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Socio-economic status of grape growers in Nashik district, Maharashtra: A comprehensive study

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Abstract

This research paper delves into the socio-economic status of grape growers in the Nashik district of Maharashtra, India. Nashik has emerged as a significant grape-growing region in the country, contributing substantially to the agricultural economy. The study aims to provide a comprehensive analysis of the socio-economic factors influencing grape cultivation in the region, including aspects related to income, education, landholding, technological adoption, and market integration. By shedding light on the challenges and opportunities faced by grape growers, the research seeks to inform policies and interventions that can enhance the livelihoods of this vital agricultural community.

Keywords: Socio economic, respondents, literacy, income, land-holding, occupation

Introduction

In India, grape is known over a long period and has been mentioned by 'Sasruta'' and 'Charka' in their ancient medicinal treaties. 'Kautilya' in his 'Arthshatra' written in fourth century BC mentioned the type of land suitable for grape cultivation stated that grape was introduced into India in 1300 A.D by Muslim from Iran and Afghanistan. During the historic event of changing the capital from Delhi to Daulatabad 1430 A. D was reported to have seen flourishing vine yards down the Vindhya Mountains. In terms of horticulture crop production, Maharashtra is considered to be the most important state of the country. This state leads the country in the production of grapes, bananas, oranges and onions. Grape has already been established as an important commercial crop in Maharashtra. Although the cultivationis mainly concentrated in the three districts of Nasik, Sangli and Solapur, a large number of farmers in the neighbouring districts like Pune, Ahmednagar and Satara are switching over to grape cultivation An Indian grape shade of colour, delicious taste and high nutritive value. A small quantity of grape is also grown in states like Haryana, Rajasthan and Uttar Pradesh.

Grape is one of the important fruits covering an area of 161.91 thousand hectares occupying 2.30% of the total area of Fruits Production in 2021-22 (3rd Advance Estimate). The country is also a major exporter of Fresh Grapes to the world. The country has exported 267,950.39 MT of Grapes to the world, worth Rs. 2,543.42 crores/ 313.70 USD Millions during the year 2022-23.)

The country has exported 267,950.40 (In MT) of fresh grapes worth 254,342.14 lakh during the year 2022-23. And, the country has exported 263,075.66 (In MT) fresh grapes worth 230,216.45 lakh during the year 2021-22. Major Export Destinations (2022-23) Netherland, Bangladesh, United Arab Emts, U.K and Russia. (Source: DGCIS Annual Export, Agri Exchange)

Grapes Production in Maharashtra

Nashik district is in north-west part of Maharashtra. The district is divided into 15 talukas. The average rainfall is around 1075 mm. The extent of area irrigated is about 40% of the cultivated area in the district. Ground water is the predominant source of irrigation. The type of soils includes shallow to medium red and black soils. Horticulture crops like grapes, pomegranate, onion and tomato are popular in the district. Nashik is traditionally a major hub for exports of agricultural commodities. Based on the cropping pattern trends, onion, grape, tomato, maize and bajra are the emerging major crops in the district. The Nashik district is the largest producer of grapes in India with nearly 1,75,000 acres of vineyards, while the total acreage in Maharashtra is 2,50,000. During the season, in Maharashtra alone, about 9 lakhs tonnes of grapes remains in vineyards with about 4.0 to 4.5 lakhs tonnes in Nashik region. Nashik, renowned as the "Wine Capital of India," has witnessed a substantial growth in grape cultivation over the years. This study aims to unravel the socio-economic dimensions of grape growers in the region, providing insights into their living conditions, economic activities, and challenges.

Research Methodology

Sampling Design

Multi-stage sampling technique with stratified random sampling at its ultimate stages was used.

1. **First stage:** Selection of District (Purposively).
2. **Second stage:** Selection of Block (Purposively).
3. **Third stage:** Selection of Villages (Randomly).
4. **Forth stage:** Selection of Respondent (Randomly).

Selection of Block- Nashik

There are 15 community development blocks in Nashik district *viz*. Nashik, Baglan, Chandvad, Deola, Dindori, Lgatpuri, Kalwan, Malegaon, Niphad, Peint, Sinnar, Surgana, Tribakeshwar and Yevla. Dindori and Niphad block were selected purposively for the study based on the fact that these blocks were highest area under grape cultivation. List of all the 15 community development block of Nashik district along with total area under grapes production was obtained from current official records available in the District Horticultural Office Nashik.

Selection of Villages in Nashik district

There are 332 villages in two selected blocks. From the offices of block development officer from each block a list of villages was procured and such villages were sorted out with highest concentration of grapes farm which was 127. Out of the total villages of grape farms approx. 10% i.e. 6 villages from each blocks were selected randomly for the present study from the block Dindori and Niphad situated in Nasik district.

