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Marketing Efficiency and Constraints Faced by Guava Orchardists in Punjab

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Abstract

The present study analyzes the marketing patterns and constraints faced by guava growers in Punjab state. Primary data were collected from 60 guava growers of three districts namely Ludhiana, Patiala, and Sri Muktsar Sahib of Punjab using a multistage random sampling technique to achieve the objectives of the study for the crop period 2024-25. The results revealed that the majority (70%) of the produce was routed through pre-harvest contractors; however, higher marketing costs (Rs. 666 per quintal) and a lower producer's share (58.66%) were found in this channel compared to other routes. Direct sales to the consumer were found to be the most efficient channel. Guava growers faced high input prices and limited availability of quality saplings as major production-related constraints, while unawareness about grading and packing facilities and price volatility were major marketing-related constraints. The study suggests that there is a need for timely input supply, enhanced storage and market linkages, and capacity building, especially for small and marginal farmers, to enhance the sustainability and profitability of guava cultivation.

Keywords: Marketing efficiency, Marketing channels, Constraints, Guava

JEL Classifcation: Q13, Q12, Q16, Q18

Introduction

Horticulture has emerged as a key driver of agricultural diversification in India, offering both ecological sustainability and economic benefits. With rising emphasis on sustainable land use and balancing conservation with development, horticulture now occupies a central role in agricultural reforms. Traditionally dominated by cereals like wheat and rice, Indian agriculture is gradually shifting towards high-value crops like fruits and vegetables, which ensure better returns, employment generation, and income diversification for farmers (Sharma & Jain, 2011). This transformation is supported by India's diverse climate, varied agro-ecological zones, and strong farming traditions, making the country well-suited for a wide range of horticultural crops. Fruits and vegetables, being labor-intensive, not only generate significant rural employment but also reduces the dependence on low-return cereal cultivation (Birthal et al., 2008; Pattanayak and Mallick, 2017).

India today stands as the world's second-largest producer of fruits and vegetables after China. In 2023–24, total horticultural output was estimated at 353.19 million tonnes from nearly 29 million hectares, with fruits contributing 112.73 million tonnes and vegetables 205.80 million tonnes (NHB, 2025). While bananas, mangoes, guavas, grapes, and lemons registered steady growth, apple and pomegranate production declined slightly. Fruit exports also remained robust, crossing 12.76 lakh tonnes worth nearly USD 986 million, with the total value of fruit and vegetable exports nearing Rs. 13,000 crores (APEDA, 2025). Despite minor fluctuations in vegetable output, horticulture continues to play a vital role in India's agricultural GDP and trade economy, supported by government initiatives and expanding market opportunities.

Among various fruit crops, guava (*Psidium guajava*) has gained particular significance. Native to tropical America, guava was introduced to India in the 17th century and is now among the top five fruits by area under cultivation, after citrus, banana, mango, and papaya. In 2024–25, guava occupied about 261,000 hectares with an annual output of 3.91 million tonnes (NHB, 2024). Uttar Pradesh, Madhya Pradesh, and Andhra Pradesh lead in cultivation, while Punjab has emerged as a high-productivity hub. The increasing area and production highlight guava's growing economic importance in Indian horticulture.

Punjab, long known as the wheat-rice belt, is increasingly diversifying towards horticulture, with guava as a prominent choice (Kashish and Dhawan, 2017). Fertile soils and a favorable climate make it suitable for guava farming, which is now spread across most districts. In 2018-19, Punjab recorded 12,768 hectares under guava, producing nearly 293,000

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tonnes (GOP, 2023). The three districts viz. Ludhiana, Patiala, and Sri Muktsar Sahib contributes around 38.55 per cent of the states' guava production. Farmers' interest is largely driven by guava's profitability, as the perennial crop offers multiple harvests per year and stable income compared to seasonal cereals (Kumar et al., 2019).

Despite its potential, guava farming in Punjab faces significant challenges. The fruit's high perishability and limited shelf life make timely marketing essential. Seasonal harvest cycles, with a summer crop prone to fruit fly infestations and a more lucrative winter crop, create fluctuations in quality and supply. This often results in price volatility and marketing instability. Moreover, the traditional multi-layered supply chain-dominated by pre-harvest contractors, wholesalers, and retailers-reduces farmers' share in consumer prices, as a large portion of the value is absorbed by intermediaries (Bhat et al., 2017; Veerendrakumar et al., 2018). Limited cold storage, poor transportation facilities, and a lack of processing infrastructure further aggravate post-harvest losses, forcing farmers to sell quickly and often at lower prices.

