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Trade competitiveness of Indian cumin during the liberalized period: An economic analysis

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Abstract

India holds a preeminent position in the world as the largest producer, exporter, and consumer of spices. The new economic policy, aimed at liberalizing various sectors, initiated by the Government of India in 1991 was a significant turning point for the spices sector as several spice commodities including cumin, benefitted from the policy shift. Considering the increasing global demand for cumin and India's dominant position in its cultivation and export, it is important to study the effects of trade liberalisation on export performance of cumin. In this study we analyze changes in production patterns, export trends and trade competitiveness. The findings shows that export value growth has overtaken export quantity, indicating enhanced profitability and improved global pricing and it suggests that trade liberalization has substantially enhanced cumin export performance by reducing trade barriers, increasing market access, and fostering competitiveness, allowing India to consolidate its dominant position in the global cumin trade.

Keywords: Export, liberalisation, cumin, trade, competitiveness

Introduction

India stands as the world's largest producer of cumin (Meena *et al*., 2022). During 2020–21, the country produced approximately 7.95 lakh tonnes of cumin from an area of 10.87 lakh hectares (Anonymous, 2022). The primary cumin-producing states in India are Rajasthan and Gujarat (Shivakumar *et al*., 2010; Zohary & Hopf, 2002; Parashar *et al*., 2014). Developing countries, particularly India, play a leading role in supplying spices to the global market (Jaffee, 2005). Not only does India leading in spice production, but it is also the largest consumer of these spices. This signifies that a significant portion of the spices grown in India is used domestically, reflecting the importance of spices in Indian cuisine and culture. India's role as the largest exporter of spices highlights its ability to not only meet domestic demand but also as an important supplier to international markets. Bhagwati and Srinivasan (1993) emphasize that trade liberalization promotes long-term economic growth by enhancing competitiveness and encouraging efficient

allocation of resources. In the context of India's agricultural sector, including spices, such liberalization has opened up global markets, increased export opportunities, and motivated quality improvements across value chains. Among the many spices that benefitted from the 1991 economic liberalization policy, cumin emerged as one of the most prominent, due to its increasing global demand and India's dominant position in its cultivation and export.

Cumin (*Cuminum cyminum* L.) is an important spice in India, both economically and agriculturally. The spice is cultivated primarily in the arid regions of Gujarat and Rajasthan, where it serves as a significant source of livelihood for farmers. However, despite this potential, the crop sector faced significant economic development challenges in the past. The early years of India's international trade were characterized by economic planning. The exports saw a gradual increase from 1949 to 1970 and thereafter, from 1971 to 1991 the export performance showed noticeable improvement. However, it was the period after 1991, marked by the adoption of new economic policies, that the Indian spice trade, particularly cumin, truly responded to the demands of the global market. Despite the importance of cumin in India's spice economy, there has been limited research specifically focused on its global trade dynamics in the post-liberalization period. Therefore, this study aims to address this gap by providing a comprehensive analysis of India's position in the international cumin market and identifying the factors influencing its trade performance. In this context, analysing the trade performance of cumin during the liberalization period is crucial to understand how this high-value spice has adapted to increased global economic integration.

Materials and methods

The analysis encompasses multiple dimensions, including export and import dynamics, market competitiveness, shifts in the direction of trade, as well as India's comparative advantages and disadvantages in the global cumin market. To achieve this, secondary data was collected from reliable sources such as the Spice Board of India, Horticultural Statistics at a Glance, Spice statistics at a Glance, Government of India Ministry of Commerce and Industry, Department of Commerce, Handbook of herbs and spices, India stat, FAO, UNCTAD, IMF, WTO, UNCTAD, CEPII, RBI, Ministry of Agriculture (Government of India) and various issues of Economic Survey. The study period primarily focused on the years following the economic liberalisation of 1991; to assess the long-term impact of policy reforms on cumin trade but for the pre and post liberalisation comparison the study collected the data from 1961 to 2022. Time-series data on area under cultivation, production, productivity, exports, and imports of cumin were analysed using statistical tools such as trend analysis, compound growth rates, and export performance indices. Analysing the percentage share of cumin exports among major exporting countries in the world market, based on export quantity, export value, and export unit value helps to identify global trade patterns and shows which country is gaining or losing its prominence. This comprehensive approach helps to identify key trends, structural shifts, and India's evolving role in the global cumin trade.

