

Guava Market Access Plan

TA-6782 IND: Enhancing Market Linkages for Farmer Producer Organizations

Draft

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1 Crop Background

Guava is a tropical fruit that is grown in tropical and sub-tropical areas in Central and South America, North Africa, and South Asia. It is round / oval in shape with green-yellow skin with a white / pink / red pulp. The pulp is sweet and has a distinctive taste. It is consumed both as table fruit and in processed forms such as jams, spreads, and ready-to-drink juice. Guava is good source of Vitamin C and A, as well as potassium, fibre, and other nutrients.

1.1 Global Scenario

Food and Agriculture Organization (FAO) tracks the production and trade of guava along with mango and mangosteens, and separate data on guava is not published by other such organizations. Hence, no data on global production and trade is provided in this document.

Based on anecdotal data, India is the largest producer of guava in the world. Other major producing regions are Thailand, Vietnam, Egypt, and Brazil.

1.2 Indian Scenario

1.2.1 Production

India's guava production is estimated to be 40.5 lakh MT across an acreage of 2.65 lakh hectares in 2021-22. The production has shown a steady year-on-year increase, growing at an annual rate of 4% from 2017-18 to 2021-22. The increase in production is due to increase in area under guava cultivation, while the productivity has remained nearly constant.

Table 1: India – Guava Production, Area under Cultivation & Productivity – 2017-18 to 2021-22

Year	Production (MT)	Area (ha)	Productivity (MT/ha)
2021-22 [#]	49,99,901	3,24,460	15.41
2020-21	45,82,297	3,08,095	14.87
2019-20	43,61,245	2,92,372	14.92
2018-19	42,52,600	2,76,207	15.40
2017-18	40,53,510	2,64,852	15.30

Source: Department of Agriculture and Farmers Welfare, Government of India; # 3rd estimate

Maharashtra is not among the top 10 producers of guava in the country and is the 12th largest guava producer in 2021-22. Uttar Pradesh and Madhya Pradesh are the largest producers and each account for nearly 20% of national production. Production is spread across the country, with more 15-20 states producing at least 10,000 MT of guava each year.

Table 2: Top 10 States in Guava Production in India – 2021-22 [#]				
S. No.	States	Production (MT)	Area (ha)	Productivity (MT/ha)
1	Uttar Pradesh	9,83,587	52,249	18.82
2	Madhya Pradesh	9,30,357	49,325	18.86
3	Bihar	4,34,410	29,804	14.58
4	Tamil Nadu	3,60,460	14,333	25.15
5	Andhra Pradesh	3,49,164	14,063	24.83
6	Punjab	2,76,685	12,173	22.73
7	Haryana	2,38,514	15,594	15.30
8	West Bengal	2,10,667	18,840	11.18
9	Chhattisgarh	1,86,929	20,324	9.20
10	Gujarat	1,78,076	14,522	12.26
India		45,82,297	3,08,095	14.87

Source: Department of Agriculture and Farmers Welfare, Government of India; # 3rd estimate

The same set of 10 states are in the top 10 producing states for the last 5 years. Uttar Pradesh, Madhya Pradesh, and Bihar have remained the top 3 producers over the last 5 years.

Table 3: Top 10 States in Guava Production from 2017-18 to 2021-22				
2021-22 [#]	2020-21	2019-20	2018-19	2017-18
Uttar Pradesh	Uttar Pradesh	Uttar Pradesh	Uttar Pradesh	Uttar Pradesh
Madhya Pradesh	Madhya Pradesh	Madhya Pradesh	Madhya Pradesh	Madhya Pradesh
Bihar	Bihar	Bihar	Bihar	Bihar
Tamil Nadu	Andhra Pradesh	Andhra Pradesh	Andhra Pradesh	Andhra Pradesh
Andhra Pradesh	Haryana	Haryana	Haryana	West Bengal
Punjab	Punjab	Punjab	West Bengal	Chhattisgarh
Haryana	West Bengal	West Bengal	Punjab	Punjab
West Bengal	Chhattisgarh	Chhattisgarh	Chhattisgarh	Gujarat
Chhattisgarh	Gujarat	Gujarat	Gujarat	Tamil Nadu
Gujarat	Karnataka	Karnataka	Tamil Nadu	Karnataka

Source: Department of Agriculture and Farmers Welfare, Government of India; # 3rd estimate

Maharashtra's share in India's guava production has been in range of 2.5-3.5% between 2017-18 to 2021-22. Though the area under cultivation has steadily increased over the last 5 years, the production has not commensurately increased due to decreasing productivity. The state's productivity has decreased from 2017-18 (13.55 MT/ha) to 2021-22 (10.52 MT/ha).

Table 4: Maharashtra – Guava Production, Area under Cultivation and Productivity – 2017-18 to 2021-22

Year	Production (MT)	Area (ha)	Productivity (MT/ha)	% of India's Production
2021-22 [#]	1,41,651	13,471	10.52	2.83%
2020-21	1,29,747	12,178	10.65	2.83%
2019-20	1,37,072	11,787	11.63	3.14%
2018-19	1,18,569	9,270	12.79	2.79%
2017-18	1,22,831	9,065	13.55	3.03%

Source: Department of Agriculture and Farmers Welfare, Government of India; # 3rd estimate

Production of guava in Maharashtra is concentrated in the Western Maharashtra and Marathwada region. The table below provides the details of top 10 guava producing districts in the State.

Table 5: Top 10 Districts in Guava Production in Maharashtra – 2021-22[#]

S. No.	States	Production (MT)	Area (ha)	Productivity (MT/ha)
1	Ahmednagar	23,500	2,350	10.00
2	Pune	19,152	1,596	12.00
3	Nanded	12,690	850	14.93
4	Beed	12,504	834	14.99
5	Nashik	11,084	1,112	9.97
6	Buldhana	10,603	925	11.46
7	Jalgaon	7,396	890	8.31
8	Osmanabad	6,940	635	10.93
9	Solapur	6,138	877	7.00
10	Sangli	4,956	619	8.01
Maharashtra		1,41,651	13,471	10.52

Source: Department of Agriculture, Government of Maharashtra; # 3rd estimate

1.2.2 Important Varieties

The table below provides brief description of major guava varieties in India.

Table 6: Major Guava Varieties in India

Allahabad Safeda	Allahabad Safeda is a white pulp variety and considered to be the most common guava variety across India, with major cultivation in the Northern States. It has a smooth skin and soft sweet pulp on ripening.
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Table 6: Major Guava Varieties in India	
Lucknow-49	The variety, also called as “Sardar”, is a white pulp variety. The fruits are round in shape, size larger than Allahabad Safeda, with yellowish green. The pulp
Lalit	Lalit is a high yielding variety with small-medium sized fruits. The fruits’ pulp are pink in colour. The variety is suitable for both table consumption and processing.
Pink Taiwan	This variety has origination in Taiwan but is grown in good quantities in India. It bears medium sized fruits with sweet pink flesh. The peel is greenish yellow in colour when ripe.
Banarasi Surkha	Banarasi Surkha is grown in Northern states (Uttar Pradesh, Bihar). The guavas are medium sized and have a pink-red colour attractive and sweet pulp.
Arka Mridula	Arka Mridula is a selection of Allahabad Safeda. It has yellow color peel when fully ripe with white pulp. The fruits have high brix content and pectin, making it suitable for processing.

