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### Examine the constraints of farmers in the production and marketing of sugarcane in the Lakhimpur Kheri district of Uttar Pradesh

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#### Abstract

Sugarcane is a most important commercial crop grown especially for sugar production and plays a pivotal role and is very significant in India's agrarian economy. It has grown successfully in tropical and subtropical weather. It provides many valuable materials like sugar, jaggery, ethanol, and other byproducts. The present study was conducted to find out the constraints faced by the farmers in the Production and Marketing of Sugarcane. A total of 150 respondents were selected through proportional random sampling. The collected constraints were analyzed using Garrett's ranking methodology to develop a quantitative position of each constraint. The findings showed that farmers faced production and marketing constraints more severely. Among the production constraints, the lack of labour availability, the problem of wild animals, high incidence of pests and diseases were prominent. Similarly, in the case of marketing constraints, a low price in the local market, price fluctuation, and high commission charges dominated. Thus, several field-level constraints faced by farmers have been identified and ranked in the context of the production and marketing of sugarcane.

**Keywords:** Agrarian economy, constraints, ethanol, Garrett's ranking, jaggery, sugar

#### Introduction

Sugarcane is a key agro-industrial crop in India, forming the backbone of the sugar and ethanol industries and contributing significantly to rural livelihoods. It is cultivated over 5 million hectares in India and supports over 50 million farmers directly and indirectly (Government of India, 2022) <sup>[4]</sup>. Sugarcane is one of the most important commercial crops in India, significantly contributing to the livelihoods of millions of farmers and the rural economy at large. Uttar Pradesh stands as the leading sugarcane-producing state, with Lakhimpur Kheri district being a major contributor due to its favourable agro-climatic conditions (Singh and Yadav, 2020) <sup>[14]</sup>. Despite its economic importance, sugarcane farmers continue to face numerous challenges in both production and marketing. These include inadequate irrigation facilities, high input costs, delayed payments from sugar mills, lack of storage infrastructure, and price fluctuations (Kumar *et al.*, 2019) <sup>[6]</sup>. Identifying and addressing these constraints is crucial for enhancing productivity, ensuring fair market access, and improving the overall welfare of sugarcane growers in the region. Sugarcane, a vital commercial crop in India, supports the livelihood of over 50 million farmers and numerous workers in the allied sugar industry. It occupies a prominent position in the agricultural economy due to its high biomass yield and multiple by-products such as sugar, ethanol, and

molasses (Patil *et al.*, 2018) <sup>[10]</sup>. Farmers often encounter delayed payments from sugar mills, lack of remunerative prices, poor transportation facilities, and limited access to market information (Rani and Mishra, 2021) <sup>[12]</sup>. These challenges not only reduce farm income but also discourage farmers from sustaining sugarcane cultivation in the long run. Therefore, understanding these constraints is essential for formulating effective agricultural policies, extension strategies, and infrastructural interventions to support the sugarcane farmers of Lakhimpur Kheri. Sugarcane (*Saccharum officinarum*) plays a vital role in the agrarian economy of India, contributing significantly to rural employment and the country's sugar and ethanol industries. India is the second-largest producer of sugarcane globally, and Uttar Pradesh alone accounts for nearly 40% of the total production (ICAR, 2022) <sup>[5]</sup>. Lakhimpur Kheri, known for its fertile alluvial soil and abundant water resources, has emerged as one of the top sugarcane-producing districts in the state (Tiwari *et al.*, 2020) <sup>[17]</sup>. Despite its potential, sugarcane cultivation in this region is fraught with numerous production and marketing constraints. Farmers face problems such as poor access to quality planting materials, declining soil fertility, erratic rainfall patterns, and rising input costs, which hinder optimal yields (Sharma and Ali, 2018) <sup>[13]</sup>. Moreover, the lack of timely technical guidance and inadequate mechanization further aggravates

production challenges (Meena *et al.*, 2021) <sup>[8]</sup>. The absence of competitive markets, delayed procurement by sugar mills, non-availability of real-time market data, and lack of government intervention in price stabilization remain major bottlenecks (Singh *et al.*, 2022) <sup>[15]</sup>. The disparity between the cost of cultivation and delayed or inadequate returns from the market places significant financial stress on farmers, leading to reduced investments and long-term disinterest in sugarcane farming. These challenges emphasize the urgent need for institutional support, infrastructural improvement, and farmer-centric policy measures to mitigate risks and promote sustainable sugarcane production and marketing in Lakhimpur Kheri and similar regions (Kumar and Joshi, 2021) <sup>[7]</sup>. Sugarcane farming in Lakhimpur Kheri is hindered by several constraints that span both the production and marketing stages. In the production, farmers face challenges such as rising costs of inputs like fertilizers and pesticides, erratic monsoon patterns, limited access to credit, and low adoption of modern technologies (Choudhary *et al.*, 2019) <sup>[2]</sup>. Moreover, insufficient extension services and inadequate infrastructure, such as rural roads and storage facilities, further reduce productivity (Pandey and Kumar, 2020) <sup>[11]</sup>.

