

Knowledge and its relationship with characteristics of guava growers

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Abstract: The present study was conducted in Dharwad district of Karnataka state during 2021-22. To study the profile characteristics, knowledge and its relationship with characteristics of guava growers “*Ex-post facto*” research design was employed. A total sample size of 120 guava growers were selected for the study. The required information was collected by using structured interview schedule and simple random sampling technique. The important findings of the study were, two fifth (40.00%) of the guava growers had medium land holding, cent per cent of them belonged to high annual income group, two fifth (40.00%) of them had 2.01 to 4.00-acre area under guava cultivation and majority (61.66%) of the guava growers belonged to low market accessibility category. Overall knowledge of recommended cultivation practices shows that nearly half (48.33%) of the guava growers belonged to medium knowledge category and 32.50 per cent belonged to high knowledge category. The correlation analysis highlighted that knowledge of recommended cultivation practices of guava was positively and significantly related with education, extension participation, extension contact, mass media exposure, economic motivation and innovativeness. Fluctuation in market prices (100.00%), high wage rates (91.67%), exploitation by middlemen (77.50%) and lack of storage facilities (66.67%) were major constraints faced by guava growers. The major suggestions expressed by guava growers were fixing of minimum support price for guava (94.16%), establishment of processing units (71.67%), creating storage facilities (61.67%) and strengthening the marketing support by providing adequate market information (53.33%).

Key words: Constraints, Guava growers, Knowledge, Suggestions, Profile characteristics

Introduction

Guava (*Psidium guajava* L.) is one of the important and commercially cultivated fruit crop belonging to the family Myrtaceae. It is originated in tropical America, stretching from Mexico to Peru and gradually became a crop of commercial significance in several countries like Brazil, Mexico, China, Malaysia, Thailand, Islands, Cuba and India. India contributes 45 per cent of the world's guava production followed by China (10%), Thailand (7.5%), Mexico (4.5%) and Brazil (3%). India is the largest producer of guava in the world and accounts for an area of 306.64 thousand ha with a production of 4516.17 thousand metric tonnes and productivity of 14.73 MT/ha. In India, major guava producing states are Uttar Pradesh (21.78%), Madhya Pradesh (17.20%), Bihar (9.62%), Andhra Pradesh (7.42%) and Haryana (6.00%). Karnataka stands in 10th position in terms of production with share of 3.71 per cent. In Karnataka state, area under guava accounts for 7.98 thousand ha with a production of 167.48 thousand metric tonnes and productivity of 20.99 MT/ha. In Karnataka, Dharwad district occupies first position in area and production followed by Chikkaballapura, Ramanagara, Tumkur and Haveri. The total area under guava fruit crop in Dharwad district accounts for 900 ha with production of 15627 metric tonnes. Lucknow-49 and Navalur local varieties are largely grown in Dharwad district.

The guava fruit which in recent times has gained attention among the farmers because of its high nutritive attributes (like rich in antioxidants, Vit-C, lowering risk of cancer and diabetic friendly) has high demand in market. Due to this there is increase

in area under guava production in Dharwad district in recent years. There is shift in crop (from other fruits like mango *etc.* to guava) by farmers due to low input cost and management of orchard which in turn produces high yield which gives farmers a better economic return. This has encouraged a number of farmers to start guava farming on commercial scale. Several studies have been conducted on fruit crops to know the adoption of cultivation practices but very few research studies have been conducted on guava crop. Keeping these things in view, the present study was undertaken to know the knowledge and its relationship with characteristics of guava growers, profile characteristics, constraints and suggestions in guava cultivation. The findings of the study would also help to understand the constraints and suggestions in cultivation of guava.

Material and methods

The study was conducted in Dharwad district as it has highest area under guava cultivation in Karnataka in the year 2021-22. Considering the major guava growing areas three talukas (Hubballi, Navalagund, Dharwad) of Dharwad district were selected. Further, from the selected each taluka 40 guava growing farmers whose farm was more than five years old were randomly selected to constitute a sample of 120 farmers for the study. To study the knowledge and its relationship with characteristics of guava growers, profile characteristics, constraints and suggestions in guava cultivation a structured interview schedule was prepared by reviewing the previous studies and pretested in the non-sample area for its practicability

and relevancy. Mean, standard deviation and correlation were used for classification of the members into various categories.