Selection of Respondent

A list of grape farms was prepared with the help of Gram Pradhan from the selected villages. Then after 5% respondents from total number of farms from each villages was randomly selected. After collection of primary data respondents were categorise done the basis of Land-holding for the present study.

1. **Small:** less than 1 ha,
2. **Medium:** 2 ha to 3 ha
3. **Large:** 3 ha and above.

Analytical tools

The following statistical tools and technique was use in analysis of data and interpretation of result.

Chi-square Test: A chi-square (χ^2) statistic is a test that measures how a model compares to actual observed data. The data used in calculating a chi-square statistic must be random, raw, mutually exclusive, drawn from independent variables, and drawn from a large enough sample.

The Formula for Chi-square test-

$$x^2 = \sum \frac{(O_i - Ei)^2}{E_i}$$

x^2 = Chi Square
0_i = Observed Value
E_i = Expected Value

Results and Discussion

It was observed that number of grapes farmers in smaller size group of farms is less than their larger size group counterparts. Most of the marginal and some of the small farmers had farms in common ownership because the farms was established by their parents when the holding size was large but later due to partition in family they become owner of smaller land holding and farms to remained with them. Every stratum for each village separately was arranged in descending order of the size of their holdings. The table below describes the list of respondents taken from each village located in Nashik districts on the basis of farmers involved in the overall farming and actors in the supply chain management of grapes.

Table 1: List of Respondents Selected for Grapes farming during the agriculture year 2021-22

Selected Block	Selected Villages	Farm size groups			Total Number of Samples
		Small	Medium	Large	
Dindori	Pimpalnare	10	8	2	20
	Palkhed	8	6	2	16
	Matrewadi	9	5	1	17
	Ashwantwadi	9	6	2	17
	Chamdari	12	7	1	20
	Bopegaon	11	8	3	25
Niphad	Dawchiwadi	10	4	1	14
	Nandordi	8	5	1	14
	Ugaon	12	6	2	17
	Sakore	6	4	1	11
	Ozar	9	6	1	15
	Kokangaon	6	7	1	14
Total		110	72	18	200

Age

Table 2: Age distribution of grapes growers

S. No.	Age	Small	Medium	Large	Total	% of Total
1	Below 30 years	60	20	2	82	41.00
2	Between 30-60 years	37	42	12	91	45.50
3	Above 60 years	13	10	4	27	13.50
	Total	110	72	18	200	100.00
Chi-Square- 20.948, Df - 4, Sig. – 0.00						

As presented in table 2 "Below 30 years": There are 60 grape growers in this age category with small farms, 20 with medium farms, and 2 with large farms, for a total of 82 growers. "Between 30-60 years": There are 37 grape growers in this age category with small farms, 42 with medium farms, and 12 with large farms, for a total of 91 growers. "Above 60 years": There are 13 grape growers in this age category with small farms, 10 with medium farms, and 4 with large farms, for a total of 27 growers. The Chi-Square statistic is 20.948. The degrees of freedom (Df) are 4. The significance level (Sig.) is 0.00. The Chi-Square test is used to determine if there is a significant association between age and farm size among grape growers. In this case, the very small p-value (Sig. – 0.00) suggests that there is a statistically significant relationship between age and farm size among grape growers.

Education

Table 3: Distribution of grapes farmers according to their education

S. N.	Education	Small	Medium	Large	Total	% of Total
1	Illiterate	53	10	0	63	31.50
2	Primary level	25	18	1	44	22.00
3	High school	18	20	3	41	20.50
4	Inter-mediate school	9	14	6	29	14.50
5	Graduation and above	5	10	8	23	11.50
	Total	110	72	18	200	100.00
Chi-Square- 58.534, Df - 8, Sig. – 0.00						

In table 3 there are 63 illiterate grape farmers in total. None of them have a large farm, while 53 have small farms, and 10 have medium-sized farms. There are 44 grape farmers with primary level education. One of them has a large farm, 18 have medium-sized farms, and 25 have small farms. Out of 41 grape farmers with a high school education, 3 have large farms, 20 have medium-sized farms, and 18 have small farms. Among the 29 farmers with intermediate school education, 6 have large farms, 14 have medium-sized farms, and 9 have small farms. The group with the highest level of education, consisting of 23 farmers, includes 8 with large farms, 10 with medium-sized farms, and 5 with small farms.

