

Production Trends of Large Cardamom in India and Nepal: A Comparative Study

Monu Rai^{1*} & Prof. Otem Padung²

¹ PhD Scholar, Department of Commerce,
Rajiv Gandhi University, Doimukh-791112, Arunachal Pradesh, India

ORCID: <https://orcid.org/0009-0009-1267-3513>

² Professor, Department of Commerce,
Rajiv Gandhi University, Doimukh-791112, Arunachal Pradesh, India

Abstract

Large cardamom (*Amomum subulatum* Roxb.) is an indigenous, high-value spice crop cultivated in the moist and semi-evergreen forests of the Eastern-Himalayan region of India, Nepal, and Bhutan. This crop plays a significant role in supporting the livelihoods of farming communities and sustains various stakeholders within the spice value chain. Although cultivated across all three nations, Nepal is the world's leading producer, while India, although second in production, remains the top exporter of large cardamom. This comparative study analyzes the production dynamics of large cardamom in India and Nepal, focusing on key factors such as cultivation area, production volume, and yield. It aims to identify disparities and opportunities for improving agricultural practices in both countries. The findings provide valuable insights for policymakers seeking to enhance the large cardamom sector and strengthen the regional spice industry.

Keywords: Large Cardamom, Production Trends, India, Nepal, Comparative Analysis.

Introduction

Agriculture plays a vital role in promoting rural development, especially in developing and least developed nations. It supports global economic growth by generating employment opportunities, improving food security, mitigating poverty, and sustaining livelihoods (World Bank, 2007; Food and Agriculture Organization, 2023). The economic landscapes of South Asian Countries such as India and Nepal are closely tied to the agricultural sector. According to the Economic Survey 2023-24, the agriculture and allied activities sector in India provides livelihoods to about 42.3% of the population, comprising approximately 18.2% of the national GDP (Government of India, 2024). Similarly, in Nepal, the agriculture sector contributes approximately 21.87% to the GDP and employs around 61.21% of the total population (World Bank, 2023).

Within this broad agricultural landscape, the Spice Industry stands out as one of the fastest-growing sectors, offering significant possibilities for farmer livelihood and generating vital

*Corresponding Author Email: munu.rai93@gmail.com

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foreign exchange through commercialization (Ralte & Ekhe, 2022). India, the world's largest producer and exporter of spices, cultivates around 75 varieties of spices, with an export record of US\$4.72 billion in the fiscal year 2024-25 (IBEF, 2025; Spices Board India, 2025). Similarly, Nepal's spice exports, particularly large cardamom and ginger, play a significant role in the country's overall export economy (Observatory of Economic Complexity, 2025; World Bank, 2017). Thus, the spice trade in both countries not only enhances local economies but also stabilizes the global supply chain of valuable crops. Large cardamom, also known as the '*Queen of Spices*', is one of the most important cash crops, uplifting the socio-economic status of rural communities in the Eastern Himalayas (Partap et al., 2014). In the fiscal year 2022-23, India and Nepal together produced around 17,526 metric tons (MT) of large cardamom. The price of large cardamom significantly impacts farmer incomes and market stability, with production volumes showing notable year-to-year fluctuations (ICIMOD, 2020).

Farmers in both countries face several challenges in large cardamom production, including diseases such as leaf blight (Bagchi, Roy, & Dutta, 2025), inadequate management practices, and unorganized market channels with numerous intermediaries. While previous research has focused on various aspects of large cardamom farming, such as regional yields in Sikkim (Sharma et al., 2016), the value chain in Nepal (ICIMOD, 2011), and general farming techniques, Limited comparative research has been conducted on the differences in land use, production volumes, and yield rates between India and Nepal during the period of 2018-19 to 2022-23. This study provides a macro-level synthesis of national aggregates; however, significant sub-national variations may exist.

Objectives

The Main goals of the study are outlined as follows:

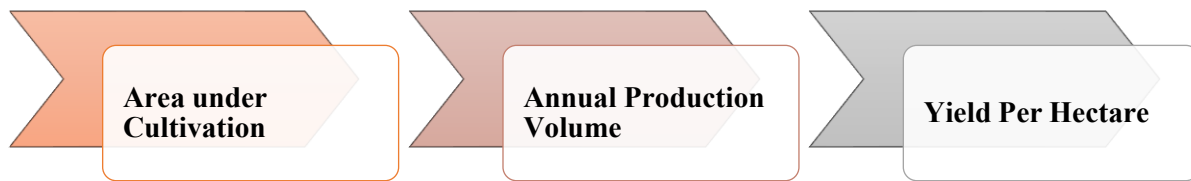
1. To analyze the trends in cultivation area, production volume, and yield across both nations during the 2018-19 to 2022-23 period.
2. To identify the factors affecting crop production in both countries.
3. To propose targeted strategies to improve the sustainability and profitability of the crop in both countries.

Methodology

The present study is based on secondary data obtained from annually published reports issued by the Spice Board of India (SBI) and the official agriculture statistics provided by the Ministry of Agriculture and Livestock Development (MoALD), Nepal. In addition to these sources, data on large cardamom production were also drawn from peer-reviewed articles. The study follows a descriptive and comparative approach, focusing on analyzing key production indicators as outlined below.

