A Study of the Financial Condition of Cash Crop Cotton Farmers in Nanded District

Mr. Parameshwar C. Shinde[1], Dr. M. V. Bhosale[2]

[1,2]School of Social Sciences, S.R.T.M.U. Nanded.

Abstract:

This study explores the financial condition of cotton farmers in Nanded District, Maharashtra, a region known for its significant contribution to India's cotton production. The research examines income levels, credit access, and challenges such as debt dependency, price volatility, and climatic risks. Data from government reports, research studies, and statistical records form the basis of analysis. Findings reveal that despite cotton being a high-value cash crop, farmers face financial distress due to market fluctuations, low returns, and dependence on informal credit systems. Suggestions for policy reforms and innovative farming practices are also discussed.

Keywords: Cotton farming, Bt cotton, financial condition, rainfed agriculture, government support

1.0 INTRODUCTION

Cotton, a fiber crop often referred to as "white gold" or "wool," has a rich history dating back to ancient Egypt, where the art of making fabric from cotton was first mastered. Today, cotton is cultivated in countries like India, China, the United States, Pakistan, Brazil, Uzbekistan, Australia, Turkey, Argentina, and Greece. India stands out as a leading producer, contributing approximately 23% of the world's cotton production. The country dedicates around 12.0 million to 13.5 million hectares to cotton cultivation, accounting for about 37% of the global cotton area. Notably, Maharashtra is a prominent cotton-growing state in India. According to research, India's cotton production is forecasted to reach 362.18 million tons by 2029-30. Gujarat and Maharashtra lead in state-wise production, with higher productivity compared to other regions. Around 76% of India's cotton is produced in rain-fed regions, while 33% comes from irrigated areas. Cotton undergoes several stages, from planting to ginning, with modern techniques and genetically modified varieties boosting yield and pest resistance. The versatile cotton fibers are used to create various fabrics, from everyday clothing like t-shirts and jeans to specialized items like high-quality bed linens and fine laces. In the medical field, cotton's absorbent and hypoallergenic properties make it ideal for bandages, gauze, and surgical dressings. Beyond textiles, cottonseed is a valuable byproduct, with its oil widely used in cooking and industrial applications such as soap and cosmetics manufacturing, and cottonseed meal serving as a high-protein livestock feed. Furthermore, cotton plays a crucial role in sustainable agriculture, being an essential component of crop rotation practices that help maintain soil health and reduce reliance on chemical fertilizers and pesticides.

As global demand for cotton continues to rise, sustainable and ethical cotton farming practices are becoming increasingly important. Several initiatives and certifications, such as Better Cotton Initiative (BCI) and Organic Cotton certifications, aim to ensure that cotton is grown with minimal environmental impact and fair labor practices. These programs promote water conservation, reduce pesticide use, and

ensure safe working conditions for farmers. Moreover, advancements in biotechnology are leading to the development of cotton varieties that require less water and are more resistant to pests and diseases, further enhancing sustainability. The textile industry is also making strides in recycling cotton garments, thereby reducing waste and promoting a circular economy. As consumers become more conscious of their environmental footprint, the demand for sustainable cotton products is expected to grow, driving further innovation and improvement in cotton farming and production. Thus, cotton not only remains a cornerstone of the global textile industry but also embodies the potential for positive change towards a more sustainable and ethical future.

2.0 METHODOLOGY

The research employs secondary data analysis from credible sources, including government publications, agricultural research papers, and district-level statistical reports (Department of Agriculture, 2021; Nanded District Agricultural Office, 2022). The data is analyzed to understand trends in cotton farming income, credit utilization, and associated risks.

Table 1; Key Aspects of Cotton Farming in Nanded.

