

Comprehensive Learning Report on the Export of Mangoes from India to EU Markets by Farmer Producer Companies



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Abbreviations list

AMD	Indo-German Agricultural Market Development Project
APEDA	Agricultural and Processed Food Export Development Authority
APMC	Agricultural Produce Market Committees
BMEL	Federal Ministry of Food and Agriculture, Germany
BoDs	Board of Directors
BP	Business Plan
CEO	Chief Executive Officer
DAC&FW	Department of Agriculture, Cooperation and Farmers Welfare
DMI	Directorate of Marketing and Inspection
EU	European Union
e-NAM	e-National Agriculture Market
FPC	Farmer Producer Company
FPO	Farmer Producer Organization
GAP	Good Agricultural Practices
GoUP	Government of Uttar Pradesh
Gol	Government of India
GI	Geographical Indication
Ha	Hectare
INR	Indian Rupee
IPM	Integrated Pest Management
INM	Integrated Nutrient Management
MoA&FW	Ministry of Agriculture and Farmers Welfare, India
MRL	Maximum Residue Level
MT	Metric Ton
MI	Maturity Index
MRIN	Marketing Research and Information Network
NCCD	National Center for Cold Chain Development
NIAM	National Institute of Agricultural Marketing
NABARD	National Bank for Agriculture and Rural Development
PHM	Harvesting & Post Harvest Management
PO	Purchase Order
SFAC	Small Farmers Agribusiness Consortium
SOP	Standard Operating Procedure
SAGF	Strengthening of Agmark Grading Facilities
VCA	Venture Capital Assistance
UK	United Kingdom

I. Introduction

The Indo-German Agricultural Market Development (AMD) Project has achieved a significant milestone by completing a trial shipment of mangoes from Lucknow to Europe for the first time. This landmark event highlights the potential for expanding Uttar Pradesh's horticultural exports and exemplifies the growing collaboration between India and Germany in enhancing agricultural trade and market development. The successful trial marks a promising step towards establishing a robust and sustainable supply chain for high-quality Uttar Pradesh mangoes in the European market, paving the way for future growth and opportunities for farmers and exporters alike. The farmers of IRADA farmers producer company from Lucknow, Uttar Pradesh sent their export consignment of Dasherri Mangoes to Europe, creating a pathway for a new potential market through NextOn Foods Pvt Ltd, a leading exporter of fruit and vegetables in India. The maiden export consignment to the EU markets was jointly supported by the Indo-German AMD project, the Marketing Division of the Department of Agriculture and Farmers Welfare, Govt. of India (GoI), the Directorate of Agricultural Marketing and Foreign Trade, Government of Uttar Pradesh (GoUP), and the Agricultural and Processed Food Products Export Development Authority (APEDA). The GI Dasherri Mangoes exported are from farms certified under GLOBALG.A.P. and comply with the EU food safety standards. This certification ensures that the mangoes meet stringent international criteria for good agricultural practices, emphasising sustainability, food safety, and the welfare of workers.

This report provides a detailed account of the processes adopted by the Farmer Producer Companies (FPCs) for exporting mangoes from India to the EU markets. It encompasses various stages, including market research, compliance with standards, quality control, logistics, financial management, relationship building, sustainability practices, and marketing strategies. The lessons learned from these experiences are documented to serve as a guide for future exports.



Figure 1 A beginning to the new journey of Dashehari Mangoes to Europe- Flag off Ceremony

II. Project Background

The Indian mango is a special product that substantiates the high standards of quality and bountiful nutrients packed in it. In India, Uttar Pradesh is one of the leading states for mango production with a share of 23.33 per cent among the leading producers of the country. The average productivity of the crop in Uttar Pradesh is estimated at 17.58 MT/Ha, which is substantially higher than the national average productivity of 9.3 MT/Ha. The mangoes produced in the state have high export potential, but limited access to the global market, particularly the EU, due to inadequate pre-harvest management, insufficient understanding of importing countries' requirements, and underdeveloped supply chains. To promote the export of mangoes from Uttar Pradesh, the Indo-German Cooperation on Agricultural Market Development (AMD) project aimed to engage Farmer Producer Companies (FPC) in adopting pre-harvest management practices that comply with EU protocols, preparing them for entry into premium export markets, including the EU.

The Indo-German Cooperation on Agricultural Market Development (AMD) Project began in 2021 with the overarching goal of fostering sustained economic growth in the agricultural sector and enhancing rural livelihoods. This initiative aligns with India's strategy for modernizing agricultural markets.

The project focuses its activities in three states; Uttar Pradesh, Odisha, and Rajasthan and offered technical support to develop selected agri-food value chains and Farmer Producer Organisations (FPOs). It aims to improve the efficiency and effectiveness of domestic market marketing and to boost the export potential of specific agricultural value chains and products. Additionally, the project seeks to explore international marketing opportunities for Indian farmers. The project aims to achieve three key outcomes:

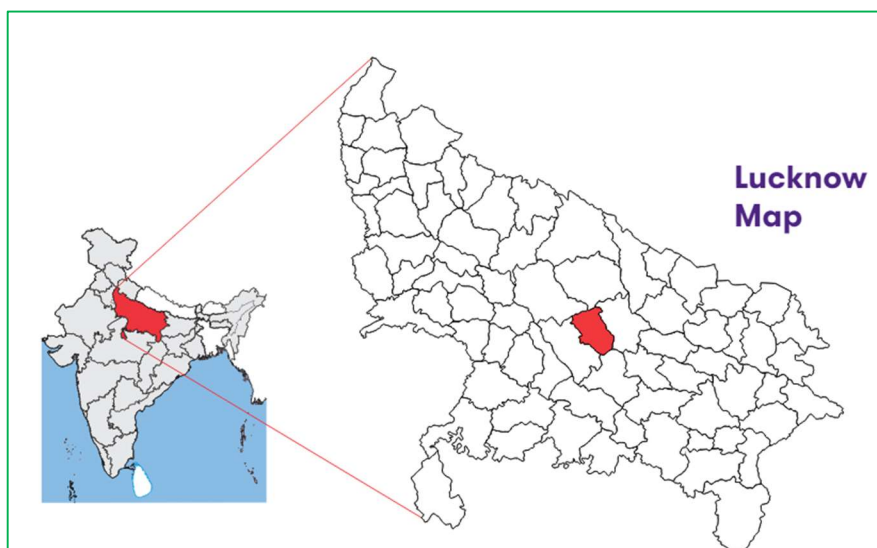
- Enhance the policy environment for agricultural market development and increase the export potential of Indian products through a dialogue platform.
- Strengthen support services and related capacities for agricultural market development.
- Integrate target farmer organizations into market-oriented value chains and enhance their access to international markets, particularly in the EU.

To integrate FPOs into market-oriented value chains and improve their capacity to access international markets, the Indo-German AMD Project has facilitated trial shipments of turmeric, coriander, cumin and Mangoes. From April to June 2024, the project piloted trial shipments of spices from Odisha and Rajasthan, and Mangoes from Uttar Pradesh collaborating with selected FPOs and different government organizations in collaboration with exporters who specialise in these products.

III. The ‘MALIHABADI DASHEHARI’ Mango

In UP, Maliabadi-Mal-Kakori is the biggest Mango Fruit Belt, the region comprising of Malihabad, Mal and Kakori tehsils of Lucknow district of Uttar Pradesh on the banks of Gomati River occupying an area of about 11,500 ha under mango plantation is famous for ‘Malihabadi Dashehari’ mango. ‘Malihabadi Dashehari’ mango (alternatively spelt “Dussehrii” and “Dasherii”) is a variety of mango that is a small to medium-sized fruit with an elongated shape, yellow, with fibreless flesh, rich characteristic pleasant flavour and good keeping quality. It is reported in the UP-district Gazetteer that in 1955, 56,2480 acres in Lucknow district were under mango cultivation and the town of Malihabad was famous for the ‘Dashehari’ cultivar of mangoes and nurseries from this area supplied planting material to all over the state.