Figure 1

Core Indicators for comparing large cardamom production between India & Nepal



Source: Author’s presentation using the data from the SBI and MOALD.

The rationale for selecting India and Nepal is based on their dominant contribution to the global large cardamom market. The combined production for both nations reached approximately 17,526 metric tons (MT) during the 2022-23 fiscal year. In India, cultivation is concentrated in the northeastern states, including Sikkim, West Bengal, Arunachal Pradesh, Nagaland, and Manipur. Among these, Sikkim contributes over 57% of the total national output (Spice Board of India, 2023). In Nepal, primary production hotspots are located in the Eastern region (Taplejung, Sankhuwasabha, Panchthar, Ilam, and Khotang), accounting for over 80% of the country's total production (MoALD, 2024).

The study was conducted over five years (fiscal year 2018-19 to 2022-23). This timeframe captures recent trends and allows for an assessment of market stability following the COVID-19 pandemic. Data were compiled and managed using Microsoft Excel. Descriptive statistics, including measures of central tendency and annual growth rates, were used to quantify and compare the production trends. Key findings are presented using clear data visualizations, including tables and comparative figures.

Results and Analysis

The analysis of the three production parameters (area, volume, and yield) is presented using quantitative methods based on the secondary data sources detailed in the methodology section.

Table 1

Area under large cardamom cultivation in India and Nepal (2018-19 to 2022-23)

Fiscal Year	India Area (Ha)	India YoY Growth (%)	Nepal Area (Ha)	Nepal YoY Growth (%)
2018-19	31,377	N/A	15,055	N/A
2019-20	29,760	-5.15%	16,565	+10.03%
2020-21	31,297	+5.16%	15,668	-5.41%
2021-22	31,533	+0.76%	15,975	+1.96%
2022-23	31,755	+0.71%	15,975	+0.00%
CAGR	0.24%		1.19%	

Source: Author’s presentation using the data from the SBI and MOALD.

Table 1 highlights that the area under large cardamom cultivation showed different trends in India and Nepal. This divergence is due to differences in land size, market dynamics or government agricultural policies across countries. As shown in Table 1, Indian growers consistently maintained a larger cultivation area (average of 31,000 hectares), which is approximately double that of Nepal's average land holding of 15,800 hectares.

Moreover, it also shows that India's total area remained largely stagnant, with a very low Compound Annual Growth Rate (CAGR) of 0.24%. This shows a saturated land-use pattern in India, where existing land is maintained and optimized for yield rather than expanded. In contrast, in Nepal, with a CAGR of 1.19%, there seems greater potential for land expansion and an improved management system (Shrestha, 2018) for large cardamom. The growth in Nepal was notably driven by a significant expansion of +10.03 observed specifically in the 2019-20 fiscal year (Table 1). Moreover, no changes seem in the growth rate of land expansion even in recent year. Increased national effort is required for land expansion in Nepal to enhance production capacity. In the same way, in India, land expansion (Feroze et al., 2022) with optimization can also be done.

Production Volume and Market Analysis

Building upon the analysis of cultivation areas, this section examines the resulting production volume and market analysis between India and Nepal.

Table 2

Annual large cardamom production volume, Market Share, & Volatility (2018-19 to 2022-23)

Fiscal Year	India Production (MT)	India Share (%)	India Volatility (YoY % Change)	Nepal Production (MT)	Nepal Share (%)	Nepal Volatility (YoY % Change)
2018-19	8,669	52.15%	N/A	7,954	47.85%	N/A
2019-20	8,530	47.16%	-1.60%	9,545	52.84%	+20.00%
2020-21	8,803	51.51%	+3.20%	8,289	48.49%	-13.16%
2021-22	8,812	50.28%	+0.10%	8,714	49.72%	+5.13%
2022-23	9,074	51.13%	+2.97%	8,674	48.87%	-0.46%
Average	8,777.6	50.41%		8,635.2	49.59%	

Source: Author’s presentation using the data from the SBI and MOALD.

According to reports from the Spice Board of India (SBI) and the Ministry of Agriculture and Livestock Development (MoALD), Nepal is widely recognised as the largest producer of large cardamom globally, followed by India. However, the aggregate data presented in Table 2, which covers the fiscal years 2018-19 to 2022-23, indicate that the production volumes of the two countries remain closely comparable during the observed period. On average, India

accounts for a slightly higher share of total production (50.41%), compared to Nepal’s 49.59%. The distribution also shows year-to-year variability in production volumes, with the leading position occasionally shifting between the two countries during the study period.

