane farming lie in its abundant natural resources, fertile soils, significant economic contribution to rural areas, and potential for renewable energy production. Technological advancements and research have further increased its profitability. However, there are weaknesses such as vulnerability to climate change, rising input costs, and pest and disease management challenges. By adopting proper planning and technology, these issues can be effectively addressed. The industry also presents various opportunities such as diversification of sugarcane products, integration of new technologies, and implementation of sustainable agricultural practices. However, persistent challenges include disease outbreaks, pest infestations, and potential policy changes that may impact the industry. By strategically navigating these elements, farmers can maximize productivity and profitability.

Cost-effective sugarcane farming is essential for ensuring profitability. One of the key approaches to reducing production costs is soil testing and nutrient management. Soil fertility is a major concern, with declining organic carbon and nitrogen levels. Conducting soil tests before fertilizer application allows for nutrient application based on deficiencies, leading to more efficient use of fertilizers. Integrating inorganic fertilizers with organic manures and biofertilizers enhances soil health and optimizes crop yield. The implementation of soil health cards for farmers empowers them with crucial insights into essential nutrients and micronutrients required for their land, fostering sustainable cultivation practices.

Adopting nursery-raised plantlets is another effective method to enhance crop performance while reducing seed rates. This method allows for the faster multiplication of high-yielding varieties and improves germination rates. The trench method of planting, wherein planting is done in deep trenches of 20-25 cm, offers numerous advantages. It increases yield by

15-20%, enhances sugar content by 0.5-0.8%, improves germination rates to 75-80%, and reduces irrigation water usage by 50-60%. Additionally, it prevents lodging, as deeper root establishment allows better anchoring, improved nutrient uptake, and greater crop resilience.

Mechanization is crucial in sugarcane farming as it reduces labor dependency and improves efficiency. Land leveling using laser levelers ensures uniform crop growth and optimizes resource utilization. Various mechanized tools, such as deep furrow planters, seedling transplanters, and mechanized harvesters, enable timely and cost-effective farming operations.

The availability of farm machinery banks further ensures that farmers can access these implements at affordable rates. Mechanization not only enhances productivity but also reduces human drudgery, making sugarcane farming more sustainable.

Water conservation plays a vital role in improving profitability. The adoption of drip irrigation significantly reduces water usage by 60%, increases cane yield, and enhances sugar content (CCS) by 25%. This system ensures the direct application of water and nutrients to the root zone, improving efficiency. Unlike flood irrigation, which often leads to poor germination and lower yield, drip irrigation promotes better crop growth while conserving natural resources. Moreover, government subsidies on micro-irrigation systems make it financially viable for farmers.

Sustainable pest and disease management is another critical aspect of profitable sugarcane farming. Excessive use of chemical pesticides negatively affects soil

health and human well-being. Transitioning to biocontrol methods ensures a more sustainable approach to pest management. The use of Trichoderma for fungal disease control, Trichocards for borer management, and Metarhizium and Beauveria for termite and white grub control has proven to be highly effective. These eco-friendly alternatives not only help in reducing input costs but also contribute to a healthier farming ecosystem.

Increasing production per unit area is equally important for profitability. This can be achieved by adopting high-yielding sugarcane varieties suited to different climatic conditions.

Ensuring a balanced adoption of early and mid-late varieties

optimizes sugar recovery and prevents over-reliance on a single variety, reducing the risk of pest and disease outbreaks. Seed treatment is another crucial step in sugarcane farming. Seed-borne diseases like red rot, smut, and wilt lead to significant yield losses. Treating setts with hot water or fungicides before planting enhances crop establishment and disease resistance.

Intercropping with short-duration crops like legumes, oilseeds, vegetables, and maize enhances land and resource utilization. The wide spacing of sugarcane rows allows the successful intercropping of complementary crops, improving soil texture, nutrient cycling, and weed control. This not only increases productivity but also provides additional income sources for farmers. Trash mulching further supports soil health by conserving moisture, reducing surface evaporation, and improving water retention, resulting in increased cane yield and better crop resilience against drought.

Ratoon management is another essential component of profitable sugarcane farming. Ratoon crops occupy a significant portion of total cane cultivation, especially in subtropical states

like Uttar Pradesh. Proper ratoon management reduces the cost of cultivation, eliminates the need for land preparation, and results in early ripening, thereby improving the effective crushing period. Effective ratoon management practices include trash shredding, application of organic decomposers like Trichoderma, stubble shaving, irrigation immediately after harvest, and the application of biofertilizers and farmyard manure to enhance soil fertility. Mechanized ratoon management devices (RMD) streamline these operations, ensuring better crop performance and increased yield.

Integrating dairy and livestock farming with sugarcane cultivation creates a symbiotic system that enhances profitability. The availability of fodder from sugarcane fields supports livestock, while farmyard manure from animals improves soil fertility. This integration reduces input costs, enhances soil health, and promotes sustainable agricultural practices.

Post-harvest losses in sugarcane farming pose significant challenges. Being a perishable crop, sugarcane undergoes a sucrose loss of 25-30% between harvesting and milling. Delays of 3-7 days between harvesting and processing in subtropical regions result in substantial sugar losses. Implementing efficient harvesting techniques and following a scientific harvesting schedule help mitigate these losses. Maturity-based harvesting ensures optimal sugar recovery and prevents unnecessary weight and quality deterioration. Harvesting at the right level also contributes to uniform ratoon regeneration and enhanced profitability.

Value addition in sugarcane farming offers diverse opportunities for improving profitability. Producing compost from biological decomposition, manufacturing organic manure from trash, and using sugarcane residues for silage and biochar are effective ways to utilize by-products efficiently. Additionally, value-added products like sugarcane syrup, confectionery, jaggery, and acetic acid production enhance farmer incomes. Government schemes supporting agro-based enterprises provide further incentives for farmers to explore value addition and rural employment opportunities.

However, profitable sugarcane farming requires a combination of scientific strategies, cost reduction techniques, and sustainable agricultural practices. By implementing mechanization, improved planting techniques, efficient water use, biological pest control, and value addition, farmers can significantly increase their yield and profitability. These strategies not only enhance productivity but also contribute to a sustainable and resilient sugarcane farming ecosystem.

What are the key factors contributing to profitability in sugarcane farming? How do irrigation practices impact sugarcane productivity and profitability?

Key Factors Contributing to Profitability in Sugarcane Farming

Several factors play a crucial role in ensuring profitability in sugarcane farming. Proper land preparation is fundamental, and applying fertilizers based on soil test recommendations is essential to maintaining soil fertility. Understanding the specific nutrient and micronutrient requirements

of the soil ensures optimal crop growth and sugar production. Without proper nutrition, sugarcane growth is stunted, and sucrose accumulation is affected, ultimately impacting profitability.

The selection of appropriate sugarcane varieties is another critical factor. Varieties should be chosen based on soil type, climatic conditions, and resistance to stress factors such as drought and waterlogging. Growing high-yielding and disease-resistant varieties ensures better productivity and reduces losses due to pest and disease infestations. Additionally, obtaining planting material from certified sources is crucial to preventing the spread of seed-borne diseases. Proper sett treatment, involving dipping in fungicides (10-15 minutes) or hot water treatment (1-2 hours at 50-520C) before planting, significantly reduces the risk of early-stage infections and pest attacks.

Impact of Irrigation Practices on Sugarcane Productivity and Profitability

Efficient water management plays a pivotal role in sugarcane cultivation. Most farmers still rely on traditional flood irrigation, which not only wastes water but also leads to inefficient nutrient utilization and lower yields. Instead, adopting advanced irrigation techniques such as drip irrigation can significantly enhance productivity and resource efficiency.

Drip irrigation allows for precise application of water and nutrients directly to the root zone, reducing water wastage by up to 60%. It also improves sugarcane growth by maintaining optimal soil moisture levels, leading to better germination and enhanced sucrose accumulation. Studies have shown that flood irrigation results in reduced cane yield and lower sugar content due to water stress and nutrient leaching. Conversely, drip irrigation enhances cane yield, improves sugar recovery, and conserves water resources.

Moreover, the trench method of planting further complements efficient irrigation practices. By planting sugarcane in deep trenches, water and nutrients can be applied efficiently, ensuring their direct availability to the plant roots. This method not only improves water retention but also prevents lodging and enhances root development, contributing to increased crop resilience and yield.

What are the practices to manage pests and diseases in sugarcane cultivation to minimise loss? Can you suggest the optimised application of fertiliser to improve the cost-effective production of sugarcane? Name some innovative harvesting and postharvest techniques to enhance profitability for sugarcane farmers.

Pest and Disease Management in Sugarcane Cultivation

Minimizing the use of chemical pesticides and insecticides is essential for sustainable sugarcane farming. Instead, biocontrol measures should be adopted to manage pests and diseases effectively. Root borers are among the major pests affecting sugarcane, and their impact can be mitigated through the use of Trichocards, which introduce parasitic eggs under the leaves before the onset of the monsoon. The application of Trichoderma at the time of planting is another effective approach, as it helps control soil-borne pests and fungal infections. By incorporating these biocontrol strategies, farmers can reduce pesticide costs and

minimize the adverse effects of chemical residues on soil health. Additionally, implementing cultural practices such as crop rotation, trash mulching, and the use of resistant varieties further enhances pest and disease resistance, ensuring higher yields and better-quality sugarcane.

Optimized Fertilizer Application for Cost-Effective Production

Applying fertilizers at optimized levels is crucial for achieving cost-effective sugarcane production. The recommended fertilizer dose for sugarcane includes 180 kg of nitrogen, 80 kg of phosphorus, and 60 kg of potash per hectare. However, for autumn planting, nitrogen application should be increased to 200 kg per hectare to support early-stage growth and tillering. Organic fertilizers, such as well-decomposed farmyard manure (FYM) and press mud, provide essential nutrients while improving soil structure and microbial activity. Incorporating press mud during land preparation, followed by multiple ploughing sessions, ensures its even distribution in the field. This organic matter enhances soil fertility, moisture retention, and nutrient availability, reducing the dependency on synthetic fertilizers while maintaining optimal crop productivity.

Innovative Harvesting and Post-Harvest Techniques for Profitability

Sugarcane is a perishable crop containing about 70% water, and moisture loss begins immediately after harvest. As sugarcane undergoes natural deterioration, sucrose starts converting into other by-products, leading to a decline in sugar content and weight loss. This deterioration is especially rapid in high temperatures, making timely post-harvest management crucial for maintaining profitability. To minimize losses, the harvested cane should be transported to the mill within two days. Any delay beyond this period results in reduced sugar recovery and lower payments to farmers. Harvesting should be performed based on the maturity of the cane, as harvesting immature or over-mature cane leads to lower sugar content and financial losses. Moreover, harvesting should be done from ground level to ensure maximum sugar extraction and uniform ratoon regeneration for the next crop cycle.

Incorporating mechanized harvesting techniques further enhances efficiency and profitability. Modern sugarcane harvesters reduce labor dependency, ensure precision cutting, and minimize post-harvest losses. Additionally, mechanical trash shredders can be used to decompose plant residues efficiently, improving soil organic matter for subsequent crops.

How important is weed management in sugarcane farming, and what are the most effective weed control strategies? Any market trends and value-added opportunities for farmers to increase profitability? Are there any tools tailored for sugarcane farmers to get more profit and sustainability?

Weed Management and Value-Added Opportunities in Sugarcane Farming

Weed management is critical in sugarcane farming, especially during the initial growth stage when the crop grows slowly. Weeds compete for nutrients, moisture, and light, significantly affecting crop yield if not controlled within the first 60 days. Effective weed control strategies include trash mulching, intercropping,

mechanized weed removal, and the use of recommended herbicides. Trash mulching conserves moisture while suppressing weed growth, and intercultural operations help manage weeds effectively.

Sugarcane farming offers several value-added opportunities that enhance profitability. Every part of the sugarcane plant is useful, its leaves, roots, and bagasse can be utilized for silage, fuel, biochar, and organic compost. Sugarcane juice can be processed into jaggery, syrup, and various confectionery products. Bagasse and leaves can be converted into vermicompost, improving soil health. Exploring these value-added avenues can significantly increase farmers' income and sustainability in the sugar industry.

