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Identifying production and marketing constraints faced by sugarcane farmers: A study in Gujarat

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Abstract

The present study was conducted in Gujarat. Multi stage sampling technique was used for selection of districts, talukas, villages and farmers. Data from farmers was collected through a pre-designed schedule. Henry Garrett's Ranking Technique was used for ranking constraints. It was found that burning of sugarcane at time of harvesting, scarcity of labour, labour wages, insufficient and delayed irrigation water supply from canals and pest and disease occurrence were major production constraints in the study area. Price paid for sugarcane, market options for selling of sugarcane and sugar factory's share authority were major marketing constraints. It was suggested that farmers should adopt drip irrigation to resolve irrigation and weed issues in the study area.

Keywords: Production, marketing, constraints, sugarcane, Henry Garrett's ranking

Introduction

Agriculture is an integral part of the Indian economy. Around 58 per cent population's most important supply of employment in India is through agriculture. (IBEF, 2022) ^[5] In agriculture, among all crops revenue of sugarcane is higher than other crops. (Indian Sugar Mill Association, 2021) ^[6] Therefore, sugarcane has a special place in farmers' hearts. During the 2020-21 period, India attained the second position globally in terms of sugarcane production. The area dedicated to sugarcane cultivation was 4.851 million hectares, with a total production of 405.399 million tonne. (Commodities, 2022) ^[2] Gujarat has experienced significant growth in sugarcane production. In the same period, Gujarat held the fifth position in terms of the cultivated area for sugarcane and the fourth position in sugarcane production across India. The area allocated to sugarcane cultivation in Gujarat during 2020-21 was 2,19,300 hectare, resulting in a production of 16.954 million tonne. (Directorate of Agriculture, 2022) ^[3] Despite of significant growth, farmers faced problems in production and marketing of sugarcane. Studying constraints helps identify the specific challenges and limitations faced by farmers in agricultural production and marketing. This knowledge is crucial for understanding the factors that hinder optimal productivity and profitability in the sector. Therefore, an attempt had been made to identify the constraints.

Methodology

The study was conducted in Gujarat. In the study, primary and secondary data sources were utilized. Primary data was collected in the year 2021-22 from farmers using a pre-designed schedule. Secondary data was obtained from research papers, government-published reports, and web references. Multistage sampling method was employed. In the first stage, the researchers purposively selected the top 10 districts based on their higher cultivated area in 2019-20. These districts were Surat, Bharuch, Tapi, Navsari, Narmada, Valsad, Dang, Gir Somnath, Junagadh, and Vadodara. Moving to the second stage, two talukas were randomly chosen from each district. In the third stage, two villages were randomly selected from each taluka, resulting in a total of 40 villages being included. Finally, in the fourth stage, five farmers were randomly selected from each village, resulting in a total of 200 farmers being part of the study.

Henry Garrett's Ranking Technique

This technique was used to evaluate the constraints faced by the farmers for production and marketing. Constraints were based on available review of literature and survey. The orders of merit given by the farmers was converted into a rank by using the formula.

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To find out the most significant factor which influences, Garrett’s ranking technique was used. As per this method, respondents were asked to assign a rank for all constraints and the outcomes of such ranking was converted into a score value with the help of the following formula:

$$\text{Percent position} = 100 * (R_{ij} - 0.5) / N_j$$

Where,

R_{ij} = Rank is given for the i^{th} variable by j^{th} respondents

N_j = Number of variables ranked by j^{th} respondents

With the help of Garrett’s Table, the percent position estimated was converted into scores. Then, for each factor, the scores of each individual were added, and then the total value of scores and mean values of the score were calculated. The factor with the highest mean value was considered to be the most important factor.

Source: Garrett and Woodworth, 1971 [4]