Results and discussion

Knowledge of recommended cultivation practices by guava growers

The results in Table 1 reveals that knowledge of recommended cultivation practices by guava growers. Cent percent of the guava growers had knowledge about soil type, recommended varieties, planting time, pit size and spacing (5x 5m and 6 x 6m). 70.83 per cent had knowledge about 7.5 x 7.5 m spacing of guava. This might be because these are simple and essential practices to be followed.

With respect to nutrient management cent per cent of guava growers had knowledge about FYM application followed by application of chemical fertilizers (61.67%), pit filling materials (58.33%) and time of chemical fertilizer application (54.16%). In case of growth regulators 35.00 per cent had knowledge regarding spray of GA-3 @ 100 ppm while, only 10.00 per cent had knowledge about spray of NAA @ 200 ppm. This might be because, these are complex practices and require regular extension contact to understand these practices.

Regarding irrigation cent per cent had knowledge about flood irrigation method and 83.34 per cent had knowledge about drip irrigation method. High per cent (91.67%) had knowledge about recommended frequency of irrigation (Once in every 20 days in summer, Once in a month in winter). The possible reason might be because these practices are simple and easy to adopt.

In case of intercropping cent per cent had knowledge about intercropping of pulses followed by cash crops (60.0%) and vegetables (45.00%). With respect to intercultural operations cent per cent had knowledge about weeding during rainy season and light harrowing. Majority (79.17%) of the guava growers had knowledge about mulching. These are simple practices to get better returns might be possible reason. Less per cent (26.67%) had knowledge about spray of pre-emergent herbicide (Diuron-0.8 kg/acre). This might be because this herbicide is old and unavailable in market.

The results from Table 1 also highlights that 80.00 per cent had knowledge about management of fruit fly followed by management of spiralling white fly (61.67%), khajji bug (48.34%) and leaf eating caterpillar (14.17%). With respect to disease management majority (70.00%) had knowledge about management of scab and anthracnose whereas, 44.17 and 20.83 per cent had knowledge about management of guava wilt and stylar end rot, respectively. In case of physiological disorder 35.84 per cent had knowledge about management of bronzing of leaves. Traditional know-how resulted in high knowledge about fruit fly, spiralling whitefly, scab and anthracnose management practices. Lack of awareness and less incidence resulted in low knowledge of management practices of khajji bug, guava wilt, leaf eating caterpillar and stylar end rot.

Overall knowledge of recommended cultivation practices

Results from Table 2 with respect to overall knowledge of recommended cultivation practices shows that nearly half

(48.33%) of the guava growers belonged to medium knowledge category. While 32.50 per cent belonged to high and 19.17 per cent belonged to low knowledge category. The reasons might be that majority of guava growers had education upto high school, medium level of extension contact, extension participation and mass media exposure. The results are on par with Meena (2012), Jhariya (2019) and Kumar *et al.* (2020).

Profile characteristics of guava growers

Age

It was noticed from the Table 3 that nearly half (46.67%) of the guava growers were under middle age category. While 27.50 per cent were under old age category and 25.83 per cent of them were under young age category. Majority of the guava growers belonged to medium to high age category, as most of the farmers had high farming experience and the data collected from the farmers who have guava plantation of more than five years. The results are in line with findings of Kumar (2012) and Dhaka (2016). They found that most of the farmers were middle aged among pomegranate and guava growers respectively.

Education

Nearly two fifth (37.50%) of the guava growers studied up to high school followed by 15.83 per cent were illiterate, 14.17 per cent studied upto middle school, 13.34 per cent studied upto PUC, 12.50 per cent studied upto primary school and only 6.66 per cent of guava growers studied upto graduation and above. The rural social environment may be the major reason for this trend. Due to their continued reliance on tradition, rural people prefer not to send their children to college and instead expect them to help with farm and household activities. The results are on par with the study conducted by Meena (2012), Manjunath and Bai (2019).