The main Mango producing blocks in Lucknow are Malihabad, Mal, Kakori, Sarojini Nagar, Bakshi Ka Talab (BKT), Chinhat, Mohanlalganj etc. The cluster is known for its local Malihabadi Dussehri which got a GI tag back in 2008.



According to the traditional mango growers of the region, the ‘Dashehari’ mangoes grown in other areas are different from ‘Dashehari’ grown in the Malihabad region as ‘Dashehari’ mangoes grown in other regions have un-uniform ripening and a marked difference in shape, colour and taste. The climatic and geological conditions prevailing in Malihabad, and its adjoining regions have given unique characteristics to the ‘Malihabadi Dashehari’ mango, which has given firm sustainability to characteristics of ‘Malihabadi Dashehari’ mango for more than 300 years. The traditional growers attribute the unique soil of Malihabad region to the characteristics of pleasant flavour, rich sweet taste when fully ripened, rich orange-yellow colour, fibreless flesh and good keeping quality. Beta carotene is the main factor responsible for the development of yellow colour. The average values are 12,150 µg/100 g pulp.

Dusheri mangoes are predominantly sold in domestic markets within India and have also been exported to Nepal, Southeast Asia, and the Gulf regions. However, exports to the European Union, the United States, and other premium markets have not yet commenced due to challenges related to production levels, post-harvest management, compliance with importing countries' requirements, and the need for more extensive market exploration.

A. Dusheri Mango Crop Seasonality

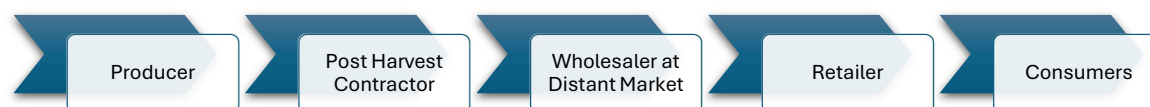
In Uttar Pradesh, many varieties of mangoes are grown, and the crop seasonality can vary slightly for different mango varieties. Additionally, the mango belt in Uttar Pradesh is very vast, starting from the districts of Meerut in western Uttar Pradesh to Lucknow in Central and Varanasi in Eastern Uttar Pradesh. This wide range has a huge diversity of agro-climatic conditions and soil types, therefore, activities performed in different regions vary accordingly.

In the adoption of various practices at orchards, there is again an enormous difference in different types of farmers. The progressive farmers maintain the orchard with desired care adapt various scientific practices and follow the schedule for the application of fertilizers, nutrients and spray. However, in general, the other farmers seldom adapt to these practices.

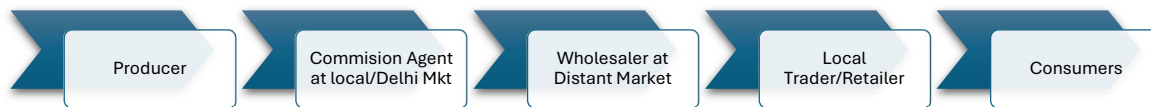
Month	Activity	
June	Harvesting followed by Pruning	Application of fertilizers and FYM.
July		
August		
September	Ploughing, mainly to remove grasses and other weeds from the field.	Short-duration crops such as vegetables
October		
November		
December		
January	Application of pesticides, specifically for midge insects and mealy bug infestation, mango hopper.	Progressive farmers also keep honeybee boxes in orchards for efficient pollination and fruit set.
February		
March	Some farmers apply fungicides to control powdery mildew.	
April	Irrigation, post onset of fruit.	
May	Harvesting of fruits	

B. Existing Market Channel of Mangoes in Uttar Pradesh

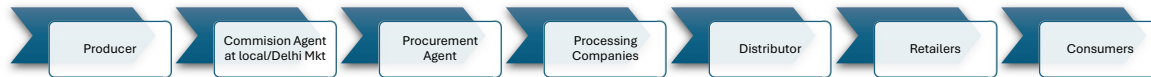
Channel-1: This is the most prominent marketing channel, accounting for up to 85 per cent of the mango trade.



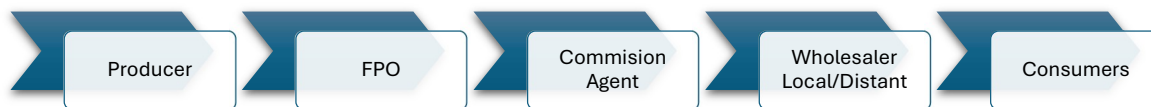
Channel-2: This is an alternative marketing channel and accounts for up to 15 per cent of mango trade.



Channel-3: This is an example of a trade channel which accounts for 2 to 3 per cent of mango trade



Channel-4: This represents a new trade channel, accounting for 2 to 3 per cent of mango trade.



According to various studies, farmers receive between 25% and 45% of the consumer price in the mango value chain. This range reflects the proportion of the final retail price that reaches the farmers. The variation in this percentage is influenced by several factors, including the efficiency of the supply chain, the number of intermediaries involved, and the market dynamics.

In more efficient supply chains with fewer intermediaries, farmers tend to receive a higher share of the consumer price. Conversely, in supply chains with multiple intermediaries, such as wholesalers, distributors, and retailers, the farmers' share diminishes as each intermediary takes a portion of the profit. Additionally, market demand, transportation costs, and post-harvest handling practices can also impact the percentage of the consumer price that farmers ultimately receive. Understanding and addressing these factors is crucial for improving the economic well-being of farmers and ensuring a fairer distribution of profits within the mango value chain.

IV. Stakeholders

For facilitating the trial shipment of Mangoes, different stakeholders worked closely with the Farmers Producer Organization to support the overall processes. Directorate of Agricultural Marketing and Foreign Trade, Government of Uttar Pradesh (GoUP), Agricultural and Processed Food Products Export Development Authority (APEDA), Marketing Division of the Department of Agriculture and Farmers Welfare, Govt. of India (GoI), and NextOn Foods Private Limited provided necessary support to the IRADA Farmer Producer Company Limited and the Indo-German AMD project team. Brief about the stakeholders is given in the section below.

A. IRADA Farmer Producer Company Limited (Producer):

IRADA FPC was registered in June 2016 as a producer company and promoted by the National Bank for Agriculture and Rural Development (NABARD). FPC has 914 shareholders spread across

17 villages. Out of the total number of shareholders, 190 are women shareholders. All the equity shareholders of the FPC are small and marginal farmers and contribute to the equity of the FPC. FPC has paid up capital of Rs. 3.05 lakhs. Most of the members of this FPC are the owners of mango orchards. The FPC members have around 600 Ha of land from which 90% of the land is cultivated under mango production and produces 3,000 – 5,000 MT of mangoes annually. 80 per cent of the orchard comprises of Dusheri varieties and 20 per cent comprises of Chuasa and Langda mango varieties.

The Board of Directors (BoD) of the FPC and other members of the FPC are actively involved in business activities that are mostly related to strengthening the backward supply chain. The majority of business activities are associated with trading of agri-inputs while a small portion (20-25%) of business is associated with output trading. Farmers associated with the FPC still practice and prefer individual marketing rather than a collective marketing approach. The shareholders use their market linkages for the required immediate cash payments after selling their produce. There is a lack of awareness among the FPC members for a collective marketing approach which results in meagre output business by the FPC.

