



Adoption New Improves Technology of Guava (*Psidium guajava* L.) Cultivation in Bijnor District of Uttar Pradesh of India

Desh Pal Singh^{1*}, Satya Prakash², Vikas Kumar³, Krishna Kumar Singh¹ and Prerna Sharma⁴

¹Krishi Vigyan Kendra, Nagina (Bijnor), India.

²College of Horticulture, India.

³Krishi Vigyan Kendra, Shamli, Sardar Vallabhbhai Patel University of Agriculture and Technology, Meerut (UP), India.

⁴Student Rohta Road, Meerut, India.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/IRJPAC/2020/v21i2430342

Editor(s):

(1) Dr. Hao-Yang Wang, Shanghai Institute of Organic Chemistry, China.

Reviewers:

(1) Alaa El-Din Khalil S. Omar, King Faisal University, Kingdom of Saudi Arabia.

(2) Nur Fadiyah Mohd Zawawi, Universiti Malaysia Kelantan, Malaysia.

(3) Noor-ul-Ain Soomro, University of Sindh, Pakistan.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/63229>

Original Research Article

Received 01 October 2020
Accepted 07 December 2020
Published 31 December 2020

ABSTRACT

Guava is one of the most important nutritious and commercially cultivated fruit crop belonging to the family Myrtaceae. Owing to its hard nature, it is grown successfully in tropical and subtropical regions in India over an area of 246.85 thousand hectares with production of 4053.51 thousand metric tons. The total area under guava cultivation in Uttar Pradesh is 49.53 thousand hectares with 928.44 thousand metric tons production during 2017-18 [1]. Guava grown in diverse agro climatic conditions faces different biotic and abiotic stresses limiting the production and productivity of guava that its influence the economic condition of guava growers. Keeping these facts in mind, the present study was conducted in Bijnor district of Western Uttar Pradesh to analyze the socio-economic condition of guava growers. The result indicated that among the all study characteristics majority of the guava growers belonging to the middle ages 46 to 60 years (56.36 percent), general

*Corresponding author: E-mail: dpsingh0107@gmail.com

caste (50.91 percent), education level literate (90.00 percent) and among literate level of education maximum guava growers (42.42 percent) was high school, family type-joint family (78.18 percent), family member-4 to 6 members (51.82), land holding size-above 5 hectare (46.36 percent), irrigation facilities-own electric tube well (58.18 percent), occupation-agriculture and guava farming (48.18 percent), annual income-more than Rs 1,00,000.00 (62.73 percent) and social participation-no participation (61.82 percent). On the basis of result of this study it's become the necessary to develop some extension strategies for the promotion of higher production and productivity of guava in Bijnor district.

Keywords: Guava growers; constraints; production; extension strategies.

1. INTRODUCTION

Guava (*Psidium guajava* L., Family *Myrtaceae*) is one of the most nutritious and high value fruit crop for the nutritional security of country. It is originated in tropical America. Being a very hard crop, it can be successfully grown with very little care. Owing to its hard nature, it is grown successfully in tropical and subtropical regions in India over an area of 264.85 thousand hectares with production of 4053.51 thousand metric tons [1]. It is susceptible to frost. It can tolerate drought and high temperature to some extent. Established guava orchards do not require much care after planting. Due to its wider climatic adaptability, hardy to various biotic and abiotic stresses, precocious and prolific bearing habit, quality fruit with high nutritive value, medicinal attributes, used both as fresh fruit and after processing in different value added products and considered as multipurpose tree due to its utility as fruit, fuel, fodder and timber plant and high remunerative crops. Rainy and winter season crops are very hardy as compared to spring crop. Fruit quality of the winter season crop is best. Low quality production and productivity has adversely affected by guava wilt, bronzing, shoot and fruit borer, guava canker etc. Guava is a very popular fruits in Uttar Pradesh. It is available throughout the year except during the summer season. Guava occupies 49.53 thousand hectares area with 928.44 thousand metric ton production during 2017-18 in Uttar Pradesh. The best quality guava was also produced in Uttar Pradesh particularly in Allahabad region [1,2]. Guava fruit is a good source of ascorbic acid and pectin. Citric and malic are the predominant acid in guava. The physico-chemical characteristics of guava varies with varieties, stage of maturity, management practices, agro climatic situations, season of crop etc. The nutritional value of guava, ripe fruits contain approximately 79.50 percent moisture, 15.25 percent dry matter content, 3.20 percent crude fibres and little amount of ash, crude protein and fat. The fruits