Family size

More than two fifth (42.50%) of the guava growers belonged to medium size family with 4-8 members. Whereas, 34.16 per cent belonged to large size family (more than 8 members) and 23.34 per cent belonged to small size family (less than 4 members). Due to change in social structure of the society, which is moving towards small and medium families because of division of land holding and urbanization, there is erosion of large family system and this has led to a greater number of medium sized families. The results are in conformity with study conducted by Kumar (2012), Hipparkar (2015) and Prashant *et al.* (2016).

Land holding

Two fifth (40.00%) of the guava growers belonged to medium farmer category with land holding of 10.01-25.00 acres, followed by 20.83 per cent of them were semi-medium farmers with 5.01-10.00 acres, 18.34 per cent of them were small famers with 2.51-5.00 acres, 16.67 and 4.16 per cent of them are big (more than 25.00 acres) and marginal farmers (up to 2.50 acre), respectively. Small farmers want returns quickly and the profit in guava starts only after 5th year onwards, hence very less per cent of small and marginal farmers could be justified. The results are in line with the findings of Dhaka (2016).

Knowledge and its relationship with characteristics

Table 1. Knowledge of recommended cultivation practices by guava growers		(n=120)
Particulars of recommended cultivation practices	f	%
Soil type suitable for guava growing sandy loam soil, Medium black soil, Red soil, Sandy soil	120	100.00
Recommended guava varieties Allahabad safeda, Lucknow-49(Sardhar), Arkamrudal, Navalur local	120	100.00
Planting time: June-July	120	100.00
Pit size		
i) 60 x 60 x 60 cm	120	100.00
ii) 90 x 90 x 90 cm	120	100.00
Spacing		
i) 5 x 5 m	120	100.00
ii) 6 x 6 m	120	100.00
iii) 7.5 x 7.5 m	85	70.83
Nutrient management		
i) Pit filling materials FYM-30kg+ Vermicompost (3-5kg) +Soil FYM	70	58.33
1) 2t/acre	120	100.00
2) 3t/acre	120	100.00
Application of chemical fertilizers N: P: K=150:60:120g/plant	74	61.67
Time of chemical fertilizer application	65	54.16
During early rainy season (May-June)		
Growth regulators		
i) GA-3 @100 ppm	42	35.00
ii) NAA @ 200 ppm	12	10.00
Method of irrigation		
i) Drip irrigation	100	83.34
ii) Flood irrigation	120	100.00
Frequency of irrigation once in every 20 days in summer, once in a month in winter	110	91.67
Intercropping in guava		
i) Pulses (Green gram, chickpea, cowpea)	120	100.00
ii) Vegetables (Tomato)	54	45.00
iii) Cash crops (Soyabean, groundnut)	72	60.00
Intercultural operations		
i) Weeding during rainy season	120	100.00
ii) Light harrowing	120	100.00
iii) Mulching	95	79.17
Chemical weed control		
Diuron @ 0.8 kg/acre	32	26.67
Insect pest management		
i) Khajji bug Spray 4g Carbaril 50WP/ 1.7ml Dimethoate 30EC per litre of water at the time of flowering	58	48.34
ii) Fruit fly		
a) Spray 4g Carbaril 50WP/ 1.7ml Dimethoate 30EC with 10g jaggery in 1lt of water	96	80.00
b) Insert traps containing 100ml mixture of 1ml methyl eugenol and 10ml malathion 50 EC/lt of water (4 traps/acre)	20	16.67
iii) Leaf eating caterpillar Spray 4g Carbaril 50WP/lt of water	17	14.17
iv) Spiralling whitefly Removal of host plants and to prevent further infestation application of imidacloprid 200SL at 0.01% or triazolophos 40EC at 0.06%	74	61.67
Disease management		
i) Guava wilt Mix 1g Carbendiazim or 1g thiophenoate methyl/lt of water and drench around plant before rainy season with 2-3 lt of solution per plant	53	44.17
ii) Stylar end rot Remove severely infected fruits and to prevent further spreading spray 2g Zineb 75WP or 1g Carbendiazim/lt of water	71	59.17
iii) Scab and anthracnose Spray 2g Mancozeb 75WP or 2g Zineb 75WP/ lt of water	84	70.00
Bronzing of leaves Spraying of DAP @ 0.5%+ ZnSO ₄ @ 0.5% 4-6 times during October-November months	43	35.84