The production and agronomic aspects of guava have been studied widely. The research on guava's marketing efficiency, price dynamics, and the socio-economic conditions of growers remains limited in Punjab. Understanding these dimensions is crucial for improving farmer incomes and strengthening guava's role in diversification. Against this backdrop, the present study seeks to provide a holistic assessment of guava farming in Punjab. The specific objectives are to analyze marketable surplus, marketing channels, and price spread in the guava trade, andidentify constraints faced by the guava growers.

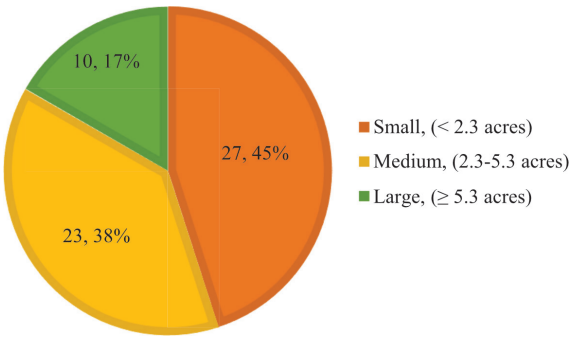
Data Sources and Methodology

Data

Primary data were collected through personal interviews with selected guava growers using a structured schedule in Punjab during the year 2024-25. A multistage random sampling technique was followed to draw a representative sample for the study. At the first stage, three districts viz. Ludhiana, Patiala and Sri Muktsar Sahib contributing around 37 per cent of the area under guava in Punjab were selected. In the second stage, a cluster of 2-3 villages were selected. At the third stage, a sample of twenty guava growers were selected from each selected district, and hence, in whole 60 guava growers were chosen for detailed analysis.

Categorization and selection of farmers

A complete list of guava growers with area under guava cultivation was obtained from the Deputy Director of Horticulture offices at Ludhiana, Sri Muktsar Sahib and Patiala, Punjab. These growers were listed in an ascending order on the basis of area under guava cultivation in the state. They were classified into small, medium and large



Note: Distribution based on the area under guava cultivation

Figure 1: Distribution of guava growers according to farm size category, Punjab

farm categories using the cumulative cube root frequency method (Singh and Sukhane 1969). Further, the growers were categorized into three farm size groups viz. Small (upto 2.3 acres), Medium (2.3-5.3 acres) and Large (more than 5.3 acres) as shown in Figure 1. Therefore 27 small, 23 medium and 10 large guava growers were selected from the list using cumulative cube root frequency method.

Figure 2: Details about the selection of guava growers

The information was gathered on farmers' socio-economic characteristics, guava area and production, self-consumption, marketable surplus, sales pattern, leasing of orchards to pre-harvest contractors, and marketing expenses such as grading, packaging, transport, and market charges. To estimate marketing costs, margins, and price spread, a sample of 10 pre-harvest contractors, 10 wholesalers, and 10 retailers were also surveyed. The information related to the constraints faced by the guava growers was also gathered.

Analytical techniques

Producer's net price: It refers to the prices that the farmers received for their produce at the time of disposal. As a result, when transportation and the market charges are deducted from the gross price received by the farmer, it gives the net price received by the farmer.

Producer's selling price: The price at which the grower sells his produce in the market.

Marketing margins: The profit of various market functionaries is referred to as marketing margins it was calculated by deducting the purchase price and marketing

expenses from the sale price of the marketing functionaries. It was calculated as:

$$MM_i = P_{si} - (P_{pi} + C_{mi})$$

Where,

MM_i = Marketing margin of the i^{th} intermediary

P_{si} = Value of the receipts per unit (sale price)

P_{pi} = Purchase value per unit (purchase price)

C_{mi} = Total marketing cost per unit

Price spread: It is calculated by deducting the price received by the guava grower from the price paid by the consumer and it includes the net margins of the intermediaries.

Producer's share in consumer's rupee: It refers to the percentage of the net price received by the guava growers to the selling price of retailer or consumer's purchase price. Mathematically it is expressed as follow:

$$PS = \frac{Pp}{Pr} \times 100$$

Where,

PS = Producer's share in consumer's price

Pp = Producer's price

Pr = Consumer's price

Marketing efficiency: The marketing efficiency was estimated by using Acharya's approaches. Higher the value of the marketing efficiency better would be the marketing operations.