1.2.3 Trade – International

The export of guava from India has witnessed a good growth over the last 4 years from 2018-19 to 2021-22, increasing at an annual rate of 53% in those years. Export quantities through still remain low in comparison to India’s production quantities. This is because there is limited consumption of guava in large markets such as Europe, USA, and China.

Table 7: Guava Exports from India – 2017-18 to 2021-22		
Year	Quantity (MT)	Value (₹ Crs)
2021-22	5,339	20.26
2020-21	2,886	9.4
2019-20	1,697	5.2
2018-19	957	4.72
2017-18	1,230	5.54

Source: Agri Exchange – APEDA

Nepal is the largest importer of guava from India accounting for 65% India’s exports in 2021-22. Exports to Nepal are mostly the lower grade guavas, indicated by the average export price of ₹20 per kg, while the overall average export price is ₹38 per kg in 2021-22.

Table 8: Guava Export Quantity and Value for Top 5 Destinations from India – 2021-22			
S. No.	Country	Quantity (MT)	Value (₹ Crs)
1	Nepal	3,456	6.67
2	Tanzania	571	2.45
3	Netherland	268	1.45
4	United Kingdom	240	2.86
5	Germany	180	2.07
India		5,339	20.26

Source: Agri Exchange – APEDA

The increase in India's guava exports is driven by the increased exports to Nepal. Tanzania is a new market for Indian guavas, with 500-600 MT being exported both in 2021-22 and 2022-23 (April to November 2022).

Table 9: Export Trend of Top 5 Guava Importing Countries from India – 2017-18 to 2021-22 (MT)						
S. No	Country	2017-18	2018-19	2019-20	2020-21	2021-22
1	Nepal	352	191	1,240	2,271	3,456
2	United Kingdom	46	93	60	162	240
3	Tanzania	0	0	0	0	571
4	Qatar	98	121	98	97	63.84
5	United Arab Emirates	119	107	66	65	117
India		1,230	957	1,697	2,886	5,339

Source: Agri Exchange – APEDA

1.2.4 Trade – Domestic

Guava is traded across the country, through private / unorganized channels and through the Government notified *Mandis*. The price in domestic trade is dependent on supply-demand dynamics.

Major markets for guavas are the *Mandis* either in large urban centers or near high guava producing regions. Below tables provide the total arrivals and average modal price in *Mandis* with highest guava arrivals (across India and in Maharashtra) during 2022, as per AGMARKNET.

Table 10: Arrivals and Modal Price in Major Guava Mandis in India – 2022			
S. No.	Mandis	Arrival (MT)	Average Modal Price (₹/quintal)
1	Azadpur (Delhi)	40426	3891
2	Ajmer (F&V) (Rajasthan)	15550	2077

Table 10: Arrivals and Modal Price in Major Guava Mandis in India – 2022

S. No.	Mandis	Arrival (MT)	Average Modal Price (₹/quintal)
3	Ghaziabad (Uttar Pradesh)	8841	2534
4	Mathura (Uttar Pradesh)	8320	1541
5	Mumbai Fruit Market (Maharashtra)	7127	3773
6	Pune (Maharashtra)	5450	2737
7	Gaddiannaram, Hyderabad (Telangana)	5041	1684
8	Agra (Uttar Pradesh)	5029	2071
9	Durg (Chhattisgarh)	4001	3762
10	Aligarh (Uttar Pradesh)	3668	2118

Source: AGMARKNET

Table 11: Arrivals and Modal Price in Major Guava Mandis in Maharashtra – 2022

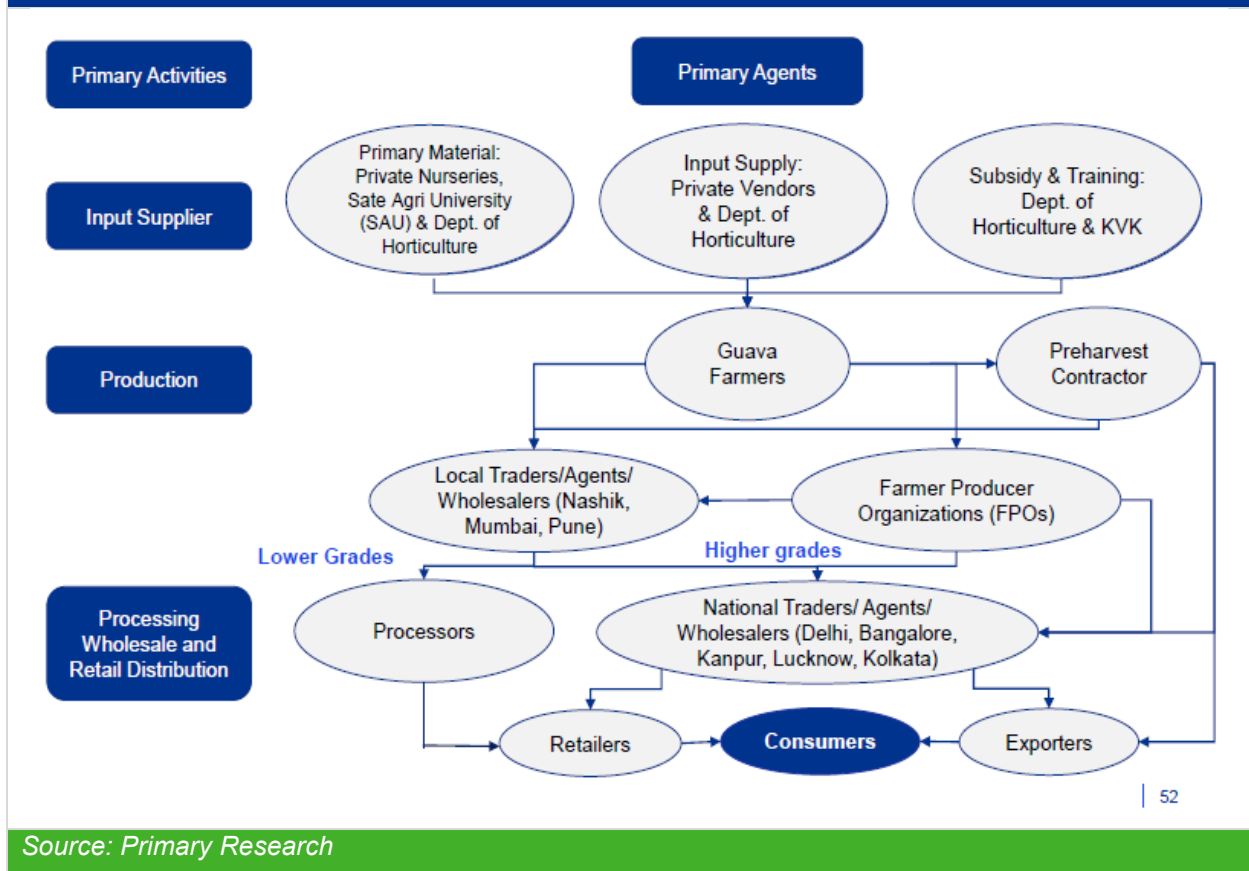
S. No.	Mandis	Arrival (MT)	Average Modal Price (₹/quintal)
1	Mumbai Fruit Market	7127	3773
2	Pune	5450	2737
3	Solapur	1187	1983
4	Aurangabad	288	1507
5	Amravati (Fruit & Vegetable Market)	276	1813