f= Frequency %= Percentage

Area under guava

Two fifth (40.00%) of the guava growers belonged to 2.01 to 4.00-acre category, followed by 35.00 per cent of them have 4.01 to 10.00 acre, 15.00 per cent of them have 1.01 to 2.00 acre and 10.00 per cent of them have up to 1-acre area under guava cultivation. Small farmers want returns quickly and the profit in guava starts only after 5th year onwards, hence very less per cent of small and marginal

farmers take up guava cultivation. The findings are similar to the findings of Kota (2011) and Nikhil (2016).

Annual income

Cent per cent of guava growers belonged to high annual income group with an income of more than ₹ 1,20,000. The data was collected only from the farmers having guava plantation

Table 2. Distribution of guava growers according to their overall knowledge of recommended cultivation practices (n=120)

Category	Guava growers	
	Frequency	Percentage
Low (<24.46)	23	19.17
Medium (24.46-26.73)	58	48.33
High (>26.73)	39	32.50
Mean	25.60	
S.D.	2.68	

with more than five years age and nowadays, guava cultivation has become more profitable due to higher market prices of guava and lesser cost of cultivation might have led to high income level of guava growers. Hence the result. The results are similar to the study conducted by More (2016).

Farming experience

Nearly half (46.66%) of the guava growers had high farming experience (more than 20 years). While 33.34 per cent belonged to medium farming experience (10-20 years) and 20.00 per cent of growers belonged to low farming experience (upto 10 years). Majority of the guava growers belonged to middle age category and might have engaged in agriculture early without any higher education. Hence percentage of growers with high level of farming experience were more. The results have the support from the findings of Noonari *et al.* (2016), Manjunath and Bai (2019) and Kumar (2021).

Experience in guava cultivation

More than two fifth (40.83%) of the guava growers had medium experience in guava cultivation (10-20 years). Whereas, 33.34 per cent had high farming experience (more than 20 years) and 25.83 per cent had low farming experience (up to 10 years). Majority of the guava growers belonged to high farming experience in guava cultivation, as most of the farmers have started guava cultivation after few years of farming experience and the data collected from the farmers who have guava plantation of more than five years. Hence the result. The results are on par with the study conducted by Navyashree (2016) and Manjunath and Bai (2019).

Farm resource availability

More than two fifth (46.66%) of the guava growers belonged to medium resource availability category. While, 31.67 per cent were in low and 26.17 per cent belonged to high farm resource availability. Most of the farmers owned lands with medium black soil that was suitable for guava cultivation and good number of guava growers possessed water resources like bore well, open well and canals. This is because the study area comes under high rainfall region that provides water availability throughout the year. Most of them owned equipment like sprayer, tractor and tiller. This is because these are necessary equipments required for timely operations in guava field. The better economic status of guava farmers also might be the reason for their affordability of these equipments under different schemes.

Medium to high size family might be possible reason for medium labour availability among guava growers. Majority of guava growers had organic manures, this is because high per

Table 3. Profile of guava growers (n=120)

