

## An Analysis the Socioeconomic Profile of Sugarcane Farmers

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**Abstract :** An important agricultural sector in India, the sugar industry may produce about 25 million tonnes of sugar every year. With a 15% share of the world's sugar production, it is the second-largest producer globally, behind Brazil. This sector is highly promising as a renewable energy source and is critically important to India's rural economy. It promotes a wide range of ancillary businesses and helps sustain the livelihoods of almost 60 million farmers and their families. The entire socio-economic prosperity of the farming community in India can be attributed to sugarcane, a significant cash crop. The sugarcane juice is transformed into several byproducts, such as molasses, sugar, khandsari, etc. The states of Gujarat, Uttar Pradesh, Maharashtra, Tamil Nadu, & Karnataka are the primary locations for crop production. In India, many people make their living via the cultivation and processing of sugarcane. About 3,300 man-hours are needed to complete the various processes involved in sugarcane production. There is a severe scarcity of workers in the sugarcane growing regions of India. Cane harvesting is a time when the scarcity of workers is most noticeable. Men and women work side by side in sugarcane fields, albeit their skill levels may vary in different tasks. Men alone are responsible for ploughing, spraying, cleaning irrigation channels, earthing up, applying plant protection chemicals, and off barring, among other sugarcane agricultural chores. Because of how physically demanding and time-consuming these tasks are, men are performing them. By doing this study, we can better understand the challenges faced by sugarcane workers and their socioeconomic status, which is crucial for providing them with a stable income.

**Keywords:** sugarcane farmers, socioeconomic profile, rural economy, agricultural livelihoods, income patterns, landholding size, education level, farming practices, crop productivite.

### INTRODUCTION

An important agricultural sector in India, the sugar industry may produce about 25 million tonnes of sugar every year. With a 15% share of the world's sugar production, it is the second-largest producer globally, behind Brazil. This sector is highly promising as a renewable energy source & critically important to India's rural economy. It promotes a wide range of ancillary businesses and helps sustain the livelihoods of almost 60 million farmers and their families. In 2011–2012, the sector made 800 billion rupees, with farmers receiving 550 billion rupees. More than 500 sugar mills operate within the industry, with varying levels of management and ownership (Singh, 2016). Thirunavukarasu (2015) provides an alternative estimate, stating that over 50 million farmers and their families rely on sugarcane as a means of subsistence. Approximately 12% of the rural population in these nine states is directly or indirectly

employed by the sugar business. Each farmer practically helps produce 2.9 million metric tonnes of sugar annually.

The whole economic and social advancement of India's farming population may be attributed to sugarcane, the country's most important cash crop. The sugarcane juice is transformed into several byproducts, such as molasses, sugar, khandsari, etc. The states of Gujarat, Uttar Pradesh, Maharashtra, Tamil Nadu, & Karnataka are the primary locations for crop production. Based on their production capability, the states that produce sugarcane are categorised into three groups. Uttar Pradesh and Maharashtra are the two states that produce the most sugarcane. Following that, the states of Gujarat, Andhra Pradesh, Tamil Nadu, Karnataka, and Haryana are significant producers. The states of Bihar & Assam also have relatively poor sugarcane production.

Karnataka state grows sugarcane, which is a major cash crop. The districts of Belgaum, Bijapur, Mandya, Shimoga, Mysore, Belagavi, Chitradurga, and Gulbarga make up the majority of Karnataka's 2.82 lakh hectares, which places it third in area, and 23.37 million tonnes in production, putting it fourth overall. With an area of around 1,05,237 hectares & production of about 48,98,782 tonnes in 2003–04, the Belgaum district was the largest in the state. Meanwhile, the Mandya district had the highest sugarcane yield."

### **Processing**

There have traditionally been two steps in the processing of sugarcane. Mills that process sugarcane are found in areas where sugarcane is grown. From the sugarcane that has been gathered, two products are made: raw sugar, which is then refined, and "mill white" sugar, which is consumed locally. White refined sugar, which is more than 99 percent sucrose, is made when sugar refineries, which are often located in sugar-consuming nations like Japan, Europe, & North America, clean and purify raw sugar. There is a gradual fuzziness between these two phases. The sugar-producing tropics are seeing a shift towards combined milling and refining as a result of rising demand for refined sugar products driven by rising incomes in those regions.