Growth rate analysis

The Compound Annual Growth Rate (CAGR) was used to analyse the long-term growth trends in cumin exports during the liberalization period. This method offers insights into the rate at which export quantity and value have changed over time, highlighting key trends and patterns that reflect the performance and responsiveness of cumin trade in the global market.

$$Y_t = ab^t\, e^{\wedge ut}$$

Where,

Y_t = AreLa/ Production/ Yield/ Export quantity/ Export value/Export unit value

a = Intercept

b = (1+g) regression coefficient

t = Time period in years

ut = Disturbance term for the year 't' taking natural log on both side equation (1) becomes

$LnYt = Lna + tnLb + ut$

Growth rate = (Antilog of b – 1) *100

Instability analysis

The Instability Index is a useful statistical tool for measuring the extent of year-to-year fluctuations in export performance. In the context of cumin exports, this method helps identify the volatility in export quantity and value over time, which is key for understanding market stability and risk exposure. High instability may indicate supply chain disruptions, price fluctuations, inconsistent production, or external market pressures, all of which can affect trade competitiveness. On the other hand, a low instability index reflects a more predictable and stable export environment, which is favourable for long-term planning and investment in the cumin trade sector. Thus, the index provides valuable insights for policymakers, exporters, and stakeholders aiming to enhance the resilience and global positioning of India's cumin exports.

Instability index = Standard deviation of natural logarithm ($(t+1)/Yt$)

Where,

Yt = Area / Production / Yield and export in current year 't' and

Yt+1= Area / Production / Yield and export in next year 't+1'

If the standard deviation is 0, there has been no trend deviation. When series vary more from the trend, the ratio of $Yt+1/Yt$ varies more, which denotes greater variable instability.

Export trends of cumin

The movement in export quantity and export value of cumin through the calculation of the Compound Annual Growth Rate (CAGR) ratio by dividing the CAGR of export value by the CAGR of export quantity and multiplying the result by 100 provides a valuable metric for analysing the trade performance of cumin. Analysing share of major exporting countries of cumin in the world market in terms of export quantity, export value and export unit value helps to identify the trend of cumin export in global market and indicating which country is gaining or losing its prominence.

Revealed Comparative Advantage (RCA) analysis

The trade performance of cumin is done by the RCA analysis. Revealed Comparative Advantage (RCA) was first introduced by Bela Balassa (1965). The objective of using RCA is to analyse a competitive advantage of Indian cumin in world market. RCA measures export performance of country or commodity. Its formula defined as a country's share of world exports of a commodity divided by its share of total world exports. The index for country i and commodity j is calculated as follows:

$$RCAij = (Xij/Xik) /(Xnj/Xnk)$$

Where,

Xij = Exports of country 'I' of commodity 'j'

Xik = Exports of country 'I' of a total agricultural commodity 'k '

Xnj = Exports of a world 'n' of commodity 'j', and

Xnk = Exports of a world 'n' of a total agricultural commodity 'k'

The following technique, the index is formed symmetric, following the methodology suggested by Dalum *et al* (1998) and the resultant index is called as 'Revealed Symmetric Comparative Advantage' (RSCA). It can be expressed mathematically by the following equation.

$$RSCA = (RCA-1) / (RCA+1)$$

This measure ranges between -1 and +1. If the corresponding RSCA value is positive, a product is said to have competitive advantage in its export, and vice versa. The RSCA was used to investigate the comparative advantage in this analysis.