Technological Innovations and Tools for Profitability

Several technological advancements have been tailored to sugarcane farmers to improve productivity and sustainability. Mechanized tools such as laser levellers enhance efficient land preparation, optimizing water usage and nutrient supply. Moisture meters help farmers monitor soil moisture levels, ensuring optimal irrigation management. Rotary inverters are beneficial in sugarcane fields, facilitating efficient operations. In Uttar Pradesh, farm machinery banks provide affordable access to these implements, allowing farmers to rent equipment at nominal costs. Utilizing these technologies ensures smoother and more timely agricultural operations, leading to increased yields and higher profitability.

Conclusion

The future of sugarcane farming lies in the adoption of modern, sustainable, and cost-effective agricultural practices. By integrating scientific land preparation, optimized irrigation, biological pest control, and advanced mechanization, farmers can significantly enhance productivity and profitability. Additionally, adopting high-yielding varieties, ensuring balanced fertilizer application, and utilizing innovative harvesting techniques will further strengthen the sector. The sugarcane industry also presents vast opportunities for diversification, value addition, and technological integration. By leveraging government schemes, farm machinery banks, and modern agronomic tools, farmers can ensure sustainability while maximizing their economic returns. With a focus on reducing production costs, conserving water, and minimizing post-harvest losses, sugarcane farming can continue to thrive as a profitable and resilient agricultural enterprise.

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Mr Mayank Manoj Sharma

Director, Technical, Mayank Aquaculture Pvt Ltd,
Surat, Gujarat

Tells us about the entrepreneur opportunities in aquaculture especially shrimp farming.

India is one of the largest shrimp producers in about 2 lakh ha (hectare) farming land and exports in the world market earning huge amount of foreign exchange for the country benefiting countless lives and transforming lives of coastal rural community and boosting employment opportunities for the Indian population.

Our average productivity is about 5000 kg per ha. Average farming is done in less than an area of 5 ha as most of our farmers are having landholding of about or under 5 ha only.

The shrimp consumption is less in domestic market and is destined to grow in the future through joint efforts of the industry. Our company has started a venture to boost the domestic shrimp consumption under the brand "Zhingalala" "From our pond to your plate" concept where the consumers get the experience of shrimp delicacies at our restaurant.

There are a few steps associated with shrimp farming, such as site selection, designing the site, construction pond as per design specification, infrastructure, preparing pond, and bringing good seed and stocking the seeds (post larvae), maintaining all water parameters as needed in shrimp rearing, proper feed management proper healthcare and ancillary inputs for shrimps. We have to take care of their health by supervision and taking care of farm biosecurity to avoid contamination and disease outbreak.

Once the material has attained commercial harvestable size, only then the material is ready to proceed with harvesting and processing as per the market demand. We have two supply chains -export oriented and domestic chain. In this value chain, we have various stakeholders primarily divided into corporate companies, hatcheries, feed suppliers, dealers, distributors, sub-dealers dealing in supply of necessary inputs seed, feed, healthcare inputs and other ancillary inputs to the farmers. Once the farmer produces shrimp, it goes to the processor through designated supply chain, where they buy the shrimp from the farmers distributors or dealers, and then export the shrimps to other countries. The purchasing buyers or agents or companies associated with the international destination takes care of the shrimp to various stores, HORECA, and consumers. In the domestic market, the process is similar, and from the wholesalers, retailers or company outlets, the shrimp is accessible to the end consumers.

In terms of basic shrimp farming steps, We have to have the site survey done in terms of design and construction, keeping in mind the basic design such as reservoir, settlement, inlet, outlet, sluice gate, feeder canals, treatment

pond. The ponds should maintain proper slope and drain facility as well. Pond preparation involves oxidising the organic matter, ploughing and tilling of soil and have and proper sun drying. Then we can start pumping the water from the source, have filtration system to avoid any entry of wild fishes or organic matter. We have to dechlorinate the ponds, apply prebiotic, and probiotics with necessary minerals to balance water parameters, and after 15 days we can stock the shrimp seeds.

The prebiotic preparation is done with jaggery, yeast, and molasses. We need to maintain pH, salinity, alkalinity, temperature, mineral ratio which are important for shrimps. When the pond is prepared, we get seeds from hatchery suppliers and maintain the necessary logbook to know from where we buy the seeds, check the performance, and specific pathogen status. The pond acclimatisation is done before stocking the seeds into the pond to avoid any salinity or temperature shock. have electricity, diesel generators, starters, cables, pumping capacity to take water from the source, and aeration for water circulation to bring oxygen in the shrimp pond for the shrimps to grow stress free.

We allow the necessary algae to grow as it is a good source of feed for the shrimps. Once shrimps are stocked in the farming and feeding management begins. Feed is the crucial component in the cost of production in shrimp farming and comprises 50% of the total cost to produce per kg of shrimp. Dyke feeding is done in the pond where the farm persons broadcasts the feed all over the pond. Nowadays, we also adopt automated feeders which can dispense and throw shrimp feed in the pond and they can be of moving autofeeders or stationary autofeeders. Through the check tray, we can observe the health of the shrimp, its consumption rate etc. We also have the shrimp toilet or a central drain system where all unnecessary matter and muck get collected and discarded. We have to provide biosecurity to prevent unwanted entry of disease vectors and this is done through tyre wash, bird net to avoid entry of birds, and we can have crab and dog fencing. Any person entering the farm should cross the biosecurity barrier foot dip, hand wash to avoid entry of any dangerous pathogens inside the shrimp farm. Once the material is ready to harvest, the farmers contact the designated person or buyer and plans for harvest. The harvest of shrimp is very simple, the sluice gate mechanism is opened and the water level reduces with gravitational action and starts flowing out. We have a labour worker team with harvesting trap net at the outer side of the opening mouth of the outlet pipe with labours where water is coming out. It is a very simple process where the labour workers traps the shrimps in the nets to collect them. Later, the labour person will collect the shrimps put them in the tub filled with ice under harvest shade and maintain necessary temperature to keep the quality of harvested shrimps super fresh.

When we are done with the farming step, we go to the processing

step where the harvesting truck collect the material, weighs it and determines it size and count and takes to processing plant for further processing and value addition. The personnels who work here will prepare the shrimp by peeling and removing the head, tail or shell as per the product specifications and packaging requirement.

The shrimps are frozen and packing is done along with necessary tests to ensure if the shrimps are free from any harmful chemicals and antibiotics and later the shrimps are exported. Moreover, female employment is also there in the shrimp industry sector, especially in the processing plant for handling, sorting, grading and peeling the material.

To simply highlight the potential of shrimp farming and aquaculture, I can give an example of Gujarat, where the salt affected wasteland were converted into best productive land for shrimp farming, giving self-employment for coastal rural fishermen community. Many individuals have the potential to become entrepreneurs. It is a labour intensive subject boosting employment as it demand workforce. One ha of land can employ about 10 to 12 workers directly and indirectly across the various level of value chain (inputs, shrimp culture, processing, market) depending on the scope of work.

Food and safety through aquaculture and allowing FAQ decision, supplying food to the growing population will play a crucial role apart from earning inflow of foreign exchange.

My father Dr Manoj M. Sharma is a well-known world renowned shrimp farmer, an entrepreneur, national awardee shrimp farmer by National Fisheries Development Board, Government of India and is a World Aquaculture Society award recipient, where his work in Gujarat has attracted Reverse migration and created employment opportunities and benefited 150,000 individuals directly and indirectly. His work has provided employment to 10 thousand tribal workers. His work has documented across many platforms such as Better India, kisan tak channel, Kisano Ke Mahanayak Show on DD national channel and many prominent aquaculture magazines.

Mayank Aquaculture Pvt Ltd is having farming presence across 200 hectares land producing 1 thousand ton shrimp per annum and another 1 thousand tons associated with farmers through contract partnership model. We supply necessary inputs to the farmers to rear shrimp and also provide guidance. The probiotic and healthcare company my father started on the lines of providing the best quality bioremediation and healthcare products to the farmers under "VIVALINE brand".

Vivasoil is probiotic for pond bottom, maintains water quality and effective organic matter degradation, promoting ponds natural productivity, reducing ammonia and nitrite stress and gives less stress to shrimps, hence benefiting the shrimps in terms of better growth and survival. We maintain all necessary parameters and protocols at our pond to produce shrimp sustainably. My father has received many national and international recognition from government and private organisations.

Zhingalala is the domestic market vision of my father who believes that over reliance on shrimp export market makes the industry highly vulnerable, and so it is important to have a domestic market for the sustainability of the Indian shrimp industry. Zhingalala was opened in 2019, serving more than 45 shrimp delicacies in restaurant.

We have served and catered around 50,000 individuals since inception and have around 5 thousand regular customer base who visit us often. We also have our own retail outlet. There is a belief that domestic market for shrimp has hurdles with cold chain, but like any other product like ice cream for example, it is also going through the cold chain network across India. Hence, the shrimps can easily be part of cold chain network with joint efforts form various stakeholders. The shrimp can easily be placed across the other non-vegetarian food items

like fish, chicken, eggs and mutton for the non-vegetarian consuming population. Our country already has a huge fish consuming population and they should be introduced with shrimps. There is a huge technical intervention and innovation being carried out in shrimp farming. Interested youth can opt for healthcare division and biotechnological intervention taking care of the shrimps to combat diseases. PMMSY, FIDF is the government scheme for aspiring entrepreneurs and young individuals where they can submit the project and get the maximum subsidy. One can check department of fisheries, government of India or National Fisheries Development board website to gain all the necessary insights.

What are the current trends driving growth in shrimp industry, and how do entrepreneurs capitalise on this?

The shrimp industry has a steady pace of growth and has an immense growth potential in our nation as now close to one million ton of production is reported. In terms of entrepreneurship opportunity, domestic market can have good scope for stable growth for any aspiring individual when he opts for sales and distribution of fresh and frozen shrimps or even opt farming, where he can have integrated concept on rearing shrimps and directly sell in the local market.

He need not to over rely on the export market and will have financial stability and liquidity for better expansion working on domestic and export model both. Shrimp farming has a good scope in healthcare segment because diseases like WSSV, EHP, Vibriosis and many other diseases are hampering the growth of the industry and it creates lot of production issues for farmers and hence it is good potential for youth to find cure through science and technology and make fortune for themselves and benefit farmers. Moreover, they can work in the value addition segment by not only selling frozen shrimps to the export market but also value added, ready to cook or ready to eat products like marinated and breaded shrimp, freeze dried products, and many more available in the market where entrepreneurs can work on.

What technological advancement are revolutionising shrimp market, and how do entrepreneurs leverage these measures to increase sustainability?

Intervention of technology has been very vigorous in our nation currently, we have IoTs, sensors, biosensors, automated feeders and we have central data base systems where we feed all the data we have, and we can have efficient management of the database. The auto feeders are available good technology to eliminate the need of excess labour and are good for big sized ponds where the feed is dispensed and broadcasted all across the pond uniformly.

There is stationary auto feeder or moving auto feeder to bring efficiency in feeding management because we can recalibrate or calibrate as per the requirement and specifications of the pond. Feed wastage has become less, improves water quality, and shrimp consumption is increasing. There is indoor bio-floc and RAS aquaculture system concepts along with advanced aeration systems. Technological updation and improvements over time in genetics, nutrition, disease diagnostics, healthcare, cold chain logistics and automation can also bring a change in shrimp industry where one should always participate.

What are the key challenges faced by entrepreneurs in aquaculture specifically in shrimp farming, and how can they overcome them?

This is a livestock business and needs 24*7 monitoring and lots of good eye and observation skills along with technical understanding of the subject. One who has a clear plan can almost recover from any challenges or difficulties.

Some key issues are diseases, reduced price realization in export market due to post covid economic era and geo political situations and certain trade related issues, increase in cost of production. So, the entrepreneurs need to be calculative at what best they can

produce at their farm and have a clear financial analysis on Cost of production versus selling rate and also plan the stocking or have a contractual relation with packers or exporters to gain maximum realization for his produce. These challenges are unprecedented and usually recovers overtime with supply and demand.