Acharya's approach

$$ME = \frac{PP}{Mc+Mm}$$

Where,

ME = Marketing efficiency

PP = Price received by producer

Mc = Total marketing costs

Mm = Net marketing margins of intermediaries

Likert scale: To identify and assess the severity of production and marketing challenges experienced by guava growers, a structured Likert scale methodology was employed. The study utilized a five-point Likert scale, allowing respondents to express their level of agreement with each statement—ranging from Strongly Disagree (1) to Strongly Agree (5). This approach enabled a systematic measurement and comparison of the various problems faced by the growers.

Chi-square test: To evaluate the distribution of respondents across the Likert scale categories (Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree), a chi-square test was conducted. This statistical test examines whether the observed percentages of respondents selecting each category differ significantly from the expected distribution. By applying the chi-square test, the analysis determines if the responses are uniformly distributed or if certain categories are selected more frequently, revealing significant patterns in respondents' perceptions or experiences.

Results and Discussion

Cropping pattern

The cropping pattern of guava growers showed that paddy was the principal *kharif* crop, accounting for 41.52 per cent of the gross cropped area, while wheat dominated the *rabi* season with a share of 40.48 per cent as shown in Table 1. Fodder crops were grown in both seasons, making up 3.52 per cent in *kharif* and 3.06 per cent in *rabi*. Guava, as a perennial crop, occupied 9.68 per cent of the gross cropped area, with its highest proportion among large farms (11.84 %), followed by medium (11.49 %) and small farms (5.42 %). Other perennial crops contributed only 0.32 per cent of the gross cropped area. The gross cropped area per farmer was 41.19 acres overall, with large farms having the highest area (87.63 acres). The overall cropping intensity was 181.01 per cent, reflecting efficient land use and multiple cropping practices among guava farmers during the period.

Variety-wise distribution of area under guava

The variety-wise area under guava revealed that Lucknow-49 and Allahabad Safeda were the predominant varieties, accounting for 34.27 per cent and 34.08 per cent of the total guava area, respectively (Table 2). L-49 (Hybrid) occupied 22.67 per cent, while other varieties constituted 8.98 per cent. Among farm sizes, Allahabad Safeda had the highest share in small farms (57.70%), whereas Lucknow-49 dominated by medium (38.71%) and large farms (26.99%). L-49 (Hybrid) was primarily grown on large farms (30.12%). On an overall basis, the average area under guava per farm was 3.99 acres, with large farms contributing the most (10.38 acres). This distribution highlights a preference for improved and hybrid varieties, particularly on larger holdings, reflecting ongoing varietal diversification in guava cultivation.

Marketable surplus of guava growers

The marketable surplus of guava growers during 2024-25 indicated that, on average, 95.61 per cent of total guava production was available for market across all farm sizes (Table 3). Large farms exhibited the highest marketable surplus at 98.04 per cent, followed by medium (95.60 %) and small farms (89.72 %). On an overall basis, the home consumption, spoilage, kind payments and gifts or donations together accounted for a small fraction of the total production, with home consumption averaging 0.93 per cent and spoilage 1.17 per cent. These results highlighted that guava cultivation in the study area was predominantly market-oriented, especially among larger holdings.

Table 1: Cropping pattern of guava farmers, 2024-25

(Acres)

Particulars	Small	Medium	Large	Overall
Kharif				
Paddy	12.31	14.05	37.03	17.10
	(42.27)	(39.99)	(42.25)	(41.52)
Maize	0.19	0.00	0.00	0.08
	(0.64)	(0.00)	(0.00)	(0.20)
Fodder	1.33	1.57	1.50	1.45
	(4.58)	(4.45)	(1.71)	(3.52)
Rabi				
Wheat	11.83	13.77	36.43	16.67
	(40.61)	(39.18)	(41.57)	(40.48)
Mustard	0.63	0.30	0.60	0.50
	(2.16)	(0.87)	(0.68)	(1.21)
Fodder	1.19	1.28	1.40	1.26
	(4.07)	(3.65)	(1.60)	(3.06)
Perennials				
Guava	1.58	4.04	10.38	3.99
	(5.42)	(11.49)	(11.84)	(9.68)
Other perennial crops*	0.07	0.13	0.30	0.13
	(0.25)	(0.37)	(0.34)	(0.32)
Gross cropped area	29.13	35.15	87.63	41.19
	(100.00)	(100.00)	(100.00)	(100.00)
Net sown area	15.47	19.80	49.20	22.75
Cropping intensity (%)	188.28	177.48	178.10	181.01