Source: AGMARKNET

1.2.5 Value Chain Overview

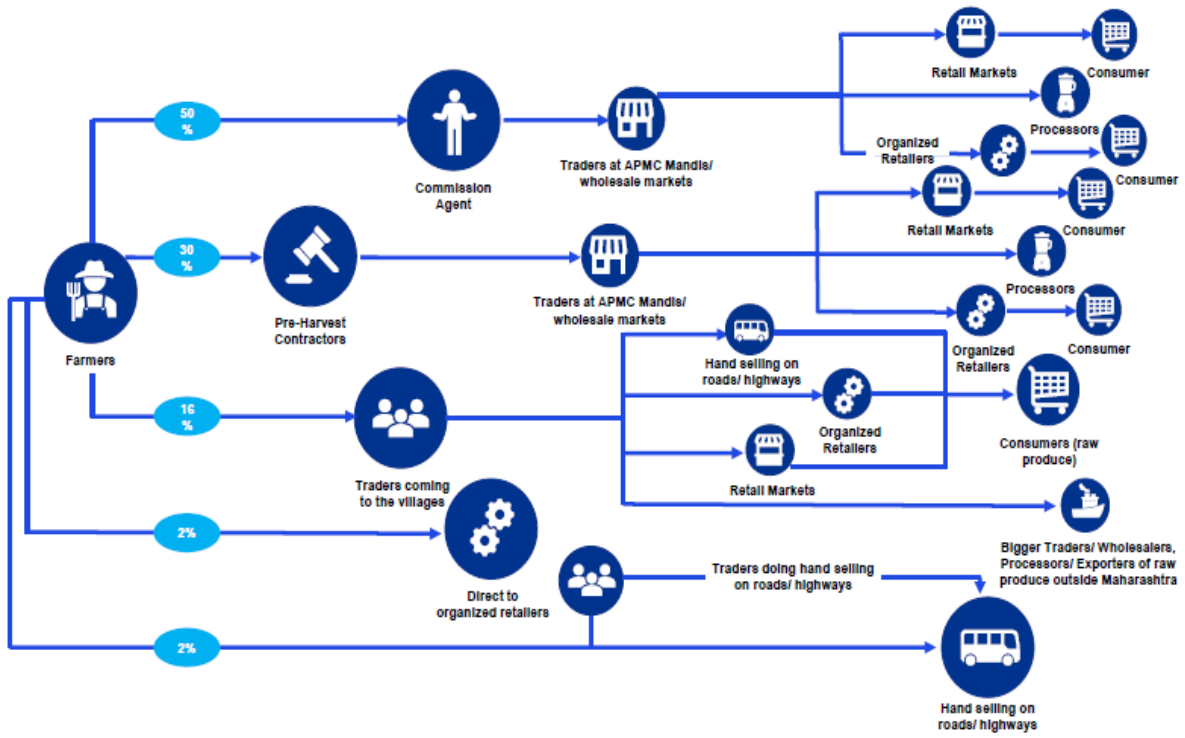
The guava value chain starts from nurseries / institutions supplying saplings to farmers. Trainings are provided through Government Departments and Krishi Vigyan Kendras. Guava farmers sell their produce to local traders / *mandis* and pre-harvest contractors. Guavas are supplied from local *mandis* to major consumption markets across the country. The structure of guava value chain is provided in the figure below.

Figure 1: Structure of Guava Value Chain



There are multiple marketing channels for guavas to reach consumers from farmers. Local traders / *mandis* route is the major channel for farmers to sell their guavas. The commodity flow through these marketing channels is detailed in the figure below.

Figure 2: Commodity Flow and Trade Analysis of Guava



Source: Primary Research

2 Marketing Strategy

Individual farmers and FPOs face issues in accessing profitable markets for their produce. Key challenges for them are their remote locations, high transportation costs, limited market information / knowledge of requirements, and the lack of business skills. The following market strategy has been prepared with a focus on providing information that helps FPOs in accessing reliable and profitable markets, while ensuring their produce meets market standards. In addition, it is envisaged that the FPOs have better bargaining power, some of the value chain activities are shifted towards them and there is a win-win situation for both FPOs and associated value chain actors / market players. Also, while providing information on opportunities, associated risks have also been highlighted. Prior to a detailed market segment-wise strategy, some of the common and cross-cutting interventions that are required at the end of FPOs for better market access are given below:

Commodity resource mapping and Know Your Farmers (KYF): FPOs should keep information on acreage of cultivable land under different crops, approximate marketable crop available with the farmers in the season, etc. This will help FPOs to have an idea of the volumes to be handled in the season and plan to effectively market their produce eventually.

Aggregate large volumes of produce: FPOs can establish long-term business relationship only if they are able to consistently supply sufficient quantity of produce, as per the buyer requirements. FPOs can increase procurement catchment area to consistently meet minimum requirement quantities.

Flexibility with payment terms: Many market segment function on credit cycle, which can vary from as low as 5-7 days to as high as 30-60 days. FPOs should have sufficient working capital to made credit cycle and farmer payments.

Have good market intelligence: FPOs should have good market intelligence to decide on store / sell decisions and to determine which market to send the produce to. Market intelligence can be collected through online sources such as Government data and news articles, and through on-ground network of contacts in different parts of the country. Keeping a tab on market situations in target export markets will help FPOs in market entry and expansion.

Appointment of manager: FPOs can appoint a manager for its market linkage business. This will help in better sales planning, coordination with buyers for purchase and payment timelines. It can also appoint a manager for procurement activities. For FPOs to expand its business and supply to more buyers, it is necessary to have strong procurement, and appointment of manager can help in establishing the same.

Diversify supply options: All types of markets and customers come with both opportunity and risks for FPOs. This document also details on potential risks that FPOs might face in each market. To mitigate risks, FPOs should ensure that it deals in multiple markets and with multiple customers in each market. In addition, to get quality commensurate pricing, FPOs need to supply each market with its required quality of produce.

This section details out the strategy that the FPOs can adopt to supply Guavas in the major market segments, namely, 1) Export Markets, 2) Domestic Markets, 3) Organized retail and eCommerce, and 4) Processors. Key components of this section are:



2.1 Exports

Export markets are regions / countries that guava is exported or can be exported from India. Export markets are classified as Indian Sub-Continent, the Middle East, and Other Export Markets for guava in this document.