What are the regulatory considerations and compliance requirement for starting shrimp cultivation operations, and how can entrepreneurs get these regulatory successfully? How can entrepreneurs leverage partnerships with research institute and industry experts to enhance shrimp farming techniques and stay ahead of the industry?

Government of India is proactively promoting the sector and has done phenomenal work. All the necessary information are available in the central or state fisheries department for the aspiring entrepreneurs who should have all the information about the regulatory requirements as per the regions.

They should have understanding about the capital outlay, project, and people should have integrated technical and economic analysis associated with shrimp farming. This helps them to reap the benefits from aquaculture. The fisheries infrastructure development fund is created by the government for aspiring individuals interested in working on innovative concepts for their projects. They can get bank loan at subsidised bank interest. We have state fisheries department, MPEDA, CAA which assists farmers to get necessary farm registration. An entrepreneur can be well versed with all the benefits associated with government schemes for an organised approach in shrimp farming. It is important to have engagement with government institutions and universities which should have course for shrimp farming for the students to get an understanding about shrimp farming and get exposure.

Any biotechnology university can collaborate with farmers to have an understanding about necessary bioremediation, disease cure, water quality parameter, and help in getting best possible products. They should know how the working capital, capital investment work, general understanding of the shrimp market size that are sold in domestic and international markets. It should motivate the youth for shrimp farming. One can always contact us for any requirements.

How can entrepreneurs use data analysis and productive modelling to optimise shrimp farming practices to maximise profitability? What are the potential risks and uncertainties associated with shrimp farming, and how can entrepreneurs develop risk management system to mitigate the risks?

The data analytics helps us in case of large scale farming or corporate farming. Feeding daily feed records for every pond parameter is troublesome for any manager or technician, and technologies have to evolve to certain extent which they already are, a small farmer can use the app associated with the necessary information such as the number of seeds to stock, the average size, and feeding time, feeding management, water parameters and the data analytics can give certain projection to the shrimp farmers on the inputs to put in ponds, difference in efficiency in all ponds, overall efficiency, it can keep track of average productivity and any miscalculation in the system, and also monitor parameters like temperature, dissolved oxygen, etc. Universities should have exposure visits and project curriculum for students or invite corporate farmers and entrepreneurs to share their success story and give lecture in the curriculum. Any aspiring entrepreneur should spend 2 years in understanding the shrimp farming in nearby areas to have an idea of how the system works, have technical understanding, risk mitigation and understand how the market and the industry works. If they don't have exposure, they cannot understand the quality of work or attention needed to be given to the pond and farming system. They should be well versed with financial calculations, like investment, Depreciation, ROI, cash flow management. We have to take care of the pond and our business ourselves. Hence, there should be exposure on what is required and this can be guiding template for youth.

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Ms. Shobana Uthayashankar

Founder, Innogle Technologies Pvt Ltd, Chennai, Tamil Nadu

Discusses about ocean technology solutions.

We are transmitting in digital formation for the end-user to facilitate. Our product is so unique that it is useful in many industries such as fishing. Kadal compass and Rakshava are exclusively for the fishing industry and for tourism to be used. Our focus is more on the fishing industry, we have different solutions such as SEROF and SAGARAN which are useful for rescue operations and search if someone is missing.

This solution will trace and track them in real time. As we all know, beyond 20 kms in the ocean, we do not have communication channel. So, we are providing a communication channel because communication is important in passing even a simple message.

It is difficult in the ocean to have two-way communication, and we have to depend on satellite which is highly expensive and not affordable for all fishermen and ocean workers. To overcome this challenge, we have a solution called TOHFT. We are also working under the guidance of telecom and telecommunication department with regard to this.

By the very name, Kadal Compass, we know it is related to sea, as Kadal means sea. We are trying to solve a critical problem faced by the fishermen, especially when someone is sailing, he or she has a risk of life because it is difficult to trace and track where they are even for the neighbour in the particular boat. Fishermen's life is at 35 to 40 times higher, and fatality is 24 thousand per year. For some areas, we do not have any statistics, and we do not know the exact fatality rate. So, we have to focus on life safety. Now, satellite is the only source of getting information on potential fishing zones. The problem here is satellites will provide a kind of chlorophyll based image which cannot pinpoint exactly about the species in the zone. Often we find fishermen forced to discard unintentional species back into the ocean which affects ocean's ecosystem. We suggest their using eco-sounder for potential fishing zone in the ocean. Even this will only give an imagination of a fish but not the species. So, this problem also has to be addressed.

Our unique Kadal compass can be used as a user interface with 26 unique features. Some of the salient features are: user interface which is multi-lingual and fishermen can access this easily as it is user-friendly too. According to their language the whole interface will change along with the icons. So, they can easily find out what it says such as the functionality. When a fisherman is in deep sea, when he wants to have a two-way communication, it will help in talking to other boats. He need not depend on the satellite. Safety is provided by the watch in the device which has to be worn by the fisherman. If he goes missing, we can easily trace and track them. This is called Under Water Device,

a unique solution for the fishermen with high end cameras, lights, and integrated with the transducer. This has to be thrown into the fisherman when in water, with the top floating, drifting technology is used, and bottom will submerge into the water to capture the kind of species or fish is there. Fishermen can see what is there in underwater by this watch and get suggestions on catching the fish. It vibrates to prevent fishermen catching the unintentional species.

We get two way communication as we use a high end M2M solution, where the data is securely sent to the cloud. The device has to be fixed in the deck of the boat so that the fishermen can see in real life what is there under water, they can throw the underwater device contact with water so that it will float and get the details. Based on the customisation we can work on it. they will have a life safety watch in each hand integrated with the other AAR authentication for more research and rescue. When most of the people sleep during the sailing, when accidents happen and fisherman is missing or fall down, the neighbour also will not know who is missing. This is a real time issue. So, when a person is wearing the watch, the signals from the watch can give alarm to the members on the board, and he can be rescued in the correct location. So, instead of waiting for the coastguards to come to save, we can rescue the person fast. This is one of the innovative solutions that we have developed, and it can be used anywhere for the life safety. The watch can be used for defence or tourism people for establishing emergency communication and safe the lives. The underwater device has a magnetic charger, and the power of the diesel in the boat can be used here like any other charger. Once charged, it will float and give a real time scenario of what is in the underwater.

This device can also be used for cage fishing. The main problem in a cage fishing is the water parameter qualities. We have to collect the samples, take it to lab, and get the test done. But here a small device is given which can be put in water, and it will give us immediately the pH values, salinity, the fish feeding done etc. The major loss the fisherman faces is feeding the fish as we do not know if the food is ok or not. So, we can provide a real time monitor system which is AI based to see underwater, if the fish gets enough food or more to be given. They can get the water quality parameters tested in very short time. It depends on the transducer that we can get GPS integrated, pH sensor, salinity, TDS, nitrate sensor etc, so that the parameters will be linked in one device that has a camera and AI based system. We can have a cost effective solution for all farmers at an affordable cost.

Using the swan technology, the floater will spin automatically to cover the water parameter qualities, especially in a large pond. We are also trying to find out he fish type, the disease, and the solution, but it is a difficult algorithm, and we have developed to provide a solution to identify the fish behaviour due to disease or lack of oxygen. We can trigger the oxygen level using the IoT. We can provide a network between the cages to have the communication passed on to the cloud. Delhi Department of Fisheries has shown interest in exhibiting our product in their stand in Delhi, and we have been appreciated by

coastguards too. Department of Fisheries, Pondicherry has shown interest in taking the life safety watch. We are in touch with companies in India and abroad. We are the first company to introduce 5 G in ocean. We have also won NITI AYOG award and in the compendium of 75 agriculture entrepreneurs and innovators. In QUALCOMM also we have won awards for our high end technology. We bring the solution according to the customer needs.

How user-friendly is the Kadal compass interface, and what support or training is available for the users?

Considering the fact that the fishermen want a quick solution that is user-friendly, we have found a device where they don't have to read everything. They can see the picture and click. We are supporting the users preferred language, and the whole system changes. They can understand easily. When they are purchasing, we will provide a real time training through video or in person. We do not need any kind of installation for that, it is a simple process, they just have to fix the plug and play the interface, throw the device UWD in the water by tethering with the boat. We can always come and give the necessary support if a group of people want to buy.

Are there any additional sensors or capabilities integrated into the Kadal compass to provide a supplementary data feature?

Our main idea is to observe the ocean ecosystem. We have different parameters integrated, according to the ocean, we will have a depth analyser for the particular surface temperature. This will also detect and capture the location based video and parameters. This will be useful for the ocean researchers and policy makers to know more about the ocean. We he already 13 LPS for this product for which we have filed patent.

Can Kadal compass be integrated with other marine navigation systems or technologies?

We are working on it. If someone shows interest, we can take it forward. We are working with NAVIC, the chipset integrated in our system. So, here also we are open to discussion, and if they have different solutions that will be useful for the fishermen, we are happy to take them.

What are some of the key challenges faced by your company in Chennai market, and how does the company address them?

We are in discussion with the Tamil Nadu government. In terms of life safety watch, they are happy to take the product to do the pilot for further processes. Pondicherry is fine with us, and Tamil Nadu has shown interest. We have had high level meetings. So, through them we are going to take it as ocean is very sensitive, so through the governments we will be channelising our process for fishermen.

How does Innogle Technologies engage with the local community and support initiatives for skill development and education?

The general mindset is, when I connect with an investor or high level people and when I talk about the background of fishermen, they will always think if it is affordable, how they will pay, if they will understand or not, etc. But, we have made a solution that is easy to understand, we will improve the new markets to explore the ocean, and we are focusing on fishermen. I am sure, they will come up, play a key role in that, training, talking, and skills by implementing the solutions as they know what they are into.

Are there notable achievements or milestones that your company has reached since its establishment?

I went to different countries and states to do research in this field, but I could not find a solution for the life safety. When we talked to one person who lost his entire family during the Tsunami, we thought we should come up with something to save lives as this is a real life problem. We realised people do not have any kind of awareness about this, AI will be applied for awards and competition. Whenever we talk about oceanography, they think it will not work. We are the first company to have got 5 G in ocean, and the potential has been identified. We are moving on to the next level. If our safety watch can save one person also, it is an achievement for us.

How does Kadal compass handle challenges such as interference or magnetic variation in ocean environments? What is the technology behind Kadal compass, and how does it differ from traditional compass?

We are working with professors in terms of that. We don't actually find any such variation or fluctuation. We are in discussion with oceanography researchers in terms of that. Kadal compass is working on ocean underwater and can be controlled on surface also.

The technology is IOUT that we have embedded in our board. We have done according to our needs, and the boards will be flexible enough to adapt to the sensors and other components. We have our in-house team which is working on identifying the species, marine species, and suggestions. It is quite complicated, but we are working on it. We have captured a few database and based on that we are working on it. identification of fish is difficult, and we have to focus on minute things such as mouth, fin, etc, and we are working on that too.

Are there plans to upgrade or develop the Kadal compass in future?

Yes, our solutions are completely innovative, and this will be useful for fishermen who want to save the lives. We want to have a fishing potential zone in real time with the simplest methodology. We will be happy to assist anyone by giving the details. Ours is a customised one, and if you want anything to be added or customised with solutions for your cage, we are happy to take it. Similarly, for ocean also, no one is having this kind of solution. We are happy to provide the same if you want such an infrastructure or atmosphere.