*Figures in parentheses indicates percentages to total; *Kinnow, Plum, Pear*

Table 2: Variety wise area under guava, 2024-25

(Acres)

Particulars	Small	Medium	Large	Overall
Allahabad *Safeda*	0.91	1.43	2.40	1.36
	(57.70)	(35.48)	(23.13)	(34.08)
Lucknow-49	0.67	1.57	2.80	1.37
	(42.30)	(38.71)	(26.99)	(34.27)
L-49 (Hybrid)	-	1.00	3.13	0.90
		(24.73)	(30.12)	(22.67)
Others*	-	0.04	2.05	0.36
		(1.08)	(19.76)	(8.98)
Total	1.58	4.04	10.38	3.99
	(100.00)	(100.00)	(100.00)	(100.00)

*Figures in parentheses indicates percentages to total; *Punjab Pink and Shewta*

Table 3: Marketable surplus of guava growers, 2024-25

(qtl)

Particulars	Small	Medium	Large	Overall
Total production	221.48	588.96	1452.10	567.45
	(100.00)	(100.00)	(100.00)	(100.00)
Home consumption	5.22	5.04	6.10	5.30
	(2.36)	(0.86)	(0.42)	(0.93)
Spoilage	6.85	6.43	6.40	6.62
	(3.09)	(1.09)	(0.44)	(1.17)
Kind payment	5.81	6.22	6.00	6.00
	(2.63)	(1.06)	(0.41)	(1.06)
Gift and donations	1.63	3.13	2.80	2.40
	(0.74)	(0.53)	(0.19)	(0.42)
Any other	3.26	5.09	7.20	4.62
	(1.47)	(0.86)	(0.50)	(0.81)
Marketable surplus	198.70	563.04	1423.60	542.52
	(89.72)	(95.60)	(98.04)	(95.61)

Figures in parentheses indicates percentages to total

Marketing channel

A marketing channel refers to the path or route through which agricultural produce moves from the producer to the final consumer, involving various intermediaries such as pre-harvast contractors, wholesalers and retailers. The analysis of marketing channels for guava growers during 2024-25 identified four distinct routes through which produce reached the consumer as shown in Table 4. Channel-I involved direct sale from producer to consumer, representing the shortest and most efficient route. Channel-II included the retailer as an intermediary between producer and consumer. Channel-III comprised producer, wholesaler, retailer and consumer, reflecting a more extended supply chain. Channel-IV was the most complex, involving the producer, pre-harvest contractor, wholesaler, retailer and consumer. The predominance of intermediaries in Channels-III and Channel-IV indicated increased the marketing costs and reduced producer margins, while direct channels offered better returns to growers. This diversity in marketing channels highlights the varying degrees of efficiency and producer participation in guava marketing.

The results depicted in the Table 5 revealed that the majority of the farmers (70 %) prefer to sell their produce through pre-harvest contractors, with this channel being universal among large farmers and dominant among small (66.67 %) and medium (60.87 %) farmers. Commission agents or wholesalers were the next most common channel, used by 38.33 per cent overall, but only 30 per cent of large farmers. Retailers accounted for 26.67 per cent of sales, with similar proportions across small and medium farms. Direct sales to consumers were least preferred, chosen by just 11.67 per cent of growers, indicating limited direct market access for most guava producers.

The results presented in the Table 6 revealed that that the majority of guava was transacted through pre-harvest contractors, accounting for 70.29 per cent of the total quantity. Commission agents or wholesalers handled 17.67 per cent, while retailers managed 8.76 per cent. Direct sales to consumers constituted only 3.29 per cent of the total. Large farms relied most heavily on pre-harvest contractors (84.45 %), whereas small and medium farms showed a more diversified channel use. Overall, the findings indicate a strong dependence on intermediaries, especially pre-harvest contractors, with limited direct market access for guava growers.