Since its inception, the FPC has been able to establish a significant value in the business through the sale of agri-inputs. Currently, FPC has established an average proportion of agri-input business. FPC has its agri-input store for selling all the important agri-inputs as per the requirements of farmers. FPC has all types of agri-inputs (Pesticides, Seeds, and Fertilizers) and eNam trade licenses. FPC have domestic trading experience but does not have a trade license. As the FPC had no prior experience with exports, capacity building of FPO members for collective business approach, handholding support for export-oriented activities, market linkage, agri-infrastructure and access to financial resources etc. were required to support the FPC for developing an export-oriented value chain of mangoes.

B. NextOn Foods Private Limited (Exporter):

Motivated by a commitment to delivering top-quality consumer foods and positively impacting the agriculture sector and farming communities, NextOn Foods was established in 2017 with a global vision to significantly contribute to the food economy. Founded by a team of dynamic and enterprising individuals united by a common goal, NextOn Foods specializes in the export of fresh fruits and vegetables, frozen fruits, canned fruits and vegetables, as well as contract farming. The company proudly serves markets in the UK, Europe, and South Asian countries, consistently striving to enhance the international food supply chain.

NextOn is dedicated to delivering high-quality and safe agricultural produce to consumers while creating an efficient system and robust supply chain model that enables all stakeholders to thrive. With a modern approach and highly adaptable logistics and supply chain mechanisms, the brand ensures the production, packaging, and distribution of healthy and safe food, establishing a strong linkage between farmers and consumers.

NextOn Foods Private Limited, in a strategic effort to support the farmers of Lucknow, collaborated with the IRADA Farmers Producer Company (FPC) and the Indo-German Agricultural Market Development (AMD) project to commission the inaugural trial shipment of Dusheri

mangoes to Europe. This collaboration marked a significant achievement in showcasing the potential of Indian agriculture on the global stage.

NextOn Foods played a pivotal role in this initiative by assisting the IRADA FPC in obtaining GLOBALG.A.P. certification. This certification ensures that the mangoes meet international standards for good agricultural practices, which is crucial for accessing European markets. Beyond certification, NextOn Foods provided comprehensive technical guidance for both the harvesting process and all aspects of post-harvest supply chain management.

Their support included training farmers on optimal harvesting techniques to preserve the quality of the mangoes, implementing best practices for handling and packaging, and establishing efficient logistics to ensure the fruit remains fresh during transportation. By integrating these advanced methodologies, NextOn Foods not only facilitated the successful export of Dusheri mangoes but also empowered local farmers with the knowledge and tools needed to maintain high standards and increase their competitiveness in international markets.

This initiative highlights NextOn Foods' commitment to enhancing the agricultural sector's sustainability and profitability, fostering a robust link between local farmers and global consumers, and setting a precedent for future agricultural exports from India.

C. Indo-German Agricultural Market Development Project: (Facilitator)

The Indo-German Cooperation on Agricultural Market Development (AMD Project) began in 2021 with the overarching goal of fostering sustained economic growth in the agricultural sector and enhancing rural livelihoods. The project initiative aligns with India's strategy for modernizing agricultural markets.

The AMD project focused its activities in three Indian states—Uttar Pradesh, Odisha, and Rajasthan, offering technical support to develop selected agri-food value chains for the farmer producer organizations (FPOs). The project activities aimed to improve the efficiency and effectiveness of domestic market marketing and to boost the export potential of specific agricultural value chains and products. Additionally, the project seeks to expand international marketing opportunities for Indian farmers.

The project specifically aims to achieve three key outcomes:

- Enhance the policy environment for agricultural market development and increase the export potential of Indian products through a dialogue platform.
- Strengthen support services and related capacities for agricultural market development.
- Integrate target farmer organizations into market-oriented value chains and enhance their access to international markets, particularly in the EU.

D. Marketing Division of the Department of Agriculture and Farmers Welfare, Govt. of India (GoI): (Facilitator)

The Department of Agriculture and Farmers Welfare (DA&FW) is organized into 28 Divisions and has five attached offices and twenty-one subordinate offices which are spread across the country for coordination with state level agencies and implementation of Central Sector Schemes in their respective fields. The Marketing division of the DA&FW, primarily endeavours developing implementing policies related to development of agricultural markets.

The marketing division, at the national level, implements schemes like Marketing Research and Information Network (MRIN), Strengthening of Agmark Grading Facilities (SAGF), Agri-business Development through Venture Capital Assistance (VCA) and Project Development Facility, Training, Research and Consultancy through Choudhary Charan Singh National Institute of Agricultural Marketing (NIAM), National Agriculture Market (e-NAM), Implementing of Agricultural Produce (Grading and Marking) Act, 1937 including framing/amendment of Rules there under, schemes relating to Agricultural Marketing implemented by SFAC such as Formulation of Farmers' Producer Organization (FPO) and Equity Grant Scheme and Agricultural Marketing Reforms in States and UTs.

E. Directorate of Agricultural Marketing and Agricultural Foreign Trade, Government of Uttar Pradesh (GoUP): (Coordinator of Activities)

Directorate is presently playing an important role in implementations and promotion programs in the state, about market intelligence, agricultural exports, Geographical Indications (GI), assaying work under National Agricultural Market (E-NAM), grading pure food items as per Agmark grading of the Government of India and providing pure edible products to the consumers. This directorate is designated as the nodal agency for UP Agricultural Export Policy, 2019 and Geographical Indication (GI) promotion in the state.

This directorate is continuously making efforts to empower the farmers by helping them in taking informed decisions through easy access to agricultural market information in the state. For this, through the departmental website www.upkrishivipran.in and mobile app UP MANDI BHAV, daily updated market prices of the state's agricultural markets are made available to the farmers free of cost, apart from this, on the pan India free website of agricultural market prices of the Government of India www.agmarknet.gov.in, out of 242 agmarknet nodes of the state, the prices of which 228 agricultural markets in the month of June, 2024 are being updated daily and information is being provided to the general public.

F. Agricultural and Processed Food Products Export Development Authority (APEDA): (Technical Guidance and Support)

The Agricultural and Processed Food Products Export Development Authority (APEDA) was established by the Government of India under the Agricultural and Processed Food Products Export Development Authority Act passed by the Parliament in December, 1985. The Act (2 of 1986) came into effect from 13th February, 1986 by a notification issued in the Gazette of India.

Agricultural and Processed Food Products Export Development Authority performs the following functions-

- Development of industries relating to the scheduled products for export by way of providing financial assistance or otherwise for undertaking surveys and feasibility studies, participation in enquiry capital through joint ventures and other reliefs and subsidy schemes;
- Registration of persons as exporters of the scheduled products on payment of such fees as may be prescribed;
- Fixing of standards and specifications for the scheduled products for the purpose of exports;
- Carrying out inspection of meat and meat products in slaughter houses, processing plants, storage premises, conveyances or other places where such products are kept or handled for the purpose of ensuring the quality of such products;
- Improving of packaging of the Scheduled products;
- Improving of marketing of the Scheduled products outside India;
- Promotion of export-oriented production and development of the Scheduled products;
- Collection of statistics from the owners of factories or establishments engaged in the production, processing, packaging, marketing or export of the scheduled products or from such other persons as may be prescribed on any matter relating to the scheduled products and publication of the statistics so collected or of any portions thereof or extracts there from; and
- Training in various aspects of the industries connected with the scheduled products.