It is clear that as the level of education increases, there is a trend of having larger farms. Illiterate and primary level educated farmers predominantly have small farms, while those with higher education levels tend to have medium or large farms. Among all the education categories, illiterate farmers have the largest representation, and they primarily have small farms. This suggests that a significant portion of grape farmers in this region may have low levels of education. Farmers with high school and intermediate school education levels have a relatively balanced distribution between small, medium, and large farms. Graduates and those with higher education are more likely to have larger farms, indicating a correlation between education and farm size.

Family Size

Table 4: Distribution of the grapes growers according to number of family Size

S. No.	Family Size	Small	Medium	Large	Total	% of Total
1	Small (1-4)	60	42	8	110	55.00
2	Medium (4-6)	40	18	7	65	32.50
3	Large (6-9)	10	12	3	25	12.50
	Total	110	72	18	200	100.00
Chi-Square- 4.764, DF - 4, Sig. - 0.31						

In table 4 show that there are 110 grape growers in small families. This group represents the majority of grape growers. Out of these, 60 have small farms, 42 have medium-sized farms, and 8 have large farms. There are 65 grape growers in medium-sized families. Among them, 40 have small farms, 18 have medium-sized farms, and 7 have large farms. Group with the fewest grape growers consists of 25 individuals in large families. In this category, 10 have small farms, 12 have medium-sized farms, and 3 have large farms.

The majority of grape growers are from small families (1-4 members), which accounts for the largest share of the total grape growers. Among them, a significant portion have small or medium-sized farms. Medium-sized families (4-6 members) represent the second-largest group of grape growers, with a substantial number having small farms. Large families (6-9 members) have the fewest grape growers, and most of them have small or medium-sized farms.

These inferences suggest that there may be a correlation between family size and the size of the grape farms. Smaller families tend to have a mix of small and medium-sized farms, while larger families are less common and are more likely to have small or medium-sized farms. However, it's important to note that this data does not provide information about the relationship between family size and the productivity or income of grape growers.

Occupation

Table 5: Occupational distribution of grapes grower

S. N.	Occupation	Small	Medium	Medium	Total	% of Total
1	Agriculture	50	25	3	78	39.00
2	Horticulture	15	12	4	31	15.50
3	Animal husbandry	35	20	1	56	28.00
4	Business/ Profession/Job	10	15	10	35	17.50
	Total	110	72	18	200	100.00
Chi-Square- 28.259, Df - 6, Sig. - 0.00						

In table 5 there are 78 grape farmers engaged in agriculture. Out of these, 50 have small farms, 25 have medium-sized farms, and 3 have medium-sized farms. The horticulture sector includes 31 grape farmers. Among them, 15 have small farms, 12 have medium-sized farms, and 4 have medium-sized farms. This category involves 56 grape farmers. Out of these, 35 have small farms, 20 have medium-sized farms, and 1 has a medium-sized farm. A total of 35 grape farmers are engaged in business, professions, or jobs. Among them, 10 have small farms, 15 have medium-sized farms, and 10 have medium-sized farms.

Agriculture has the highest number of grape farmers, with a significant majority having small farms. This suggests that agriculture is the predominant occupation among grape farmers in this region, and many of them have small-scale operations. Horticulture is the second-largest occupation category among grape farmers. Like agriculture, a substantial portion of horticulturists has small farms, but there are also some with medium-sized farms. Animal husbandry, while the third-largest occupation category, primarily consists of grape farmers with small farms, indicating that this group tends to have smaller-scale grape operations. Business, professions, and jobs represent a smaller but still significant portion of grape farmers. This group has a more balanced distribution of small, medium, and medium-sized farms.

These inferences suggest that the occupation of grape farmers is diverse, with agriculture being the most common occupation. The distribution of farm sizes varies among different occupations, with small farms being prevalent among agriculture, horticulture, and animal husbandry, while a more even distribution of farm sizes is observed among those involved in business, professions, or jobs.

Annual Income

Table 6: Distribution of grapes farmers according to their annual income

S. N.	Income	Small	Medium	Large	Total	% of Total
1	Below - 200000	35	15	2	52	26.00
2	200000 - 500000	55	27	4	86	43.00
3	Above - 500000	20	30	12	62	31.00
	Total	110	72	18	200	100.00
Chi-Square-23.132, Df - 4, Sig. - 0.00						

Below 200,000 Income: There are 52 grape farmers with an annual income below 200,000. Out of these, 35 have small farms, 15 have medium-sized farms, and 2 have large farms.

200,000-500,000 Income: The income group between 200,000 and 500,000 includes 86 grape farmers. Among them, 55 have small farms, 27 have medium-sized farms, and 4 have large farms.