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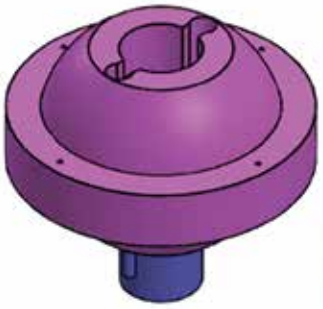
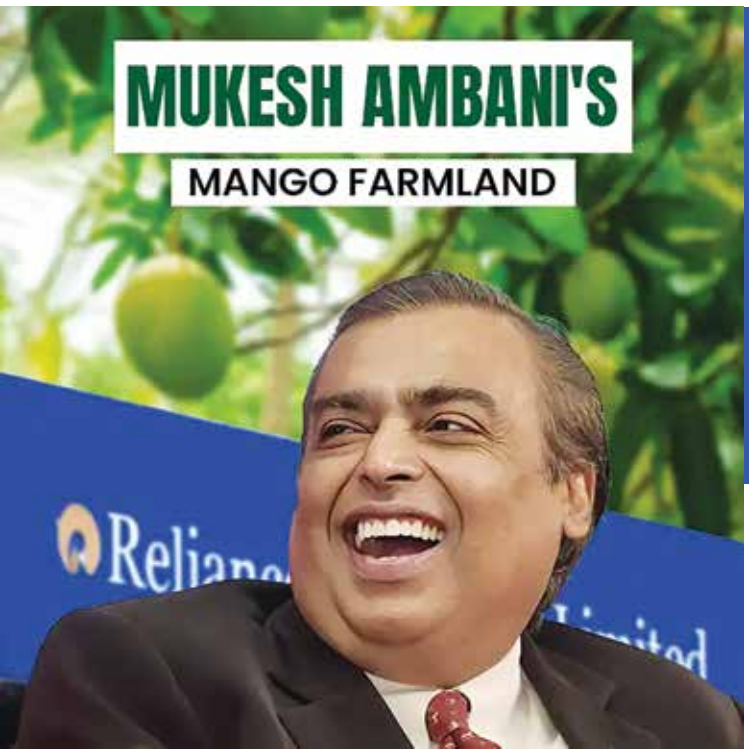


Success stories in Economically important horticulture crops



Transforming Wastelands into Wealth: The Inspiring Story of Mukesh Ambani's Mango Farming

Under his direction was Reliance Industries, headed by Mukesh Ambani and experiencing a major environmental crisis in the late 1990s. Known for its pollution, the Jamnagar refinery in Gujarat, one of the biggest refineries in the world, seriously degraded the surrounding land as well as the air. The problem inspired environmental authorities and local people to express strong disapproval, which led the company to seek a sustainable solution. Developed out of this need, the largest mango orchard in Asia, the Dhirubhai Ambani Lakhibag Amrayee, became an inspirational and distinctive project: turning barren and unclean spaces into these mango orchards. Investing in mango farms offers a special chance since it combines environmental sustainability with financial gains and a close relationship to nature. Among the many tales of agricultural success, the narrative of Dhirubhai Ambani's mango plantations shines out as a lighthouse of creative farming methods, visionary business, and sustainable development. This story captures the core of transforming a fantasy about agriculture into a reality bursting with life.

The Genesis of the Mango Farming: Legendary architect of India's industrial rebirth, Dhirubhai Ambani dreamed more than simply urban development and industrial strength. His vision included the lush agricultural fields, where he saw much opportunity for output and creativity. He founded the "Lakhibag Amrayee," an example of mango farming right in Gujarat's center. This project was not only about growing mangoes; it was a calculated attempt to show how current agricultural farming methods and ancient knowledge can coexist.

Overcoming Environmental Challenges: Ambani's mango farming management was deliberate and methodical. He saw the inherent worth of combining modern scientific techniques with traditional agricultural knowledge.

This mix sought to guarantee environmental sustainability and economic feasibility while increasing output.

High-Density Planting : Using high-density planting methods was a major breakthrough for Lakhibag Amrayee. The farm maximized available space by grouping mango trees closely, resulting in a significant increase in yield per hectare. This approach allowed for more effective resource use, allowing for more fruit to be produced within the same territory.

Advanced irrigation systems: Good mango cultivation is critically dependent on water management. The farm's modern drip irrigation systems provided precise water distribution to the roots of the plants. This method not only helped to save water but also encouraged better plant development, hence improving yields and fruit quality. The deliberate utilization of water supplies highlighted Ambani's dedication to environmentally friendly farming methods.

Organic farming is emphasized: In appreciating the need for organic farming, Ambani was ahead of his time. At Lakhibag Amrayee, pesticide and chemical fertilizer use was limited. Instead, they employed organic farming techniques such as composting and natural pest control. This method guaranteed the creation of premium, chemical-free mangoes, therefore satisfying the increasing consumer demand for organic food and supporting environmental health.

Integrated Pest Management: Lakhibag Amrayee turned to

Integrated Pest Management (IPM) techniques to guard the mango plantations against illnesses and pests. This strategy incorporated cultural traditions, biological control techniques, and sensible application of chemical treatments. IPM reduced the environmental impact by encouraging a balanced ecosystem inside the orchards, preserving the health of the plants.

Economic and social impacts: Establishing Lakhibag Amrayee had significant social and financial effects. Economically, the farm produced significant returns, demonstrating how very beneficial agricultural investments may be. The superior mangoes produced by the farm guaranteed strong financial returns for investors because they commanded premium prices in both home and foreign markets.Socially, many local households started depending on the farm for their income. It improved local abilities, created job opportunities, and helped the economies of nearby towns thrive. Moreover, the farm's success inspired other farmers to implement similar creative ideas.

Legacy and Continued Innovation : Dhirubhai Ambani left the Lakhibag Amrayee as evidence of visionary leadership and creative farming. Even after his death, the farm continues to flourish, changing with new technologies and agricultural developments. Attracting visitors and agricultural specialists from all around the world, it is still serves as a benchmark for quality in mango farming.

The farm's continued success emphasizes the importance of ongoing education and adaptation in agriculture. Lakhibag Amrayee continues to set new sustainability and output benchmarks by embracing new technologies and approaches.

Conclusion : The account of Dhirubhai Ambani's Lakhibag Amrayee is an interesting one of how strategic planning and visionary ideas may revolutionize industry, including agriculture. It emphasizes the potential of mango farming as a sustainable and profitable investment, providing insightful knowledge for both investors and future farmers.

Ambani's efforts demonstrate that investing in mango farms goes beyond mere profit. It is about building a legacy of the environment, community growth, and sustainability. Lakhibag Amrayee's triumph is a constant source of inspiration because it demonstrates how creatively, diligently, and sustainably agriculture can be an effective engine of wealth and good change.

Source: https://holidaysfarm.in

UP's Award-Winning Banana King Earns Rs 48 Lakh/Year, Becomes Idol For Farmers!

Felicitated with 20 awards at the district, state and national levels, including the Jagjivan Ram Kisan Puruskar, his farm in Daulatpur attracts thousands of farmers from within India and abroad.

About 30 km from the capital city of Lucknow, in Uttar Pradesh's Barabanki district, is the village that Ram Saran Verma calls home. Three generations of the Verma family toiled in their Daulatpur 4-acre field to live a simple and frugal life.

Ram, on the other hand, had different dreams. He wanted to pursue higher studies after Class 10. But the financial situation at home pushed him to trade his education for a plough and take up agriculture.

Now, a little over 50, he has been dubbed UP's "hi-tech farmer", who works on farms spread across 150 acres and also earns Rs 3-4 lakh a month!

Felicitated with 20 awards at the district, state and national levels, including the Jagjivan Ram Kisan Puruskar, his farm in Daulatpur attracts thousands of farmers from within India and abroad.

The Better India got in touch with the farmer to document his incredible journey over three decades.

When Ram first set foot on his family field as a young farmer, he observed how his father, a traditional farmer, grew staples like wheat and rice, alongside sugarcane and mustard. While the cost of production was high, the labour required was intensive. And the returns hardly earned any profits. He decided to break away from traditional farming and use innovative techniques to increase the yield.

In 1984, he managed to save up Rs 5,000 and decided to travel to Maharashtra, Gujarat, Punjab and Haryana, where he interacted with successful farmers, agricultural scientists and experts. After travelling for nearly two years, he returned to Daulatpur. When he spoke to his father about setting up a banana plantation, the older farmer did not approve.

Nevertheless, Ram went ahead and decided to plant bananas on one acre of land. In the first year itself, he started earning profits.

What set him apart after 1988 was the distinction of being one of the first farmers in the state to introduce tissue culture for banana farming.

What is tissue culture?

It's a lab process where tissues of the selected crop are used for cloning. It can be used for the mass production of quality crops which ensures a higher yield in a short period. Tissue culture ensures that bananas are identical in quality, look and size. And while they have a high demand in the domestic market, farmers can earn additional profits by exporting them too! The 1-acre plantation yielded 400 quintals of bananas. While the cost of production was about Rs 1 lakh at the end of 14 months, the farmer earned a profit of over Rs 4 lakh, four times higher than his initial investment. He also started growing red bananas which are known to be rich in protein, fibre and low on sugar. While the variety is popular in the southern states, Verma attempted to grow them in UP.

Reddish-maroon in colour, the fruit has a tangy taste and is slightly smaller, compared to the traditional yellow bananas. He planted 1,000 saplings of the same variety in his farm way back in 2012.

Read full @ https://l1nq.com/6OFHz

Source: www.thebetterindia.com

Farmer Grows Thai Guava That Can Weigh Up To 1.4 Kilo, Earns Rs 32 Lakh/Year

Dinesh Baggad from Madhya Pradesh was a traditional farmer who switched to growing the Thai variety of guava on his orchard, earning him lakhs of rupees. These guavas are massive and extremely sweet, and Dinesh says they're easy to grow as well

A visit to Dinesh Baggad's guava orchard in Madhya Pradesh will leave you spellbound at the sight of the hundreds of massive guavas hanging from the trees, which spread out across the expanse of the seemingly never-ending orchard.

But a few years ago, Dinesh's farm was not the sight to behold that it is today. The farmer, who belongs to Sajod-Rajod village, used to traditionally grow chillies, tomato, okra, bitter gourd and other seasonal vegetables on his 4-acre ancestral land. However, a heavy infestation of pests and fungus, along with increasing labour costs, had reduced his profit margins and income.

"Market rates don't increase much compared to the cost of production, and low profits over the years make farming economically challenging," Dinesh, who was earning around Rs 7 lakh from traditional farming, tells The Better India.

A Fruit That Weighs 1.4 Kilos

In 2010, his friend suggested he try horticulture and introduced him to the Thai variety of guava. "The guava looked huge in the pictures and video. I also visited an orchard in the neighbouring state and was impressed, as each fruit weighed at least 300 grams and almost grew to the size of a muskmelon," he says.

"The variety is called VNR-1, and I learned that the fruit had a longer shelf-life by six days and was less susceptible to infestation. The long shelf-life means that even far-located markets can be accessed. Considering it as a profitable prospect, I decided to experiment with the same," he explains.

Today, Dinesh has 4,000 plants in his orchard, which earn him Rs 32 lakhs. Taking inspiration from his success, about 400 farmers in Madhya Pradesh have also followed suit.

Dinesh notes, "Initially, I had doubts that the fruit variety had been injected with hormones or some chemicals to achieve their massive size. But after planting a few at my farm, I received my first fruiting in 11 months by following conventional farming techniques. The biggest fruit weighed 1.2 kilos."

He adds that he then leased 18 acres of land with his brothers to plant 4,000 trees in 10 years. His income has increased fivefold over the years and brought much needed financial relief, he says. "I sold the fruit at Rs 40-50 per kilo and produced 65 tonnes in 2021. Each fruit weighs between 400 and 1,400

altogether. “I tried to sell my produce at 12 market places across India, including Bhilwara, Jaipur, Udaipur, Ahmedabad, Vadodara, Surat, Pune, Mumbai, Bengaluru, Bhopal, Delhi and others,” he says, adding that he saw his first success in 2016, when he sold guavas at Rs 185 per kilo in Mumbai. “I realised that customers in Delhi and Mumbai appreciated the fruit, and I started targeting specific markets,” he adds.

grams, attracting customers with its size and sweet taste,” he says.

Dinesh says that he was one the first to grow these guavas in the region successfully.

He adds that though his decade-long perseverance has brought him success, marketing the fruit was the biggest challenge before him.

Changing The Market Demands

“The trees require minimum maintenance and demand less attention, but when I began marketing the fruits, it became a problem. Many people were sceptical about buying the guava for its massive size, and felt like it would be too much to consume a kilo in one go,” he says.