are also a good source of vitamins (A and C), calcium, Phosphorus and iron. Several volatile compounds including hydrocarbons, alcohols and carbonyls have been reported to be responsible for the characteristic flavour of guava. The decreases in astringency with the advancement of maturity are ascribed to polymerization of leucoanthocyanins. Socio-economic condition particularly age, education, income, land holding size and extension contact greatly influenced the knowledge level of the farmers [3,4,5].

This study aimed to guide the farmers should be sufficiently exposed to the technological developments so that they will develop confidence as well as competency and adopt improved practices resulting in area expansion, better production and productivity.

2. MATERIALS AND METHODS

This study was conducted in Bijnor district during 2019-20 seasons. Bijnor district comprise of 11 blocks. Two villages from each block were selected randomly on the basis of availability of guava orchard for study. Thus the total number of 22 villages was selected for the investigation and five guava growers were selected from all selected villages. Thus the total sample size was of 110 respondents. The data were collected through personal interview with the help of pre-structured schedule. Interview schedule was prepared on the basis of objective of the study. The data were analyzed and find out the percentage and frequency.

Percentage: The frequency of a particular cell was divided by the total number of respondents in that particular category and multiplied by hundred.

$$\text{Percentage (\%)} = \frac{\text{Actual no. of respondent}}{\text{Respondents or Score}} \times 100$$

Mean: It was calculated to the average value of particular score. The formula is given below:

$$\text{Mean score} = \frac{\text{Total scores on particular item}}{\text{No of Respondents}}$$

3. RESULTS AND DISCUSSION

3.1 Socio-Economic Status of the Guava Growers

3.1.1 Age

Among the socio-economic status characteristics, age is one of the most important character in understanding their view about the particular problems, by a large age indicates extent of maturity in particular individuals. In that sense age becomes more important to examine the response.

Table 1 indicates that majority of the guava growers belonging to the middle age (56.36%) followed by lower middle age (23.64%); young age (12.73%) and old age (7.27%) guava growers respectively. These same trends were also reported by many researchers.

3.1.2 Caste

The Table 2 focuses that a maximum number of the guava growers belonging to general caste category. Out of total sample size highest percentage of guava growers (50.91) belonged to general caste category followed by 37.27 and 11.82 percent belongs to other backward caste and scheduled caste and schedule tribes caste categories respectively. The data revealed

that the general caste person was had dominance in all type of activities of the village because of being more in number. The lower caste category person did not come together on single platform. This was also observed as one of the main reason due to which the rate of participation of all categories person is lower in training, meeting and development activities. Thus, it is concluded that the majority of guava growers (50.91) percent were belong to general caste.

3.1.3 Education

It is well known fact that education is one of the most important characteristics that might affect the person's attitudes and the way of looking and understanding any particular social phenomena. In a way, the response of an individual is likely to be determined by his educational status and therefore it becomes imperative to know the educational background of the guava growers. Hence the variable 'Educational level' was investigated by the researcher and the data pertaining to education is presented in a given below table.

The Table 3 revealed that 90.00 percent majority of the guava growers were literate as against illiterate person (10.00 percent). Further, the educational standard of literate guava growers in descending order were found as 42.42, 21.21, 13.13, 11.11, 5.05, 5.05 and 2.02 percentages of High school, Junior High school, Intermediate, Graduate, Postgraduate, Primary school and Can read and write respectively.