Aspect	Value
Agro-climatic Zone	Central Maharashtra Plateau Zone, Deccan Plateau, Hot Semi-Arid Eco-Region
Rainfall	993.1 mm (Annual Average)
Soil Types	Deep black (36.81%), Medium deep black (9.43%), Shallow black (53.75%)
Area Under Cotton	235.1 thousand hectares
Productivity	147 kg/ha
Intercropping	Cotton + Pigeon pea (6:2 ratio)
Irrigation Dependency	Predominantly rainfed; low irrigated coverage
Pest Management	Jassids, whitefly, bollworms; IPM and neem-based pesticides
Government Programs	TSP and SCSP (Subsidized inputs, pest control measures)
Economic Impact	Improved income through high-yielding varieties and interventions

Cotton farming in Nanded, particularly as a cash crop, benefits significantly from improved varieties, technological interventions, and targeted support programs. Bt cotton varieties like NHH 44 BG II and

NH 1901 Bt are designed for rainfed conditions, offering sustainable yields (13-25 q/ha), pest resistance, and superior fiber quality, while Desi varieties like PA 740 and PA 812 support organic farming with lower input costs and high-quality fiber. Technological practices, such as optimal spacing (120 x 45 cm), fertilization (120:60:60 NPK kg/ha), and green gram intercropping, enhance productivity and profitability. Weed and pest management using herbicides and bio-fertilizers further reduce costs and improve returns. Extension programs like the Tribal Sub-Plan (TSP) and Scheduled Caste Sub-Plan (SCSP) provide vital support through training, input distribution, and capacity-building, benefiting over 250 farmers in the region. With a focus on sustainable and organic practices, these interventions are instrumental in maximizing yields and economic returns for cotton farmers, solidifying its role as a lucrative cash crop.

Table 2; Agricultural and Cotton Yield Statistics for Nanded District (2022-23).

| Sr. No.	Taluka	Agricultural Area (in hectares)	Area Under Cotton Crop (in hectares)	Cotton Yield (2022-23) (in quintals per hectare)
1	Nanded	120000	50000	9.5
2	Ardhapur	47409	30000	10.2
3	Bhokar	28236	18000	8.8
4	Mudkhed	48522	22000	9.1
5	Biloli	24546	15000	7.7
6	Naigaon	34282	18000	8.5
7	Degloor	39421	20000	9
8	Mukhed	52126	25000	9.3
9	Dharmabad	32650	14000	8.3
10	Umri	18752	7500	7.5
11	Hadgaon	33123	12000	8.9
12	Himayatnagar	27815	11000	8
13	Kandhar	25345	10000	8.2
14	Loha	40451	18500	9.4
15	Kinwat	23107	9500	7.9
16	Mahur	22348	8000	7.6

3.0 RESULT AND DISCUSSION
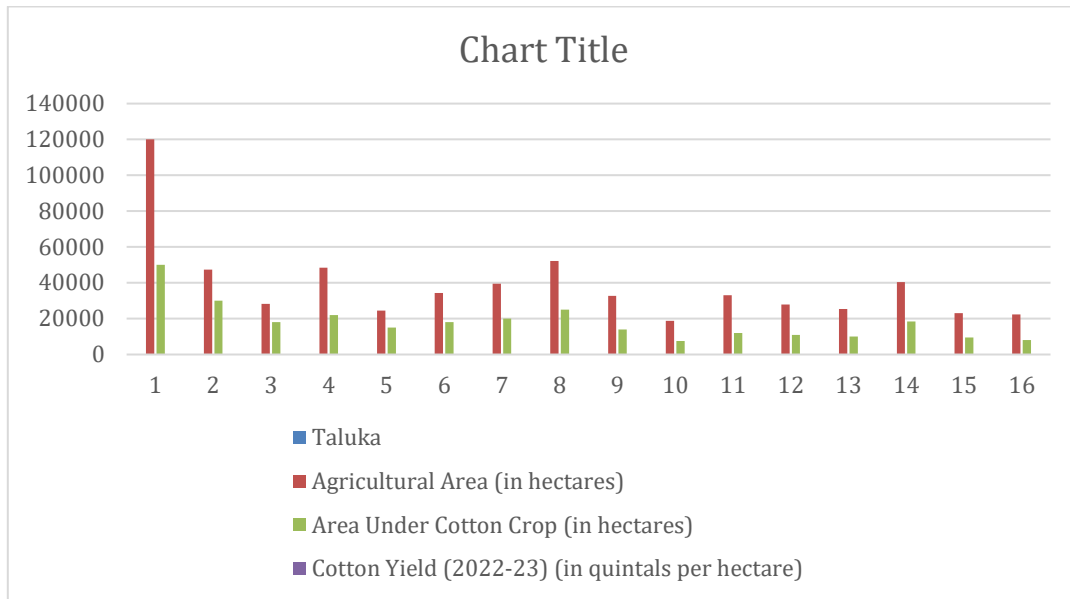
Diagram ; Agricultural Area, Cotton Cultivation, and Yield in Nanded District (2022-23).