Dinesh realised that venturing into the new sector of horticulture demanded a different market

Dinesh plans to expand his plantation by an additional five acres in the coming year. “I wish to enter food processing to make products from guava, but I do not have the capital and know-how. The plantation will benefit me for the next 10 years,” he says.

He also aims to experiment with Red Diamond, a seedless variety of guava. “I have recently learned about it and hopefully it will be in demand soon,” he says.

Edited by Divya Sethu

Source: https://thebetterindia.com

Farmers in Tamil Nadu Cultivating Alphonso Mango; Getting Good Yield and Profit

Due to its large demand among consumers, many farmers across the country wish to cultivate this delicious fruit in their farms, however, there are only a few states which have the natural habitat to grow Alphonso.

Among all the varieties of mangoes in India, Alphonso mango is the most demanded variety due to its sweetness, richness, and flavor. It is also known as Hafoos, Hapuz, or Aapoos. Due to its large demand among consumers, many farmers across the country wish to cultivate this delicious fruit in their farms, however, there are only a few states which have the natural habitat to grow Alphonso.

These states include Gujarat, Maharashtra, Madhya Pradesh, and Karnataka. However, there is a district in Tamil Nadu where the cultivation of Alphonso mango has taken place. In and around the district of Dindigul, many farmers are not only cultivating a variety of mango but are also earning a great income. For the farmers of Tamil Nadu, the cultivation of Alphonso holds great importance as the fruit is high-yielding and can be quite rewarding.

Why Alphonso is Special for Tamil Nadu

The cultivation of Alphonso could be quite fruitful for the farmers. As the summers are approaching, demand for mangoes reaches its peak. But many farmers in southern India could not reap the benefits of Alphonso’s demand.

As mentioned above, this variety of mangoes is generally found in the eastern states of India and not in southern India. This is because the weather of the southern states is not considered suitable for the cultivation of the fruit.

Source: https://krishijagran.com

Kabir Chandrakar: How an MBA Turned Guava Farms into Gold

MBA grad Kabir Chandrakar transformed family guava farming in Chhattisgarh, achieving nationwide acclaim and significant revenue

In the vibrant landscapes of Mujgahan Village in Raipur, Chhattisgarh, an inspiring tale of innovation and dedication unfolds. Kabir Chandrakar, an MBA graduate in Corporate Finance from the University of Chester, had to make a crucial choice back in 2014. Would he stride down the corporate corridors or till the soil of his family's farming legacy? Kabir chose the latter, driven by an astute observation.

In 2011, Kabir's father dabbled in guava cultivation. However, high packaging expenses hindered the venture. Drawing from his academic knowledge and business acumen, Kabir recognised an opportunity. Instead of succumbing to the heavy costs, he imported essential packaging materials at much lower prices. This savvy move didn't just slash their own expenses; it also evolved into a lucrative business as Kabir sold these materials to other local farmers.

With the wind of encouragement from his kin and friends, Kabir poured his energies into expanding the family's guava enterprise. In a year, he augmented their cultivation space from six to 10 acres, availing a loan and subsidies from the National Horticulture Board (NHB). With an unwavering commitment, Kabir introduced superior guava saplings and integrated modern drip irrigation methods, ensuring minimal water wastage.

Today, the fruits of Kabir's labor are evident. The family's guava estate sprawls over a whopping 110 acres across three Chhattisgarh locations. The VNR Bihi guava, celebrated for its impressive yield and lasting freshness, is Kabir's crown jewel. Last year alone, the 32-year-old entrepreneur generated a revenue of Rs 2.50 Cr from just 40 acres. With newer plantations set to bear around 1,000 tonnes of fruit this year, he's eyeing a turnover nearing Rs 3 Cr.

AVM Guava, Kabir's esteemed produce, doesn't just grace local markets. It has carved a niche across India, from the North East to both Northern and Southern regions.

But Kabir's impact isn't confined to his own farms. He's also sowing seeds of knowledge by offering consultancy services to budding guava cultivators and fruit farming enthusiasts. Kabir Chandrakar, once an MBA student, is now Chhattisgarh's shining star in the agricultural arena, embodying the perfect blend of tradition and innovation.

Source: https://yourstory.com

Jamshedpur Farmer Baiju Hembrom Finds Success in Organic Strawberry Cultivation

In the heart of Jharkhand's East Singhbhum district, Baiju Hembrom, a young farmer from Churugoda village in Maudasholi Panchayat, has transformed his life and livelihood by embracing modern horticulture. Moving beyond traditional farming, Baiju's journey into organic and high-value crop cultivation has not only increased his earnings but has also turned him into an inspiration for fellow farmers in the region.

Starting with conventional crops like capsicum, brinjal, tomato, ladyfinger, bitter gourd and cucumber, Baiju consistently focused on improving crop quality and yield. His dedication bore fruit and in 2021-22, with guidance and grant assistance from the District Horticulture Officer under the Horticulture Development Scheme, he ventured into organic strawberry farming using shade nets. This shift marked a turning point in his agricultural career.

By participating in various training programs and adopting advanced farming techniques, Baiju mastered organic farming and protected cultivation methods. His efforts not only boosted his farm's productivity but also set an example of sustainable and eco-friendly agriculture.

The impact of Baiju's perseverance was evident in 2024-25 when he received the first prize for outstanding strawberry cultivation at the Krishi Vigyan Kendra, Darisai Kisan Mela, an award presented by the Department of Agriculture, Animal Husbandry and Cooperation. This recognition reinforced his role as a progressive farmer leading by example.

Today, Baiju Hembrom earns an annual net profit of Rs 2-3 lakh from strawberry cultivation and other horticultural crops. This financial success has enabled him to provide better education for his children and improve his family's quality of life. His story is a testament to the power of knowledge, technology and hard work in transforming agriculture into a profitable venture. Baiju's remarkable journey underscores the immense potential of horticulture in Jharkhand and serves as a beacon of hope for farmers willing to embrace innovation. His success story proves that with determination and the right support, farming can be a lucrative and sustainable profession.

Source: https://avenuemail.in

Litchi Farmer in Odisha Earns Rs 21 LPA, Gives IT Professionals a Run for Their Money

Sexagenarian Netrananda Sahu, from village Kalla under Barkote block of Deoghar district in Odisha, is a bundle of energy in his litchi orchard, though his farming of the juicy fruit proves rough and tough.

For his 200 litchi plants spread across four acres alone fetch him about Rs 12 lakh every year, while paddy, mustard, and other crops grown on another seven acres bring in nearly Rs. 9 lakh per year. Together, his total income of about Rs 21 lakh per year matches the salary of a Senior Project Manager at some top Indian IT companies.

Inspired and guided by Sushanta Dash, a former junior horticulture officer of Deoghar, Netrananda—fondly called "Netra" by his loved ones—ventured into litchi farming in 2003-04. After his first harvest in 2010-11, he began modestly trading litchis in 2012-13. Today, the litchis he harvests each April and May outperform his other agricultural ventures in profitability.

"About 500 villagers in nearly 30 villages under Barkote and Teleibani blocks primarily grow litchi across 600 hectares in the district. While most of them are doing well, Netrananda is among 20 farmers in the district considered the most successful litchi farmers," said Antarjyami Sahoo, the deputy director (horticulture), Deoghar.

"Netrananda purchased 200 litchi saplings at the subsidised rate of Rs 1 each from our farm in Barkote block headquarters, while a sapling cost Rs 10 in the open market at the time. The government had set the rate at Rs 1 to encourage villagers to take up litchi farming," said Sushanta, who is now the deputy director (horticulture) of Gajapati district.

Though Netrananda's litchi plantation began in July-August of 2003-04, it only started yielding fruit in 2010-11. Each plant in his field then produced 200 to 500 fruits. However, he distributed the fruit freely among people, hoping to create a viable market for his litchi.

He started trading modestly in 2012-13 when each plant began yielding 700 to 1,000 fruits. During this time, he sold litchi by the roadside along NH No.6 (now NH No.49) near his village, while continuing to distribute a portion of the yield for free. Despite the challenges, he managed to earn Rs 50,000 to Rs 60,000 annually by selling a bunch of 100 fruit-bearing stalks at Rs 50 to Rs 60. By 2016-17, when each plant began yielding 2,000 to 3,000 juicy fruits, he sold a bunch at Rs 70 to Rs 80, earning between Rs 1 lakh and Rs 2.5 lakh.

Yet, it required immense patience and perseverance, as a number of plants wilted, pest attacks reduced productivity, many fruits cracked while maturing, and birds such as owls and bats fed on them. These factors, according to him, caused an annual loss of about 20 percent of the yield.

"My real trade started in 2021-22, when a plant five to seven feet high yielded nearly 5,000 fruits and a plant 20 to 22 feet high produced 15,000," said Netrananda. "I segregated the smaller fruits from the bigger ones. Now, I sell a bunch of 100 stems bearing smaller litchis at Rs 80 to Rs 100, while the bigger ones fetch Rs 120 to Rs 150. Besides, I also sell litchi saplings at Rs 40 each. "I have grown plants of the Bombai, Muzaffarpur, and China varieties. I have 20 plants of the Bombai variety, 10 of the Muzaffarpur variety, and the remaining 170 are of the China variety in my orchard.

"Though the yield from each variety is almost the same, my customers prefer the China variety, as its ripe fruit is more reddish and tastier." Traders from places such as Rourkela, Sambalpur, Cuttack, and Bhubaneswar eagerly buy his litchis. Even traders from Bihar and Jharkhand, both known for their litchi farming, take his produce. Netrananda manages to sell off his entire litchi harvest within a fortnight.

However, farming is no easy task in Deoghar, especially until harvest time. Netrananda and his five workers have to irrigate the plants twice a week during summer and once a week in winter, though irrigation is rarely needed during the rainy season.

According to him, the most arduous part of the job is protecting the ripening fruit from birds. He and his workers must remain awake through the night, ringing bells and flashing lights on the plants to ward off the avian marauders. "Another tough part is hiring 10 to 15 temporary workers during harvest time for plucking the fruit stalks, collecting, and tying them into bundles, especially as there is an acute shortage of workers in our village," said Netrananda.

"I pay Rs 250 daily to each of the five workers who manage my entire farming setup. I have also provided housing for them and cover their food and medical expenses. During harvest, I pay Rs 300 daily to each of the temporary workers."

Netrananda has two children—a daughter and a son. He married off his daughter in 2022. "As my son never showed any interest in farming, I invested nearly Rs 50,000 to set up a shop selling dress materials in our village for him. However, I've never tried to enquire about how much he earns, because I have immense faith in myself and my farming," he said.

"An average temperature of 30-35 degrees centigrade is ideal for litchi cultivation, which is prevalent in around 30 villages where litchi farming has been adopted," said deputy director (horticulture) Antarjyami. "While sandy loam soil is best suited for litchi farming, the clayey soil in village Kalla can also yield good results if farmers follow proper farming techniques. Unfortunately, most farmers are lax in adhering to scientific methods, whereas Netrananda follows them to the letter with relentless effort, even in the evening of his life."

Netrananda also expresses gratitude to the Deoghar-based Krishi Vigyan Kendra (KVK), a wing of Odisha University of Agriculture and Technology, Bhubaneswar, for their guidance. KVK regularly educates farmers on scientific methods of plant, pest, and disease management.

The recommended distance between two litchi plants is usually 20 to 30 feet, and Netrananda has maintained a 25-foot gap between his plants. After every harvest, he ensures the plants are pruned, which helps maintain consistent annual yields.

He applies pesticides at the right time to prevent pests such as the 'fruit-and-shoot borer' from attacking the plants when flowers are about to turn into fruit. Similarly, he uses fungicides to prevent diseases like Cephaleuros virescens during the rainy season, according to Dr Sabyasachi Sahoo, KVK's subject matter specialist in Deoghar.

Although Netrananda has studied only up to the upper primary level, he has gained extensive knowledge of litchi farming through experience and regular interactions with officials from the horticulture department and scientists from KVK. About 22 farmers from different villages near Kalla, who have purchased saplings from him to start litchi farming, frequently seek his guidance.