Results and discussion

India is the world's largest cumin producing country, contributing around 75% of total world output. The other major cumin-producing countries are Syria (13%), Turkey (5%), UAE (3%) and Iran. Area under cumin in India was 8,42,000 hectares with an estimated production of 5,47,000 tonnes in the year 2019-2020 (Spice Statistics at a Glance 2021). Analysing export trends during liberal trade regime provides insights on how global demand; trade policies and economic shifts have influenced India's cumin export performance. India's position among major exporting countries offers insights into the country's role in the international cumin trade market.

Trends in cumin production and export from India

Table 1 shows the trends in area, production, yield, export, import, and domestic consumption of Indian cumin from 1991–92 to 2021–22. The area under cumin cultivation has expanded significantly from an average of 280 thousand hectares in 1991–96 to 1,001 thousand hectares in 2016–22 with a CAGR of 7.94%. Production also showed a substantial rise, from 112 thousand tonnes to 691 thousand tonnes, with a higher CAGR of 11.99%. Yield improved significantly, increasing from 398 kg/ha to 686 kg/ha, reflecting a slower CAGR of 3.81%. This shows that the increase in cumin output is largely driven by expansion in area rather than productivity gains. This growth in production has contributed significantly to the increase in cumin exports (Meena *et al*. 2018). Export quantities grew from an average of 3,000 tonnes to 2,14,000 tonnes, with a remarkable CAGR of 25.9%. Export value increased even more sharply from 158 million to 32,907 million rupees —recording a CAGR of 33.42%. The export unit value also increased from rupees 47/kg to rupees 157/kg, Chaitra and Sonnad (2019) recorded significant CAGR in cumin export quantity and value in their analysis of chilli and cumin exports from India indicating improved international pricing and enhanced benefits to Indian exporters (Yogesh and Mokshapathy, 2014).

Interestingly, the rate of growth in export value has outpaced that of export quantity, which is economically advantageous. As per Sathe and Deshpande (2006), higher export value growth relative to quantity is beneficial, as it implies increased profitability per unit. Cumin imports have also shown an upward trend, suggesting strong domestic demand. Domestic consumption rose from an average of 109 thousand tonnes to 481 thousand tonnes, with a CAGR of 8.73%.

This increase is likely influenced by population growth, urbanization, and changing dietary preferences. The data indicates that India's cumin sector has experienced substantial growth post-liberalization, marked by expansion in area, increased production, rising exports, and growing domestic consumption. Both domestic and international demand for Indian cumin increased simultaneously. However, the slower improvement in yield suggests the need for strategies to enhance productivity. To sustain this dual demand, India must focus on improving agricultural practices, investing in research, and developing infrastructure to boost both yield and quality, ensuring that cumin farmers can meet rising global and domestic needs efficiently.

Trends in export quantity and value of cumin

The analysis of cumin trade performance during the trade liberalization period (1991–2022) focuses on understanding the factors driving export growth including price and quantity. When export quantity declines but export value rises, it benefits the economy as it reflects higher prices (Nagoor, 2008). Conversely, if quantity increases while value declines, it indicates falling prices and is less beneficial. If both quantity and value decline, but the drop in value is smaller, it still favors the economy due to rising prices, with the ratio falling below 100. Table 2 shows cumin's growing share in India's total spice exports—from 2.88% in 1991–95 to 13.32% in 2016–22, an outcome from rising global

Table 1. Area, production, yield, and trade of cumin in India

Year	Area in '000 ha	Production in '000 tonnes	Yield in kg/ha	Export qty in '000 tonnes	Export value million rupees	Export Unit value	Import qty in 000 tonnes	Import value in million rupees	Import Unit value	Domestic consumption	% share of export in production
Avg 1991-92 to 1995-96	280	112	398	3	158	47	0.48	11	23	109	3.03
Avg 1996-97 to 2000-01	285	110	383	12	802	63	1.45	57	40	100	10.86
Avg 2001-02 to 2005-06	499	184	375	13	1028	80	1.82	110	63	173	6.99
Avg 2006-07 to 2010-11	516	287	542	40	4036	100	1.1	107	104	249	13.84
Avg 2011-12 to 2015-16	799	472	596	102	13534	137	1	114	150	372	21.33
Avg 2016-17 to 2021-22	1001	691	686	214	32907	157	4	680	169	481	31.74
CAGR 2012-13 to 2021-22	7.94	11.99	3.81	25.90	33.42	6.30	12.99	24.26	9.78	8.73	-