2.1.1 Indian Sub-continent

Indian sub-continent market are the markets in following countries – Bangladesh, Pakistan, Nepal, Bhutan, Sri Lanka, and Maldives.

2.1.1.1 Characteristics of the Segment

The Indian Sub-continent market consists of countries that are in the lower-middle income to middle income category. Hence, the customers are more price sensitive and less stringent in terms of quality.

India currently exports to Nepal and Maldives in the Indian sub-continent market. Nepal is India's largest export destination for guava, accounting for 65-80% of India's total guava exports between 2019-20 to 2021-22. Export to Maldives is in insignificant quantity.

Guava is commercially cultivated in Pakistan, Bangladesh, and Sri Lanka in good quantities. Since all the 3 countries have tropical and sub-tropical climatic conditions and receive good rainfall similar to India, they are suitable for cultivating guava.

2.1.1.2 Competition

Other Countries:

India does not face good competition for its guava exports to Nepal due to geographical proximity. Nepal shared its border with Uttar Pradesh, the top guava producing state in India. This results in minimal logistics cost for exports to Nepal.

Other States:

Maharashtra is a minor producer of guava in the country accounting for only 2-3% of production. Exports to Nepal is dominated by Uttar Pradesh, since it is the largest producer and borders' Nepal.

2.1.1.3 Maintaining Quality Standards and Supply

Exporting guavas does not require adherence to high quality standards. The focus is on exporting low cost guavas due to high price sensitivity of the consumers in Nepal. Hence, Grade II & III guavas are suitable for export to Nepal.

FPOs looking to supply to Nepal should have infrastructure for sorting, grading, and packaging. Since lower grades can be exported to Nepal, FPOs should have an alternate channel to market their top grades at premium prices. Exporting guava to Nepal does not require pre-cooling or cold storage facilities. Exports can be done by road through ambient temperature trucks.

Exporting to Nepal may not be a lucrative market for FPOs in Maharashtra. FPOs need to compete with suppliers from Uttar Pradesh on cost, while incurring significantly higher transportation costs than the suppliers in Uttar Pradesh.

Supply to Nepal is done in 2 seasons – June to August (with peak supply in July) and November to January (with peak supply in December). The major season for exports is June to August, and it coincides with the primary supply season in Uttar Pradesh.

2.1.1.4 Pricing

The export price to Nepal is dependent on the market prices of lower grade guavas in Uttar Pradesh markets. The export price range for the last 3 years are provided in the table below:

Year	2020-21	2021-22	2022-23
Average export price range	₹10-20 per kg	₹20-25 per kg	₹25-35 per kg

2.1.2 The Middle East

The Middle East market includes UAE, Saudi Arabia, Iran, Oman, Egypt, Qatar, Iraq, Kuwait, Syria, Israel, Jordan, and Bahrain.

2.1.2.1 Characteristics of the Segment

The Middle East market has significant Indian diaspora and Indian origin population especially UAE, Saudi Arabia, Oman, Qatar, and Kuwait. Hence, this market has good demand for many Indian horticulture crops and is a top market for horticulture exports from India. The purchasing power of consumers in these markets are also high, and they demand high quality fruits and vegetables.

Qatar and UAE are the top importers of guava from India in the Middle East, averaging 80-100 MT per year from 2018-17 to 2021-22. Other countries in this market that import guavas from India are Oman, Bahrain, Saudi Arabia, and Kuwait. The exports to these 4 countries less are than 50 MT per year in the same time period as above.

2.1.2.2 Competition

Egypt: Egypt is the major exporter of guavas to the Middle East. Guava is among the major agriculture commodities exported from Egypt. Guavas from Egypt are smaller in size average 4-6 pieces per kg, and greenish-yellow in colour with white pulp. They are also cheaper compared to guavas from India and are in the similar price range as guavas from Thailand and Vietnam. The main season of export from Egypt for guava is September to January.

Other Countries: Vietnam and Thailand export guavas to the Middle East market. These 2 countries export large sized guavas (2-3 pieces per kg) and export both white pulp and pink / red pulp guava varieties. Guavas from these countries are priced cheaper than guavas from India. Sri Lanka is another exporter of guavas to the Middle East market.

Other Indian States:

Maharashtra is the top exporter of guavas from India to the Middle East. Other top exporters are Kerala, West Bengal, Karnataka, and Tamil Nadu. West Bengal, Tamil Nadu and Karnataka are larger producers of guava than Maharashtra. Maharashtra does not face significant competition from these States for guava exports.

Madhya Pradesh is fast approaching as a preferred state for exporters in Maharashtra for procurement of export quality guava. Guavas are procured from Ratlam and Mandsur districts in Madhya Pradesh for exports.

2.1.2.3 Maintaining Quality Standards and Supply

Top grade guavas are exported to the Middle East market, of mainly large varieties. Pink pulp varieties like Pink Taiwan are also exported to the Middle East.

Preferred Varieties	VNR Bihi VNR Bihi is preferred due to its large size and higher shelf life
Size	500-700 g per fruit
Physical Appearance	<ul style="list-style-type: none">• No physical damage• Clear skin with no brown spots• Distorted shape fruits are not preferred• No insect damage / holes

Apart from the above quality parameters, the sweetness of the fruit is important and over-ripe fruits are not accepted for exports since it affects the retail shelf life.

Guava can either be exported by air or sea to the Middle East market, with air being the most preferred mode of transport. For export through air, guava can be supplied at ambient temperature. For export through sea, guava need to be sent through reefer containers to ensure good shelf life. The transit time from Nava Sheva port to Dubai port is 7-9 days including loading and unloading. FPOs looking to supply to the Middle East can invest in packhouse facilities for sorting, grading, and packaging, pre-cooling chamber and reefer trucks.

Currently, guava is not usually sent as full containers, but in small quantities, due to limited demand. In such cases, exporters combine different fruits and vegetables, pre-cool the material and send it in reefer containers to the Middle East. Guavas are packed in CFB boxed in varying quantities from 4 to 6 kg boxes as per importer demand. Each guava is also packed in foam sleeve, and additional wrapping of individual fruit with plastic film can also be practices for slowing done ripening of fruits.

The procurement model of guava for export is from *Mandis*, as the export quantity is limited. Most exporters have not established backward linkages to procure from farmers / FPOs, since both requirement and supply ability are limited. Some exporters looking to increase guava exports are in the process of establishing backward linkage for farm procurement.

Guava is exported to the Middle East market throughout the year, with higher exports from September / October to February / March. FPOs should have good production and procurement capacities, to supply across the years, along with providing top quality produce when supplying to exporters.

2.1.2.4 Pricing

The export pricing is determined by the prevailing domestic prices for top grade guava. Procurement prices for export to the Middle East market is in the range of ₹50-80 per kg.

Costs such as sorting and grading, packaging, port charges are also incurred during exports. The labour charges for sorting, grading, and packaging varies from place to place, based on local labour market. For packaging, cost of foam sleeves are ₹40-50 per kg (of foam sleeves), cost of 4-6 kg capacity CFB boxes is ₹10-15 per box.

