



Socio-Economic Characteristics of Guava Orchardists in Western Uttar Pradesh, India

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Authors' contributions

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

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ABSTRACT

This study was conducted in two blocks i.e., Baghara and Charthawal of Muzaffarnagar district of Western Uttar Pradesh during the year 2018-19. To know the socio-economic characteristics of guava orchardists for this investigation data was collected from 80 guava orchardists through personal interviews. It was found that the majority of guava orchardists (43.75 percent) belongs to higher medium age group ranging between 46 to 60 years of age, (22.50 per cent) respondents were having educational status up to high school, (70.00 per cent) orchardists were belonging to other backward caste category, (91.25 per cent) orchardists were married, (91.25 per cent)

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orchardists were engaged in agriculture as the main occupation, 60.00 per cent orchardist's were living in joint family, (48.75 per cent) guava orchardists were belong to medium family category 5-8 members including their family, (63.75 per cent) were having membership of one organization, (78.75 per cent) orchardists were had pucca house, (51.25 per cent) orchardists were having land (above 04 ha.), majority of the respondents (60.00 per cent) were having medium level of family resources (between 6-10), (90.00 per cent) were having motor cycle/ Scooty as transportation facility, (43.75 per cent) were having low level of farm assets (below 6), (68.75 per cent) orchardists were having private electric tube well as a source of irrigation, (81.25 per cent) were having medium level of information sources (Between 7-12 sources) in research study area. The majority (53.75 percent) of guava orchardists' annual income was above Rs. 2,00,000.

Keywords: Guava orchardists; socio-economic characteristics; carbohydrates.

1. INTRODUCTION

Guava (*Psidium guajava*L.) belongs to family Myrtaceae is one of the cherished fruits of India and is aptly called the Apple of Tropics and Poor man's apple. It is native to Mexico, Central America and Northern South America. Of its high adaptability to varied soil and climatic conditions along with its hardy nature, it has acclimatized to Indian conditions within a short period of time. This fruit has gained considerable prominence in our country in general and the state of Uttar Pradesh in particular on account of its high nutritive value, pleasant aroma and availability at moderate price [1-6].

Guava besides being a wholesome fruit is a storehouse of pectin, minerals (Ca P and Fe) carbohydrates, fiber, riboflavin, thiamine and vitamin C. The fruit is used to prepare jelly, jam, nectar, juice, pie, cake, stewed and preserve. Fresh fruit of guava contains 100 to 260 mg Vitamin C of per 100g of its pulp and it is not lost during preservation. The total area and production of guava in the country are 265 thousand hectares and 40,54 thousand metric tons. Guava is successfully grown all over the country and Uttar Pradesh is the most important guava-producing state of the country and Allahabad has the reputation of growing the best guava in the country as well as in the world [7-10]. Uttar Pradesh is the largest producer of guava viz; 914.94 thousand metric tons from an area of 49.01 thousand hectares followed by Madhya Pradesh 523.75 thousand metric tons in 30.31 thousand hectares. (National Horticulture Board 2017-18) Production of guava in high-density planting (1.5x3.0 m) is 26 tons per hectare during third year. The yield goes up to 47 tons/ha during the fifth and 55 tons/ha during the seventh year of growth. At spacing of 6.0x6.0 m, the 6 tons/ ha yield is obtained. The meadow orchard system is more beneficial than any other

system. In this system, the production starts from 2nd year itself giving an average yield of 13 tons/ ha which doubles during the next year. In the 3rd/ and 5th year yield is approximately 40 and 60 tons/ ha, respectively. This clearly shows that the meadow orchard system is better than other planting systems [11-14].

The impacts of climate change, derived mainly from global warming, threaten to affect the socioeconomic conditions of the population, especially those whose livelihoods depend on the use of natural resources and agricultural activities (Forero, 2002) [15].

For this reason, strengthening the family agricultural systems of indigenous peoples, Afro-descendants and peasants supposes the recognition of other ways of knowing, managing, using and interpreting nature, which by the way have proven to be the only proven way to use fragile tropical ecosystems with some ecological feasibility in the face of the failure demonstrated by "scientific knowledge" and the Western civilizing process [16,17]. The role of traditional knowledge will be essential in programs for the management, conservation, and evolution of the country's genetic heritage by giving continuity to the historical systems of domestication, selection, improvement, renewal, and diversification of species (Olivares and Franco, 2015).