Source: Spices Board of India

Note: Domestic consumption = Production – export + import; CAGR- Compound annual growth rate and Avg- Annual average

demand for Indian cumin. Export growth was particularly strong between 2006–2010 and 2011–2015, when the CAGR ratio exceeded 100, suggesting that price increases were the main driver of export growth. This period was identified as the most beneficial for the Indian cumin economy (Chaitra and Sonnad, (2022).

Table 3 presents a comprehensive analysis of the export performance of cumin from India between 1991 and 2022. India dominated global cumin exports, showing a consistently strong upward trend in both quantity and value. The CAGR for India's export quantity is 23.77%, while its export value shows a CAGR of 25.92%. These figures illustrate India's significant growth and leadership in the global cumin market. However, India's export unit value growth is relatively modest at 1.67%. This suggests that although India exports a larger volume and value of cumin, it earns comparatively less per kilogram than some competitors. Other major exporters such as Turkey, Spain, and the Netherlands also show growth in exports, though at a slower pace, during the same period. The lower EUVs may be due to limited processing, packaging, or branding in Indian cumin exports. This trend mirrors other commodities, such as pepper from Vietnam, which has the lowest EUV globally due to similar reasons (Nagoor, 2009).

Growth and instability in cumin export

Table 4 presents the data on growth rate and instability of area, production, yield, export quantity, export value and export unit value of cumin during pre and post liberalisation period. During the pre-liberalization period (1961-62 to 1990-91), cumin cultivation in India showed moderate growth in area (3.77% CAGR) and higher growth in production (6.31% CAGR), but with notable instability, particularly in production (0.44). This indicates that while land under cultivation was expanding steadily, actual output was affected by inconsistent yields and environmental or input-related issues. Yield growth was modest (2.45% CAGR),

Table 2. Selected parameters of cumin export from India

Year	Percentage share in total spice export (value)	CAGR in qty	CAGR in value	CV in qty	CV in value	CAGR Ex Value/Ex Qty *100	CV Ex Value/Ex Qty *100
1991-1995	2.88	27.91	18.76	43.68	35.45	67.21	81.16
1996-2000	5.26	-4.48	13.63	49.51	39.27	-304.55	79.32
2001-2005	5.91	4.31	3.88	40.72	53.17	90.01	130.58
2006-2010	7.25	63.61	85.47	81.31	97.63	134.37	120.07
2011-2015	9.03	32.56	33.17	54.95	48.26	101.87	87.82
2016-2022	13.32	10.44	8.62	27.91	19.35	82.60	69.35

Source: Calculation based on data from UNCOMTRADE
Note: CV= Standard deviation/Mean*100

Table 3. Performance of India's cumin exports, 1991-2022

Period	Quantity	Value	EUV
1991-1995	3304	5103	1.6
1996-2000	8696	15351	1.91
2001-2005	10266	17558	1.64
2006-2010	32190	65962	1.84
2011-2015	89860	188410	2.15
2016-2022	185686	412862	2.27
Overall CAGR (%)	23.77	25.92	1.67

Note: Quantity in 000 tonnes, Value in 000US $, EUV in US $/kg
Source: Calculation based on data from UNCOMTRADE

showing limited technological progress. Exports during this period were relatively unstable, with export quantity growing at 4.98% but marked by high volatility (1.09), likely due to restrictive trade policies, variable international demand, and supply constraints. Despite this, export value grew impressively at 14.48%, driven by rising global prices (unit value CAGR of 9.05%). In the post-liberalization period (1991-92 to 2021-22), cumin experienced accelerated and more stable growth across all parameters (Raziya, 2022). Area expanded at 5.69% CAGR, and production rose sharply to 8.48% CAGR, supported by better policies and market conditions (Sakamma, 2009). Export performance improved significantly, with quantity and value growing at 17.22% and 23.15% CAGR respectively, and instability levels notably reduced. Ibrahim and Arunachalam (2015) similarly found that Indian spice exports performed better in the post-WTO regime, with reduced instability across several commodities.