FPOs looking to directly export without an exporter intermediary would also incur additional costs, apart from the shipping charges. For export by sea, average port handling charges are ₹25,000 to ₹30,000 per container and custom agent charges ₹6000 to ₹8000 per container. For export by air, these charges are approximately ₹3-5 per kg.

2.1.3 Europe

Europe market includes member countries of the European Union and United Kingdom (UK). Major member countries of European Union that trade agricultural commodities with India, are Netherlands, France, Spain, Germany, Italy, Denmark, and Belgium.

2.1.3.1 Characteristics of the Segment

Europe is one of the biggest markets, along with North America, for export of agriculture commodities from developing countries. Most of the countries in this market are developed economies and have high quality standards for marketing of fresh fruits and vegetables. The purchasing power of consumers in this market is significantly higher than other markets such as the Middle East and Indian sub-continent.

Except UK, the presence of Indian diaspora is insignificant in other countries (only Italy and Germany have more than 1 lakh Non-Resident Indians (NRIs), while UK has more than 3.5 lakh NRIs and 14 lakh Persons of Indian Origin). Hence, unlike the Middle East market, where the consumption of produce from Indian can be primarily dependent on immigrants from India and neighboring countries, the consumption in Europe should be driven by local population. In Europe, India currently exports more than 10 MT of guavas per year to UK, Germany, and the Netherlands, and in negligible quantities to Italy, France, Switzerland, Sweden, and Norway.

Exports to Europe has steadily increased from 2017-18 to 2021-22 but is still less than 1000 MT per year. This is because of limited consumption, which is driven by the Indian diaspora, and not the native population. Guavas are not part of European cuisine / diet as a regular fruit, hence the export of guavas from other major producing countries to Europe is also limited.

2.1.3.2 Competition

Other Countries:

Production of guavas within Europe is limited due to requirement of tropical and sub-tropical climate for guava cultivation. Few pockets in southern Spain cultivate guava, but they are consumed locally.

Brazil is considered to be the major exporter of guavas to Europe. The state of Parana in southern Brazil produces high quality guavas that are exported to Europe and few other international markets. The Brazilian guavas are known for their sweet pink pulp and are medium-sized varieties. Growers in the region are practicing bagging of guavas 60 days before harvest to minimize residue and avoid infestation. This makes the fruits suitable for exports to Europe and comply with their MRLs.

Other Indian States:

Maharashtra is the top exporter of guavas from India to Europe market. Though exports is done through air from Maharashtra, exporters procure from guavas from Madhya Pradesh and Gujarat also. Madhya Pradesh is fast approaching as a preferred state for procurement of export quality guava. Guavas are procured from Ratlam and Mandsur districts in Madhya Pradesh for exports.

2.1.3.3 Maintaining Quality Standards and Supply

Top grade guavas are exported to the Europe market, of mainly the large premium varieties.

Preferred Varieties	VNR Bihi VNR Bihi is preferred due to its large size and higher shelf life
Size	500-700 g per fruit
Physical Appearance	<ul style="list-style-type: none">• No physical damage• Clear skin with no brown spots• Distorted shape fruits are not preferred• No insect damage / holes

Apart from the above quality parameters, the sweetness of the fruit is important and over-ripe fruits are not accepted for exports since it affects the retail shelf life.

Europe has strict requirements on pesticide residue levels (MRLs) for import of all fruits and vegetables. FPOs looking to supply guavas for export to Europe should ensure that MRLs are within specified limits. The updated database of MRLs for Europe Union can be found in this link - <https://ec.europa.eu/food/plant/pesticides/eu-pesticides-database/start/screen/mrls>. The MRLs indicate the “maximum” allowable levels for different chemicals, but it depends on the importers for more stricter

requirements. Many large retailers in Europe can have more stricter standards on MRLs, which the exporter should clarify through the importers.

Guava can either be exported by air or sea to the Middle East market, with air being the most preferred mode of transport. For export through air, guava can be supplied at ambient temperature. For export through sea, guava need to be sent through reefer containers to ensure good shelf life. The transit time from Nava Sheva port to Dubai port is 7-9 days including loading and unloading. FPOs looking to supply to the Middle East can invest in packhouse facilities for sorting, grading, and packaging, pre-cooling chamber and reefer trucks.

Currently, guava is not usually sent as full containers, but in small quantities, due to limited demand. In such cases, exporters combine different fruits and vegetables, pre-cool the material and send it in reefer containers to the Middle East. Guavas are packed in CFB boxed in varying quantities from 4 to 6 kg boxes as per importer demand. Each guava is also packed in foam sleeve, and additional wrapping of individual fruit with plastic film can also be practices for slowing done ripening of fruits.

The procurement model of guava for export is from *Mandis*, as the export quantity is limited. Most exporters have not established backward linkages to procure from farmers / FPOs, since both requirement and supply ability are limited. Some exporters looking to increase guava exports are in the process of establishing backward linkage for farm procurement.

2.1.3.4 Pricing

The export pricing is determined by the prevailing domestic prices for top grade guava. Procurement prices for export to the Europe market is in the range of ₹60-100 per kg.

Costs such as sorting and grading, packaging, port charges are also incurred during exports. The labour charges for sorting, grading, and packaging varies from place to place, based on local labour market. For packaging, cost of foam sleeves are ₹40-50 per kg (of foam sleeves), cost of 4-6 kg capacity CFB boxes is ₹10-15 per box.

FPOs looking to directly export without an exporter intermediary would also incur additional costs, apart from the shipping charges. For export by sea, average port handling charges are ₹25,000 to ₹30,000 per container and custom agent charges ₹6000 to ₹8000 per container. For export by air, these charges are approximately ₹3-5 per kg. The air freight to London and Amsterdam is in the range of ₹120-160 per kg.

2.1.4 Establishing Connects in the Market

To export produce it is necessary to understand the major export routes and to establish connects with relevant companies / personnel. The selection of export route for an FPO should be done as per the quality

of produce available for export, human capital to handle export related compliances, financial capabilities, and risk-taking ability.