For this purpose, an interview guide was used, which facilitated the research work. The quantitative information was framed within social, cultural and economic aspects following the guidelines proposed by Mosquera (1983) and Olivares et al. (2012).

For the characterization of the agri-food landscapes of each of the indigenous ethnic groups addressed, the study on the Definition

and characterization of agroecological units north of the Orinoco River in Venezuela (National Institute of Agricultural Research. INIA, 2016) automated in the System was used. of Information of the Agroecological Areas (SIAA), which is an automated system that contains in digital format the spatial and attributive information of the agroecological areas of Venezuela at a scale of 1:250,000; under the ARC View Geographic Information System v.3.2. (Arcview GIS, 1996) and the Visual Fox Pro v.5.0 Program (Microsoft, 1996) (Rey et al., 2000; Rodríguez et al., 2003).

The economic importance can be evaluated from many perspectives: from its uses, from the volume and value of the raw material, and from the outlays for guava research and agricultural outreach services [18-21]. The increased guava production in Brazil is related not only to the growing consumption of fruit in its fresh form, but also products originating from its industrialization (Quintal et al. 2017). Many food industry products contain guava, such as juice, nectar, pulp, jam, jelly, slices in syrup, fruit bar, dehydrated products, additive to other fruit juices and its consumption as fresh fruit, guava has attained real economic importance in all the world's tropical and subtropical regions (Kadam et al., 2012; Leite et al. 2006).

In the particular case of Carabobo, areas with better agricultural conditions are considered where there are four and five months of continuous rain, of these, areas with steep slopes and/or soils with limited agricultural potential are excluded (Rodríguez et al., 2013). However, areas with three months of continuous rain can be used for agriculture only in cases where there are irrigation systems, as well as those located on plains or foothills and present class I, II and III soils (Cortez et al. , 2018).

In this sense, to characterize and directly understand the structure and existing correlations between the variables that define the agricultural production system, it is possible to use multivariate analyzes such as the Principal Component Analysis method (Cuadras, 1992; Demey et al., 1994).

For several decades, in Venezuela, the method has been applied in various areas related to diagnosis and prediction in agroecosystems as well as other aspects such as the delimitation of precipitation patterns (Olivares et al., 2012; Vicario et al., 2015).

Research carried out globally on the ability to forecast the degree of food insecurity in indigenous agricultural territories is based on the establishment of different early warning systems (EWS) [22-25]. They are represented by environmental indicators considered as the basic elements of the crises generated due to extreme weather events such as: droughts (Paredes-Trejo and Olivares, 2018, Cortez et al., 2018), floods (Olivares y Hernandez, 2019).

1.1 Justification

Guava production technology is never completely accepted by the growers in all aspects. In such ways they always face constraints in the adoption of recommended technology. There is a need to do more efforts in the study area as well as in the country to increase production and improve its quality. If we want to increase the production of guava as well as its quality, we should give the focus on the adoption of recommended guava production technology. Adequate knowledge of recommended technology is a pre-requisite for the adoption of innovations. The proposed study will help to orchardists to solve their constraints which come in the adoption of improved package of practices of guava and its export quality. An attempt will be made to study the present status of guava orchardists in a very comprehensive manner along with the present knowledge level of guava growers and constraints being faced by them regarding the guava production technology. It is necessary that a recommended technology transferred by the scientists need to be done systematically to know the present level of knowledge and adoption of guava production technology and the constraints being faced during adoption, so that its production in the region can be increased.

This would be conducive to planners, administrators, extension workers and non-governmental organization personnel to do the sincere efforts in promotion of knowledge and adoption level in management practices of guava cultivation It will also focus the new dimension of research to futuristic researchers engaged in the field of extension education.

2. METHODOLOGY

This study was conducted in Muzaffarnagar district of Western Uttar Pradesh. The district comprises of 9 blocks one of which, two blocks Baghara and Charthawal were selected for the study purposively on the basis of the maximum

area under guava cultivators and availability of maximum guava cultivators. From each block four villages were selected purposively thus the a total 8 villages were selected for the investigation and from each village 10 respondents were selected purposively. Thus, the total sample size was 80 respondents for the investigation. The data was collected through personal interviews with the help of a pre-tested interview schedule. The data was analyzed and used appropriate statistical techniques.