Variables	Guava Growers	
	Frequency	Percentage
Age		
Young (18-35 years)	31	25.83
Middle (36-55 years)	56	46.67
Old (> 55 years)	33	27.50
Education		
Illiterate	19	15.83
Primary school (1 st to 4 th)	15	12.50
Middle school (5 th to 7 th)	17	14.17
High school (8 th to 10 th)	45	37.50
PUC	16	13.34
Graduation and above	8	6.66
Family size		
Small (<4 members)	28	23.34
Medium (4-8 members)	51	42.50
Large (>8 members)	41	34.16
Land holding		
Marginal farmer (up to 2.50 acre)	5	4.16
Small farmer (2.51-5.00 acre)	22	18.34
Semi-medium farmer (5.01-10.00 acre)	25	20.83
Medium farmer (10.01-25.00 acre)	48	40.00
Big farmer (> 25.00 acre)	20	16.67
Area under guava crop		
Marginal farmer (up to 1 acre)	12	10.00
Small farmer (1.01-2.00 acre)	18	15.00
Semi-medium farmer (2.01-4.00 acre)	48	40.00
Medium farmer (4.01-10.00 acre)	42	35.00
Annual income		
Low (< ₹ 60000)	0	0.00
Medium (₹ 60000-120000)	0	0.00
High (> ₹ 120000)	120	100.00
Farming experience		
Low (Up to 10 years)	24	20.00
Medium (10-20 years)	40	33.34
High (>20 years)	56	46.66
Experience in guava cultivation		
Low (Up to 10 years)	31	25.83
Medium (10-20 years)	49	40.83
High (>20 years)	40	33.34
Farm resource availability		
Low (<3.48)	38	31.67
Medium (3.48-4.15)	56	46.66
High (>4.15)	26	21.67
Extension contact		
Low (<10.54)	22	18.33
Medium (10.54-11.66)	55	45.83
High (>11.66)	43	35.84
Extension participation		
Low (<9.23)	32	26.67
Medium (9.23-10.32)	58	48.33
High (>10.32)	30	25.00
Mass media exposure		
Low (<23.62)	35	29.17
Medium (23.62-27.38)	47	39.17
High (>27.38)	38	31.66
Economic motivation		
Low (<14.23)	32	26.66
Medium (14.23-15.44)	59	49.17
High (>15.44)	29	24.17
Innovativeness		

Table 4. Benefits availed under government schemes (n=120)

Name of the scheme	Benefits availed	Guava growers	
		f	%
National Horticulture Mission	Plantings, drippipes, tractor, tiller	52	43.34
Krishi Bhagya	Farm pond	62	51.67
Rastriya Krishi Vikas Yojana	Grass cutter, sprayer	22	18.33
Pradhan Mantri Krishi Sinchai Yojana	Drip	38	31.67
Pradhan Mantri Kisan Samman Nidhi	Financial assistance of ₹ 10,000	72	60.00

f= Frequency % = Percentage

cent of guava growers possessed buffalo and cow which provides farm yard manure. Similar results were observed in study conducted by Tippeswamy (2007), Kudari and Patil (2015) and Kumar *et al.* (2018).

Extension contact

Less than half (45.83%) of the respondents had medium extension contact. While, 35.84 per cent had high and 18.33 per cent had low extension contact. This might be due to high level of annual income, innovativeness and interest towards new practices might have led the guava growers to contact extension workers. The results are in conformity with the findings of Kachare (2012), More (2016) and Navyashree (2016).

Extension participation

Nearly half (48.33%) of the respondents belonged to the medium category of extension participation. Whereas, 26.67 per cent were in low and 25.00 per cent were in high category of extension participation. This might be due to medium level of education, medium extension contact and less awareness about extension activities among guava growers. The results are similar to that of Damor *et al.* (2017) and Morwal *et al.* (2019).

Mass media exposure

Nearly half (48.33%) of the respondents were in medium extension participation category. Whereas, 26.67 per cent were in low and 25.00 per cent were in high category of extension participation. As mass media like television, social media and internet were used by majority of the guava growers, they fall in medium to high level of mass media usage. The results are on par with the findings of Sanjota (2014), Bheemudada (2015) and Meena *et al.* (2017).

Economic motivation

Nearly half (49.17%) of the guava growers belonged to medium economic motivation category. Whereas, 26.66 per cent belonged to low and 24.17 per cent belonged to high economic motivation category. Economic motivation is an individual's drive to attain maximum profit which was found to be the reason that majority of guava growers belong to medium category of economic motivation. The results are in conformity with the findings with Hipparkar (2015), Ekhande (2016) and Prashant *et al.* (2016).