Table 4: Details of identified marketing channels of guava in Punjab

Channel	Details
Channel-I	Producer----------Consumer
Channel-II	Producer------Retailer-------Consumer
Channel-III	Producer---Wholesaler---Retailer---Consumer
Channel-IV	Producer---Pre-harvest contractor---Wholesaler---Retailer---Consumer

Table 5: Distribution of guava growers according to preferred marketing channels

(Number)

Particulars	Small	Medium	Large	Overall
Pre harvest contractor	18	14	10	42
(Channel-VI)	(66.67)	(60.87)	(100.00)	(70.00)
Commission Agent/wholesaler	14	6	3	23
(Channel-III)	(51.85)	(26.09)	(30.00)	(38.33)
Retailer	8	7	1	16
(Channel-II)	(29.63)	(30.43)	(10.00)	(26.67)
Consumer	3	2	2	7
(Channel-I)	(11.11)	(8.70)	(20.00)	(11.67)
Total	27	23	10	60
	(100.00)	(100.00)	(100.00)	(100.00)

Figures in parentheses indicates percentages to total

Marketing efficiency

Marketing efficiency refers to the effectiveness with which a marketing system performs its function of moving goods from producers to consumers at the lowest possible cost, while maximizing returns to producers and minimizing costs to consumers. The analysis of marketing costs and margins across the identified marketing channels for guava revealed substantial differences in producer returns, marketing expenses, and consumer prices (Table 7). Channel-I, representing direct sales from producer to consumer, recorded the highest producer price (Rs. 2487) and the lowest marketing cost (Rs. 198.50), with no marketing margin, resulting in a consumer price of Rs. 2685.50. The producer's share in the consumer's rupee was the highest at 92.61 per cent, and Acharya marketing efficiency was also the highest at 12.53. In Channel-II, where the retailer acted as an intermediary, the producer price decreased to Rs. 2297.29, marketing costs rose to Rs. 306.29, and marketing margins increased to Rs. 434.29, raising the consumer price to Rs. 3037.86. The producer's share in the consumer's rupee dropped to 75.62 per cent, and marketing efficiency declined to 3.10.

Channel-III involved both wholesaler and retailer, further reducing the producer price to Rs. 2,078.45, with marketing costs of Rs. 560.60 and marketing margins of Rs. 489.12. The consumer price increased to Rs. 3128.17, the producer's share fell to 66.44 per cent, and marketing efficiency was 1.98. Channel-IV was the most complex, involving the producer, pre-harvest contractor, wholesaler, and retailer. Here, the producer price was the lowest at Rs. 1854.76, marketing costs were the highest at Rs. 665.57, and marketing margins peaked at Rs. 641.33. The consumer price reached Rs. 3161.66, the producer's share declined to 58.66 per cent, the price spread reached to maximum i.e. Rs. 1306.90 and marketing efficiency was the lowest at 1.42.

These results clearly indicate that as the number of

Table 6: Quantity of guava transacted through different marketing channels

(Quintals)

Particulars	Small	Medium	Large	Overall
Pre harvest contractor	126.89	323.04	1202.30	381.32
(Channel-IV)	(63.86)	(57.37)	(84.45)	(70.29)
Commission Agent/wholesaler	51.48	121.65	156.30	95.85
(Channel-III)	(25.91)	(21.61)	(10.98)	(17.67)
Retailer	15.93	103.39	4.30	47.52
(Channel-II)	(8.01)	(18.36)	(0.30)	(8.76)
Consumer	4.41	14.96	60.70	17.83
(Channel-I)	(2.22)	(2.66)	(4.26)	(3.29)
Total	198.70	563.04	1423.60	542.52
	(100.00)	(100.00)	(100.00)	(100.00)

Figures in parentheses indicates percentages to total

Table 7: Marketing efficiency and price spread of identified marketing channel

Particulars	Channel-I	Channel-II	Channel-III	Channel-IV
Producer Price (Rs./q)	2487.00	2297.29	2078.45	1854.76
Marketing costs (Rs./q)	198.50	306.29	560.60	665.57
Marketing margins (Rs./q)	0.00	434.29	489.12	641.33
Consumer price (Rs./q)	2685.50	3037.86	3128.17	3161.66
Price spread (Rs./q)	198.50	740.58	1049.72	1306.90
Producer's share in consumer's rupees (%)	92.61	75.62	66.44	58.66
Acharya Marketing efficiency	12.53	3.10	1.98	1.42

intermediaries' increases, both marketing costs and margins rise, leading to a progressive decline in the producer's share in the consumer's rupee and overall marketing efficiency. Direct marketing channels are thus more efficient and beneficial for guava growers, while multi-tiered channels primarily benefit intermediaries, raising the final consumer price.