2.1 Tabular Analysis

For comparison and interpretation of various aspects, knowledge, adoption, and constraints responsible, tabular analysis was used.

2.2 Percentage

Simple comparison has been made on the basis of percentage. For obtaining percent, the frequency of a particular cell was multiplied by 100 and divided by the total number of orchardists in that particular category to which all of them belonged. The formula used to calculate the percentage is given below-

$$\text{Percentage} = \frac{\text{Frequency}}{\text{Number of respondent}} \times 100$$

2.3 Mean (Average)

The mean (\bar{X}) was calculated by adding the total scores obtained by the respondents and divided it by the total number of respondents using the following formula:

$$(\bar{X}) = \frac{\sum X}{N}$$

Where,

$$\begin{aligned} (\bar{X}) &= \text{Average or mean} \\ \sum x &= \text{Total number of scores obtained by} \\ &\text{respondents} \\ N &= \text{Total number of respondents} \end{aligned}$$

2.4 Rank Order

The various ranks were given on the basis of the highest to the lowest frequency.

2.5 Standard Deviation (SD)

S.D. is the square root of the mean of the squares of all deviations, the directions being

measured from the arithmetic mean of the distribution. It is commonly developed by the symbol sigma (σ).

$$\sigma = \sqrt{\frac{1}{N} \sum_{i=1}^N (x_i - \bar{x})^2}$$

Where,

$$\begin{aligned} \sigma &= \text{Standard deviation} \\ d &= \text{Deviation from variables mean} \\ n &= \text{Total number of items} \end{aligned}$$

3. RESULTS AND DISCUSSION

The Socio-economic status of the guava orchardists includes the personal profile of orchardists in terms of their age, education, caste, land holding size, housing pattern, social participation, annual income, marital status and occupation of the orchardists, social and economic factors.

The findings related to different aspects of socioeconomic characteristics were presented in Table 1.

The Table 1, reveals that the majority of guava orchardists (43.75 percent) were belonging to medium age group ranging between 46 to 60 years of age, similar findings were reported by Mehta and Sonawane [26]. The maximum number of respondents (22.50 percent) were having educational status up to high school, similar findings were reported by Tekale and Gavit [27]. Most of the orchardist's 70.00 percent were belonging to another backward caste category, similar findings were reported by Singh et al. [28] and most of the orchardist's 91.25 percent were married in the study area. Agriculture was the main occupation of the orchardist's 91.25 percent and (60.00 percent) of orchardists were living to joint families while 48.75 percent guava orchardists were belonging to the medium family category 5-8 members including their family. The maximum number of respondents (63.75 percent) were having members of one organization. The majority of orchardists (78.75 percent) were having pucca houses and (51.25 percent) of respondents were having (above 4 hac) of land in the study area. The majority of the respondents (60.00 percent) were having medium level of family resources (between 6-10) and (90.00 percent) of respondents were having motor cycle/ scooter as transportation facilities. The majority of the

respondents (43.75 percent) were having low level of farm assets (below 6) and majority of the orchardists (68.75 percent) were having private electric tube well as a source of irrigation while, 81.25 percent respondents were having medium

level of information sources (between 7-12 Sources). The majority (53.75 percent) guava orchardists' annual income was of Rs. 2,00,000 similar findings were reported by Tekale and Gavitt [27].

Table 1. Distribution of the guava orchardists according to their socio-economic characters

Socio-economic characteristics of guava growers	Particulars	
	F	%
N = 80		
Age		
Young age group (below 30 years)	9	11.25
Lower medium age group (31-45 years)	28	35.00
Higher medium age group (46-60 years)	35	43.75
Old age group (above 60 years)	8	10.00
Education		
Illiterate	02	2.50
Can read only	02	2.50
Can read & write	06	7.50
Primary school	06	7.50
Junior High School	07	8.75
High school	18	22.50
Intermediate	13	16.25
Graduate	16	20.00
Post-graduate and above	10	12.50
Caste		
Upper caste (General)	19	23.75
Middle caste (OBC)	56	70.00
Lower caste (SC/ST)	05	6.25
Marital status		
Married	73	91.25
Unmarried	7	8.75
Main occupation		
Caste based occupation	-	-
Business	2	2.50
Cultivation (Agriculture)	73	91.25
Service	5	6.25
Type of family		
Nuclear family	32	40.00
Joint family	48	60.00
Size of family		
Small family (1-4 members)	15	18.75
Medium family (5-8 members)	39	48.75
Large family (More than 8members)	26	32.50
Social participation		
No. member of any organization	15	18.75
Member of one organization	51	63.75
Member of more than one organization	10	12.50
Office Holder	7	8.75
Distinctive feature	6	7.5