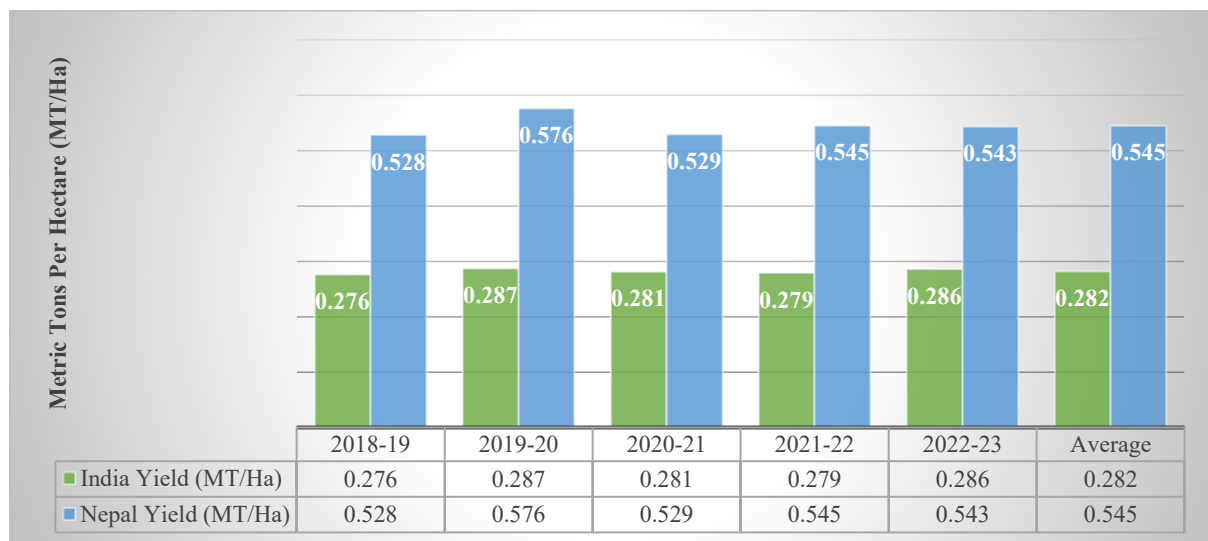
Furthermore, analysis of the year-over-year (YoY) production changes indicates greater fluctuations in Nepal’s output, including a notable increase of 20.00% in 2019-20, followed by a decline of 13.16% in 2020-21 (Table 2). These fluctuations may be associated with factors such as weather variability, disease incidence, and other external pressures (Khatiwada, Subedi, & Dangol, 2019). In contrast, India’s production appears relatively more stable over the same period. It should be noted that the values presented in Table 2 represent aggregated national-level estimates, and therefore, sub-national variations within each country may not be fully reflected in this analysis.

Yield Analysis

While cultivated area and production volume indicate the scale of production, analyzing yield is essential for understanding productivity differences between countries.

Figure 2

Average annual yield (MT/Ha) of large cardamom in India and Nepal (2018-19 to 2022-23).



Source: Author’s presentation using the data from the SBI and MOALD.

The data presented in Figure 2 demonstrates a significant structural difference in agricultural efficiency between India and Nepal. During the study period, Nepal consistently recorded substantially higher yields than India, with an average yield of 0.545 MT/Ha, which is approximately 93% higher than the average yield in India (0.282 MT/Ha).

This persistent yield disparity reflects a structural difference in the regional farming systems of the two countries that should be taken into consideration. The analysis confirms a persistent efficiency gap (Goswami & Pariyar,2025) that requires strategic measures. Addressing this gap requires strategic interventions, including the adoption of improved scientific management practices, the use of quality planting materials, disease control

measures, on-farming training to farmers, strengthening value chain linkages (Khatriwada, Subedi, & Dangol, 2019), and land expansion, which may further contribute to increasing productivity and reducing the existing efficiency gap within the study area.

Discussion

The main motivation of this study is to present a snapshot of the structural differences in large cardamom production trends between India and Nepal over the past five years (2018-2023). This period also captures dynamics occurring before, during and after the pandemic. Although there is no significant impact of COVID-19 on large cardamom cultivation itself, the data highlights critical divergences in national production strategies. The analysis suggests a dual approach is necessary for regional development: greater emphasis is needed on land expansion in Nepal, while India must focus on increasing its yield rate per hectare. This targeted strategy is supported by existing literature. Strategies such as adopting improved scientific management practices, using quality planting materials, implementing effective disease control measures, providing on-farm training for farmers, and strengthening value chain linkages (Khatriwada, Subedi, & Dangol, 2019) can be differentially applied to improve yield and narrow the identified efficiency gap between the two nations.

Recommendations

1. Invest in on-farm training programs to ensure the use of quality planting materials, disease control measures & modern farming technology.
2. Strengthen value chain linkages in both nations to improve market access, stabilize prices, and foster better production practices.
3. Prioritize sustainable land expansion and enhance potential yield efficiency.
4. Focus on adopting advanced, scientific management practices to optimize land use and narrow the efficiency gap of large cardamom production.

Conclusion

This study provides a comprehensive comparative analysis of the large cardamom production sectors in India and Nepal from 2018-2023. The key contribution is the quantification of the three dimensions, i.e., area, volume, and yield. The analysis highlights a persistent efficiency gap and significant structural differences in how the two nations approach cultivation. This gap identifies a critical area for targeted improvement in both countries' agricultural strategies. Addressing these disparities will ultimately contribute to the sustainable overall development of the regional spice Industry and also benefit all the value chain actors connected with this high-value cash crop. Strategic improvements across these three dimensions are essential for achieving multidimensional growth in the sector.

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