### **Milling**

The first step in processing sugarcane is transporting it to a mill, which is often situated near the field of cultivation. The cane is often transported to the mill by small rail networks. A sugar mill uses rotating blades to wash, cut, & shred sugarcane. The process involves crushing the

shredded cane between rollers and constantly mixing it with water. The resulting juices, known as garappa in Brazil, contain 10-15% sucrose. The fibrous solids, known as bagasse, are then burned to provide fuel. A sugar mill can become more than just energy independent using bagasse; the surplus can be turned into animal feed, used to make paper, or even used to power the local grid through combustion.

Add lime to the cane juice to bring its pH up to 7. The mixture prevents sucrose from decomposing into glucose & fructose and also helps to remove certain contaminants by precipitation. After the lime and other suspended solids have settled to the bottom of the container, the mixture is let to sit for a while. The clarified juice is then concentrated into a syrup that contains around 60% sucrose by weight. After being supersaturated, the syrup is seeded with crystalline sugar & subjected to further vacuum-assisted concentration in a multiple-effect evaporator. The syrup's sugar crystallises as it cools. To isolate the sugar, the leftover liquid, or molasses, are spun out using a centrifuge. Blackstrap refers to the molasses that remains after several crystallisations have been exhausted in an economically viable manner in an effort to extract more sugar from the original batch.

The hue of raw sugar can range from yellow to brown. Sulphur dioxide, a chemical that turns many impurities that cause colour into colourless ones, can be bubbled through cane juice before evaporation if a white result is needed. Sugar that undergoes this sulfidation process to become white is known by several names, including "mill white," "plantation white," and "crystal sugar." In countries that produce sugarcane, this is the most popular type of sugar.

### **Economic importance of sugarcane ratoons**

The vegetative approach involves planting sugarcane seeds using stalks that have been chopped. The chopped pieces germinate & produce tillers in tropical and subtropical climates. When conditions are right, the tillers grow into the cane crop. Once the mature cane crop is harvested, the buds on the leftover subterranean stubbles begin to germinate once more, producing a new crop. The name of this type of crop is "ratoon crop." (Young, 1986)

Ratooning is a crucial step in sugarcane harvesting all around the globe. In addition to lowering cultivation costs, this method eliminates the need for seed material and some cultural activities, such as predatory irrigations or ground preparation. Among the benefits of ratoon cropping that Puckett et al. (1970) highlighted were:

- i) The presence of a pre-formed root system reduces production costs by eliminating the need to prepare the land and care for the plant during its early growth, whether it's a clone or seedling.
- ii) The growing season is more efficiently used, particularly in the beginning; and
- iii) The ratoon crop has a shorter crop cycle.
- iv) It can produce more crop in the same amount of time per unit area;
- v) It can be utilised in breeding programmes to keep clones' plans consistent throughout seasons; and
- v) It can save water during the post-monsoon irrigation season in India because to its shorter growing period.

It is common practice to harvest two or more ratoon crops in nations that produce a lot of cane. Four or six ratoons are typical in Cuba, the Philippines, Mauritius, and Hawaii. Ratoons are used in sugarcane production in different quantities all around the globe. Despite experimental evidence showing that cultivating ratoons with proper care can be highly profitable, only one or two ratoons, with low yields, are harvested in India. The ratoon is an important component of India's sugarcane crop. Ratoon typically occupies more than 55% of the total cane acreage in several of the important cane-growing states, including Uttar Pradesh, Maharashtra, Gujarat, & Haryana. But in some regions, like Assam, ratoons make up over 80% of the cane-growing land.

