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Study of Marketable Surplus and Marketing of Sugarcane and Its Product (Jaggery) in West Champaran District of Bihar

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ABSTRACT

This study investigates the marketable surplus and marketing systems of sugarcane and its by-product, jaggery, in West Champaran district, Bihar—a key sugarcane-producing region. Despite favorable agroclimatic conditions, farmers face challenges such as inadequate infrastructure, delayed payments from sugar mills, high marketing costs, and middlemen exploitation. Data were collected from 120 farmers across seven villages in Sikta block using a multistage sampling method, with analysis based on Garrett's ranking technique, and Acharya's marketing efficiency formula. Results revealed that jaggery is mainly sold through long chains of intermediaries, reducing profits. Small and marginal farmers are especially affected due to limited credit access, poor transportation, and lack of market information. Average marketable surplus stood at 77.97% for sugarcane and 98.38% for jaggery, showing strong commercialization potential. The study recommends promoting Farmer-Producer Organizations (FPOs), improving rural processing, ensuring timely mill payments, and enhancing market access to boost farmer income and rural development.

Keywords: Sugarcane, Jaggery, Marketable Surplus, Marketing Channels

INTRODUCTION

Sugarcane (Saccharum officinarum), a key commercial crop in India, is vital for producing sugar, jaggery, and ethanol, supporting millions of rural livelihoods. India ranks as the world's second-largest sugarcane producer, with Bihar—particularly West Champaran—being a significant contributor due to its fertile alluvial soil, favorable climate, and ample water resources. Despite ideal growing conditions, farmers in West Champaran face major marketing challenges such as poor transportation, delayed mill payments, lack of storage, and dependency on middlemen, which reduce their earnings. Most are small and marginal farmers with limited access to credit and market information. Jaggery, a traditional non-centrifugal sugar product known for its nutritional value and high demand in rural areas, is mainly produced by small-scale and cottage industries facing high processing costs and limited market access. This study aims to assess the marketable surplus and marketing practices of sugarcane and jaggery in West Champaran, highlighting constraints and offering insights for better policies and rural development.

RESEARCH METHODOLOGY

The study was conducted in Sikta block of West Champaran, Bihar, a key sugarcane-growing area. Using a multistage sampling method, 120 farmers from seven villages were selected and categorized by landholding size. Data from 2024–2025 were collected through structured interviews and secondary sources like government reports and sugar mill records. Additionally, 10% of local market functionaries were surveyed. Analytical tools included Acharya's MME formula, Garrett's Ranking Technique. Marketing costs, margins, and marketable surplus were also assessed. This comprehensive approach ensured reliable findings to support practical improvements in sugarcane and jaggery marketing systems.

ANALYTICAL TOOLS

1. **Acharya's marketing efficiency formula-** MME = FP/ MC+MM
2. **Garrett ranking** - Per cent position = 100 (R_{ij}-0.5) /N_j
3. **margin analysis =** $\frac{\text{Price to Consumer – Price to Producer}}{\text{Price to Consumer}} * 100$
4. **Marketable Surplus** = P – {C + C_f + W + S}
5. **Marketing Cost** = Cf+ Cm1+ Cm2+ Cm3+……. + Cmn

RESULTS AND DISCUSSION

Table 1: Socio-Economic Profile

Indicator	Marginal	Small	Medium	Large
Avg. Annual Income	₹<1 lakh	₹1–2.5 lakh	₹2.5–5 lakh	₹>5 lakh
Literacy (%)	48.3	32.2	14.5	5
Avg. Landholding (ha)	1.01	0.67	2.79	2.95

There are notable differences in the socioeconomic characteristics between the various farm size groups. Although they are the lowest income group—those with an average yearly income of less than ₹1 lakh—marginal farmers have the greatest literacy rate (48.3%) and an average landholding of 1.01 hectares. The literacy rate of small farmers, on the other hand, is lower at 32.2%, and they typically possess 0.67 hectares. They earn between ₹1 and ₹2.5 lakh annually. Medium-sized farmers, who make between ₹2.5 and ₹5 lakh a year, with an average landholding of 2.79 hectares and a literacy rate of 14.5%. Although they own the most land on average (2.95 hectares), big farmers with earnings over ₹5 lakh have the lowest literacy percentage (5%). Data indicates that literacy levels and income and landholding size are inversely correlated.