Innovativeness

More than two fifth (40.83%) of the guava growers belonged to high innovativeness category. While 39.17 per cent belonged

to medium and 20.00 per cent belonged to low innovativeness category. Majority of guava growers were under medium category of land holding and wanted to achieve higher returns and hence were innovative in adopting the new practices. The results are similar to the findings by Deshmukh (2013).

Market accessibility

Majority (61.66%) of the guava growers belonged to low market accessibility category. Whereas, 23.34 per cent had medium and 15.00 per cent had high market accessibility. This might be due to the reason that there are no markets nearby for sale of guava and lack of proper marketing channels. Most of the guava growers sold their produce at farm gate itself due to high market distance, perishability of the produce, unfavorable market prices and lack of proper road connectivity. The results are similar to the findings by Fakayode *et al.* (2012).

Benefits availed under government schemes

Table 4 indicates that majority (60.00%) of the guava growers availed financial assistance of ₹ 10,000 under Pradhan Mantri Kisan Samman Nidhi. More than half (51.67%) of the guava growers availed benefits of Krishi Bhagya followed by National Horticulture mission (43.34%), Pradhan Mantri Krishi Sinchai Yojana (31.67%) and Rastriya Krishi Vikas Yojana (18.33%). More than half of respondents availed benefits of only two schemes out of five schemes. This might be due to lack of awareness and red-tapism to avail benefits under horticultural schemes provided by the government.

Relationship of profile of guava growers with their knowledge of recommended cultivation practices

The results presented in Table 5 reveals the relationship between profile characteristics of guava growers with knowledge level of the respondents about recommended cultivation practices of guava.

There was positive and significant association between education and knowledge of recommended cultivation practices by guava growers. This might be due to the fact that educated person is in better position to gather information, better understanding capacity and interpretation of complex information related to farming. Knowledge gain and retention is more among the educated growers and they become more receptive to the innovations compared to less educated or illiterate farmers. These results are in line with the findings of Yadav *et al.* (2013), Prashanth *et al.* (2018) and Patil *et al.* (2020).

There was positive and significant relationship between extension contact and knowledge of recommended cultivation practices by guava growers. This is because regular contact with extension personnel makes guava growers to gain more information regarding knowledge of improved cultivation practices. These results are in line with the findings of More (2016).

There was positive and significant relationship between extension participation and knowledge of recommended cultivation practices by guava growers. The possible reason might be that participation of respondents in various extension activities exposes them to acquire new and improved practices of guava. Similar

Table 5. Relationship of independent variables with knowledge level of guava growers regarding recommended cultivation practices (n=120)

Variables	'r' value
Age	0.067 ^{NS}
Education	0.269**
Land holding	0.065 ^{NS}
Family size	0.107 ^{NS}
Annual income	0.071 ^{NS}
Farming experience	0.125 ^{NS}
Experience in guava cultivation	0.092 ^{NS}
Area under guava	0.098 ^{NS}
Farm resource availability	0.017 ^{NS}
Extension contact	0.494**
Extension participation	0.272**
Mass media exposure	0.263**
Economic motivation	0.231**
Innovativeness	0.442**
Market accessibility	0.106 ^{NS}
Benefits availed under government schemes	0.012 ^{NS}

** -Significant at the 1per cent ^{NS}-Non-significant

results are observed in findings of Jadhav *et al.* (2022).

There was positive and significant relationship between mass media exposure and knowledge of recommended cultivation practices by guava growers. The exposure to various mass medias provides enormous opportunities to gain experiences and serve as reinforcement in gaining knowledge. These results are in line with findings of Prashanth *et al.* (2018) and Patil *et al.* (2020).