Socio-economic characteristics of guava growers	Particulars	
	F	%
Housing pattern		
Kachaha house	03	3.75
Mixed (Kachcha + Pucca)	14	17.50
Pucca	64	78.75
Land holding		
Marginal farmers (below 01 ha.)	2	2.50
Small farmers (01-02 ha.)	7	8.75
Medium farmers (0 2-04 ha.)	30	37.50
Large farmers (above 0 4 ha.)	41	51.25
Family resources		
Up to 6 materials	2	2.50
6-10 materials	48	60.00
Above 10	30	37.50
Transportation facility		
Bullock cart (jhota- buggy)	65	81.25
Cycle	68	85.00
Motorcycle/Scooty/Scooter	72	90.00
Tractor trolley	51	63.75
Car/Jeep/Taxi	49	61.25
Any other (Bus/truck)	15	18.75
Farm machineries		
Below 6 (assets low)	35	43.75
Between (6-12 assets medium)	33	41.25
Above 12 (assets high)	12	15.00
Irrigation facilities		
Govt. electric tube well	2	2.50
Private electric tube well	55	68.75
Tube well diesel engine	5	6.25
Canal	12	15.00
Ponds	4	5.00
Any other specify	2	2.5
Source of information		
Information low (below 6 sources)	8	10.00
Information medium (between 7-12 sources)	65	81.25
Information high (Above 12 sources)	7	8.75
Annual income		
Below RS. 50,000	4	5.00
RS. 50,000- 1,00,000	9	11.25
RS. 1,00,000- 1,50,000	11	13.75
RS. 1,50,000-2,00,000	13	16.25
Above 2,00,000	43	53.75

4. CONCLUSION

It may be concluded that most of the guava orchardists were belonging to higher medium age group, had education up to high school, belongs to backward caste, married, their main occupation was agriculture, living in jointly belong to medium family size,