Table 1. Distribution of guava growers according to their age

SN	Categories (Years)	Guava growers	
		Frequency	Percentage
1	Young (15-30)	14	12.73
2	Lower middle (31-45)	26	23.64
3	Middle (46-60)	62	56.36
4	Old age (>61)	8	7.27
Total		110	100

Table 2. Distribution of guava growers according to their caste

SN	Categories	Guava growers	
		Frequency	Percentage
1	General caste	56	50.91
2	Other backward caste	41	37.27
3	Scheduled caste/ Scheduled Tribes	13	11.82
Total		110	100

Table 3. Distribution of guava growers according to their education

SN	Categories	Guava growers	
		Frequency	Percentage
1	Illiterate	11	10.00
2	Literate	99	90.00
(a)	Can read and write	02	2.02
(b)	Primary School	05	5.05
(c)	Junior High School	21	21.21
(d)	High School	42	42.42
(e)	Intermediate	13	13.13
(f)	Graduate	11	11.11
(g)	Post Graduate	05	5.05
Total		110	100

3.1.4 Family type

The type of family in which a person live and gets socialized has immense important in deciding his or her values, beliefs and behavior patterns which are likely to affects his or her attitudes towards a particular problem. Hence, the family type plays its own role in giving the response of an individual and therefore it was thought important to understand the family type of the guava growers.

Table 4 indicate that 78.18 percent guava growers were associated with joint family system while 21.82 percent guava growers were belonged to single family system hence the joint family system was dominated in the study area

3.1.5 Family Size

Family size is also an important factor that influences the dominancy in the society. These influencers are shown in the table.

It is evident from the table that the highest percentage (51.82) of the guava growers was belongs to the family who had 4 to 6 member in their family. 22.73 percent guava grower's family belongs to that family who had three members and 25.45 percent guava growers family belongs to that family who had more than 7 family members. It may be concluded that still there is dominancy of joint family system with 4 to 6 member in the study area. Similarly to reported that the most of guava growers were lived in joint family system and had 4 to 6 family members.

3.1.6 Size of Land Holding

Size of land holding is also more important factor in socio- economic status of the farmer's family. Land holding in the study areas of guava growers was given in table.

The table indicates that the maximum number of guava growers (46.36%) were found in the land holding category of large guava growers (above 5.0 ha.) followed by 33.64% guava growers had medium land holding categories (2 to 5 ha.), 17.27% guava growers had small land holding category (1 to 2 ha.) and 2.23 percent marginal guava growers who had less than 1 hectare land. Some researchers [3,6,7,2] also found the same trend that large land holding families grows guava.

3.1.7 Irrigation Facility

It is clear from the above table that the 58.18% farmers have their owned irrigation sources (electric tube well). Along with the 23.64% guava growers were used the cannel irrigation system. Only 10.91% guava growers were used to Govt. tube well and 7.27% used private tube well with diesel pump. The result showed that the most of the guava growers were not dependent on natural sources and they did not government or private tube well. It showed that the strong economic condition of the guava growers of the study area. Similar finding were also reported [7].

3.1.8 Guava growers occupation

Person's occupations to have a bearing on his or her personality and so also the ways of looking at the problem before him. The quality of life is also determined by an individual's occupations and the income he drives from it. Occupation of an individual also socialized him or her in a particular fashion which in turn reflects his or her pattern of behaviors and his or her extent understanding of particular phenomena. In other worlds the person response to a problem is possible determined by the type of occupations who is engaged in and hence venerable occupations was investigated by the researcher

and data pertaining to occupation is presented in given below.

It is clear from the about table that the guava growers were the main occupation 48.18 percent followed by agro-based enterprises 30.00 percent, business 17.27%, service 2.73% and caste based occupations 1.82%, respectively and anyone was responses were given by guava growers as an agriculture labor and service. Similar finding were also reported [6,2].

3.1.9 Annual Income

Income of a person plays an important role in shaping the economic conditions of an individual which in turn is likely to have a bearing on the

response about the problem posted to him. The researcher, therefore in this study attempted to investigate the income as variable and the data related to income of the guava growers is presented in below table.

The annual income of the guava growers were showed in table that 62.73% Guava growers fall in the income group of rupees above 1,00,000/ followed by 15.45% farmers whose income were ranged from rupees 75,001 to 1,00,000, 10.91% farmers whose income were ranged from 50,001 to 75,000 and Rs. 25,001 to 50,000 respectively. The above finding of the table showed that about 62.73 percent of guava growers fall in the income group of rupees above 100000/ lac.