### Research Methodology

The present study was conducted in the Lakhimpur Kheri district of Uttar Pradesh. Lakhimpur Kheri district consists of 15 Community Development blocks out of 15 Community Development blocks Mohammadi and Kumbhi were selected purposively because of their well acquaintance with the study area, and the highest area under sugarcane crop production. A sample of 150 respondents was selected through a proportional random sampling technique. A descriptive research design was used for the study. Data were obtained using a structured interview schedule. Garrett's score was used to determine the most important constraints perceived by the farmers. The formula for percent position suggested by Garret (1981) <sup>[3]</sup> is

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

Where

$R_{ij}$  = Rank given for the  $i^{\text{th}}$  variable by the  $j^{\text{th}}$  respondent

$N_j$  = Number of variables ranked by the  $j^{\text{th}}$  respondent

### Results and Discussion

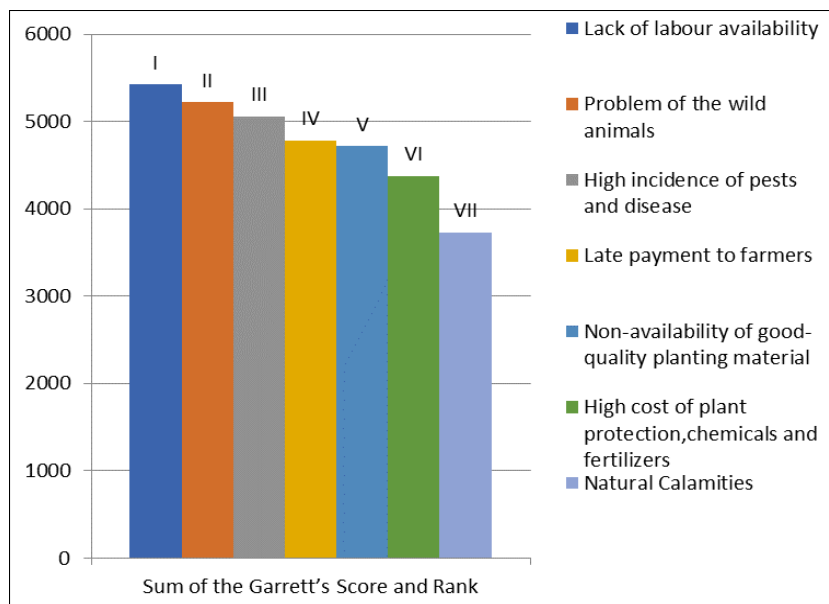
Table highlights the constraints experienced by the farmers and their ranking of different levels as perceived by the farmers in production and marketing. The constraints are ranked based on the severity of their influence, using Garrett's Score to determine their rankings, which is presented in Table 1. Lack of labour availability (78.60) was assigned first rank. This could be because of the migration trends, the seasonal nature of sugarcane cultivation, and rising rural wage rates, leading to a shortage of available farm labour during peak agricultural activities. The problem of wild animals (72.50) was second ranked. This may be due to the blue bulls and wild boars are a growing concern in these regions, directly affecting yield and causing economic losses. Similar findings were reported by (Agarwal *et al.*, 2024; Patel *et al.*, 2014) <sup>[1, 9]</sup>. The high incidence of pests and disease (68.40) was third ranked. This may be due to the plant protection awareness or access to affordable agrochemicals. Late payment to farmers (61.32) ranked fourth. This result might be due to the late payments by sugar mills remaining a chronic issue, adversely affecting farmers' cash flow and investment capacity for the next crop season. Non-availability of good-quality planting material (58.95) ranked fifth. This result might be due to the inadequate Seed Villages or Nurseries, insufficient seed distribution systems, and Limited Supply of Certified Seed Cane to the sugarcane grower. Similar findings were reported by (Agarwal *et al.*, 2024) <sup>[1]</sup>. The high cost of plant protection, chemicals and fertilizers (53.45) was ranked sixth. This result might be due to the dependence on imports, reduced or delayed Subsidies, rising input costs and inflation, and limited Access to Credit for farmers. Similar findings were reported by (Singh *et al.*, 2021) <sup>[16]</sup>. Natural Calamities (42.37) was ranked seventh.