Exports can be done through two routes:

Export Route	Description
Through an exporter from India	Companies / individuals specialize in exporting of agriculture and horticulture commodities to specific export markets. FPOs can supply produce as per required quality specifications to the exporters. The exporters buys the products from FPOs and then exports the products.
Through an importer at the importing country	FPOs can identify importers in the importing country. Importers are companies / individuals that obtained the necessary permissions in the importing country to import specific agriculture and horticulture commodities

Export Route	Establishing Connects
Through an exporter from India	<ul style="list-style-type: none"> ● Trade fairs (physical and virtual) conduct by APEDA. Details are published on https://apeda.gov.in/apedawebsite/trade_promotion/International_trade_event ● Other National Trade Fairs conducted by various Organizations / Association. These events are published on various platforms such as: <ul style="list-style-type: none"> ○ https://krishijagran.com/events ○ https://www.kisaanhelpline.com/agriculture-events ○ https://www.2exhibitions.com/agriculture-and-forestry/ ● Online trade websites such as www.indiamart.com and www.exportersindia.com ● Buyer-Seller meets organized under the MAGNET project
Through an importer at the importing country	<ul style="list-style-type: none"> ● Trade fairs (physical and virtual) conduct by APEDA. Details are published on https://apeda.gov.in/apedawebsite/trade_promotion/International_trade_event ● Other National Trade Fairs conducted by various Organizations / Association. These events are published on various platforms such as: <ul style="list-style-type: none"> ○ https://krishijagran.com/events ○ https://www.kisaanhelpline.com/agriculture-events ○ https://www.2exhibitions.com/agriculture-and-forestry/ ● International Trade Fairs such as: <ul style="list-style-type: none"> ○ Fruit Logistica: yearly event at Berlin, Germany is one of the most important events for fruit trade across the world

Export Route	Establishing Connects
	<ul style="list-style-type: none"> ○ Asia Fruit Logistica: yearly event conducted in Asia – at Hong Kong / Bangkok ○ Fruit Attraction: yearly event at Madrid, Spain ● International events on horticulture trade are regularly published on the website of CBI – a centre for promotion of imports from developing countries to Europe. www.cbi.eu/events ● www.freshplaza.com, and https://www.hcisingapore.gov.in/events also provides an event calendar on important global fairs for horticulture crops

2.1.5 Advantages and Risks Associated

Each export route mentioned in the above sub-section comes with its risks. Not each export route is suitable for all FPOs, and it is necessary for FPOs to understand the risks before pursuing exports through any of these routes.

Export Route	Risks / Disadvantages	Advantages
Through an exporter from India	<ul style="list-style-type: none"> ● Significant margin from the final export price is taken by the exporter ● FPOs cannot make significant export-oriented investments as export orders may not be assured. Exporters can procure equivalent quality from any other seller at lower prices, if available ● Countries can ban import of guava from India due to reasons such as repeated non-compliance to MRLs or pest infestations. These are outside the control of the FPO, and can significantly affect FPO's business in case it has high exposure to that export market 	<ul style="list-style-type: none"> ● Exporting through this route is suitable for all FPOs, especially for FPOs that handle small quantities ● Payment terms from exporters to FPOs can be for shorter credit time ● Export compliance is handled by the exporter – only quality adherence is taken care by FPOs
Through an importer at the importing country	<ul style="list-style-type: none"> ● FPO should be able to send the minimum required quantity per consignment consistently. This is possible only through strong procurement (from its member farmers, and other growing regions) 	<ul style="list-style-type: none"> ● Higher margins ● Long-term business opportunity. FPO can become an exporter for other FPOs / market players

Export Route	Risks / Disadvantages	Advantages
	<ul style="list-style-type: none"> ● Payment default by importers in case the FPO does not take precautionary measures like Letter of Credit ● Credit timelines for payment from the importer can be as high 30 to 60 days ● FPO requires proper and complete knowledge on export compliance requirements of the importing country ● Rejection of consignment by importing country – shortfall in compliances. Especially for European and North American markets ● Countries can ban import of guava from India due to reasons such as repeated non-compliance to MRLs or pest infestations. These are outside the control of the FPO, and can significantly affect FPO's business in case it has high exposure to that export market 	<ul style="list-style-type: none"> ● Increased exports through volume and by adding other crops in which the FPO is dealing

2.2 Domestic Market

Domestic markets here are the Government notified *Mandis* and private traders in large cities across the country.

2.2.1 Characteristics of the Segment

Domestic markets consume all grades of guava, as it has a wide range of customer segment from exporters to retailers to processors. The demand from domestic market is constant throughout the year, while the pricing is based on day-to-day supply demand dynamics.

Access to different domestic markets across the country can be beneficial to FPOs as they can act as good hedge against price risk. Lower prices in one region do not translate to low prices in another region. Hence, FPOs can sell their produce across different domestic markets.

2.2.2 Competition

Competitors for FPOs in Maharashtra for supply of guava to domestic markets are the top guava producing states in the country. Since Maharashtra is a minor producer of guava, it has net inflow of guavas into the states, i.e., consumption is greater than production in the state. Hence, competition for Maharashtra FPOs can be divided into 2 segments: In Maharashtra's markets and in Other states markets.

Maharashtra markets:

Guavas from Gujarat, Madhya Pradesh, and Chhattisgarh are supplied to markets in Maharashtra. The quality of guavas from Gujarat and Madhya Pradesh of the VNR Bihi variety are considered to be of equivalent or superior quality compared to those grown in Maharashtra. Both these states are larger producers of guavas than Maharashtra.

Other states markets:

Maharashtra faces significant competition in supplying guavas to major consumption markets such as Delhi, Bangalore, Hyderabad, Kolkata, Lucknow, Patna, Ahmedabad, and Chennai. Except for NCR, all other markets have very high production compared to Maharashtra within their state. Delhi is closer to the top 2 producing states – Uttar Pradesh and Madhya Pradesh, wherein Uttar Pradesh supplies traditional varieties while Madhya Pradesh has good production of hybrid varieties such as VNR Bihi.

2.2.3 Maintaining Quality Standards and Supply

Domestic markets accept all grades of guava as there is demand for all grades at respective price points. Grading pattern would differ from market to market and from variety to variety.

Grade	Small Varieties	Large Varieties
Grade A	250-300 g per piece	500-750 g per piece
Grade B	150-250 g per piece	400-500 g per piece
Grade C	50-100 g per piece	250-400 g per piece

Varieties such as Pink Taiwan, Sardar, Lucknow, and Vilas are categorized under small varieties in the above table. VNR Bihi is considered to be the premium variety in domestic markets. Apart from premium varieties, Pink Taiwan has good demand from consumers and is sent to multiple markets, especially the Northern states.

Currently, sorting and grading of guavas are done by traders / aggregators near the production regions. Grade-wise sales (sorted) of guavas may not be practiced across all *Mandis* or commission agents / traders. Sorted and graded VNR Bihi variety guava is widely adopted and accepted at *Mandis*. Hence, FPOs intending to sort and supply their produce to domestic markets should ensure that suitable buyers are available to pay a premium on their produce.

Guavas are packed in crates, of 20 kg each, for delivery to different markets. The premium varieties are provided primary and secondary packaging. Each fruit is wrapped by a foam sleeve to protect it from physical damage and then packed in CFB boxes of 20-25 kg each.