Table 4. Distribution of guava growers according to their family type

SN	Categories	Guava growers	
		Frequency	Percentage
1	Single Family	24	21.82
2	Joint Family	86	78.18
Total		110	100

Table 5. Distribution of guava growers according to their family size

SN	Categories	Guava growers	
		Frequency	Percentage
1	Up to 3 member	25	22.73
2	4 to 6 member	57	51.82
3	7 and above	28	25.45
Total		110	100

Table 6. Distribution of guava growers according to their size of land holding

SN	Categories	Guava growers	
		Frequency	Percentage
1	Marginal (<1 ha)	03	2.23
2	Small (1-2 ha)	19	17.27
3	Medium (2-5 ha)	37	33.64
4	Large (>5 ha)	51	46.36
Total		110	100

Table 7. Distribution of guava growers according to their irrigation facility

SN	Categories	Guava growers	
		Frequency	Percentage
1	Cannel	26	23.64
2	Govt. tube well	12	10.91
3	Private tube well with diesel pump	08	7.27
4	Own electric tube well	64	58.18
Total		110	100

Table 8. Distribution of guava growers according to their occupation

SN	Categories	Guava growers	
		Frequency	Percentage
1	Agriculture Labor	00	00
2	Caste based occupation	2	1.82
3	Service	3	2.73
4	Agriculture (Guava farming & Agriculture)	53	48.18
5	Business	19	17.27
6	Agro-based Enterprises	33	30.00
Total		110	100

Table 9. Distribution of guava growers according to their annual income

SN	Categories	Guava growers	
		Frequency	Percentage
1	Below Rs. 25,000.00	00	00
2	Rs. 25,001 to 50,000	12	10.91
3	Rs. 50,001 to 75,000	12	10.91
4	Rs. 75,001 to 1,00,000	17	15.45
4	Above Rs. 1,00,001	69	62.73
Total		110	100

Table 10. Distribution of guava growers according to their social participation

SN	Categories	Guava growers	
		Frequency	Percentage
1	No participation	68	61.82
2	Participation in one organization	26	23.64
3	Participation in two organization	14	12.73
4	Participation in more than two organization	2	1.81
Total		110	100

3.1.10 Social participation

Social participation of a person in various events and gathering shows his degree of involvement in his social and cultural life. This is likely to have an impact on this views and attitudes about the particular problem. Keeping this in mind variable social participations was considered for the investigation and data of the same is presented in a cursory glance over the data depicted in the table.

The table indicates that out of 110 guava growers, 61.82% guava growers showed no participation in any technical organization followed by 23.64% guava growers who were participated in one organization, 12.73 percent guava growers who were participated in two organizations and remaining 1.81 percent guava growers who were participated in more than two organization, respectively and no one was found as office bearer member of any organization.

4. CONCLUSION

The socio-economic status of family of the guava orchardist was found to be a major association with the extent of adoption new improves technology of guava cultivation. It influenced the knowledge level of orchardists.

CONSENT

As per international standard or university standard, participant's written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Anonymous. SHM. Horticultural statistics at a glance; 2018.

2. Yadav RN, Singh Dan, Sharma TD. Relationship between extent of adoption of improved mango cultivation practices and socio-economic features of mango orchardists of Western Uttar Pradesh, J. Progressive Agri. 2007;7(1/2):31-33.
3. Javale PS, Nachance. Socio-personal characteristics and adoption of recommended practices of mango and citrus crops. Maharashtra J. Ext. Edu; 1994.
4. Rathor RS, Dhakar SD. Impact of KVK training programme of knowledge and adoption of Guava crop technologies in Chittorgarh District of Rajasthan. Indian Res. J. Extension Education, Special Issue. 2012;(2):123-124.
5. Thakur K, Bhosale S, Thakur KD. Information sources and Knowledge of mango growers. Maharashtra J. Ext. Edu. 1991;10(2):262-225;13:135-139.
6. Shakuntala and Chaman. Socio-economic characteristics of rural families. Maharashtra J. Extension Edu. 2000;19: 325-328.
7. Shashidhara KK. A study on socio-economic profile of drip irrigation farmers in Shimoga and Davanegere districts of Karnataka, M. Sc. (Agri.) Thesis, University of Agricultural Sciences, Dharwad; 2003.

© 2020 Singh et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

The peer review history for this paper can be accessed here:
<http://www.sdiarticle4.com/review-history/63229>