Constraints faced by guava growers

The analysis of production-related constraints faced by guava growers, based on the Likert scale, highlighted key challenges (Table 8). Less availability of quality saplings at government nurseries was a significant issue, with 33.33 per cent of respondents strongly agreed and 16.67 per cent agreed, which is well supported by statistically significant values. High prices of quality saplings, fertilizers and plant protection chemicals were also major concerns, with 40.00 per cent strongly agreeing. High labour costs were notable (31.67 % strongly agreeing). Other issues, such as lack of technical skills and low subsidies on drip irrigation, were less pronounced and found to be statistically non-significant.

The analysis of marketing-related constraints faced by guava growers is portrayed in Table 10, as measured on the Likert scale, revealed several noteworthy issues. High price volatility was identified as the most significant constraint, with 36.67 per cent of respondents agreeing and 18.33 per cent strongly agreeing, well supported by a statistically significant p-value. Exploitation by middlemen (26.67 % strongly agreeing) and unawareness about grading and packing facilities (22.33 %) strongly agreeing were also prominent concerns. Other major constraints included inefficient transportation (26.67 % neutral, 18.33 % agreeing), higher labour charges for harvesting and lack of quality storage facilities. The findings highlight that market-related risks and the role of intermediaries are the most critical marketing constraints for guava growers, particularly those with significant chi-square and p-values, indicating the need for interventions aimed at improving market access,

Table 8: Production related constraints faced by farmers' response on Likert scale, 2024-25

(per cent)

Particulars	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Chi square	p value
Less availability of quality saplings of guava at nursery	10.00	13.33	21.67	16.67	33.33	7.92**	0.04
High prices of good quality sapling of guava fertilizer and plant protection chemicals	8.33	10.00	18.33	16.67	40.00	12.50**	0.01
High cost of labour for farmers	8.33	18.33	21.67	16.67	31.67	7.64**	0.04
Lack of knowledge about Orchard orientation/orchard layout	15.00	23.33	21.67	16.67	21.67	2.50	0.18
Lack of knowledge about plant propagation/multiplication	18.33	26.67	21.67	20.00	10.00	2.50	0.18
Lack of technical skills	13.33	21.67	33.33	16.67	13.33	11.81**	0.01
Low subsidies on drip irrigation system	13.33	21.67	18.33	21.67	21.67	2.64	0.18

*Note: ** Statistically significant at p<0.05 level*

Table 9: Marketing related constraints faced by Farmers response on Likert scale, 2024-25

(per cent)

Particulars	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Chi square	p value
Lack of knowledge about regular market	26.67	16.67	20.00	15.00	18.33	4.03	0.13
Inefficient transportation system	11.67	20.00	26.67	18.33	16.67	5.83*	0.08
Unawareness about grading and packing facility	25.00	30.00	16.67	13.33	8.33	9.03**	0.02
Lack of quality storage facility	28.33	18.33	23.33	16.67	11.67	4.72	0.11
Higher labour charges for harvesting	16.67	28.33	20.00	20.00	10.00	4.03	0.13
Exploitation of guava growers by middle men	11.67	18.33	21.67	16.67	26.67	4.31	0.13
High price volatility	11.67	16.67	15.00	36.67	18.33	19.17***	0.01

*Note: *** Statistically significant at p<0.01, **p<0.05 and ***p<0.1 level*

information, and infrastructure.

In conclusion, guava growers faced major constraints including unavailability and high prices of quality saplings, expensive fertilizers and chemicals and high labour costs. Additional issues were lack of technical skills, limited knowledge about orchard management and plant propagation and low subsidies for drip irrigation. Input-related costs and availability were the most critical challenges.

Conclusion and Policy implications

The study concluded that Lucknow-49 and Allahabad Safeda were the most commonly grown varieties of guava by the farmers. The average area under guava cultivation was 4 acres, accounting for 10 percent of the gross cropped area. Large farmers mainly involved in guava cultivation contributed to a marketable surplus constituting 95.6 percent of the total guava production. The route through pre-harvest contractors was found to be the major marketing channel for guava. High input prices, limited availability of guava saplings, unawareness about grading and packing facilities, and price volatility were identified as the major constraints faced by guava growers in the study area. Therefore, the study suggested that state agencies must ensure the timely supply of certified saplings and affordable inputs, supported by regular pest and disease monitoring services. It was observed that only a few marginal and small farmers (less than 5 acres) put area guava cultivation. To motivate these farmers, extension programs and training, especially for smaller holders, are critical for promoting efficient production and improved market participation.

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