## **LITERATURE REVIEW**

Dr. Ghadge Shrikant Tukaram (2019) More than one million hectares of land in India are devoted to growing sugarcane, a crucial cash crop. In addition to being the world's largest consumer of sugar, India is second in sugarcane production, accounting for 27 percent of global output. For rural India, the sugarcane sector is the lifeblood of the economy & biggest agro-based enterprise. An integral part of the Pune district's economy is the sugarcane crop. About 12.54 percent of the state's crushed cane in 2016 and 2017 came from this district. The district's ideal climate & soil conditions, with the exception of rainfall, make it ideal for sugarcane cultivation. The majority of the sugarcane land in the Pune district is located in the tahsils of Daund, Indapur, Baramati, & Shirur. In most cases, analysing the cultivation activities of various crop production requires first studying socio-economic factors. The

Baramati tahsil in the Pune district of the Indian state of Maharashtra was the site of the research. Data for the study came from a variety of sources, some of which were primary while others were secondary. Education, family size, occupations, caste, social participation, income, dwelling style, vehicle use, etc. are some of the characteristics taken into account for this inquiry. Sugarcane growers in Baramati tahsil have a positive socioeconomic profile, according to research on their socioeconomic characteristics. The empirical results indicate that the tahsil has a lot of room to grow economically and socially if its residents improve their educational & social participation levels.

Saroj Shinde (2019) Seasonal migrants from drought-prone areas travel to the sugar belt of Maharashtra to work as sugarcane cutters. Those who engage in this profession and, by extension, the seasonal movement tend to be members of lower socioeconomic classes, lower castes, and those with limited or no formal education. A 2019 sugarcane harvest season observational study, in-depth interviews with 20 female cutters, and casual conversations with the wives of team leaders (Mukadum) make up the methods used in this exploratory study. The current push-pull factors hypothesis of migration states that, for sugar cane cutters, the push factors are drought and its effects on their home places, & pull component is the availability of jobs in the sugar belt. These employees are victims of exploitation in numerous forms, despite the fact that they are physically unable to do the job and endure terrible living conditions. Their ability to utilise state resources & services is hindered by their migration status, which puts their citizenship status in jeopardy. The fact that these employees have no ties to the sugar mills makes them easy prey for middlemen like Mukadum and contractors. In sum, middlemen such as Mukadum, Contractor, vehicle owners, and sugar manufacturers often take advantage of sugarcane cutters. Taking into account the socio-ecological conditions in which these workers earn a living helps to shed light on the obvious hardships they face in three areas: health, education, & livelihoods. As a result, coordinated efforts at the policy level are required to resolve the sugarcane cutters' labour problems.

## OBJECTIVES

1. To research on sugarcane workers' demographics, income, and level of education.
2. To investigate the daily challenges faced by sugarcane workers in the Belagavi district.

## MATERIALS AND METHODS

The current investigation was carried out in the Athani taluk of the Belagavi District, which is the location with the highest concentration of sugarcane agriculture. From the Athani Taluk, three villages were chosen based on the criteria of having the greatest amount of land under sugarcane cultivation. With the assistance of Agricultural Assistants, a list of sugarcane producers was compiled from each village. Then, using a simple random selection method, fifty respondents were chosen from each village. This brings the total number of samples to 150. For the purpose of data collection, a structured pre-tested interview schedule was used, and the personal interview approach was utilised.

## RESULTS

**Table 1: Personality traits of sugarcane farmers (N =150)**

SI. No	Independent variables	Category	Frequency	Percent
1	Land holding	Up to 2.5 marginal farmers	40	26.67
		Small farmers (2.51–5.00)	40	26.67
		Semi-medium farmers (5.01-10.00)	45	30.00
		Medium farmers (10.01–25.00)	25	16.67
		Big farmers (more than 25)	0	0.00
Mean = 6.47, SE = 0.40				

Table 1 shows that most of the people who answered (60%) were in the middle age category, which is those between the ages of 31 and 50. Next were 23.33% of people who were 51 years old or older and 16.67% of those who were 18 to 30 years old. The explanation for this might be that middle-aged farmers are frequently more active, have more agricultural experience, and are better at their jobs than younger or older farmers. Additionally, farmers in their middle years possess better physical vigor and a higher volume of familial responsibilities compared

to their younger counterparts. Sunil Kumar (2004) and Vandana (2016) both found results that were similar to each other's.