"Last year, I bought 300 saplings from Netra to grow litchi on my five acres, but I often seek his advice," said Tulan Sing, a farmer from Laimura village, located about 50 kilometres from Kalla. "Netra is so sincere and meticulous in his farming and so knowledgeable about it that he tops the list of nearly 15 farmers cultivating litchi on about 25 acres in his village," he added. - ©TWL

Source: https://www.theweekendleader.com

Despite Cyclones & Droughts, I Helped my Husband Repay a Rs 23L Debt With Grape Farming

Farmer Meena Pawar from Nashik showed indomitable spirit when her family was being crushed by financial hardships and debt. Here's how she used grape farming and sheer determination to help her family out of their crisis

Deteriorating financial conditions, debilitating drought, and erratic weather conditions had almost forced the Pawar family to sell off their 8-acre grape vineyard in Nashik to survive.

The debt-ridden family was unable to procure more loans, and giving away their ancestral land seemed like the only solution at the time.

However, daughter-in-law Meena felt otherwise. She could foresee the financial misery that selling land and losing the family's only income source could bring along. So with her "never give up" spirit and grit, she helped her husband and family recover debts worth Rs 23 lakh.

Meena married her husband Namdev in 2000 and moved to Nilwandi village in Nashik. "We worked as farm labourers in neighbouring vineyards for a living.

My husband wanted to create a grape vineyard on a small piece of land. But the family had no capital to do so. We needed to find a solution," she tells The Better India.

An eternal struggle

So Meena mortgaged her jewellery and received Rs 80,000 in return. "We needed money to set up the drip irrigation system and install the infrastructure for the farm," she says. Meena took matters into her own hands and worked to build the farm, and by 2004, she and Namdev had established an acre of the vineyard. The couple invested the profits from the sales in expanding the farm. In 2006, they scaled up the vineyard to 4 acres.

"We took an additional loan from a relative to further increase the number of grapevines on the land. By 2009, the vineyard was growing well, and we succeeded in producing quality grapes. Our financial condition seemed to be improving. But little did we know that our spirits were about to be crushed," the 38-year-old says. In 2009, Cyclone Phyan resulted in heavy rains, causing severe damage to the vineyard. "The grapes had grown and the harvesting season was about to begin when we lost about 70 per cent of the vineyard to the extreme weather event. The produce and even the vines were lost," Meena says.

She adds that to add to their woes, the date for repaying their first instalment for the loans was nearing. "Our years of efforts to gain financial stability had dissipated overnight. Till 2011, we repaid the debts and continued farming at a no-profit no-loss basis," she says. "It became difficult to feed the family and meet our living expenses. To tackle the situation, we decided to purchase a mini-truck at a low cost from an acquaintance. We planned to grow vegetables, transport them to the nearby market and sell the produce. It would provide additional income to the family apart from the vineyard."

However, the move did not succeed, and turned into a loss-making business instead. The situation worsened when the district faced drought conditions in 2012. "Shortage of water led to drying up of the vineyard, and we lost the vines and produce entirely," she says, adding that the situation prompted the family to sell off the truck.

"We repaid the loan amount of the truck with all the remaining money we had, and hit rock bottom. Over the years, the loans had piled up

and scaled to Rs 23 lakh," she says. The family members decided to do away with their ancestral land and repay the debts. "There was little capital in hand, and no agriculture activity was possible owing to the drought situation. But I was against giving up our only source of income and hope. Somehow, I convinced my in-laws to change their decision and even stopped a deal that was underway," Meena says.

Sharing her ordeal and struggle in convincing the family members, Meena says, "I had zero experience in farming. Everyone felt the stress and burden of the debts, and it became difficult to make rational decisions. There was no 'Plan B' on how the selling of land and repaying the loan would help to re-establish our lives from another source of livelihood," she says.

Meena says that she had many arguments with her husband over the next few weeks. "Namdev said the situation was beyond our capacity to manage, and that I was not able to comprehend the seriousness. But I was worried about raising my two daughters and a son. Without agriculture, we would be landless and homeless," she recalls.

Meena promised herself that she would learn various aspects of farming and take help from others. "Pursuing agriculture was our only solution as we were best at it," she notes. "I knew that a different approach could help us overcome the situation. Namdev eventually agreed," she adds. To meet the water requirements of the farm, Meena decided to build a farm pond using a government scheme. "I sought a loan of Rs 3 lakh for the same. Namdev suggested reaching out to Sahyadri Farmer Producer company, an entity formed by grape producers," she says.

Meena says the move helped them meet their water needs and avail technical know-how from other farmers on how to grow grapes. "The knowledge helped us produce quality grapes that were suitable for export. It also helped us connect with wider local markets that could offer better rates for our farm produce," she says.

However, Meena and Namdev still lacked funds for recruiting farm labour. "It was only Namdev and I who took care of the maintenance of the farm until the harvest. We could not afford a single labourer and occasionally relied on neighbours for assistance. A friend loaned us the insecticides and pesticides," she says.

With continuous determination, Meena's hard work proved successful when their 5-acre land yielded grape produce and an income of Rs 30 lakh in the first harvest. "In 2013, we cleared the loans on the farm pond and the money borrowed from friends and relatives. The following year, the produce earned us an income of Rs 32 lakh, with which we repaid all our pending debts and recovered from the financial burden entirely," she says.

'I am strong as ever'

Namdev feels grateful for Meena and says, "We were in a tough situation. Her decision to retain the land was correct, but on the other hand, the debts were piling up. We were also getting a bad deal for selling the land, and if she had not stood ground, it would have made us fall into irrecoverable losses. I am glad that her decision paid off."

Since then, Meena has led all responsibilities at the vineyard. "By 2018, we managed to build a house for ourselves and eventually buy an additional 16-acre vineyard in Girnare village," she adds proudly.

The Pawar family has leased out the vineyard to another farmer. "We have expanded our ancestral vineyard to 7 acres now, which earns a decent income. My daughters are pursuing engineering from a reputed college, and my son is studying in a private school. I feel glad that I succeeded despite all the ups and downs," Meena says.

The years of struggle have made her confident. Meena says, "The COVID-19 pandemic brought new challenges and put us back into some debts. But we have survived the worst and fought strong. The debts do not scare me anymore. I feel as strong as ever."She adds, "The hard work has helped provide a comfortable life for my children, and I have attained my life's purpose."

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Farmer Grows Avocados in Bhopal's Heat; Has a Turnover of Rs 1 Crore

Urban farmer Harshit Godha took inspiration from Israeli farmers growing avocadoes and has successfully grown the fruit in India. He shares how you can grow them too.

Harshit Godha, an urban farmer in Bhopal, Madhya Pradesh, has achieved something remarkable. In the region's extreme climate, he has successfully grown avocados. Typically, avocados are grown in northeast India, parts of Karnataka, Tamil Nadu, and Kerala, as they require temperatures between 20 to 30 degrees Celsius. According to a Krishi Jagran document, avocado is a tropical to subtropical fruit that struggles with the hot and frosty winds of North India.

"I imported 10 saplings from Israel, and now I have a 10-acre avocado plantation in Bhopal," he tells The Better India. But how did this urban farmer manage to successfully grow avocados in Bhopal? He provides an insight into his journey.

'Farming was never my plan'

Born and raised in Bhopal, Harshit says that farming was not even "remotely on his plans for the future". From a very young age, he was interested in marketing and after his schooling, he went to the UK to study business. "No one from my family is in farming and neither did I ever think that I would end up in the agriculture sector. In 2017, I was pursuing a BBA degree and wanted to make a career in marketing," he says.

Harshit was very interested in health and fitness and that is what led him to pursue agriculture. "Avocados were very easily available to us and high in nutrition. I used to love eating them and consumed them almost every day in the UK. One day, I just flipped the box and saw the packing which said it was made in Israel," he says.

Taken aback, he started researching more on how a dry and hot country like Israel can grow avocados. "I was aware of the kind of soil and temperature it needed to grow. It needs a temperature below 30 degrees and acidic soil with good drainage. I was very intrigued and wanted to learn more about how Israel did it with such high temperatures," he says.

"Upon research, I found out that Israel has successfully grown various varieties under controlled conditions and has even made new hybrid varieties. The country has been exporting the fruit for decades now," he adds. A market enthusiast, Harhsit realised that the trend of eating the fruit would soon catch up.

"There is a huge demand for the fruit in the west which means that it will reach India soon. This gave me an idea and an opportunity to capitalise on it. I thought that if I can enter the market early on, it will lead to greater profits," he explains.

Harshit was enthusiastic about learning farming from the farmers in Israel and decided to try it out in India. "I decided to cut short an internship I was doing at the time and go to Israel. I found a farmer who was gracious enough to help me learn the entire process. I stayed with him, and he taught me the ins and outs of avocado farming," he says.

How to grow healthy avocadoes?

Discussing his routine in Israel, he says, "My daily routine there started with waking up at 5 am. We would work in the fields only during the morning hours until 10. Then, in the afternoon, he would introduce me to various industry experts, such as the greenhouse managers, irrigation specialists, exporters, and marketers."

After his training period, he invited them to India. "I brought my farmer friends over in 2018. My mentor and the nursery owner conducted soil tests and assessed the climate conditions in Bhopal. They also visited other farms growing citrus and mango. After evaluating the area, they suggested that a garden could thrive in Bhopal."

They identified specific avocado varieties that would be suitable for the city. "This made me realise that while India lacks high-quality avocados and specific varieties, Israel has excellent rootstocks," he says. So, he decided to import these rootstocks from Israel and began planning his first consignment, which took place in 2019.

"However, the import process turned out to be lengthy, complicated, and full of regulations that I needed to adhere to. In 2019, I struggled with the import procedure, causing my consignment to be delayed until 2020," he says. He continues, "Then, the COVID-19 pandemic struck, and both India and Israel went into lockdown. This resulted in yet another delay of one year for my consignment."

"Finally, in 2021, I received my first shipment of avocado plants from Israel, which I planted in my own orchards," he says.

Harshit was able to grow this batch of avocados in a polyhouse nursery the same year. "While I have not made the fruit commercial yet, the yield was shared among my friends and family," he says.

"Before I planted the avocado plants, they were kept in the nursery until 2023. Finally, in March 2023, I planted them in the fields. This will be the first year the crop will be commercially viable," he says. Harshit now sells avocado plants all over India.

Harshit says that he uses Israeli technology to irrigate his plants. "We employ advanced techniques that allow us to control water distribution precisely to the root zone of each plant. Instead of using flood irrigation, which wastes a significant amount of water, we ensure that each plant receives the exact amount of water and fertiliser it needs every day."Therefore, regardless of the topography of the orchard, you will have an even distribution of water for each and every plan, he stresses.

Tips for new urban farmers

When planting avocados, it's important to keep a few things in mind.Harshit says that you need a reliable water source or should practise rainwater harvesting, especially if you're in hot climatic conditions. "In regions like the Northeast, natural rainwater is usually sufficient. For other areas like Punjab, Madhya Pradesh, or Chhattisgarh, a dependable water source is crucial," he adds.

Another key consideration is choosing the right variety of avocado plants. "I offer a 100% buy-back guarantee, ensuring that my customers won't have any problems selling their produce. I source the plants from Israel, where extensive research has been conducted on avocados over the last 60 years."

Israel has developed varieties resistant to drought and poor water quality that yield high productivity even in extreme climates.

"In contrast, the plants sold in South India for Rs 500 each may be grown from random avocado seeds and then grafted, leading to variability in quality. My plants, which cost Rs 2,500 each, are grown on commercial rootstocks of specific avocados developed in Israel," he explains.

Avocado plants consist of two parts: the rootstock (the part below the graft) and the cultivar. The rootstock imparts certain properties to the entire plant, such as high yield and manageable canopy size. This allows for easier harvesting at heights of just 10 to 12 feet.

Choosing the right rootstock and variety, as well as seeking the appropriate support, is essential.

"Remember, different climates require different management practices and techniques. For instance, the methods used in South India differ from those used in Central India where I am based. Expecting similar results from cheaper plants without considering these factors may lead to disappointment," he adds.