V. Initiatives Undertaken by Indo-German AMD project

For integrating the IRADA farmers' producer company towards a market-oriented value chain and enhancing FPC's capacities to access international markets, the Indo-German AMD project has successfully facilitated trial mango consignment to Europe. Based on the experience of facilitation of trial shipment, the Indo-German AMD project outlines the major stepwise activities that were undertaken by the FPOs to conduct the trial shipments. A short note on major activities has been highlighted below that delineates the stepwise approach for FPO planning to access the

international markets. The steps described below are not an exhaustive list but serve as a guidance note for new FPOs that plan to enter the export markets.

1. Market Research and Understanding Demand

The objective of the project is to identify target countries within the EU and the UK, understand consumer preferences and peak seasons for mango consumption, and analyze the demand for different mango varieties.

Processes:

- Conducted market surveys and utilized industry reports to gauge demand.
- Engaged with local distributors and retailers for insights into consumer preferences.
- Monitored seasonal trends and pricing patterns.

Lessons Learned:

- Tailoring exports to match market-specific demands enhances acceptance and sales. By aligning the characteristics of exported products with the unique preferences and needs of each target market. This approach involves understanding the local consumer preferences, cultural nuances, and market trends, and then customizing product offerings accordingly. This can lead to higher acceptance rates, stronger customer loyalty, and more successful market penetration.
- Continuous market analysis is crucial for staying ahead of consumer trends and competitors. By consistently monitoring and analyzing market data, FPO/exporters can identify emerging consumer preferences, anticipate shifts in demand, and adapt their strategies accordingly. This proactive approach allows businesses to stay relevant and competitive, offering products and services that meet evolving market needs. Additionally, ongoing market analysis helps in identifying potential threats from competitors and developing strategies to maintain a competitive edge. Ultimately, it enables FPOs/Exporters to make informed decisions, innovate effectively, and achieve sustainable growth.

2. Compliance and Certifications

Objectives:

- Meet EU/UK phytosanitary regulations and other standards.
- Obtain necessary certifications for market entry.

Processes:

- Secured phytosanitary certificates from plant quarantine authorities.
- Achieved GlobalGAP certification to comply with Good Agricultural Practices.

Lessons Learned:

- Strict adherence to international standards is non-negotiable for market access. Complying with these standards ensures that products meet the quality, safety, and regulatory requirements necessary for entry into global markets. It builds trust with consumers and trade partners, demonstrating a commitment to excellence and reliability. Adhering to international standards also minimizes the risk of legal issues and trade barriers, facilitating smoother transactions and market entry. This adherence is critical for maintaining a competitive edge, as it assures stakeholders of the product's consistency and compliance with global norms, ultimately supporting long-term success in international markets.
- Proactive management of certification processes is essential to avoid last-minute delays. By initiating and overseeing certification activities well in advance, businesses can ensure all necessary standards and regulatory requirements are met in a timely manner. This includes scheduling audits, gathering required documentation, and addressing any compliance issues promptly. Effective management prevents unforeseen obstacles that could delay product launches or market entry. Additionally, staying ahead of certification deadlines fosters a smoother, more efficient operational workflow, enhances credibility with stakeholders, and supports seamless market access. This proactive approach is vital for maintaining a competitive advantage and ensuring the uninterrupted supply of products to the market.

3. Quality Control

Objectives:

- Maintain high quality of mangoes from harvest to delivery.
- Ensure compliance with grading and sorting standards.

Processes:

- Implemented best practices in harvesting to prevent damage.
- Graded and sorted mangoes based on size, colour, and quality.
- Desaping, Hot water treatment pre-cooling and proper storage techniques to extend shelf life.

Lessons Learned:

- Effective post-harvest handling is essential for maintaining mango quality. Proper techniques and practices, such as careful harvesting, timely cooling, and controlled storage conditions, play a crucial role in maintaining the fruit's freshness, flavour, and nutritional value. Implementing efficient post-harvest processes minimizes spoilage and reduces the risk of damage during transportation. This includes ensuring optimal humidity levels, temperature control, and gentle handling to prevent bruising and degradation. High-

quality post-harvest handling not only extends the shelf life of mangoes but also enhances customer satisfaction by delivering superior products.

- Regular training and monitoring of farm and packhouse workers are essential for improving compliance with quality standards. By providing continuous education and skill development, workers stay informed about the latest best practices, safety protocols, and quality requirements. Training sessions can cover various aspects, from proper harvesting techniques to post-harvest handling and packaging procedures, ensuring that every step of the process meets high standards. Additionally, consistent monitoring and evaluation help identify areas for improvement and reinforce adherence to established guidelines.

4. Packaging and Labeling

Objectives:

- Use appropriate packaging materials to protect mangoes during transit (Air shipment).
- Comply with EU/UK labelling requirements.

Processes:

- Selected food-grade, sturdy, and well-ventilated packaging materials.
- Ensured labels included country of origin, variety, weight, and traceability information.

Lessons Learned:

- Investing in high-quality packaging is crucial for reducing damage and spoilage during transit. Premium packaging materials and innovative designs provide better protection against physical impacts, temperature fluctuations, and humidity, ensuring that the produce remains intact and fresh. High-quality packaging can include features like cushioning to prevent bruising, ventilation to maintain optimal conditions, and tamper-evident seals to enhance security.
- Clear and accurate labelling is essential for fostering trust and ensuring compliance with regulatory requirements. By providing detailed and transparent information on labels, such as origin, variety, and nutritional content, producers and exporters can assure consumers of the product's authenticity and quality. Accurate labelling also helps meet legal standards and guidelines, avoiding potential fines and market entry issues.

5. Logistics and Transportation

Objectives:

- Optimise logistics to ensure timely and efficient delivery.
- Maintain the cold chain throughout the supply chain.

Processes:

- Choose between air and sea freight based on cost, speed, and product shelf life but for mangoes like Dusheri air freight is preferred because of short shelf life.
- Coordinated with logistics providers for refrigerated containers and timely shipment.
- Prepared comprehensive export documentation for customs clearance.

Lessons Learned:

- Efficient logistics planning is vital for minimising delays and preserving product quality. By meticulously coordinating transportation routes, scheduling timely deliveries, and selecting appropriate carriers, businesses can ensure that mangoes reach their destination quickly and in optimal condition. Advanced logistics strategies, such as real-time tracking and cold chain management, help maintain the freshness and nutritional value of the produce throughout the supply chain. Effective planning reduces the risk of spoilage, damage, and delays, which can significantly impact product quality and customer satisfaction. Additionally, streamlined logistics can lead to cost savings, better resource utilization, and improved overall efficiency. Ultimately, robust logistics planning supports the timely delivery of high-quality products, enhancing market competitiveness and fostering customer trust.
- Maintaining an unbroken cold chain is crucial for preserving the quality of perishable goods like mangoes. The cold chain involves a temperature-controlled supply chain that starts from the moment the mangoes are packed in the packhouse until they reach the end consumer. Consistent refrigeration prevents the growth of spoilage microorganisms, slows down ripening processes, and retains the fruit's freshness, taste, and nutritional value. By maintaining an unbroken cold chain, producers/FPOs and distributors can guarantee that consumers receive high-quality, fresh mangoes.

6. Financial and Risk Management

Objectives:

- Manage financial aspects effectively, including costs and financing.
- Mitigate risks associated with export activities.

Processes:

- Managed costs through detailed budgeting and cost tracking.
- Insured shipments to protect against potential losses.

