



Sugarcane-Based Farming System and Farmer Profitability in Shamli District

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Sugarcane is the principal commercial crop of Shamli district and forms the foundation of the district's agricultural economy. The sugarcane-based farming system combines crop cultivation, ratoon management, dairy enterprises, fodder production, and in many villages small-scale Jaggery processing. The district has remained among the highest sugarcane productivity regions in Uttar Pradesh because of fertile alluvial soil, assured irrigation through canals and tube wells, improved seed varieties, and strong market linkage with sugar mills. Recent district reports show Shamli leading the state in sugarcane productivity at above 1,020 quintals per hectare, indicating highly intensive cultivation and improved crop management practices. Sugarcane provides relatively stable income compared with cereals because of assured procurement, but farmer profitability is influenced by rising labour cost, fertilizer expenditure, delayed cane payments, and fluctuations in gur market prices. The sugarcane-wheat rotation dominates the cropping pattern, while some farmers adopt intercropping with mustard, fodder, and pulses to increase land-use efficiency. Profitability improves when ratoon crops are properly managed because production cost declines while yield remains economically viable. This article examines the structure of the sugarcane-based farming system and its contribution to farmer income in Shamli district.

Introduction

Shamli district is located in western Uttar Pradesh and is one of the most agriculturally developed districts of the upper Ganga-Yamuna Doab region. Agriculture is the principal occupation of the rural population, and sugarcane occupies a dominant share in the cropping system. The district's fertile loam soil, moderate climate, and extensive irrigation facilities create highly favourable conditions for sugarcane cultivation.

Sugarcane has special economic importance because it is both a cash crop and an industrial crop. It supplies raw material to nearby sugar mills and village-level jaggery units, generating continuous employment for farmers, labourers, transporters, and traders. Because of assured market demand, most farmers allocate a substantial proportion of cultivated land to sugarcane.

The sugarcane farming system in Shamli is not limited to a single crop; rather, it includes crop rotation, ratoon cultivation, livestock integration, and seasonal intercrops. This integrated structure helps maintain household income throughout the year.

Sugarcane-Based Farming System in Shamli District

The dominant farming pattern consists of:

- Sugarcane (plant crop)
- Sugarcane ratoon crop

- Wheat after sugarcane harvest
- Fodder crops for dairy animals
- Mustard, lentil, and vegetable intercrops

The sugarcane–wheat rotation is the most common because wheat fits well after sugarcane harvesting and provides food grain security for farm households.

Ratoon cropping is economically important because it reduces:

- Seed cost
- Land preparation cost
- Labour requirement

This lowers total cultivation expenditure and improves net returns if ratoon management is proper.

Many farmers also maintain dairy animals because sugarcane leaves and crop residues serve as fodder. Dairy income supports cash flow during periods when cane payment from sugar mills is delayed.

Sugarcane Productivity and Production Conditions

Shamli district has consistently remained one of the top districts in sugarcane productivity in Uttar Pradesh. Recent reports indicate district productivity above **1023 quintals per hectare**, among the highest in the state.

Major factors responsible for high productivity include:

- Use of improved sugarcane varieties
- Timely irrigation through canals and tube wells
- Balanced fertilizer application
- Proper weed control
- Effective pest and disease management

Farmers commonly adopt high-yielding varieties such as Co-series cane recommended by agricultural departments.

Cost Structure of Sugarcane Cultivation

Major cost components include:

1. Human labour
2. Seed cane
3. Fertilizers and manure
4. Irrigation charges
5. Plant protection chemicals
6. Harvesting and transport

Among these, labour and irrigation account for a large share of total production cost.

Approximate cost distribution:

- Labour: 30–35%
- Fertilizer and manure: 20–25%
- Irrigation: 15–20%
- Seed and planting: 10–15%
- Harvesting and transport: 15–20%

Higher fertilizer prices and wage rates have recently increased cultivation costs.

Farmer Profitability

Profitability depends mainly on:

- Yield per hectare
- Sugarcane procurement price
- Timely mill payment
- Input cost control

The state-advised cane price provides price assurance, making sugarcane more attractive than many cereal crops.

Farmers also earn additional income through:

- Sale of ratoon crop
- Sale of fodder
- Supply to gur units
- Dairy enterprises

Where farmers process cane into Jaggery, immediate cash realization often improves short-term liquidity.

Constraints in Farmer Profitability

Despite high productivity, major economic constraints remain:

- Delay in sugar mill payments
- Rising fertilizer prices
- Labour shortage during peak harvest
- High irrigation cost
- Pest incidence such as red rot disease

Payment delays reduce working capital availability for the next cropping season.

Measures for Improving Profitability

The following measures can improve economic returns:

- Promotion of disease-resistant varieties
- Better ratoon management
- Mechanized harvesting
- Intercropping in early sugarcane stage
- Strengthening direct payment systems

Intercropping mustard or pulses during early growth stage increases land productivity without significantly affecting cane yield.

Conclusion

The sugarcane-based farming system is the backbone of rural income in Shamli district. High productivity, strong market linkage, and integration with dairy and secondary crops make sugarcane economically significant. However, profitability is influenced by rising input costs and delayed payments. Sustainable income growth requires improved technology adoption, efficient resource use, and stronger market management.