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Impact assessment of Geographical Indication (GI) tag on Jeeraphool rice variety

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Abstract

The present study titled "Impact Assessment of Geographical Indication (GI) Tag on Jeeraphool Rice Variety" aims to evaluate the economic impact of the Geographical Indication (GI) tag on the price, cost of cultivation, returns, and market access of Jeeraphool rice producers in Surguja district of Chhattisgarh. Jeeraphool rice is a traditional aromatic rice variety known for its distinctive aroma, superior grain quality, and geographical identity. The study was based on primary data collected from 150 sample farmers selected through a multistage sampling technique. Comparative analysis of the pre-GI and post-GI periods was carried out using standard cost concepts, profitability measures, and market indicators. The results revealed that although the cost of cultivation increased due to higher investment in quality inputs and improved crop management practices, farmers benefited from significant improvements in productivity, price realization, and profitability. The average selling price increased from ₹3,000 per quintal before GI registration to ₹6,000 per quintal after GI registration. Similarly, gross income increased from ₹84,025.00 per hectare to ₹181,390.00 per hectare, while net returns increased from ₹46,219.86 per hectare to ₹121,135.40 per hectare. The input-output ratio also improved from 1:2.22 to 1:3.01, indicating enhanced production efficiency. The study concludes that the GI tag has significantly improved the economic performance of Jeeraphool rice cultivation by enhancing farmers' income, profitability, market access, and the commercial value of the crop. The findings highlight the importance of strengthening quality certification, branding, value addition, and institutional support to ensure the long-term sustainability and competitiveness of GI-certified agricultural products.

Keywords: Geographical indication, Jeeraphool rice, cost of cultivation, profitability, market access, Chhattisgarh, agricultural economics

Introduction

Agriculture plays a vital role in the Indian economy by ensuring food security, generating employment, and supporting rural livelihoods. India possesses a rich diversity of traditional agricultural products whose unique qualities are closely associated with their geographical origin. The Geographical Indications (GI) system, established under the *Geographical Indications of Goods (Registration and Protection) Act, 1999* [6], provides legal protection to such products, enhances their market identity, and promotes value addition through geographical branding. Previous studies have highlighted that GI registration improves product differentiation, strengthens consumer confidence, and enables producers to receive premium prices while contributing to rural development (Rangnekar, 2004; Bowen, 2010) [15, 2]. Similarly, Belletti and Marescotti (2011) [1] reported that GI-certified products promote value addition, preserve traditional knowledge, and improve farmers' livelihoods through collective branding and quality assurance.

Among the GI-registered agricultural products, Jeeraphool rice, a traditional aromatic rice variety cultivated predominantly in the Surguja district of Chhattisgarh, is

recognized for its distinctive aroma, fine grain quality, excellent cooking characteristics, and cultural significance. The GI registration of Jeeraphool rice has created opportunities for product differentiation, premium pricing, quality assurance, and improved market recognition, thereby encouraging farmers to adopt better cultivation and post-harvest management practices. These improvements are expected to enhance productivity, profitability, and market access while strengthening the commercial value of the crop. However, despite the growing importance of GI registration, empirical evidence on its farm-level economic impact remains limited, particularly for indigenous rice varieties. Most existing studies have focused on legal protection, marketing, and consumer perception, with comparatively less emphasis on changes in production economics, profitability, and farmers' income following GI registration (Das, 2010) [3]. Therefore, the present study evaluates the economic impact of the GI tag on the price, cost of cultivation, returns, and market access of Jeeraphool rice producers in Surguja district of Chhattisgarh, with the objective of providing useful insights for policymakers, researchers, and institutions involved in the promotion of GI-based agricultural development.

Methodology

The present study was conducted in Surguja district of Chhattisgarh, the principal production region of GI-tagged Jeeraphool rice. The district was purposively selected due to its significant area under Jeeraphool cultivation and its recognition as the traditional production region of this indigenous aromatic rice variety. Three major Jeeraphool-producing blocks, namely Ambikapur, Batauli, and Lakhanpur, were selected purposively. A multistage sampling technique was adopted for the selection of respondents. From the selected blocks, major Jeeraphool-growing villages were identified, and a total of 150 Jeeraphool rice farmers were selected through random sampling.

The study was based on both primary and secondary data. Primary data were collected through personal interviews using a pre-tested and structured interview schedule covering socio-economic characteristics, cost of cultivation, yield, selling price, returns, and market access before and after GI registration. Secondary data were obtained from the Department of Agriculture, Government of Chhattisgarh, Directorate of Economics and Statistics, published research articles, books, government reports, and GI Registry documents.