having pucca houses, most of them belongs to semi medium farmers category, most of them having membership of one organization, having medium level of sources of transportation, implements and information. Most of the guava orchardists annual income was upto 2 lacks.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Anonymous. NHB, area & production estimates for horticulture crops (2016-17); 2017.
2. Camacho R, Olivares B, Avendaño N. Agri-food landscapes: An analysis of the livelihoods of indigenous Venezuelans. *Research Magazine*. 2018;42(93):130-153.
3. Cortez A, Olivares B, Muñetones A, Casana S. Strategic elements of organizational knowledge management for innovation. Case: Agrometeorology network. *Digital Journal of Research in University Teaching*. 2016;10(1):68-81.
4. Cortez A, Olivares B. Agricultural extension in Karina indigenous territories of Venezuela: Towards sustainable local development with identity. Saarbrücken, Germany, Academic Spanish Editorial. 2017:93.
5. Guevara E, Olivares B, Demey J. Use of climatic bioindicators in agricultural production systems in the state of Anzoátegui, Venezuela. *Multisciences Magazine*. 2012a;12(2):136-145.
6. Guevara E, Olivares B, Demey J. Use and demand of agrometeorological information in agricultural production systems in Anzoátegui Venezuela. *Multisciences Magazine*. 2012b;12(4):372-381.
7. Olivares B, Cortez A, Vine R, Wolf D, Rodriguez MF, King JC. Evaluation of agricultural vulnerability to drought weather in different locations of Venezuela. *Rev. Fr. Fac. Agron. (LIGHT)*. 2017b;34(1):103-129.
8. Olivares B. Tropical conditions of seasonal rainfall in the dry-land agriculture of Carabobo, Venezuela. *The Farm: Journal of Life Sciences*. 2018;27(1):86-102.
9. Olivares B, Hernandez R, Arias A, Molina, JC, Pereira Y. Agroclimatic zoning of maize crop for sustainability of agricultural production in Carabobo, Venezuela. *University Journal of Geography*. 2018;27(2):139-159.
10. Olivares B. Systematization of traditional knowledge and ancestral ethnicity of Karina in Anzoategui State, Venezuela. *Journal of Research*. 2014;82(38):89-102.
11. Olivares B. Application of Principal Component Analysis (PCA) in socio-environmental diagnosis. Case: Campo Alegre sector, Simón Rodríguez de Anzoátegui municipality. *Multisciences Magazine*. 2014;14(4):364-374.
12. Mehta BM, Sonawane M. Entrepreneurial behavior of mango growers of Valsad district of Gujarat state. *Indian Research Journal of Extension Education*. 2012;12(1):78-82.
13. Tekale VS, Gavit DV. Utilization of information sources by orange growers. *Asian Journal of Extension Education*. 2013;31:83-85.
14. Singh BP, Yadav RN, Mishra AK, Gupta V, Raghuvanshi T, Amit. Constraints face by them in adoption of guava production technology in Saharanpur district (Uttar Pradesh). *Bulletin of Environment, Pharmacology and Life Sciences*. 2017;6(12):81-84.
15. Hernández R, Olivares B. Application of multivariate techniques in the agricultural land's suitability in Carabobo, Venezuela. *Tropical and Subtropical Agroecosystems*. 2020;23(2):1-1
16. Montenegro E, Pitti J, Olivares B. Identification of the main subsistence crops of Teribe: A case study based on multivariate techniques. *Ideas*. 2021b;39(3):83-94.
17. Olivares B, Wolf D, Cortez A, Rodriguez MF, King JC. Socio-economic characteristics and methods of agricultural production of the indigenous community of Kashaama, Anzoategui, Venezuela. *Rev. Fr. Fac. Agron. (LIGHT)*. 2017a;34(2):187-215.
18. Orlando B, Pitti J, Montenegro E. Socioeconomic characterization of Bocas del Toro in Panama: an application of multivariate techniques. *Brazilian Journal of Regional Management and Development*. 2020;16(3):59-7
19. Pitti J, Olivares B, Montenegro E. The role of agriculture in the Changuinola district: A case of applied economics in Panama. *Tropical and Subtropical Agroecosystems*; 2021.
20. Rodriguez MF, Olivares B, Cortez A, King JC, Wolf D. Natural physical characterization of Kashaama indigenous community for sustainable land management purposes. *New Acta*. 2015;7(2):143-164.

21. Kamal S, Arshad A, Fedoras A. () Socio-economic status and problems of banana growers in Bangladesh. International Journal of Natural Sciences. 2016;3:2-1
22. Shojaei SH, Hosseini SJF, Mirdamadi M, Zamanizadeh HR. "Investigating Barriers to Adoption of Integrated Pest Management Technologies in Iran." Annals of Biological Research. 2013;4(1):39-4
23. Upadhyay AP, Papnai G, Singh P. Problems and prospects of guava producers in Allahabad District of Uttar Pradesh, India. Journal of Humanities and Social Science. 2018;23(6):01-07.
24. Vilorja JA, Olivares BO, Garcia P, Paredes-Trejo F, Rosales A. Mapping projected variations of temperature and precipitation due to climate change in Venezuela. Hydrology. 2023;10:9
25. Yadav RN, Singh D, Sharma TD. Relationship between extent of adoption of improved mango cultivation practices and socio-economic features of mango orchardists of Western Uttar Pradesh. Journal of Progressive Agriculture. 2007;7(1/2):31.
26. Lopez-Beltran M, Olivares B, Lobo-Lujan D. Changes in land use and vegetation in the agrarian community of Kashaama, Anzoátegui, Venezuela: 2001-2013. Geographical Journal Of Central America. 2019;2(63):269-2
27. Nanda A, Mandal AB, Majumder G. Adoption behavior of guava (*Psidium guajava* L.) growers in relation to scientific cultivation of guava. Journal of Crop and Weed. 2011;7(2):116-119.
28. Montenegro E, Pitti J, Olivares B. Adaptation to climate change in indigenous food systems of the Teribe in Panama: A training based on CRISTAL 2.0. Blue Moon. Rev. 2021a;51(2):182-1.

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