Lessons Learned:

- Financial planning and risk management are integral to sustaining export operations. Effective financial planning involves budgeting, forecasting, and allocating resources to ensure the business remains profitable and capable of handling the costs associated with exporting, such as production, packaging, and shipping. It also includes securing financing and managing cash flow to support continuous operations.

- Leveraging financial tools and insurance is essential for mitigating risks and enhancing financial stability in export operations. Financial tools, such as hedging, forward contracts, and trade financing, help businesses manage currency exchange fluctuations, secure funding, and optimize cash flow. These tools provide a buffer against market volatility and ensure that FPOs/Exporters can meet their financial obligations without compromising operational efficiency.

7. Relationship Building

Objectives:

- Establish and maintain strong relationships with importers, distributors, and retailers either directly or through established exporters from India

Processes:

- Participated in trade fairs and exhibitions to network with potential buyers.
- Developed strong communication channels with European partners.
- Provided excellent customer service and responsiveness to build trust.

Lessons Learned:

- Building and maintaining relationships is crucial for securing repeat business. Establishing strong, trust-based connections with customers, suppliers, and partners lays the foundation for long-term success. By consistently delivering high-quality products and services, businesses can demonstrate their reliability and commitment to customer satisfaction.
- Active participation in industry events significantly increases visibility and expands networking opportunities. Attending and exhibiting at trade shows, conferences, and seminars allows businesses to showcase their products and services to a broader audience, including potential customers, partners, and industry influencers.

8. Sustainability and Ethical Practices

Objectives:

- Adopt sustainable farming practices to meet market demands and improve farm productivity.
- Ensure ethical practices in labour and community involvement.

Processes:

- Implemented optimum use of water for irrigation to inculcate the practice of water conservation, soil health improvement, and integrated pest management.
- Adhered to fair labour practices and supported local community initiatives.

Lessons Learned:

- Implementing sustainable and ethical practices significantly enhances brand reputation and appeals to conscious consumers. By adopting environmentally friendly methods, such as reducing waste, minimizing carbon emissions, and using renewable resources, businesses demonstrate their commitment to protecting the planet. These practices not only contribute to environmental conservation but also resonate with consumers who prioritize sustainability in their purchasing decisions especially niche markets in the EU. Ethical practices, such as fair labour conditions, transparent supply chains, and responsible sourcing, further bolster a brand's image. Ensuring that workers are treated fairly and that products are sourced responsibly builds trust and loyalty among consumers. It shows that the company values human rights and ethical standards, which are increasingly important in today's market. Additionally, these practices can attract a growing segment of conscious consumers who are willing to pay a premium for products that align with their values. This not only drives sales but also encourages customer loyalty and advocacy.

9. Marketing and Branding

Objectives:

- Develop effective marketing and branding strategies to differentiate products.
- Leverage digital platforms for greater reach and visibility.

Processes:

1. Created a professional website and utilized social media for marketing.
2. Highlighted the unique qualities of Indian mangoes and their origin story in promotional materials.
3. Conducted promotional campaigns and tastings to build brand awareness.

Lessons Learned:

- Effective marketing and branding are crucial for significantly enhancing product visibility and generating consumer interest. By employing strategic marketing initiatives, such as targeted advertising campaigns, social media engagement, and participation in trade fairs, businesses can reach a broader audience and highlight the unique qualities of their products. Developing a strong brand identity that resonates with consumers, through compelling storytelling and consistent visual elements, helps in building trust and loyalty.
- A robust digital presence is increasingly vital for reaching broader markets and expanding business opportunities. By establishing and maintaining an engaging online presence through a well-designed website, active social media profiles, and strategic use of digital marketing tools, businesses can connect with a global audience.

VI. Value Chain Analysis

Actual value chain of export trial shipment of Dasherri Mango				
Particulars	Cost	Quantity	Value (INR)	Remark
Product Cost at Farmgate	80.00	1,302.40	1,04,192.00	Farmer price as farm gate @80 per kg
Farm Certification cost			1,30,000	Cost borne by AMD project and is excluded from the net calculations
MRL testing (3 samples)			30,000	Cost borne by AMD project and is excluded from the net calculations
Inward logistic	1,500.00	5.00	7,500.00	Transport from orchards to packhouse
Corrugated Fibre Box	52.00	350	18,200.00	3 Kg box cost
Foam Net Sleeve	2.00	4,200	8,400.00	
Phyto Sticker	1.00	368	368.00	
Tape	3.00	350	1,050.00	
Processing charges	13.70	1,302	17,837.40	Hot Water Treatment and processing charges of Packhouse
Exporter expenses for arranging export	LS		72,000.00	
Salvage Value			3,000.00	B'Grade Mango Sale
Product Cost at Packhouse	215.76	1,050	2,26,547.40	
Freight charges - Lucknow to Delhi airport	29.53	1,050.00	31,010.00	
Outward Logistic			4,02,153.00	Air Freight - Delhi to Amsterdam Including C&F charges
Total Value (CIF Value)	628.30	1,050.00	6,59,710.40	
Net Realisation to Exporter			5,60,700.00	
Total Profit/Loss			-99,010.40	

The cost analysis shows that that exporter incurred a loss of INR 99,010.40 due to unprecedented high cost of outward logistics (INR 4,02,153). Usually, the cost of outward logistic is INR 2,00,000. However, due to excessive consignment bookings, the outward logistics cost was very high this year.

VII. Recommendations

The project has successfully conducted a trial air shipment of the renowned Dusherri Mango from Uttar Pradesh. This trial can serve as a model for future operations, with the potential to scale up and reduce unit costs. To ensure sustainability, the Government of Uttar Pradesh (GOUP) should incentivize FPOs and exporters through the following policy interventions:

1. Encourage Farmer Producer Organizations (FPOs) to adopt Good Agricultural Practices (GAP) to obtain Global GAP certification, making them eligible for export to the EU market. As international certification costs are higher, the project recommends supporting the FPOs with subsidized certification costs for the period of five years.
2. Secondly, the MRL testing costs for FPOs complying the international export market standards should be subsidized upto 70% by the government. This would encourage FPOs to adopt and comply and international food safety standards.
3. The cost of farm certification and MRL testing was borne by the Indo-German AMD project that translated a positive cost economics for the FPOs. In order to scale up the initiatives, the costs of certification and MRL testing for FPOs should be subsidized and encouraged. If the costs related to farm certification and MRLs testing is borne by the farmers, the offer price of farmers will not be price competitive for exports.
4. The Government of Uttar Pradesh (GOUP) should implement a policy providing financial incentives to offset the disadvantages faced by landlocked states and their distance from exit points, whether by air or sea. These incentives should cover up to 40 per cent of the costs to create a level playing field for FPOs and exporters from Uttar Pradesh.
5. Continuous efforts should be made to build the capacity of stakeholders, enhancing their understanding of export requirements.
6. Additionally, the Government of Uttar Pradesh (GOUP) should promote other horticultural products with export potential to ensure that export activities can be sustained throughout the year, rather than being limited to just a few weeks.

VIII. Conclusion

Exporting mangoes from India to the EU and UK markets necessitates a thorough and multifaceted strategy. This strategy includes market research, quality control, regulatory compliance, logistics, financial management, relationship building, sustainability, and marketing. By meticulously documenting and learning from these experiences, farmers and exporters can refine and enhance their practices, ensuring successful and sustainable operations in the global marketplace.