Based on the educational attainment of the respondents, Table 1 indicates that almost one-third had finished high school and nearly one-third had finished middle school. Conversely, 18.00 percent of respondents had finished primary school, and 6.00 percent had finished higher secondary school. Only two percent of the people who answered had graduated high school, and only ten point six percent were illiterate. The results may be due to the fact that there are a lot of good schools and free basic education available. Not many of them want to go back to school, which shows that they don't have enough money and don't want to study more. It is possible that the parents could not send their kids to college since the hamlet was too far away from the colleges. Karpagam (2000) and Vandana (2016) both found outcomes that were similar to each other.

Table 1 indicated that a lesser fraction of the people who answered (46.66%) had a medium level of agricultural experience, which was defined as having between 17 and 20 years of experience. 26.67 percent of the replies, on the other hand, comprised both a low level of agricultural experience (less than 17 years) and a high level of farming experience (more than 20 years).

**Table 2: Economic characteristics of sugarcane cultivators (N = 150)**

SI. No	Self-governing variables	Category	Respondent	Percent
1	Taking part in the extension	Low (<3.31)	30	20.00
		Medium (3.31to 4.96)	90	60.00
		High (>4.96)	30	20.00
Mean =4.13, SD = 1.93, SE = 0.15				
2	Contact extension for	Low (< 4.17)	55	36.67
		Medium (4.17 to 6.03)	70	46.67
		High (>6.03)	25	16.67

Mean = 5.10, SD = 2.19, SE = 0.17				
3	Exposure to the media	Low (<5.68)	50	33.33
		Medium (5.68 to 7.19)	60	40.00
		High (>7.19)	40	26.67
Mean = 6.43, SD = 1.77, SE = 0.14				
4	Being cosmopolitan	Low (<20.30)	51	34.00
		Medium (20.30 to 22.57)	63	42.00
		High (>22.57)	36	24.00
Mean = 21.43, SD = 2.68, SE = 0.21				

It shows that over one-third of the respondents were semi-medium farmers with land-living assets between 5.1 and 10 acres. Also, 26.67% of the people who answered were small and marginal farmers who owned between 2.51 and 5 acres of land and up to 2.5 acres of land. However, none of the people who answered possessed more than 25 acres of property, and only 16.67% of them were classified middle farmers with land holdings of 10 to 25 acres. This might be because the people who answered the question got their property from their ancestors, and that property may have been passed down from generation to generation. Respondents owned an average of 6.47 acres of land. The outcomes delineated herein are, to varying degrees, analogous to those reported by Ninga Reddy (2005) and Mohanakumar (2018).

**Table 3: Communication traits of sugarcane cultivators (N = 150)**

SI. No	Self-governing variables	Category	Frequency	Percent
1	Age	Beginning (18 to30)	25	16.67
		Mid (31 to 50)	90	60.00

		Old (51 and above)	35	23.33
Mean = 43.46, SE = 0.72				
2	Education	Uneducated (Cannot read and write)	16	10.67
		Primary schooling (1 to 4)	27	18.00
		Middle schooling (5 to 7)	45	30.00
		High schooling (8 to 10)	50	33.33
		secondary (11 to 12)	9	6.00
		Graduation (Above 13)	3	2.00
Mean = 2.12, SE = 0.09				
3	Farming experience (years)	Low-slung (<17.05)	40	26.67
		Average (17.05 to 20.08)	70	46.67
		High (>20.08)	40	26.67
Mean = 18.57, SD = 3.57, SE = 0.29				

The results in Table 3 indicated that sixty percent of the survey participants exhibited a moderate degree of prolonged involvement. Conversely, twenty percent of each responder exhibited both a low and a high level of extended involvement. For taking part in the extension, the average score was 4.13. When someone takes part in extension activities, they may better understand, talk about, and discuss their problems with other farmers and experts from different fields and organizations. This participation not only gives you firsthand experience, but it also helps. If someone goes to group presentations, displays, seminars, field excursions, and demonstrations, they are more likely to accept what they see and utilize the technology on their farm or field. Priyanka (2016) says that the results are in line with what was found.

Based on the information in Table 3, 46.67% of the people who answered had a medium level of extension contact, and 36.67% had a low level of extension contact. Only 16.67 percent of the people who took the poll had a lot of involvement with extension. There might be several reasons for this, such as not having enough time to get in touch with extension workers, especially during the growing season, extension workers not being easy to reach, or farmers not being interested in learning about new things. The outcomes of this study align with the results identified by Mohanakumar (2018).