There was positive and significant relationship between economic motivation and knowledge of recommended cultivation practices by guava growers. Economic motivation

Table 6. Constraints faced by guava growers in guava cultivation (n=120)

Constraints	No.	Per cent
A. Technical constraints		
Lack of knowledge about improved cultivation practices	62	51.67
Non-availability of pest and disease resistant varieties	56	46.67
Non-availability of quality planting material	52	43.33
B. Production constraints		
High wage rates	110	91.67
Non-availability of labour	96	80.00
High cost of chemical fertilizers and plant protection chemicals	26	21.67
C. Financial constraints		
Non-availability/ Insufficient credit in time	46	38.33
Lack or non-availability of subsidies	38	31.67
Short repayment period for credit	32	26.67
High rate of interest on loan	26	21.67
D. Marketing constraints		
Fluctuation in market prices	120	100.00
Exploitation by middlemen	93	77.50
Lack of storage facilities	80	66.67
Lack of adequate market information	68	56.67
Lack of transport facilities	45	37.50
Multiple responses elicited		

Table 7. Suggestions expressed by guava growers (n=120)

Suggestions	No.	Per cent
Fixing minimum support price for guava	113	94.16
Establishment of processing units	86	71.67
Creating storage facilities	74	61.67
Strengthening the marketing support by providing adequate market information	64	53.33
Timely advisory services regarding improved cultivation practices	58	48.33
Supply of quality planting material by agriculture/horticulture universities	47	39.17
Development of pest and disease resistant varieties	42	35.00
Multiple responses elicited		

thrives guava growers to gain more knowledge about improved cultivation practices to get higher returns. Similar results are observed in findings of Patil *et al.* (2020).

There was positive and significant relationship between innovativeness and knowledge of recommended cultivation practices by guava growers. This might be due to the reason that high innovative growers will naturally prefer to know improved cultivation practices. Similar results are observed in findings of Prashanth *et al.* (2018) and Patil *et al.* (2020).

Constraints faced by guava growers in guava cultivation

The critical analysis of constraints in adoption of recommended cultivation practices in guava as pointed out in the Table 6. highlights that more than half (51.67%) of guava growers expressed lack of knowledge about improved cultivation practices as major constraint followed by non-availability of pest and disease resistant/tolerant varieties (46.67 %) and non-availability of quality planting material (43.33%) were the major technical constraints. Major production constraints faced by guava growers were high wage rates (91.67 %), non-availability of labour (80.00%) and high cost of chemical fertilizers and plant protection chemicals (21.67%).

Table 6. also reveals that non-availability/insufficient credit in time (38.33%) followed by lack or non-availability of subsidies (31.67%), short repayment period for credit (26.67%) and high rate of interest on loan (21.67%) are major financial constraints faced by guava growers. The major marketing constraints faced by guava growers were cent percent of them expressed problem of fluctuation in market prices followed by exploitation by middle men (77.50%), lack of storage facilities (66.67%), lack of adequate market information (56.67%) and lack of transport facilities (37.50%). The findings of the study are supported by Atar *et al.* (2012), Dhaka (2016), Prashant *et al.* (2016), Upadhyay *et al.* (2018) and Kaur *et al.* (2021).

Suggestions expressed by guava growers

The suggestions as expressed by guava growers in Table 7 pointed out that, majority (94.16%) of guava growers suggested fixing minimum support price for guava, so that guava growers may benefit during low market prices as fluctuation of guava market rates are high. Establishment of processing units was suggested by 71.67 per cent of guava growers, this is because guava is a perishable produce and most of the farmers tend to

sell their produce at the farm gate. Guava has got demand for value addition, so processing units can procure guava directly from farm so that guava growers can get higher profits.

Creating storage facilities was suggested by 61.67 per cent of guava growers to store the produce during unfavourable marketing situations and also facilitate growers to market the produce whenever they needed. Strengthening the marketing support by providing adequate market information was suggested by 53.33 per cent of respondents, so as to reduce the

involvement of middlemen and increase income of the guava grower. Timely advisory services regarding improved cultivation practices were suggested by 48.33 per cent of guava growers, this is because to adopt new practices to avail higher yields. Supply of quality planting material by agriculture universities was expressed by 39.17 per cent of respondents and development of pest and disease resistant varieties (35.00%). The possible reason might be reducing cost of cultivation by eliminating cost of plant protection chemicals. The findings of the study are supported by Damor *et al.* (2017) and Dhenge *et al.* (2018).

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