Among the marketing constraints as viewed by the farmers, low price in the local market (77.68) ranked first. This may be due to the high commission charges by middlemen further reduce the profit margin for producers. Similar findings were reported by (Agarwal *et al.*, 2024) <sup>[1]</sup>. Price fluctuations (69.39) were ranked second. This may be due to the Role of middlemen and traders. High commission charges (58.03) ranked third. High cost of transportation (58.03) ranked fourth. Lack of transport facilities (32.42) ranked fifth. Similar findings were reported by (Agarwal *et al.*, 2024) <sup>[1]</sup>.

**Table 1:** Distribution of the farmers according to the constraints faced in the Production and Marketing of Sugarcane (Garrett's score)

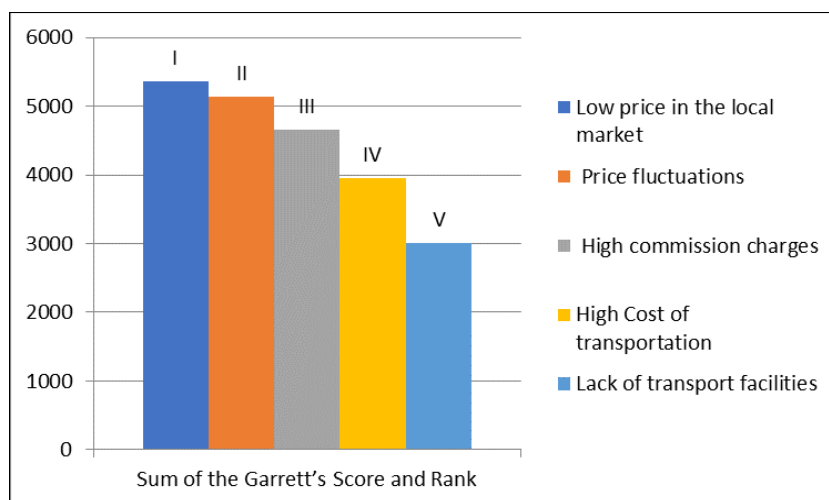
S. No.	Constraints	Sum of the Garrett's Score	Mean	Rank
<b>A</b>	<b>Production</b>			
1.	Lack of labour availability	5423	78.60	I
2.	Problem of the wild animals	5220	72.50	II
3.	High incidence of pests and disease	5061	68.40	III
4.	Late payment to farmers	4782	61.32	IV
5.	Non-availability of good-quality planting material	4716	58.95	V
6.	High cost of plant protection, chemicals and fertilizers	4379	53.41	VI
7.	Natural Calamities	3728	42.37	VII
<b>B</b>	<b>Marketing</b>			
1.	Low price in the local market	5359	77.68	I
2.	Price fluctuations	5134	69.39	II
3.	High commission charges	4664	58.03	III
4.	High Cost of transportation	3953	45.97	IV
5.	Lack of transport facilities	3015	32.42	V

## Production



**Fig 1:** The fig is represent with total Garrett's Score and rank of production.

## Marketing



**Fig 2:** The fig is represent with total Garrett's Score and rank of marketing.

## Conclusion

The assessment of the constraints encountered by sugarcane farmers in production, as well as the marketing of the crop, reveals several problems affecting the efficiency and profitability of sugarcane farmers. Production constraints include the lack of labour availability, the problem of wild animals, high incidence of pests and diseases. On the marketing front, farmers are primarily affected by low price in the local market, price fluctuation, and high commission charges. There are multiple ways to increase productivity. Levitation, the skills of farmers, promoting mechanization and improved productivity, and enhancing access to subsidized seeds and fertilizers timely manner will increase productivity. At the same time, improving market linkages with price stability and restrictive climate risks will ensure sustainable sugarcane farming, these improvements need specific actions. The sugarcane industry is highly uneven for

the producers and sellers in the market, as well as various stakeholders, with the government; each of these specific actions will need a highly coordinated effort. These efforts will seriously mobilize and strengthen the sugarcane sector, making it a highly productive, resilient, and sustainable industry in the future.

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