Annexure: 1: SOP for Mango Harvesting Packing and Dispatch

For mango harvesting and post-harvest operations, quality control measures should be rigorously implemented throughout the sorting, grading, and packing process. The following protocol is recommended for Mango harvesting and packing:

1. Step 1: Harvesting

- Harvesting of mangoes should be done at the initiation of yellow peel (MI 75-08%)
- Latex stains which lead to latex burns are major causes of rejection especially if mangoes are to be sold in export markets. To prevent this, it shall be ensured that the latex of fruits is well drained, and it shall be put on a net/net sheet for 1-2 hours after it is severed from the branch.
- Harvesting immediately following rain, shall also be avoided
- Harvested mangoes shall be prevented from contact with soil to avoid microbial contamination.
- Remove any dirt or debris from mangoes with a clean cloth.
- Allow the mangoes to dry naturally under the shed to speed up the drying process.
- Ensure that the mangoes are completely dry before proceeding to the next step

2. Step 2: Dispatch from the field to Packhouse

- Identify reliable logistics providers for transporting mangoes, ensuring freshness during transit.
- Vehicle should be clean, dry and devoid of any contaminating material
- Hot water treatment as per recommended protocol by the phyto sanitary department for EU should be applied.

3. Step 3: Packing

- Packing is to be done at the semi-ripe stage of maturity.
- FPC shall plan to hire a packhouse cum-godown in Lucknow where 2.5-3MT mangoes can be stored.
- At the packhouse, start by sorting mangoes based on their size, colour, ripeness, and quality.
- Remove any damaged or diseased mangoes in transit.
- Segregate mangoes of more than 200 grams, which will be packed in a carton box.
- Assemble the cartons and ensure that they are sturdy and in good condition for packing.
- Line the bottom of the carton with clean, food-grade plastic liners and cover it with a sleeve.
- Arrange the mangoes neatly inside the carton and place them inverted in single layers.
- Handle the mangoes carefully to avoid bruising or damage.
- Fill the carton up to the appropriate weight or volume, ensuring it is not underfilled or overfilled.
- Cushioning of cartons to be done using shredded paper (To be decided by the exporter) to protect from any bruises/injuries.
- Label each mango with an “Export quality” sticker.

4. Step 4: Dispatch and documentation

- Prepare necessary documents, such as invoices, packing lists, and transportation permits, as per the regulatory requirements.
- Arrange for transportation or coordinate with logistics personnel for the timely dispatch of the packed mango cartons.

Annexure: 2: Guidance for the FPC planning to enter the export of Mangoes

For integrating the farmers producer organizations (FPOs) towards market-oriented value chain and enhancing FPOs capacities to access international markets, the Indo-German AMD project has successfully facilitated trial shipments of Turmeric, Coriander, Cumin and Fresh Mangoes. The project piloted the trial shipment of spices from Odisha, Rajasthan and Uttar Pradesh states from April to June 2024 along with the FPOs, targeting the European Union markets. Based on the experience of facilitations of trial shipment, the Indo-German AMD project outlines the major stepwise activities that were undertaken by the FPOs and the AMD project to conduct the trial shipments.

The stepwise approach of major activities resonates with activities that the pilot FPOs adhered to access the international markets under the project guidance during the last one year. The export-oriented value chain model that was implemented by the Indo German AMD project was a simple linear output aggregation model; Farmers-FPOs-Exporter-Importer as depicted in figure below.

Farmers- Groups of 20-25 farmers aggregated in production clusters



Farmers Producer Organization –Output trading with exporter

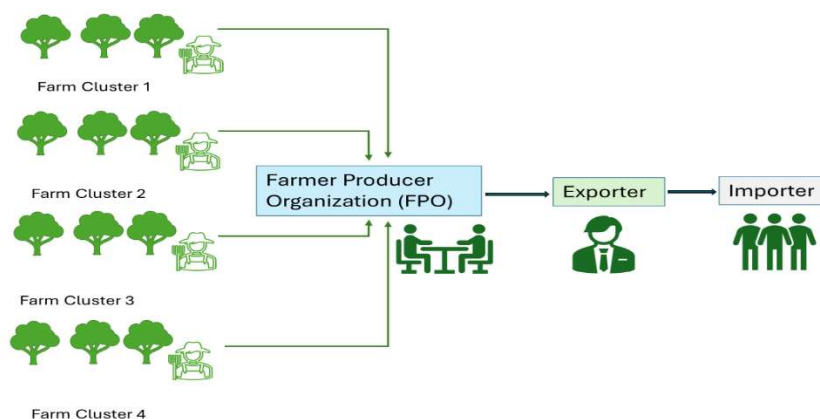


Exporter – Trading with importer



Importer – Trading with international retailers

Figure 1 Export Oriented Value Chain Model of the Indo-German AMD Project



The Indo-German AMD project recommends the FPOs to follow a simple linear value chain model in the initial years of export business stabilization. Nurturing business relationships with exporters and understanding international market trends, for initial few business operations years are

important. With the graduation of maturity and experience, the FPOs may also evolve itself as exporter and develop direct interface with importers or international retailers.

Furthermore, it's pertinent to note that the steps described below are not an exhaustive list of all the sequential export activities but serve as a guidance note for new FPOs about the activities, corroborates the experience of the Indo-German AMD project in strengthening the FPOs export value chains.

Summary of the Stepwise Approach

For facilitating trial shipment, the Indo-German AMD project has followed twenty major activities that spreads to one-year of engagement with FPOs. Details of each step have been elaborated in the section below.



<p>Step – I (12 months before)</p>	<p>Market Research and Understanding Demand</p> <ul style="list-style-type: none"> ➤ Supply and demand analysis of Mangoes to be conducted concerning European Union markets with the help of analytical studies. ➤ The Indo-German conducted a compressive value chain analysis of Mangoes in Uttar Pradesh and developed a recommendation for the development of sustainable export-oriented value chains for the Mangoes. ➤ The project specifically conducted market-based research for Dusheri Mango focusing- <ul style="list-style-type: none"> ▪ Market surveys and utilised industry reports to assess demand. ▪ Engaged with local distributors and retailers for insights into consumer preferences. ▪ Monitored seasonal trends and pricing patterns.
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<p>Step – II (12 months before)</p>	<p>Orientation Meeting with FPC- Board of Directors (BoDs)</p> <ul style="list-style-type: none"> ➤ Conduct initial meeting on ‘Basic concept on shipment’ with all the Board members including the CEO of FPC <ul style="list-style-type: none"> ▪ Assess the willingness and commitment of the Board of Directors and inclination to participate in the export operations. ➤ Plan and implement a training program on ‘Agri-Export Management System for FPOs’ targeting the participants from Board members/office bearers of the FPC. The content of the “Agri-Export Management System for FPOs” can be found on the Indo-German AMD project webpage. ➤ Plan scheduling of monthly meetings with Board members and office bearers. Monthly meetings ensure proper communication and accountability of the Board members throughout the implementation process.
<p>Step – III (12 months before)</p>	<p>Preparation of Business Plan (BP)</p> <p>Invite all the BoDs and office bearers of the FPC along with 3-4 progressive farmers for the business plan preparation exercise. During the preparation of the Business Plan, following major points were included-</p> <ul style="list-style-type: none"> ➤ Target to frame an objective statement that includes the total targeted quantity of the Agri-produce for domestic markets and export markets, target export markets destinations (countries), target domestic markets, commodity form (fresh/ polished/ sorted/ graded) ➤ The business plan should be comprehensive, realistic and practical in nature. ➤ The business plan includes the variety selected, plantation time, cultivable area, approximate yield and harvesting period. ➤ Use the standard format of the FPO business plan that details financial, logistic, HR and infrastructure requirements. ➤ Inclusion of risk and strategy to overcome the risk. Please prepare the timeline of all the activities that the FPC plans to undertake. ➤ Prepare a procurement plan that entails, the number of clusters, number of farmers, farmers payment terms, advances, quality management and checks, etc.
<p>Step IV (12 months before)</p>	<p>Deployment of Staff and Access to Finances</p> <ul style="list-style-type: none"> ➤ To implement the agri-business plan, FPC must deploy the following staffs: Chief Executive Officers (CEO), 3-4 Marketing Managers, a quality manager and a finance officer are the minimum staff that FPC should have in their company. ➤ Accountability for all the staff should be ensured with proper reporting systems and job descriptions. ➤ Based on the business plan, the required finances should be arranged. FPC needs finances for staff, procurement of farm produce from their shareholders, transportation and logistics. Please ensure sufficient credit availability. ➤ Plan for allocation of FPC's funds as well as credit channels.
<p>Step – V (Just before the flowering season)</p>	<p>Identification of Target Growers/ Producers</p> <ul style="list-style-type: none"> ➤ Progressive growers should be identified as soon as possible. Based on the targeted quantity that FPC has planned to market (domestic/ exports), number