1. **Agricultural Area, Cotton Cultivation, and Yield in Nanded District (2022-23).**
2. **Agricultural Practices and Productivity**

The study revealed that cotton farming in Nanded District relies predominantly on rainfed conditions, with minimal irrigation coverage. The Bt cotton varieties (e.g., NHH 44 BG II, NH 1901 Bt) demonstrated superior performance in terms of yield (13-25 q/ha) and pest resistance, offering farmers an opportunity to enhance productivity. However, Desi cotton varieties continue to support organic farming due to their adaptability to local soil and climatic conditions. Average productivity across the district was 147 kg/ha, with yield variations between 7.5–10.2 quintals per hectare, depending on the taluka.

3. **Income and Economic Returns**

Cotton farming offers significant income potential, particularly with high-yielding Bt varieties and innovative practices like green gram intercropping, which provides additional revenue. However, market volatility and dependency on middlemen for sales negatively impact net returns. Farmers reported difficulties in accessing formal markets, limiting their ability to secure competitive prices.

4. **Technological Interventions**

The adoption of optimal planting methods (e.g., 120 x 45 cm spacing) and fertilization schedules (120:60:60 NPK) improved yields and reduced input wastage. Integrated pest management (IPM) and the use of neem-based pesticides were effective in controlling infestations of jassids, whiteflies, and bollworms, leading to reduced chemical costs and environmental impact.

5. **Government Support and Schemes**

Programs like the Tribal Sub-Plan (TSP) and Scheduled Caste Sub-Plan (SCSP) played a critical role in supporting marginalized farmers. These schemes provided subsidized inputs, including fertilizers (e.g., NPK 10:26:26) and pesticides (e.g., Azadirachtin, Emamectin benzoate), benefitting over 250 farmers. Training sessions and capacity-building initiatives enabled the adoption of improved hybrids and sustainable farming practices.

6. **Challenges and Constraint**

Despite the advancements, farmers face significant challenges:

- **Climatic Vulnerability:** Dependence on rainfed conditions makes cotton cultivation susceptible to erratic rainfall and droughts.
- **Market Uncertainty:** Price fluctuations and limited access to MSP mechanisms expose farmers to financial risks.
- **Debt Dependency:** Reliance on informal credit sources increases farmers' financial vulnerability, often leading to cycles of indebtedness.

Cotton farming in Nanded District demonstrates a duality of high revenue potential and significant financial risk. While improved varieties and technological interventions enhance productivity, external challenges such as climatic risks and market dependency hinder profitability. Government initiatives like TSP and SCSP have made commendable progress in capacity-building and input distribution, but there remains a need for broader dissemination of knowledge about sustainable practices and better market linkages.

Investing in irrigation infrastructure and promoting crop diversification could further mitigate risks. Additionally, direct market access through farmer producer organizations (FPOs) or digital platforms could help farmers secure better prices. Integrating modern biotechnology with traditional knowledge can enhance sustainability and ensure the long-term viability of cotton farming as a cash crop in Nanded District.

4.0 Conclusion

Cotton farming in Nanded District is integral to the local economy, with varieties like Bt cotton (e.g., NHH 44 BG II) offering high yields, pest resistance, and superior fiber quality, and Desi cotton (e.g., PA 740) supporting organic farming with reduced input costs. Technological interventions such as optimal spacing (120 x 45 cm), fertilization (120:60:60 NPK), and intercropping with green gram improve productivity and profitability.

Key challenges include rainfed cultivation dependency, pest threats, and market fluctuations. Government schemes like the Tribal Sub-Plan (TSP) and Scheduled Caste Sub-Plan (SCSP) provide critical support through subsidized inputs, capacity-building, and integrated crop management (ICM). In 2022-23, these initiatives benefited over 250 farmers, promoting sustainable practices and enhancing economic returns. Despite these efforts, variability in yield (7.5–10.2 quintals per hectare across talukas) and limited irrigation remain barriers to financial stability. Cotton remains a lucrative cash crop for Nanded farmers, with focused interventions driving improved yields and economic resilience.

5.0 References

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