The economic impact of the GI tag was analysed using descriptive and comparative analytical techniques. Cost of cultivation was estimated using the Commission for Agricultural Costs and Prices (CACP) cost concepts (Cost A₁, B₁, B₂, C₁, C₂, and C₃). Economic performance was evaluated using indicators such as gross income, net returns, farm business income, family labour income, cost of production, and input-output ratio. A comparative analysis of the pre-GI and post-GI periods was carried out to assess the impact of the GI tag on cultivation cost, productivity, price realization, profitability, and market access of Jeeraphool rice producers.

Results and Discussion

Economic Impact of the GI Tag on Jeeraphool Rice Cultivation

The economic impact of the Geographical Indication (GI) tag was assessed by comparing the pre-GI and post-GI periods for Jeeraphool rice producers in Surguja district of Chhattisgarh. The findings indicate that GI registration has positively influenced the economic performance of Jeeraphool rice cultivation. Although the cost of cultivation increased after GI registration due to greater investment in quality inputs and improved crop management, farmers benefited from higher productivity, premium prices, improved market access, and greater profitability. The GI tag strengthened the identity and authenticity of Jeeraphool rice, enabling producers to receive better prices and encouraging them to adopt quality-oriented production practices.

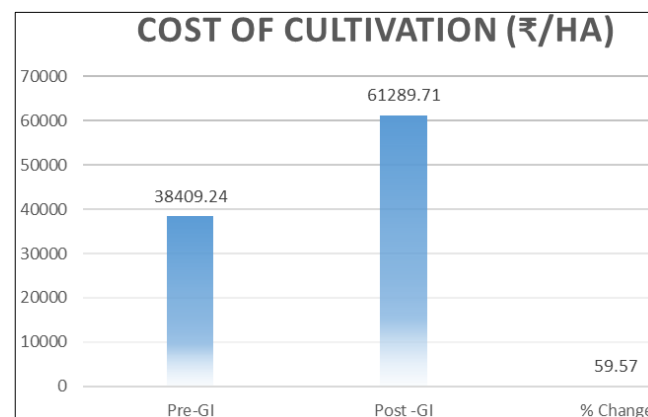
Cost of Cultivation and Cost Concepts

The average cost of cultivation increased from ₹38,409.24/ha before GI registration to ₹61,289.71/ha after GI registration, representing an increase of 59.57 per cent (Table 1). The increase was mainly due to higher expenditure on quality seed, fertilizers, organic manure, labour, machinery, irrigation, and post-harvest operations such as grading and packaging. Although production costs increased, the

additional investment improved crop quality and contributed to higher economic returns.

Table 1: Comparative Cost of Cultivation

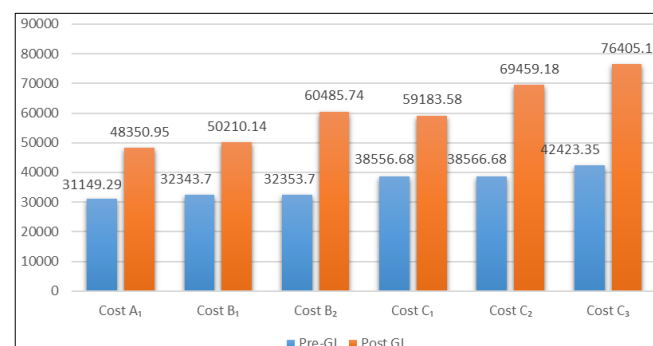
Particulars	Pre-GI	Post -GI	% Change
Cost of Cultivation (₹/ha)	38409.24	61289.71	59.57



The comparison of CACP cost concepts also showed a consistent increase in production costs after GI registration (Table 2). Paid-out costs (Cost A₁) increased because of higher expenditure on purchased inputs and hired labour, while comprehensive costs (Cost C₂ and Cost C₃) increased due to greater investment in family labour and farm management. These findings indicate that farmers invested more resources to maintain the quality standards associated with GI-certified Jeeraphool rice.

Table 2: Comparative Cost Concepts (₹/ha)

Cost concept	Pre-GI	Post GI
Cost A ₁	31149.29	48350.95
Cost B ₁	32343.70	50210.14
Cost B ₂	32353.70	60485.74
Cost C ₁	38556.68	59183.58
Cost C ₂	38566.68	69459.18
Cost C ₃	42423.35	76405.10

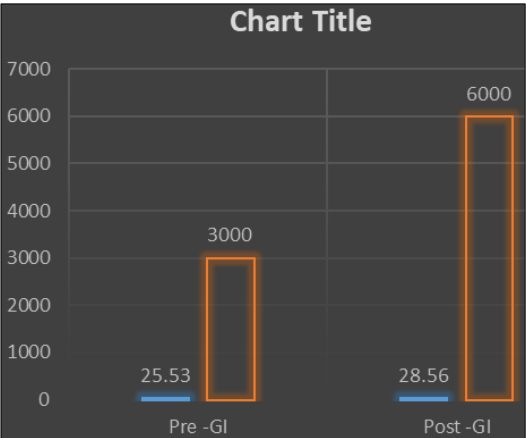


Effect of GI Tag on Yield, Price and Profitability

GI registration had a significant positive effect on productivity, price realization, and farm profitability. The average yield increased from 25.53 q/ha before GI registration to 28.56 q/ha after GI registration, while the average selling price doubled from ₹3,000/q to ₹6,000/q (Table 3). The increase in price reflects the premium value created through geographical branding, product authenticity, and greater consumer confidence.