Source: thebetterindia.com

Fig Cultivation: A Profitable and Nutrient-Rich Crop for Indian Farmers

The fig is an ancient and versatile fruit, that offers substantial potential for improving farmers' income through its high nutritional value, diverse applications, and economic viability. Cultivated globally and suited for India's subtropical and temperate climates, fig farming can thrive even in poor soils with limited water.

Fig also known as Ficus carica (synonyms – forbidden fruit), cultivation has been in practice since ancient times, and the crop is known for its adaptability, nutritional richness, and diverse uses. In India, the fig is mainly cultivated in Maharashtra, Gujarat, Tamil Nadu, and Uttar Pradesh, meeting domestic and export demands. The fig's unique 'syconium' structure and its ability to produce fruit either parthenocarpically or by pollination through the wasp Blastophaga make it an interesting crop to cultivate. Fig farming represents a potential revenue source for farmers as the increasing demand from consumers ends due to the health consciousness and natural products.

Specific Feature of Figs

Figs are medium-sized deciduous trees in subtropical regions and remain evergreen in tropical climates. The trees have irregular branches, broad ovate leaves, and long-stalked fruits. The fruit, botanically called a 'syconium,' is pear-shaped with velvety or smooth skin, usually purple or black. The syconium consists of a hollow structure with tiny, true fruits lining its inner surface.

Regional Adaptation

Figs tolerate dryness and salinity well and grow well in temperate and subtropical regions. They grow well on loamy soils with good drainage properties and have a pH of 6.0 to 8.0. The high temperatures during fruiting improve quality and sweetness so the areas with hot summers and moderate winters are optimal. The western Indian states—Maharashtra and Gujarat in particular—are ideal for fig cultivation due to their arid climate. Fig trees also adapt to marginal lands, making them suitable for regions with poor soil fertility.

Figs Use and Health Benefits

Figs are very nutrient-dense with a unique combination of high sugar and low acid content. Calorie-rich, protein-rich, calcium-rich, even more so than milk, iron-rich, and fiber-rich, figs rank as one of the most healthy fruits around. Fresh, dried, or canned, It is available for every taste, texture, and purpose. Dried figs, with a nutritional index of 11, beat out many of the more commonly consumed fruits such as apples and raisins.

Figs are versatile. Latex of the unripe fruit or any part of the tree is applied to curdle milk for cheese and drinks and has other more traditional uses as a medicinal product, used in the treatment of skin ulcers, sores, and digestive disorders. Fig leaves are used as animal fodder and for perfume extracts like "fig-leaf absolute." Folk remedies also recommend figs to soothe sore throats, swollen gums, and tumors, and for their laxative action. This combination of health and utility makes figs invaluable in both culinary and therapeutic contexts.

Varieties and Which You Should Choose

Globally, over 700 varieties of figs exist, categorized based on color and pollination patterns. In India, the Poona fig is widely cultivated for its medium size, sweet flavor, and good processing quality. Other prominent varieties include:

- Adriatic: Known for its greenish-yellow skin and superior sweetness, suitable for fresh consumption and processing.
- Black Schia: A high-quality variety with dark skin and rich flavor, suitable for export markets.
- Brown Turkey: Popular for its large fruit size and adaptability to diverse climates.

In comparative trials, California hybrids have shown promise in terms of higher yield and better fruit quality, outperforming traditional Poona figs in some regions.

The Poona fig is one of the most popular fig varieties in India, known for its bell-shaped, medium-sized fruits that weigh around 42 grams. It has a thin skin with a light-purple hue and red flesh, offering a sweet and delightful flavor. Some fig hybrids from California have performed well in Indian conditions, producing parthenocarpic fruits. Commonly grown varieties in India include Adriatic, Black Schia, Brown Turkey, Turkish White, Kabul, Marseilles, and Lucknow figs. The Coimbatore fig, a type of Adriatic fig, is regarded as superior to the Poona fig.

Economic and Market Value

Figs are a valuable crop for both fresh and processed markets. Fresh figs are sold at premium prices and do require careful handling and quick transportation due to their perishability. Dried figs have a longer shelf life and it dominate export markets. In India, fresh figs sell for Rs 50–100 per kilogram in local markets, while dried figs command Rs 800–Rs 1,200 per kilogram in both the national and international markets. A single fig tree can yield 180–360 fruits annually, thus generating a steady income source for farmers. Proper post-harvesting techniques such as cold storage and modified atmosphere packaging of fresh figs can significantly extend the marketability of the fruits.

With its nutritional worth, variety of uses, and financial advantages, fig cultivation presents Indian farmers with a viable and lucrative business opportunity. Figs can significantly enhance rural incomes and contribute to agricultural diversification with the right varietal selection, better farming methods, and well-placed market connections.

Source: https://krishijagran.com/

The Importance of Fruit Tree Cultivation and Its Economic Benefits

Fruit tree cultivation plays a vital role in agriculture, offering numerous benefits that extend beyond just food production. Growing fruit treeas enhances nutrition, boosts economic stability, and contributes positively to the environment.

Fruit trees are essential for improving dietary health. They provide a rich source of vitamins, minerals, and antioxidants that are crucial for maintaining overall well-being. By cultivating fruit trees, communities can secure a reliable supply of fresh produce, reducing dependence on market-purchased fruits and ensuring consistent access to nutritious food.

The economic advantages of fruit tree cultivation are substantial. Farmers can earn steady incomes by selling fresh fruits, processed products like jams and juices, or dried fruits. Value-added processing creates additional earning opportunities, allowing farmers to expand their businesses and increase profitability. Fruit cultivation also supports employment, creating work opportunities in harvesting, processing, and marketing, particularly in rural areas where economic activities may be limited.

Fruit trees contribute significantly to international trade as well. Many tropical and exotic fruits are highly valued in global markets, driving export growth and boosting foreign exchange earnings. By adopting improved cultivation practices and modern technologies, farmers can increase their yields and meet the quality standards required for international trade.

In terms of environmental benefits, fruit trees play a crucial role in maintaining ecological balance. Their deep roots stabilize soil, preventing erosion and enhancing soil fertility. Fruit trees also support biodiversity by providing habitats for birds, bees, and other beneficial organisms. Moreover, these trees act as carbon sinks, absorbing carbon dioxide from the atmosphere and mitigating climate change effects.

Fruit tree cultivation aligns well with sustainable farming practices. Incorporating fruit trees into traditional crop systems, known as agroforestry, helps improve land productivity.

Success story of a Vietnam Early Gold Jackfruit farmer, Earns 4 lakhs from 4 acres

Story of a Palakkadan farmer who earns 4 lakh profit from 400 Vietnam Early Jackfruit tree in 4 acres.

Highlights

- Earns 4 lakhs from 4 acres of Jack farming.
- Jackfruit is maintenance-free.
- Jackfruit farming is profitable compared to rubber.
- Vietnam Early Gold Variety gives fruit in just 1.5 years.
- Jackfruit has both domestic and international markets.

There are visitors early in the morning at the plantation in Komatikulam, East Palakkad. Many are from Abroad who have come home for vacation. They are enjoying the non-stop Palakkad wind and walking through the vast 4-acre plantation to harvest their favorite jackfruit. Rajagopalan, the gardener is helping them to point out the ripened jackfruits.

|| Rajagopalan very happily saying, from this farm where 600 jackfruit trees are grown in 4 acres: "I did not expect jackfruit farming to be so successful".

Jackfruit is in high demand, both in the domestic and export markets. However, the jackfruit market is almost in the hands of middlemen. At the same time, WhatsApp groups like 'Chakkakutum' are active in the state, so farmers can bypass middlemen and reach exporters directly. However, farmers in the state have many concerns about new commercial crops. And it will continue until the price and market stabilizes. Only farmers like Rajagopalan who are willing to experiment can remove this concern.

Rajagopalan said that when he ventured into jackfruit farming five years ago, he too had many doubts. But when rubber became unprofitable, this route was adopted. After 5 years, all concerns have changed. The most interesting thing is that there is a perpetual income from Jackfruit just like rubber.

Jackfruit instead of rubber...

Rajagopalan heard about the potential of jackfruit farming when rubber was being cut for shifting cultivation. Many of his friends disagreed with the idea of a jackfruit instead of a rubber plantation. But his family was supportive. So he planted 400 Vietnam Early gold saplings and 200 native variety jackfruit saplings. Most Vietnam Early trees started fruiting within a year and a half. After 2 years, harvesting started. Rajagopalan says that last year he sold jackfruit and got around 4 lakh rupees.

Since, Vietnam early jackfruit tree height is adjusted by cutting the head without allowing it to grow above 15 feet harvesting is very easy. By the sixth year, native varieties also begin to bear fruit. The saplings were planted at an average rate of 120 per acre . A seedling of Vietnam Early was priced at Rs 300 at that time. Manure powder was given as substrate. Drip lines were drawn to ensure drip irrigation for the entire tree. Now chemical fertilizer is given 2 times and organic fertilizer once in a year. After heavy rains in June-July, 100 grams of boron will be given to each tree. Rajagopalan says that boron is beneficial against gum cracking and black spots.

Market at home...

One of the main specialties of Vietnam early gold is its flowering capability at early stages. But Rajagopalan allows only a few jackfruits to grow in a tree considering the health of the tree. Small twigs cannot support too many. An average of only 10 tender jackfruit are retained to maturity at a time. Adults weigh 5–10 kg in 4 months of growth. Rajagopal said that it is profitable to sell the ripe jackfruit. 30rs per kg. If you get 50 kg per year from a tree, the income is Rs 1,500. (the income from selling tender jackfruit is extra).

Generally, jackfruit is obtained from native trees in April and May. But except for June and July, all other months can be harvested from Vietnam Super Early. The main feature that attracts consumers is that they can eat jackfruit whenever they want.

Jackfruit Maintenance is easy

Rajagopalan said that there is no suffering like rubber cultivation. Households can harvest themselves. When selling in bulk, the traders themselves harvest the crops. Labor is required only for 3-4 times fertilization in a year. However, this farmer reminds us that jackfruit farming can only be done after evaluating the soil, irrigation facilities and market potential of each region.

Source: www.greensofkerala.com

The Short Story of Atul Mishra Life

Dragon Fruit Success Story

Nowadays, most Indian youths are planning to get a job in multinational companies or emigrate to foreign countries to live a wealthy and luxurious life. But, Atul Mishra, a resident of Uttar Pradesh, chose farming as a profession and made a great impact on the youngsters of his village. Even after being from a technical background, he has shown a keen interest in dragon fruit farming and today, as a fruit of his hardships, he is earning handsomely from it.

Atul Mishra, dragon fruit growers in India lives in the Chilahua village, Shahjahanpur district, Uttar Pradesh. He belongs to agricultural family. He has completed B.Tech in computer. But even after graduating from such a field with vast scope, he decided to go for dragon fruit farming. His inspiration behind this move was to be useful to the farmers of his village and make his district renowned. Thus, without taking any high-paying job in any multinational company, he aimed for the cultivation of high-cost yielding dragon fruit agriculture in India on his farm. Currently Dragon fruit is most profitable fruit farming in india.

Initially, he researched about the different farming practices required for the dragon fruit cultivation in India, using internet. Then, in the year 2018, he bought a few saplings of dragon fruit from the Solapur District of Maharashtra and planted them on the barren land of his field. This experiment on a small piece of land was of great success and therefore, later he increased the Dragon fruit plantation area to five acres. In addition to this, now he has employed three men and a woman to assist him in the cultivation of dragon fruit on a large scale. Thus, it has turned dragon fruit farming into a successful enterprise. It is the dragon fruit success story of Atul Mishra in India.

In the past, wheat growing was practised by his family on a specific part of their land. But, the production was distressing, since it didn't even cover the input cost.

When he was asked about the plant protection practices followed by him, he said that he uses cow urine and medicines to keep the plant away from the attack of fungus. He said that the fruit yields one year after the sowing. The fruiting starts to develop on his plants in May and stays till the end of December. Thus, the income from the fruit continues for almost eight months.