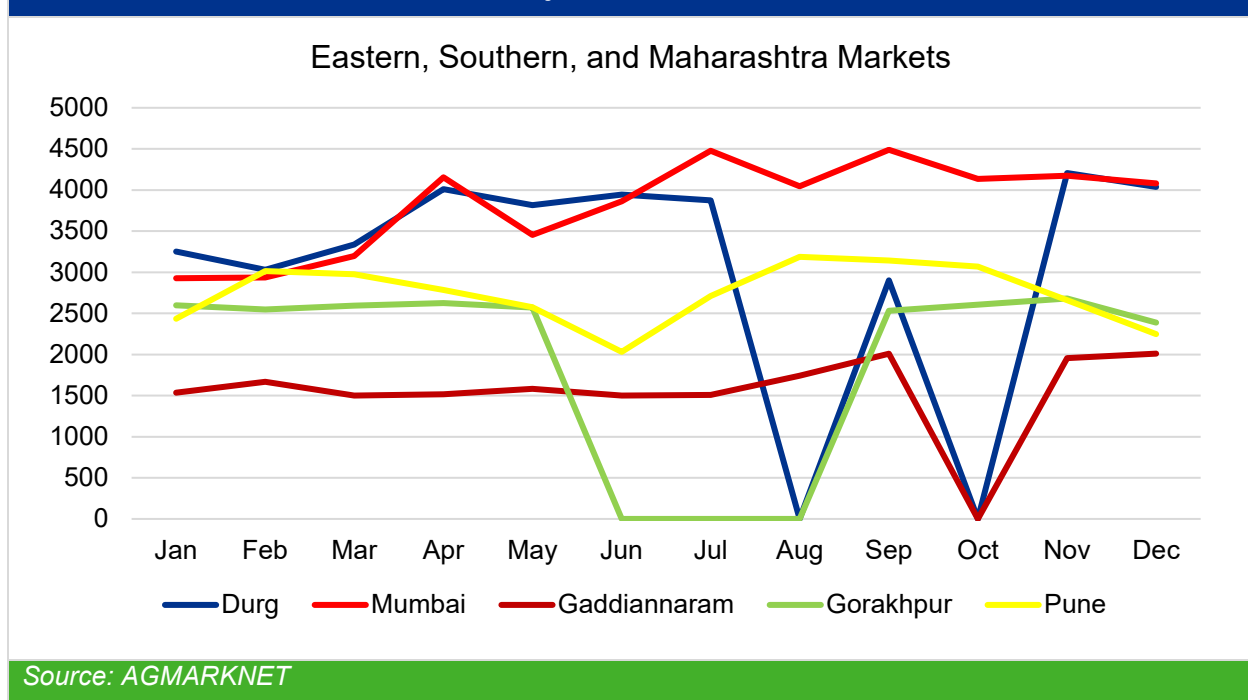
FPOs can invest in packhouse facility for sorting, grading, and packaging of guavas. Sorting and grading of guavas can be done manually or through optical sorters. Sorting, grading, and packaging is essential to get right prices if the FPO is working in premium varieties.

2.2.4 Pricing

Pricing in domestic markets depends on the day-to-day supply-demand dynamics. Hence, FPOs can command good price only by supplying good quality produce to the market. FPOs can sort and grade their produce and get premium pricing for top grade produce. But practice of buying graded guavas, especially for the small varieties, may not be prevalent in all markets, as the activity is done by the commission agents or traders, and further supplied to different channels.

Grade	Price during high supply	Price during low supply
Grade A	₹40-60 per kg	₹70-80 per kg

Guava Modal Price in major Guava Markets across India – 2022



Domestic markets tend to be quality agnostic, hence do not usually pay premium for good quality produce. It also prefers all quality produce so that it can supply to its wide customer base. Selling in domestic markets (through *Mandis*, traders) may not be the most profitable channels for the FPOs. FPOs that can sort and grade their produce, should have sell through other channels that require specific quality of guava. Nonetheless, domestic markets are an important channel as they have consistent demand.

2.2.5 Establishing Connects in the Market

FPOs can supply to domestic markets either by taking their produce for auction at *Mandis* or by directly supplying to traders in different markets. Connects can be established through visits to *Mandis* in different cities to meet Commission Agents. It can also be done by seeking help from other FPOs or traders dealing in guava in surrounding geography.

Agriculture / horticulture commodities focused marketplace platforms are effective tool for FPOs to find buyers across the country. Trading option for guava is available on **Bijak** mobile application. Online B2B platforms / trade websites such as www.enam.gov.in, www.farmerconnect.apeda.gov.in, www.kisanmandi.com, www.farmersmandi.in, www.indiamart.com and www.tradeindia.com can also be used for listing of guava.

2.2.6 Advantages and Risks Associated

Selling to major domestic markets decreases the price risk significantly. When prices are low in nearby markets, FPOs can sell their produce to other domestic markets wherever feasible. Consistent supply to major domestic markets is necessary for FPOs to build long-term relationship with buyers. This acts as a significant hedge against price variations in the nearby markets.

Risk of delayed payments or payment defaults is higher when selling to distant domestic markets in comparison to selling in nearby markets. FPOs should also be able to send a complete truck load for optimal logistics cost, thereby should have strong procurement and consistent supply.

2.3 Organized Retail and eCommerce

Organized retail and eCommerce are the fastest growing marketing channel for horticulture crops. Organized retail includes large national retail players like Reliance, More, and DMart, and other regional retail companies. Major eCommerce companies dealing in horticulture crops are BigBasket, Swiggy, Amazon, and Flipkart. Agri supply chain startups that procure from farmers and supply to various channels such as WayCool and Ninjacart are also categorized as eCommerce.

2.3.1 Characteristics of the Segment

The organized retail and eCommerce market targets the mid-premium to premium consumer categories. Hence, there is significant focus on quality of the produce. The companies in this market usually procure from *Mandis* and from traders / village-level aggregators. Over the recent years, there is significant focus from these companies to procure directly from farmers / FPOs to reduce costs and have more control over quality.

2.3.2 Competition

FPOs looking to supply to market players in this segment are competing with farmers / FPOs, *Mandis*, and traders across the country. These market players procure across the country, where required quality at the right price is available. Hence, farmers / FPOs in other major guava producing States such as Uttar Pradesh and Madhya Pradesh are also competitors to Maharashtra FPOs looking to supply to Organized Retail and eCommerce market players.

These market players procure the premium variety guavas from Madhya Pradesh and Gujarat, apart from procurement within Maharashtra, for sales within Maharashtra.

2.3.3 Maintaining Quality Standards and Supply

Organized retail and eCommerce companies generally sell three types of guavas their final customers – large premium guava, smaller white pulp guava, and pink pulp guava. Highest procurement is of smaller white pulp guavas as they are low prices, while procurement of the large premium varieties is increasing due to higher demand from consumers.

Organized retail and eCommerce companies generally require high quality (Grade A and B) produce.

Smaller varieties	Varietal Preferences	Pink pulp – Pink Taiwan No varietal preference for regular white pulp guavas
	Colour	Light green to mild dark green

	Size	<ul style="list-style-type: none"> • 150-250 g per price • 5-6 cm in diameter
Larger Premium varieties	Varietal Preferences	VNR Bihi
	Colour	Light green
	Size	<ul style="list-style-type: none"> • 500-700 g per piece • 8-12 cm in diameter
Criteria for rejection		Over ripe, immature, hard seeds, physical damage, insect damages / holes

FPOs should ensure that it delivers on the quality requirements of these market players consistently to build long-term business relationship. To deliver good quality produce, FPOs can invest in packhouse facility for sorting, grading, and packaging. All process can be done manually, while sorting and grading can also be done through optical sorters. Guavas can be supplied either in crates (for short distances) or in CFB boxes (for long distances) to organized retail and eCommerce segment. To provide additional protection for premium varieties, market players prefer individual fruits to be packaged in foam sleeves.