Above 500,000 Income: There are 62 grape farmers with an annual income above 500,000. Out of these, 20 have small farms, 30 have medium-sized farms, and 12 have large farms

Inferences

The majority of grape farmers fall into the income category of "200,000-500,000." This group includes the most grape farmers, and a significant portion of them have small farms, followed by medium-sized farms.

The second-largest income group is "Above 500,000," which includes grape farmers with higher incomes. These farmers tend to have a more balanced distribution among small, medium, and large farms.

The "Below 200,000" income group is the smallest. The majority of these grape farmers have small farms, and very few have medium or large farms.

These inferences suggest that there is a relationship between income and farm size among grape farmers. Those with higher incomes are more likely to have medium or large farms, while those with lower incomes predominantly have small farms. Additionally, the largest income group is the one with an income range of 200,000-500,000, indicating that a substantial portion of grape farmers in this region falls within this income range.

Land Utilization Pattern

Table 7: Land utilization pattern of sample farms

Sr. No.	Particulars	Size group						Overall	%
		Small	%	Medium	%	Large	%		
1	Total holding	1.48	100.00	2.58	100.00	5.21	100.00	3.09	100.00
2	Permanent Fallow	0.06	4.05	0.03	1.16	0.16	3.07	0.08	2.70
3	Total operational holding	1.42	95.95	2.55	98.84	5.05	96.93	3.01	97.30
4	Current fallow	0.02	1.35	0.02	0.78	0.001	0.00	0.01	0.43
5	Irrigated	1.20	81.08	2.24	86.82	4.70	90.21	2.71	87.81
6	Un irrigated	0.20	13.52	0.29	11.24	0.35	6.72	0.28	9.06
7	NCA	1.40		2.53		5.05		2.99	
8	GCA	1.67		2.98		5.43		3.36	
9	GIA	1.53		2.67		5.15		3.12	
10	Cropping Intensity (%)	119.28		117.79		107.52		112.37	

The "Total Holding" column represents the overall landholding in each size group. Large farms have the highest overall landholding at 5.21 hectare, followed by medium farms with 2.58 hectare, and small farms with 1.48 units. This category indicates the percentage of land that is permanently fallow (not cultivated). Large farms have the highest percentage of permanent fallow land at 3.07%, while small farms have 4.05%, and medium farms have

1.16%. This is the percentage of land that is actively used for cultivation. Large farms have the highest percentage of operational land at 96.93%, followed by small farms at 95.95%, and medium farms at 98.84%. Current Fallow represents the percentage of land that is temporarily fallow. Small farms have the highest percentage of current fallow land at 1.35%, while large farms have the lowest at 0.001%. Irrigated percentage of land that is irrigated. Large farms have the highest percentage of irrigated land at 90.21%, followed by medium farms at 86.82%, and small farms at 81.08%. Unirrigated percentage of land that is unirrigated. Small farms have the highest percentage of unirrigated land at 13.52%, followed by medium farms at 11.24%, and large farms at 6.72%. Large farms have the highest NCA percentage at 5.05%, followed by medium farms at 2.53%, and small farms at 1.40%. Large farms have the highest GCA percentage at 5.43%, followed by medium farms at 2.98%, and small farms at 1.67%. Large farms have the highest GIA percentage at 5.15%, followed by medium farms at 2.67%, and small farms at 1.53%. Cropping intensity is highest for small farms at 119.28%, followed by medium farms at 117.79%, and large farms at 107.52%. This indicates that small farms have a higher cropping intensity, meaning they cultivate their land more intensively. Large farms have the highest overall landholding and the highest percentage of irrigated land, indicating a greater capacity for intensive agriculture. Small farms have the highest percentage of permanent fallow land and the highest cropping intensity, suggesting that they are using their land more intensively but also have more fallow land. Medium farms show relatively balanced figures between large and small farms for most categories, indicating a middle ground in terms of land utilization and intensity. Large farms tend to have a lower percentage of land under permanent fallow and higher percentages of irrigated land, which may contribute to their higher overall landholding. Small farms have the highest cropping intensity, which may reflect their efforts to maximize the use of available land.

Conclusion

In conclusion, the study conducted in Nashik, Maharashtra, reveals noteworthy associations between socio-economic factors and farm characteristics among grape growers. Small and medium-sized farms dominate, with differences attributed to historical factors, family partition, and land ownership patterns. Age, education, family size, occupation, and income exhibit correlations with farm size. Notably, higher education and income are linked to larger farms. The findings underscore the diverse landscape of grape farming, emphasizing the need for tailored policies to support sustainable practices and socio-economic upliftment among growers in the region.

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