	<p>of target farmers should be calculated. Consider using the following formula -</p> $\text{Total Number of Target farmers} = \left(\frac{\text{Total Quantity targeted by FPC for marketing/}}{\text{Total quality of the agriproduce that a farmer can sell to a FPC}} \right) * 1.3$ <p>30% higher number is envisaged (multiple 1.3) as some of the farmers may not offer the final produce to the FPC at the last moment.</p> <ul style="list-style-type: none"> ➤ Target growers should be shareholders of the FPC. ➤ At least 33% of growers should be women farmers so that the agri-business is gender sensitive.
<p>Step – VI (Just before the flowering season)</p>	<p>Formation of Farmer’s Production Cluster Units</p> <ul style="list-style-type: none"> ➤ Based on the number of farmers participating in the exports, identify the potential “production cluster units”. ➤ The number of production cluster units should be selected in such a way as to comprehensively cover all the target farmers required to meet the business plan target. ➤ Each production cluster unit can be formed within the village of a Gram Panchayat and located nearby so that monitoring of farm operations is easy for the FPC. ➤ Ideally, 25-30 farmers should be part of one production cluster unit. Example – If your target farmers are 100 and, in each cluster, you have 20 farmers, we will need to form 5 Production cluster units.
<p>Step – VII (Just after the flowering season)</p>	<p>Organize Cluster level Training</p> <ul style="list-style-type: none"> ➤ Regular month-wise training calendar should be prepared by the FPC for the farmers. The training plan should consider all aspects from pre-harvest to post-harvest management operations and sessions can be planned in a proper sequence during the span of 5 to 6 months that covers the entire fruiting season. ➤ The training should be cluster-based and cover all the farmers. Focus on including women farmers in the training programs. ➤ The training should consider thematic topics like- Principals of Good Agricultural Practices (GAP), Quality specification of export market standards, IPM, INM, PHM & GlobalGAP certification, harvesting, Sorting and grading. ➤ Practical hands-on training should be provided at the farmer’s field. ➤ The creation of a participant’s WhatsApp group will be ideal for coordination and information dissemination amongst the farmers. ➤ Keep a record of all the training programs that have been conducted. ➤ Identify a resource person in each production cluster unit that will act as a linkage between the FPC and farmers.
<p>Step – VIII (During the flowering season)</p>	<p>Demonstration Plots and Handholding Support to Target Growers & FPCs</p> <ul style="list-style-type: none"> ➤ For setting up the ‘Demonstration Plots’, select the farmer and farms. Identify one Demonstration Plot in each of the production cluster units. The focus of the

	<p>Demonstration Plot is to showcase the benefit of export-oriented production technologies to other farmers.</p> <ul style="list-style-type: none"> ➤ Handholding and technical support are required during the disease and pest control and post-harvest management. Local research station professionals should be invited to provide the required technical support. ➤ Create a database of all farmers -with inputs (fertilizers, pesticides, irrigation, etc. applied), areas marked for export and domestic production, varieties planted, expected harvesting time, and expected harvest quantity. A simple data recording format should be used to collect the data at the farmer’s level. ➤ The BoDs should regularly monitor the farms and keep all the records updated.
Step IX (During the cropping season)	<p>Stakeholder Mapping</p> <ul style="list-style-type: none"> ➤ Once the BoDs have confirmed the business plan, discussion with different stakeholders – agri-startups, training /research centres, government officials, banks, financial institutions, logistic and transport service providers should be undertaken, and necessary support should be requested. ➤ Initiatives should be undertaken to meet the stakeholders at frequent intervals of time and keep them updated on the progress of the activities. ➤ Wherever possible, convergence of support should be regularly requested and accessed.
Step X (During the cropping season)	<p>Bagging of the Fruits</p> <ul style="list-style-type: none"> ➤ It’s important to bag the mango fruits in protective bags. This enables colour uniformity to protect from pests and diseases. ➤ Coordinate with local suppliers for procurement of bags and distribute the bags to farmers. ➤ Proper training should be given to the farmers to apply the mango bags. Apply the mango protection bags when the fruits are 1/3 of the maturity.
Step – XI (Before the Harvesting Season)	<p>Harvesting & Post Harvest Management (PHM)</p> <ul style="list-style-type: none"> ➤ Farmers should be well-trained before harvesting the crop regarding the maturity index, harvesting methods, prevention of contamination, and on-farm handling. ➤ Post-harvest management should include proper sorting and grading and traceability of the farmers’ produce. ➤ Ensure that harvested products are segregated – for domestic and export markets. ➤ No chemicals should be used during the PHM operations. Proper clean crates should be used to store the product.
Step – XII (During the planting season)	<p>Participate in Buyer-Seller Meet</p> <ul style="list-style-type: none"> ➤ Participate in at least one Buyer-Seller Meet and establish 4-5 contacts with the exporter or large domestic buyer. ➤ Convince the buyer – offer quantity; timeline of product availability; and quality of the product that will be delivered; (price must be negotiated on a real-time basis) ➤ Collect the contract details of the buyers and get in regular touch with the exporters. ➤ Invite the buyer to make a prior field visit to the production clusters and have

	<p>physical meetings at the FPC office.</p> <ul style="list-style-type: none"> ➤ Ask the exporters or buyers if they have any ongoing programs for farmers that can be implemented in the FPC operational areas.
<p>Step XIII Certification (Preparation to start before the flowering season)</p>	<p>Certification requirements</p> <ul style="list-style-type: none"> ➤ Enquire about suitable certification requirements. If the FPC is planning to for European markets, Global G.A.P certification is mostly demanded. ➤ Contact the exporter or the certification body to apply for GlobalG.A. P certification or other certification. ➤ Prepare for all the compliances of the certification. This is very important. ➤ Prepare for audit and get your orchard audited before 1.5 months of harvest. (Getting a certificate sometimes takes time)
<p>Step – XIV (Just on the onset of the first harvest)</p>	<p>Sampling for MRL Test</p> <ul style="list-style-type: none"> ➤ Collect samples from each of the production cluster units as per the sampling protocol. Contact APEDA to learn about the sampling protocol. The purpose of sampling is to ascertain the quality parameters of the harvest produce; specifically, the Maximum Residue Level (MRLs) as per the targeted international market standard. If the FPC confirms the quality of the produce and the qualification of the produce for a particular export market, the FPC can better negotiate the offer prices with the exporters. ➤ Analytical or sample tests should be conducted at accredited laboratories before the harvesting. ➤ Share the samples either by sampling agent or via courier. One sample of the desired quantity (3 Kg each) should be properly labelled with a permanent marker and sent in a cleanly packed 3-ply corrugated box. ➤ All necessary parameters, including the MRL level, should be tested. ➤ Test reports should be available within 7 days and the report should be discussed and shared with the cluster production units. Similarly, the test reports should be shared with the potential exporters with whom market linkages need to be established. This will enable confidence in price negotiation with exporters.
<p>Step – XV (During peak harvesting time)</p>	<p>Networking for Purchase Orders</p> <ul style="list-style-type: none"> ➤ Just at the peak harvesting season, reach out to 3-4 buyers/ exporters and share the physical samples, and test reports (Previous year or current year), and discuss the offer prices, quality and quality of offered produce. ➤ For the offer price, someone from FPC should be accountable for making real-time price negotiations with the buyer. Before quoting the offer price, understand the current domestic market rate, price fluctuations, procurement price of farmers, local transportation costs, packing costs, and sorting and grading costs. ➤ Set up a physical or online meeting with the buyer and discuss the quality and quantity requirements, offer price, logistics, transportation cost, taxes, time of delivery, sampling and testing requirements of the buyer. ➤ Once the meeting is completed, reconfirm the price, quality and quantity and request for immediate issuance of purchase order (PO).