Demand for guava is constant throughout the year, while guava is also available during most of the year except for 1-3 months. FPOs should ensure that is able to supply to its buyers throughout the year. Consistently supplying required quantity and quality throughout the year, benefits the market players as they do not need to transport guavas for their sales in Maharashtra from other states. This also benefits the FPOs as there is an assured market for its good quality guavas at reasonable prices.

Guava is not a focus crop for these market players as its consumption is limited unlike banana, pomegranate, or oranges. Hence, the market players do not establish collection centers focusing on procurement of guava. Guavas are procured through collection centers established for other fruits and vegetables. Solapur-Tembhurni-Indapur is a procurement region for guava for the market players in this segment. FPOs would be required to either supply to these collection centers or deliver to nearby distribution centers or the market players can collect the produce, if sufficient quantity is consistently available, directly from FPO's packhouse.

2.3.4 Pricing

The pricing for this category is dependent on the prevalent domestic market prices. Since these companies procure from different States to meet their demand, they can easily offset price increase in one market from procuring from another market.

Entering into seasonal contracts with these companies in this segment is a win-win situation for both the parties. FPOs can supply at a reasonable and assured price, while the companies are guaranteed of

required quality and quantity throughout the season. Pricing is decided on mutual agreement based on last season(s) markets' price trends. Prices obtained by supplying to these companies may not necessarily be higher than the market prices but FPOs can safeguard themselves against subdued low market prices. Organized retail and eCommerce companies can also pay a small premium (5%) above the prevailing market prices for consistent supply of required quality and quantity to FPOs.

FPOs will incur labour costs for sorting, grading, and packaging in the range of ₹1-3 per kg depending on local labour market rates. For packaging, cost of foam sleeves are ₹40-50 per kg (of foam sleeves), cost of 20 kg capacity CFB boxes is ₹20-40 per box depending on the quality of the box. 20 kg capacity plastic crates cost ₹100-150 per crate and can be reused since the supply from FPO to the market player's is regular.

2.3.5 Establishing Connects

Many market players in the Organized retail and eCommerce segment are actively working towards procuring from farmers and FPOs.

FPOs can try to establish connects with this market segment by:

- Through procurement centers of companies in surrounding region
- Through mutual connects who supply to such companies
- Listing on online trade websites such as www.indiamart.com and www.tradeindia.com
- Listing on agriculture / horticulture specific eCommerce platforms such as Bijak
- Various Government Departments / schemes conduct Buyer-Seller meets. FPOs can meet representatives from companies in this segment
- MAGNET project's Buyer-Seller meets. These Buyer-Seller meets offer platform for FPOs to interact with various market players including Organized retailers and eCommerce players
- Following websites give details on different events including Buyer-Seller meets that happen across the country:
 - <https://krishijagran.com/events>
 - <https://www.kisaanhelpline.com/agriculture-events>
 - <https://ficci-web.com/events>
 - <https://www.2exhibitions.com/agriculture-and-forestry/>

2.3.6 Advantages and Risks Associated

FPOs that have / can invest in building good post-harvest infrastructure can fetch better returns for their Grade A and B guavas. This segment is growing rapidly, hence making good business relationship with customers of the segment can lead to long term benefits for FPOs. Some companies in these segments

also invest in capacity building and post-harvest infrastructure such as collection centers, which the FPOs can leverage. FPOs can enter contracts with these companies and sell at profitable prices with reduced risk. Payment default risk is also lower with these companies.

Companies in this segment function on credit terms, though credit terms can be as short as 3 days or as long as 30 days. Rejections and price cuts due to quality issues can be common occurrence as they can have strict quality norms. Since these customers procure from different guava production regions and from numerous sellers, the pricing power with FPOs is low during negotiations.

2.4 Processors

Processors are manufacturing units of secondary or tertiary processed products of guava. They can be big processing units, MSMEs or cottage industries.

2.4.1 Characteristics of the Segment

Processors segment is highly price sensitive, and usually procure medium-low grade guavas. The consumption of value-added products of guava in India is minimal, hence the demand from processors for guava is also limited. The common product made from guava (both white and pink pulp) is ready-to-serve drinks. Other processed products that have a niche market are guava jams, spreads, and squashes.

2.4.2 Competition

For an FPO looking to supply to processors, its competitors are the local *Mandis* and wholesalers. The processors also tend to have long-standing relationship with select suppliers, as the suppliers understand their requirements. Large processors usually procure from multiple states to have consistent supply throughout the year.

2.4.3 Maintaining Quality Standards and Supply

Processors do not usually function with strict quality requirements, especially in terms of colour, size and physical defects. Since they are highly price sensitive, they procure medium-low grade guavas from the market.

Varietal Preferences	Varieties that have soft and sweet pulp are preferred such as Dharwar, Dholka, Lalit (pink pulp), Ratnadeep (pink pulp) Large premium varieties are not preferred
Size	Smaller size (100-150 g piece) are also acceptable
Other Specifications	9° to 11° is recommended

FPOs should target for supplying to processors only if it does sorting and grading of their produce. Lower grades can be supplied to processors, while higher grades can be supplied to export or organized retail channel.

Processors generally maintain a stock buffer and procure on periodic basis. They also function in planned schedules and can provide their requirement quantity and timelines in advance. Hence, supply to processors can be done in batches, as and when it procures sufficient quantity of required grade of guava. FPOs should target to supply in full truck loads (at least 10 MT) to minimize logistics cost.

2.4.4 Pricing

Industrial processors tend to maintain a procurement price lower than the market price. This is because of the large quantities they usually procure, thus giving an assured market for the suppliers.

Small scale processors and cottage industries operate at the day-to-day market prices. FPOs supplying to them have to match the prices that is prevailing the market for the required grade of guavas.

2.4.5 Establishing Connects

FPOs can supply guava to processors in its region (district and surrounding districts). FPOs can try to establish connects with this market segment by:

- Approaching processors in their region directly
- Through mutual connects who supply to such companies
- Listing on online trade websites such as www.indiamart.com and www.tradeindia.com
- Various Government Departments / schemes conduct Buyer-Seller meets. FPOs can meet representatives from companies in this segment
- MAGNET project's Buyer-Seller meets. These Buyer-Seller meets offer platform for FPOs to interact with various market players including Organized retailers and eCommerce players

2.4.6 Advantages and Risks Associated

Long-term business association with processors ensures a steady market for the medium-low grade guava produce. Supply to processors can be done in batches as and when sufficient quantity of required quality guava is available with the FPO. Logistics cost can be minimized by doing batched transportation.

Processors might function on long credit cycles from 15 to 60 days leading to payment default risk.