According to Table 3, forty percent of the people who answered had a medium level of exposure to mass media, while thirty-three point three percent and twenty-six point six percent had a low degree of exposure to mass media. There might be several reasons for this, such as not having enough time or interest, not being able to use the information in real life, having to learn the same things over and over again, and the fact that they could always borrow it from other farmers who subscribe to the program. There are a lot of parallels between the results of this study and the results of Vinayak Narayan Nayak's study from 2014. Thirty-four percent of respondents said they were not very cosmopolitan, while twenty-four percent said they were very cosmopolitan. Table 3 showed that less than half of the people who answered (42.00%) had a medium degree of cosmopolitanism. The average score for cosmopolitanism was 21.43. In farming, cosmopolitanism means how much a farmer looks for information from people outside of their society. One reason they would go to nearby towns and cities to sell the merchandise on a frequent basis is because the town is close by. Consequently, the level of cosmopolitanism was deemed moderate, aligning with the results of the studies conducted by Priyanka (2016) and Sowjanya (2017).

**Table 4: Psychological characteristics of sugarcane growers (N =150)**

S. No.	Variable	Category (Score Range)	Frequency (f)	Percentage (%)	Mean	SD	SE
1	Innovative proneness	Low (<14.46)	54	36.00	14.94	1.13	0.09

		Medium (14.46 – 15.42)	43	28.67			
		High (>15.42)	53	35.33			
2	Achievement motivation	Low (<26.52)	49	32.67	27.51	2.33	0.19
		Medium (26.52 – 28.51)	46	30.67			
		High (>28.51)	55	36.67			
3	Economic motivation	Low (<24.94)	75	50.00	25.67	1.71	0.13
		Medium (24.94 – 26.39)	20	13.33			
		High (>26.39)	55	36.67			
4	Risk orientation	Low (<23.59)	45	30.00	24.50	2.15	0.17
		Medium (23.59 – 25.41)	55	36.67			
		High (>25.41)	50	33.33			

5	Management orientation	Low (<56.98)	55	36.67	58.53	3.66	0.29
		Medium (56.98 – 60.09)	30	20.00			
		High (>60.09)	65	43.33			
6	Scientific orientation	Low (<15.63)	40	26.67	16.03	0.95	0.07
		Medium (15.63 – 16.44)	60	40.00			
		High (>16.44)	50	33.33			

Based on the data in Table 4, it was found that more than one-third of the people who answered (36.00%) had a low degree of innovative proneness. 35.33% and 28.67% of the people who answered the question, on the other hand, showed a high and medium degree of inventive proneness, respectively. Fifty percent of the survey respondents had a level of innovative proneness classified as medium to high. This shows that more than half of the people who answered were open to new ideas. It's feasible that these people may become users of SRI paddy farming in the near future. It is also possible that this is because they are relatively well-educated. These results are supported by the information that Vandana (2016) gathered. Table 4 shows that 36.67% of the people who answered the question had a high level of accomplishment motivation, whereas 32.67% and 30.00% had low and medium levels, respectively. This might be because sugarcane growers are trying to get more from their crops, which is what this is about. During this process, he recognizes the need of possessing up-to-date technological knowledge, which facilitates the adoption of new technologies. Consequently, one might infer that sugarcane farmers with elevated levels of achievement

motivation are more inclined to assimilate new concepts or skills compared to their counterparts.

## CONCLUSION

Most of the sugarcane growers were middle-aged and had finished high school. Most of them own a medium amount of land and are in the middle range for extension participation, extension contact, mass media exposure, risk orientation, scientific orientation, and cosmopolitanism. The research showed that sugarcane farmers were weak when it came to their willingness to try new things and their economic reasons for doing so. So, there has to be a campaign to raise awareness in order to teach the people who grow sugarcane. This is why the government, agricultural institutions, and other extension organizations need to work to spread the word about improved ways to grow sugarcane. This will help sugarcane farmers modify their way of life and improve their social and economic status. about how to grow paddy

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