Results and Discussion

Production constraints faced by sugarcane farmers

Table 1 illustrates the production constraints that farmers faced in the study area. During harvesting, excess weed on the farm and itching from that weed caused labours to burn sugarcane. Also, sometimes farmers burnt sugarcane. Therefore, harvesting of sugarcane could be done earlier. This burnt sugarcane needed to be crushed within 24 hours to prevent a decrease in sucrose content. Consequently, the primary constraint that farmers encountered was the burning of sugarcane during harvesting, with a mean score of 64.51. The second most significant limitation was labour scarcity, with a mean score of 61.92. When labour was available, their wages were high and farmers also had to provide tea, meals and pan masala. As a result, labour wages were ranked third with a mean scores of 60.70. Irrigation facilities were only available from the canal for a specific period and farmers had to use other sources of irrigation when there was no water in the canal. Thus, the lack of adequate and timely irrigation water availability from the canal was ranked fourth, with a mean score of 58.15. The fifth major constraint was pest and disease occurrence, with a mean score of 56.51. Leaves of sugarcane sold at zero cost after harvesting, resulting in the sixth constraint of sugarcane leaves being sold for free, with a mean score of 52.66. Over the past few years, input prices had risen significantly, resulting in the seventh constraint of high costs of agricultural chemicals/insecticides, with a mean score of 48.50. Farmers had to stop irrigation before harvesting sugarcane to prevent weight loss. Therefore, specific harvesting dates were assigned to farmers, but delayed in harvesting occurred due to a lack of labour, leading to the eighth constraint of delayed harvesting, with a mean score of 46.33. The timing of electricity was the ninth constraint, with a mean score of 45.13, as the electricity supply was irregular, and power cuts occurred during the day or night, creating problems for irrigation. Financial constraints were faced by farmers, resulting in the tenth constraint, with a mean score of 44.67. Unseasonal rains caused sugarcane flowering issues, leading to the impact of weather constraint, with a mean score of 42.43. The lack of knowledge about scientific crop production was ranked as the second-to-last constraint, with a mean score of 41.35. Finally, the unavailability of planting material was ranked as the last constraint in production, with a mean score of 28.81.

Similarly, Jawanjal *et al.* (2015) [8] found constraints such as irrigation issues and labour shortages, while Ahmed *et al.* (2016) [1] identified production constraints such as high agricultural chemical costs, inadequate irrigation facilities, and labour shortages during peak periods.

Table 1: Production constraints faced by sugarcane farmers

Particular	Mean Garret Score	Rank
Burning of sugarcane at time of harvesting	64.51	1
Scarcity of labour	61.92	2
Labour wages	60.07	3
Insufficient and delayed irrigation water supply from canals	58.15	4
Pest and disease occurrence	56.51	5
Selling sugarcane leaves for low or no cost	52.66	6
High expenses on agricultural chemicals and insecticides	48.50	7
Delayed harvesting	46.33	8
Electricity timing	45.13	9
Financial difficulties	44.67	10
Impact of weather	42.43	11
Lack of knowledge of scientific crop production	41.35	12
Unavailability of planting material	28.81	13

Source: Field survey

Marketing constraints faced by sugarcane farmers

Table 2 presents the constraints encountered by sugarcane farmers in the study area during their marketing efforts. The foremost constraint was the price paid for sugarcane, which received the highest mean score of 68.82. The study area had limited options for selling sugarcane, resulting in market constraints, which was the second major hindrance with a mean score of 58.62. The third most significant challenge was the sugar factory's share authority, with a mean score of 57.14, as obtaining share authority from the sugar factory was challenging. The payment system of the sugar factory was a fourth constraint, with a mean score of 55.40, as farmers found it difficult to manage the payment system that paid in three instalments. The weighing process was not conducted at the farm, making it the fifth constraint with a mean score of 32.30. Finally, transportation cost was the sixth constraint with a mean score of 28.72. Similar limitations were observed by Islam *et al.* (2016) [7], including lower sugarcane prices and transportation costs.

Table 2: Marketing constraints faced by sugarcane farmers

Particular	Mean Garret Score	Rank
Price paid for sugarcane	68.82	1
Market options for selling of sugarcane	58.62	2
Sugar factory’s share authority	57.14	3
Payment system of sugar factory	55.40	4
Weighing process	32.30	5
Transportation cost	28.72	6

Source: Field survey

Conclusion

It can be concluded that major production constraints of sugarcane farmers were burning of sugarcane at time of harvesting, scarcity of labour, labour wages and insufficient and delayed irrigation water supply from canals. Major marketing constraints of sugarcane farmers were price paid

for sugarcane, market options for selling of sugarcane and sugar factory's share authority.

Suggestions

- Encouragement towards adoption in sugarcane harvester would resolve labour issue at a harvesting time.
- Sugarcane cultivation requires a significant amount of water throughout all seasons, with summer posing the most challenging conditions for farmers. Drip irrigation will address not only the issue of irrigation but also effectively solve the problem of weeds. As a result, providing farmers with adequate subsidy for drip irrigation can be more motivating for the farmers to adopt the drip irrigation.

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