	<ul style="list-style-type: none"> ➤ If there is a disagreement, reach out to another buyer.
<p>Step – XVI (During peak harvesting time)</p>	<p>Confirm Purchase Order (PO)</p> <ul style="list-style-type: none"> ➤ After receiving an order for output marketing, verify the details including product form, quantity, quality, delivery schedule, unit price and payment terms. ➤ Clarify who pays for the transportation cost, loading and unloading charges, packaging material requirement, and coordination with the local transport for delivery of produce. ➤ Confirm PO with the buyer in writing or through a formal agreement, ensuring clarity on all aspects of the transaction. ➤ Confirm PO with the client with a request for an advance payment if possible. ➤ Confirmation to packhouse with quantity & internal agreement with unit. ➤ Confirm Packhouse for the order quantity received (if treatment of the product is required) ➤ Vehicle availability arrangements. Two types of vehicles are required, such as <ul style="list-style-type: none"> ▪ Hire vehicle-1 (Pick up / Van): Used only for procured materials collection & transportation to the packhouse. ▪ Hire vehicle- 2 (Reefer van): For transportation / Shipping of processed materials to client/exporter delivery point in cold temperature
<p>Step – XVII (After receiving the Purchase Order)</p>	<p>Implementation of Procurement Plan</p> <ul style="list-style-type: none"> ➤ The marketing manager of the FPC should take an important role in procurement. The marketing manager should contact the resource person in each of the production cluster units and procurement plans should be shared. ➤ After the PO, procurement centres/ collection centres should be identified within and outside the existing clusters. BoDs from FPC and 4-5 progressive farmers from each production cluster should take care of implementing the procurement plan. ➤ Establish procurement Centers/ collection centres to ensure sufficient raw material procurement. ➤ Nominate 4 Board members to take care of procurement from identified clusters/Farmers ➤ For the export market, fruit should be harvested, when firm and at the mature-green colour stage. Fruits harvested at the mature green stage ripe quite rapidly after harvest and begin to turn yellow within 3 to 5 days at ambient temperature, while fruits harvested in immature green will not ripen properly, have poor taste and shrivel soon. ➤ Fruits should also not be harvested by stick, which may cause injury/bruises due to impact, resulting in decay, poor quality and attractive low price. <ul style="list-style-type: none"> ▪ Procured mangoes should be shifted to the packhouse for further processing for the next level of treatment. ▪ Ensure farmers' payment daily per the agreed payment systems between the FPC and farmers. ▪ Quality (shape/ size/ weight/injuries) should be checked & taken care of by

	FPC itself.
Step – XVIII (After the Purchase Order)	<p>Harvesting, Processing, Packaging and Loading-</p> <ul style="list-style-type: none"> ➤ Before starting the harvesting of mangoes hands-on training should be given to farmers for proper harvesting and handling of mangoes. ➤ Harvesting should be done by using appropriate instruments like clippers or by carefully twisting and pulling the fruit from the tree. ➤ Harvesting under wet conditions should be avoided, since wet fruits are more susceptible to microbial growth and soil particles may cling to wet crops, exposing them to soil-borne rot organisms. ➤ Harvesting of fruits is best in the late morning, because the oil glands of these fruits are full in the early morning, causing immediate discolouration. ➤ The contact of fruits with the soil should be avoided and should be kept carefully in padded field crates, well-ventilated plastic containers, or picking bags. ➤ Check the weights of mangoes before each farmer and issue a good receipt note to the farmer. ➤ The harvested mangoes should be immediately transferred to the packhouse for the next level of treatment. ➤ Packhouse operation activities require a skilled labour force so proper training and monitoring is required at the packhouse centers. ➤ Arrange the logistics vans for the transportation of mangoes. Mangoes should be transported in padded crates and single-layer mangoes to be placed in each crate. ➤ Packhouse operations <ul style="list-style-type: none"> ▪ Check the weight of the mangoes and confirm with the packhouse. ▪ Understand packhouse Per Day Capacity. Accordingly, plan raw materials arrivals to the packhouse. ▪ Maintain hygiene at the packhouse. ▪ If work needs to be carried out in night shifts, sufficient labour and food arrangements need to be made in discussion with packhouse management for unhindered work. ➤ Sorting and grading and De-sapping <ul style="list-style-type: none"> ▪ Sort and grade the mangoes as per the buyer's requirements at the packhouse. ▪ Immediately proceed with the de-sapping and ensure that it will take 7-8 hours for de-sapping. ▪ After de-sapping, proceed for hot water treatment (required for EU markets) for treating mangoes at 48 degrees centigrade for 1 hour. ▪ Learn about the batch size of hot water treatment and coordinate with the plant quarantine division for the issuance of a Phytosanitary treatment certificate. ▪ All products that are to be exported need to be separately stored and ensure traceability. ▪ After hot water treatment, shift the mangoes to the drying and cooling area.

	<ul style="list-style-type: none"> ▪ After the mangoes have dried, use 3-ply corrugated boxes for packing. Generally, 12 mangoes are placed in each box weighing approx 3 kgs. ▪ Apply sleeves to each of the mangoes during the packing of the mangoes. ▪ Coordinate with the buyer for the reefer van and load the mango boxes carefully. ▪ Get the required phytosanitary certificate. ▪ The truck should be clean and should be compatible with carrying food items.
<p>Step – XIX- (Before dispatch of the final produce)</p>	<p>Documentation and Paperwork</p> <ul style="list-style-type: none"> ➤ The necessary documentation/paperwork required for the trial shipment are. <ul style="list-style-type: none"> ▪ Collection of PO from client – FPC ▪ PO confirmation and fix loading schedule – FPC ▪ Certification and Test Reports – FPC and exporter ▪ Generation of Invoice– FPC ▪ Any 3rd party agreement for the shipment – FPC ▪ Reporting to Govt. / Ministry / other stakeholders - FPCs ▪ Any legal matter related to shipment – FPC
<p>Step XX (After delivery of the Produce)</p>	<p>Feedback Collection</p> <ul style="list-style-type: none"> ➤ Once the product reaches the destination of the buyer, collect feedback on quantity and quality from the buyer. ➤ If any payments are pending from the buyer side, request for the completion of the payments. ➤ Communicate the feedback received from the buyer to the shareholders and farmers. ➤ If needed, take necessary actions for improvement in the next season.



Agricultural Market Development

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