Table 2: Marketing Channels of Sugarcane

Channel	Farmer Usage (%)
I: Farmer → Sugar Mill	50.0
II: Farmer → Cooperative → Sugar Mill	29.2
III: Farmer → Gur Units	20.8

According to the distribution of sugarcane marketing channels, Channel I is the most popular as half of farmers (50%) sell their output directly to sugar mills. 29.2% of farmers use Channel II, which uses cooperatives as middlemen before the sugarcane is sent to the mills. In contrast, 20.8% of farmers Favor Channel III and provide conventional gur (jaggery) facilities with their output. Although a sizable number of farmers continue to use cooperative and conventional processing methods, this trend indicates a preference for direct marketing among farmers.

Table 3: Marketing Channels of Jaggery

Channel	Distribution (%)
I: Producer → Consumer	0.28
II: Producer → Merchant → Wholesaler → Retailer → Consumer	10.11
III: Producer → Wholesaler → Retailer → Consumer	89.62

Jaggery's distribution system demonstrates a significant reliance on intermediary marketing channels. With 89.62% of the entire distribution, Channel III—where jaggery travels from producer to wholesaler, store, and consumer—dominates. 10.11% is accounted for by Channel II, which consists of a further tier of merchants before to the wholesaler. At just 0.28%, direct marketing through Channel I—where manufacturers sell directly to consumers—is incredibly rare. This suggests that there is little direct connection between producers and final customers, and that multi-tiered supply networks dominate the jaggery market.

Table 4: Marketable Surplus

Product	Average Marketable Surplus	% of Total Production
Sugarcane	334.49 quintals/farm	77.97%
Jaggery	41.53 quintals/farm	98.38%

Jaggery has a greater rate of commercialization than sugarcane, according to marketable surplus statistics. Nearly all of the jaggery produced is likely meant for market sale, since producers typically have a marketable excess of 41.53 quintals per farm, or 98.38% of the entire production. By contrast, sugarcane exhibits a higher average surplus of 334.49 quintals per farm, but this amounts to a smaller proportion of overall production (77.97%). This illustrates how a bigger percentage of jaggery is marketed despite sugarcane being produced in larger amounts, highlighting its significance as a vital commercial commodity for farmers.

Table 5: Marketing Cost and Margins

Channel	Avg. Cost (₹/quintal)	Margin (%)
Sugarcane to Mill	₹220	8–10%
Sugarcane to Gur	₹180	15–20%
Jaggery Direct Sale	₹150	25–30%

Direct sales of jaggery are the most profitable alternative for producers, according to a study of marketing costs and margins across various channels. The lowest average cost per quintal is ₹150, while the largest margin ranges from 25 to 30%. Conversely, selling sugarcane to gur units entails a somewhat higher price per quintal of ₹180, which provides a 15–20% profit. The cost of selling sugarcane to sugar mills is the highest at ₹220 per quintal, while the profit margin is the lowest at 8–10%. This demonstrates unequivocally that farmers may greatly increase their profit margins by cutting marketing expenses and middlemen.

Table 6: Constraints in Marketing

Constraint	Garrett Mean Score	Rank
Delayed Payment by Sugar Mills	74.3	1
Poor Storage & Transportation	70.1	2
Low Awareness of Market Prices	68.2	3
Lack of Institutional Credit	65.4	4
Exploitation by Intermediaries	63.1	5

According to the Garrett Mean Scores study of marketing limitations, farmers' biggest problem is sugar mills' delayed payments, which receive the highest score of 74.3, placing it at the top. After this, inadequate transportation and storage facilities came in second place with a score of 70.1. Another significant limitation is low market pricing awareness, which ranks third with a score of 68.2. In terms of impact, intermediary exploitation is placed fifth with a score of 63.1, while lack of access to institutional credit ranks fourth with a score of 65.4. These results highlight how urgently infrastructure, market data, payment systems, financial access, and fair-trade policies all need to be improved.

CONCLUSION

This study evaluates the marketable surplus and marketing strategies of sugarcane and jaggery in West Champaran, Bihar, highlighting their potential for rural development. Despite high production, small and marginal farmers face challenges such as middlemen dominance, poor road connectivity, delayed sugar mill payments, lack of formal credit, and inadequate storage. The marketable surplus is 77.97% for sugarcane and 98.38% for jaggery, showing strong commercialization potential. Jaggery is more profitable but requires better processing and market access. Recommendations include establishing local jaggery processing units, promoting Farmer-Producer Organizations (FPOs), and ensuring timely payments by sugar mills. Strengthening cooperative marketing, rural financing, and market access can empower farmers, enhancing income and supporting sustainable rural economic growth.

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