Today, he earns remarkable profit by selling this fruit in Delhi's Azadpur Mandi. He did not stop here, but now he provides dragon fruit saplings to the farmers of his state as well as different states like Bihar, Haryana and Madhya Pradesh. Also, he guides them on how to take the profitable production of dragon fruit. One such farmer influenced by him is Kuldip Singh from Rampur Daulatpur. He has decided to go for this cash-fruit production. He has not just raised his status, but also, fulfilled his dream of being useful to his society. Looking at the success rate of dragon fruit production, he has planned to expand its area of plantation to another seven acres of his land in future. He is looking forward to developing the area into agri-tourism and for the same, he is aiming to meet Chief Minister Yogi Adityanath to propose his idea of agri-tourism in front of him.

Source: https://timesofagriculture.in

Question

Q&A

Answer

01 WHICH AREA, VILLAGE, OR STATE IN INDIA HAS THE CHEAPEST AGRICULTURAL OR WASTELAND?

sscrks: *Which area, village, or state in India has the cheapest agricultural or wasteland?*

Answer 1: vishwa25: which district in MP has cheapest land?

02 NEED SUGGESTION FOR TEAK GROWING IN 2 ACRE FARM LAND

nbylappa: *I have 2 acre a farmland at Gabbadi harohalli near kanakapura road Bangalore. I want few references and suggestion. I am looking to develop the farmland by doing the following. their is already 15 mango plants. plus I want to put Teak wood plants, coconut plants and some arecanut plants and also build a house for us to leave in our remaining 1.5 acre. but I have been told by people around the village that if I put Teak wood plants, then coconut and other trees, we put it will not grow, as Teak wood plant is not good for coconut and arecanut plants. please suggest is that right. can I not do as I am thinking. I also have been told that we cannot successfully grow arecanut in that gabbadi village. how do I check if that is correct info. do I need to do soil test before planting the trees. please suggest Regards*

Answer 1: minalahm: I am a consultant in agriculture department also doing business in a Nursery farm. I have available all types of plant.From Assam. What is the main issue in your land. You can contact with me. Thanks for

03 CONSULTANT FOR COCONUT VALUE ADDED PRODUCTS

sankarvenkat; *Looking for an expert to guide me in manufacturing coconut based value added products like Virgin Coconut Oil, Coco Sugar, Dessicated coconut powder etc. Our farm is in Pollachi. Kindly contact me at the earliest.*

Answer 1: vrikshaay: Please see private message sent to you via conversation mode. Click on message (envelope) symbol on top right. You can see it. It might have come to your mail ID/Mobile also. Please contact us. We are based near Palakkad, Kerala.

04 CULTIVATE ASHWAGANDHA IN GUJARAT.

harshad_dave10: *Hello, I want to cultivate ashwagandh in my farm located in Gujarat, can any one share complete information? Please help me*

Answer 1: rcdixit: Contact Indian Medicinal & Aromatic Plants Trust for full guidance.

Answer 2: pioneeragri: We provide complete guidance for cultivation of Ashwagandha and wide range of medicinal and aromatic plants. You may please contact us via private message for more detailed discussion.

05 LARGE SCALE ORGANIC FARMING OPPORTUNITY IN KENYA

sudh6fd4: *Hello We own 350 acres of farmland in Kenya which is very virgin with natural vegetation and few scattered mango, cashewnuts and coconut trees.*
We intend to develop this land that has enough water and if necessary can also put boreholes.
It has huge potential for organic farming of mangoes and other citrus fruits besides growing most kinds of vegetables, herbs and spices. Bamboo can also be grown at the perimeter of this land.
We are looking for partners that can bring their expertise along with investment to start up this huge potential large scale farming.
We look forward to hear from well established reputable companies that may be interested.
Kind regards

06 INTEGRATED ORGANIC FARMING

rajakalrrv: *HI, We have 5 acres of wetlands. My village near Palamaner Andhra Pradesh*
Wish to do Integrated organic farming or organic contract farming
Require able hands to make it possible.

Answer 1: shajathali: Do organic farming. What ever doubt you have connect with us we will help you .

Answer 2: garao56: We land is suitable for paddy crop , please apply 10 Tons of FYM and cultivate green manure crop and plough insitu and start transplantation of paddy crop and then use panchakavaya, neem products for pest control and to improve the growth of the crop and other cultural and mechanical methods for control of pests. If you are able to continue the organic practices your land will be coverted into organic farm and start to yield

normally as if chemical fertilizers are used on the farm

Answer 1: rajakalrrv: Thanks shajathali and garao56 for your replies
The wetland is just under a lake, but all its catchment were blocked on karnataka side, hence devoid of water and almost all the farmers left farming leaving the land barren and other work for lively wood. We left our village for studies in 70s. My grandfather continued farming even without returns till midnight 90s and after his demise the land is barren.
I wish to revive into organic farming with some poultry or dairy farming for some earning
Request to suitable suggestions
I passionate about farming and settle in my village. I live in chennai. Can travel and meet you for discussion

Answer 2: vijayaagr: Please try for sinking a bore well or a open well for water availability for irrigating the crops , then think of farming

Answer 3: garao56: For land developmental activities, please approach us for project report for avalling bank loan.

Q07 SEEKING GUIDANCE ON MORINGA & BAMBOO CULTIVATION – COST, MAINTENANCE, AND MARKET PRICES

tuljaiagr: *Hello Everyone, I have 25 acres of land near Sangli, Maharashtra, and I am planning to cultivate moringa and bamboo. I would appreciate insights from experienced farmers, suppliers, and experts regarding the following:*
Cost of plants per acre – What is the approximate cost for 1,000 plants per acre for both moringa and bamboo?
Annual maintenance cost – What are the estimated expenses for irrigation, fertilizers, and other maintenance per acre?
Time to maturity – How long do moringa and bamboo take to reach a stage where they can be commercially harvested?
Market prices – What are the current market rates for moringa (leaves, drumsticks) and bamboo? Also, if the pricing is per ton, what is the approximate yield per plant?
Looking forward to valuable inputs and suggestions. If you have experience in large-scale cultivation or supply of quality saplings, please feel free to connect. Thank you

Answer 1: ForumFarmer: You can contact @moringapw, who can help you in Moringa farming and @hbedekar in bamboo farming. contact details are shared in private chat.

Q08 INTERCROP FOR COCONUT TREES

nprabhs: *Hi, We have a coconut farm with 1 year old and our area is dry during summer situated in westernghats belt. We are looking for intercrop like trees which also shouldnt harm our coconut trees. We thought of papaya trees, but white insect will harm our small coconut trees as well. So dropped papaya trees. Any other suggestions on this? Also we do like to try exotic fruit trees if possible. Please guide.*

Answer 1: garao56: Generally arecanut trees are planted in coconut . Cocoa can be planted. Other crops like pine apple , zinger, tapioka, banana, Yam etc can be planted in the coconut orchards . In AP Citrus plants (lime) also planted . G.Anandarao B.Sc(Ag)

Answer 2: tomvia: You can plant banana for three years or any seasonal veggies or fruits as mentioned by Anandarao

Answer 3: gounder28: Hello nprabhs Try Taiwan Pink Koya as udupayir between coconut trees. Yields in 6-8 months of plantation and produces through out the year. The buyer comes to your farm for harvest and pickup and they pay about Rs. 45-50/KG. The plant will yield to 6-7 years and NOT much maintenance require other than pruning often.

Answer 4: shajathali: The first mistake you did was selection of crop. Coconut is a plant of high water area lie delta, river banks. You need to give 50 ltrs of water per day now and upto 80 ltrs in future. If you give less water, you wan grow only coconut trees not coconut.
Just remove it, it is only one year old. Its my personal experience. When you don't have water to coconut itself, how you are planning for intercrop.

Question

Q&A

Answer

Q09 WHICH HERBAL PLANTS TO GROW IN MUMBAI AGRICULTURE LAND.

kamilmask: *Have a small agricultural land in Bhiwandi area in Mumbai approx. half acre, want to know which herbs to grow so that we have a steady income on it? Kindly contact me*

Answer 1: garao56: If you want study income on the 0.50 acre land take up plantation of Taiwan Guava , you will be getting study income , 320 plants can be accommodated (high density) , provide drip system, at least 5 tons of guava fruits can be harvested which will fetch 1.50 Lakhs , expenditure is 0.50 Lakhs , you will get Rs.1.00 Lakhs profit. No other type herbal plant will fetch income on a small plot for which there may not be any demand.

Answer 2: kamilmask: Is there a market for Noni fruit and can we plant and fetch enough on half acre land?

Answer 3: garao56: Not so sir somewhat large scale plantation is required , Noni is known to be prepared healthy tonic, but cultivation not much popular in south India

Q10 NEED GUIDANCE TO START-UP ORGANIC POLY HOUSE

bhargavaram1: *Hi I am interested to setup 3 acre poly house near nellore. Can anyone tell me where to find information on type of crops, economics and is organic poly house farming possible ?*

Answer 1: maitys: Agriculture is an industry, a science , a practice and an art, that can only be learned through experience; trial and error methodology .
Poly house farming is a specialised, controlled environment farming of high value, speciality crops (cut flowers, vegetables grown off-season, short season greens, micro greens,or seedling etc.) that can fetch high market price.
In Poly houses, many types of controlled environment farming is possible i.e. plants grown in a medium (a combination of soil, vermiculite, coir pith, etc.) in pots; or 5 types of HYDROPONICS (wick system, ebb and flow system, deep water culture , nutrient film technique (NFT) and aerophonics). Most of these techniques are highly complex, sophisticated, and require constant attention to make it a success.
Many poly house farms fail due to poor planning and inadequate preparation for starting the operations. Before starting poly house farming, you need to develop a business plan where you consider all of the following:
Location, Business model, Water,Growing medium, Power supply, Floor design, Input sourcing, Monitoring ,Supply chain planning, Waste management, Technical advice from expert, ROI, Manpower .

For a broad theoretical idea and brief practical exposure you can attend IHT (Noida)

Answer 2: garao56: Dear sir , you can set up poly houses in 3 acres. National Horticulture Board is extending 50% subsidy for setting up of poly houses , Approximately 7 lakhs for each 1000 sq mt poly house (4 units per acre). Also they give 25 to 50% initial cost of cultivation depending up on the crops grown in poly houses.
You can take up Capsicum, Cucumber, flowers like roses, zerbara etc
Organic cultivation can be taken up in open fields.
Nutrients for crops in in poly houses shall be applied through fertigation for desirable yields other wise uneconomical
Please contact us for project report with details of farming :
G.Anandarao B.Sc(Ag)
Retd Agricultural Officer & Agricultural Banker,
Vijaya Agro Consultants

Answer 3: peetsaga: Sir does this subsidy apply for TN aswel

Answer 4: garao56: Yes , for entire India from National Horticulture Board
G.Anandarao,Vijaya Agro Consutants, 9703128495

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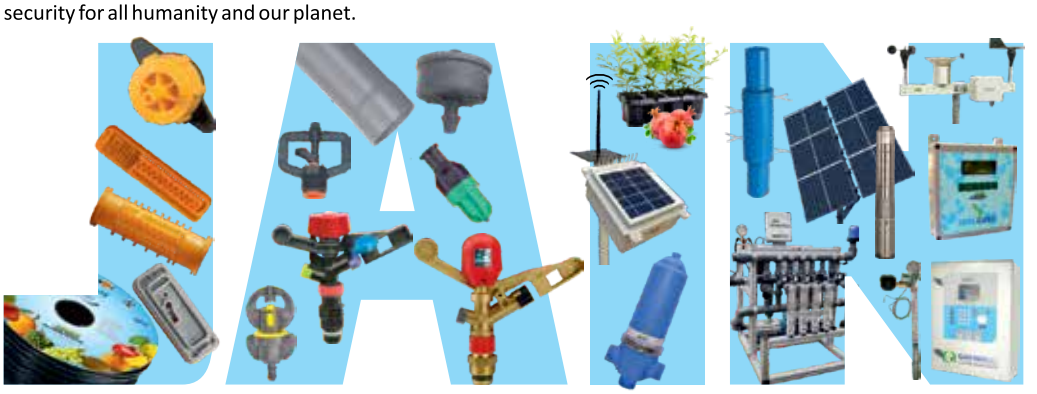

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