Table 3: Comparative Yield and Selling Price

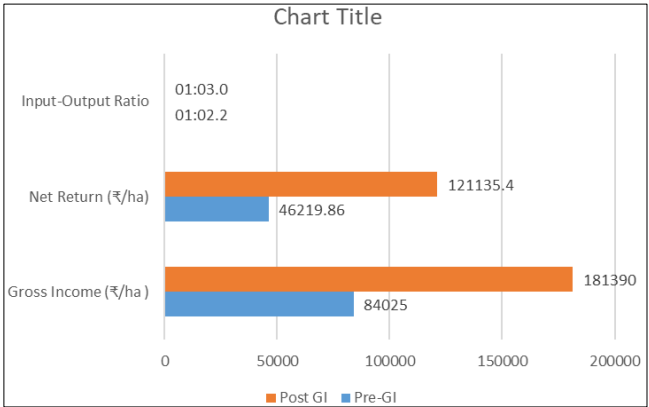
Indicator	Pre -GI	Post -GI
Yield(q/ha)	25.53	28.56
Selling Price (₹/q)	3000	6000



The increase in productivity and selling price substantially improved farmers' profitability. Gross income increased from ₹84,025.00/ha to ₹181,390.00/ha, while net returns increased from ₹46,219.86/ha to ₹121,135.40/ha. The input-output ratio improved from 1:2.22 to 1:3.01, indicating that every rupee invested generated higher returns after GI registration (Table 4). These findings clearly demonstrate that the additional production cost was economically justified by the considerable increase in farm income.

Table 4: Comparative Profitability Indicators

Indicator	Pre-GI	Post GI
Gross Income (₹/ha)	84025.00	181390.00
Net Return (₹/ha)	46219.86	121135.40
Input-Output Ratio	1:2.22	1:3.01



Market Access and Overall Discussion

The GI tag also improved market access for Jeeraphool rice producers. Before GI registration, farmers primarily marketed their produce through local traders with limited product differentiation and lower price realization. After GI registration, better branding, product recognition, and consumer awareness enabled farmers to access premium markets and negotiate higher prices. Nevertheless, inadequate processing facilities, limited consumer awareness, and weak marketing infrastructure continue to

limit the full benefits of GI registration. Strengthening Farmer Producer Organizations (FPOs), quality certification, branding, and digital marketing initiatives can further enhance the market potential of Jeeraphool rice. Overall, the findings confirm that GI registration has significantly improved the economic performance of Jeeraphool rice cultivation by increasing price realization, profitability, and market opportunities. The results support earlier studies on Geographical Indications, which suggest that geographical branding enhances product value, strengthens rural livelihoods, and contributes to sustainable agricultural development.

Conclusion

The present study assessed the economic impact of the Geographical Indication (GI) tag on Jeeraphool rice producers in Surguja district of Chhattisgarh. The findings clearly indicate that GI registration has significantly improved the economic performance of Jeeraphool rice cultivation. Although the average cost of cultivation increased due to greater investment in quality seed, fertilizers, labour, machinery, and post-harvest management, the increase in production cost was more than compensated by higher productivity, premium prices, and improved market opportunities.

The comparative analysis between the pre-GI and post-GI periods revealed that the average selling price of Jeeraphool rice increased from ₹3,000 per quintal to ₹6,000 per quintal, while average productivity increased from 25.53 quintals per hectare to 28.56 quintals per hectare. Consequently, gross income increased from ₹84,025.00 per hectare to ₹181,390.00 per hectare, and net returns increased from ₹46,219.86 per hectare to ₹121,135.40 per hectare. The improvement in the input-output ratio from 1:2.22 to 1:3.01 further demonstrates that GI registration enhanced the profitability and production efficiency of Jeeraphool rice cultivation.

Besides increasing farmers' income, the GI tag also strengthened the market position of Jeeraphool rice by improving product identity, consumer confidence, and branding. Farmers reported better bargaining power and improved access to premium markets compared with the pre-GI period. However, challenges such as inadequate processing facilities, limited consumer awareness, insufficient branding, and weak market infrastructure still constrain the realization of the full economic potential of the GI tag.

Overall, the study concludes that the Geographical Indication system is an effective instrument for promoting traditional agricultural products and enhancing farmers' livelihoods. The success of GI registration, however, depends on sustained efforts in quality assurance, value addition, marketing, and institutional support.

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