Major exporters of cumin

Table 5 shows the percentage share of cumin exports from major exporting countries over different time periods, offering insights into global market dynamics and shifting trade patterns. India, the world's leading cumin exporter, has shown a remarkable rise in both quantity and value shares since the early 1990s. From a modest share of below 20%, India's presence in the global market has steadily expanded, with significant growth particularly

Table 4. Growth and instability in production and export of Indian cumin

Particulars	Pre- liberalization (1961-62 to 1990-91)		Post- liberalization (1991-92 to 2021-22)		Overall period (1961-62 to 2021-22)	
	CAGR	Instability	CAGR	Instability	CAGR	Instability
Area	3.77	0.31	5.69	0.25	5.45	0.28
Production	6.31	0.44	8.48	0.31	6.77	0.38
Yield	2.45	0.24	2.64	0.21	1.25	0.23
Export Quantity	4.98	1.09	17.22	0.42	9.9	0.82
Export Value	14.48	0.92	23.15	0.45	18.62	0.72
Export Unit Value	9.05	0.28	5.06	0.14	7.93	0.22

evident during the periods 2011–2015 and 2016–2022. This upward trend reflects India's growing dominance and competitiveness in the global cumin trade (Thomas and Sanil, 2019).

Türkiye, another important exporter, has maintained a more stable yet modest share throughout the years. Singapore, which once had a relatively substantial export share, has witnessed a sharp and sustained decline over the years. In contrast, the USA, Netherlands, and Spain have consistently held low shares in cumin exports. Their contribution to the global market remains minimal and relatively stable, with no major shifts or growth trends observed over the years. Overall, the data reveals India's rise as the dominant force in cumin exports, while other nations either maintain a steady presence or face decline. This analysis reflects broader changes in production, trade capabilities, and global demand, reinforcing India's strategic role in shaping the cumin export landscape.

The impact of economic liberalization on cumin production and export has been profound. Post 1991, cumin experienced significant growth in all key areas cultivated area, production, and exports with improved stability. Liberalization led to the removal of trade restrictions, better access to international markets, and increased private sector participation, which collectively boosted exports. Angles (2001) reported a similar liberalization-driven transformation for turmeric in South India, where removal of restrictions and improved market access led to sustained export growth. Angles *et al*. (2011) further confirmed that globalization significantly impacted both production and export of turmeric in India, a trend mirrored in cumin's post-1991 performance. Infrastructure development, improved access to quality inputs, and enhanced market information systems also contributed to this growth. The sharp increase in export quantity and value post-liberalization indicates a structural shift in

Table 5. Percentage share of major countries in cumin export

Period	India		Türkiye		Singapore		USA		Netherlands		Spain	
	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value
1991-1995	19.93	21.28	31.83	31.19	28.31	30.17	0.98	1.53	1.52	2.00	0.28	0.41
1996-2000	23.41	30.13	26.27	27.94	12.00	13.46	0.43	0.68	1.85	4.14	0.86	1.85
2001-2005	12.88	8.32	13.99	6.29	6.57	4.08	0.69	0.42	0.71	0.67	0.21	0.18
2006-2010	31.85	28.26	4.28	4.42	2.68	2.17	0.32	0.52	0.95	1.30	0.19	0.32
2011-2015	58.44	50.40	4.37	4.62	0.69	0.59	0.15	0.22	0.86	1.24	0.35	0.50
2016-2022	78.69	74.54	3.31	3.93	0.36	0.21	0.09	0.13	0.31	0.57	0.26	0.39

Source: UNCOMTRADE

cumin from being a domestically focused crop to a globally competitive export commodity. Despite some volatility, especially in the earlier years, cumin's integration into the global value chain has brought greater economic returns to Indian producers and positioned India as a key player in the international spice market.

Destinations of cumin exports from India

Data on India's cumin exports to various countries is presented in Table 6. The table reflects changes in the top export destinations for Indian cumin. Notably, there has been a shift in the leading importers. In 2021 and 2022, China emerged as the largest importer of Indian cumin, with a 26% and 24% share, respectively. India had exported around 19 percent of its cumin to USA during 1991-92 but it has drastically decreased to 5 percent during 2020-21. At the same time India's percentage share of cumin increased towards China. The country has become the major market for Indian cumin with a share of 26.70 percent during 2020-21. USA, Nepal, Japan, Singapore, Canada, UK, Algeria, Malaysia, Pakistan and Kenya were the major destination for the Indian cumin during 1991-92 and these nations were accounting around 90 percent of total cumin export from India. But in 2020-21 China, Bangladesh, USA, UAE, Nepal, Egypt, Afghanistan, Turkey, Brazil and Malaysia are the major destination for Indian cumin export accounting around 70 percent of total cumin export. Bangladesh consistently ranks high among importers of Indian cumin, reflecting a stable market for Indian cumin in this country. The USA, Nepal, and Japan were significant importers of Indian cumin in the past. However, their shares have diminished over the years but India has successfully diversified its cumin export markets. The increased demand for Indian cumin can be attributed to its versatile use in various cuisines and its role in traditional medicine systems. India's cumin industry should continue to explore opportunities for market expansion and focus on maintaining product quality to retain its competitive edge. The growth in cumin exports contributes to

Table 6. India's cumin export direction

1991		2001		2011		2021		2022	
Country	Value (000 US$)	Country	Value (000 US$)	Country	Value (000 US$)	Country	Value (000 US$)	Country	Value (000 US$)
USA	495 (19)	USA	4499 (14)	UAE	19658 (14)	China	119847 (26)	China	110310 (24)
Nepal	355 (14)	Brazil	3921 (12)	USA	16508 (12)	Bangladesh	60197 (13)	Bangladesh	64944 (14)
Japan	377 (15)	Nepal	2727 (8)	Brazil	13822 (10)	USA	26212 (5)	USA	23715 (5)
Singapore	326 (13)	Malaysia	2730 (8)	Viet Nam	10066 (7)	UAE	20748 (4)	UAE	23532 (5)
Canada	167 (6)	Bangladesh	1377 (4)	Malaysia	8984 (6)	Nepal	19518 (4)	Afghanistan	22767 (5)
United Kingdom	122 (4)	Singapore	1650 (5)	United Kingdom	6805 (4)	Egypt	18555 (4)	Pakistan	14861 (3)
Algeria	200 (8)	Japan	1797 (5)	Mexico	6901 (5)	Afghanistan	17379 (3)	Nepal	14474 (3)
Malaysia	121 (4)	UAE	1380 (4)	Bangladesh	3700 (2)	Turkey	10025 (2)	Türkiye	12584 (3)
Pakistan	24 (1)	United Kingdom	1440 (4)	Singapore	3756 (2)	Brazil	6934 (1)	Saudi Arabia	12072 (3)
Kenya	53 (2)	South Africa	939 (3)	South Africa	2474 (1)	Malaysia	9378 (2)	Malaysia	10830 (2)
World	2502 (100)	World	30747 (100)	World	137164 (100)	World	448844 (100)	World	459537 (100)

Source: Estimation based on UNCOMTRADE

Figures in brackets shows percentage share (rounded off) in the word market

India's foreign exchange earnings and supports the livelihoods of cumin farmers and the spice industry.

Trends in revealed comparative advantage

Table 7 presents the revealed comparative advantage (RCA) of cumin for selected major exporting countries from 1991 to 2021 providing insights on the economic dynamics of cumin trade. India consistently demonstrates a substantial comparative advantage, with RCA values ranging from 7.04 to 37.77. These high values indicate that cumin holds a crucial position in India's export strategy, contributing significantly to its trade portfolio. Türkiye, while showing periods of strength, particularly in the early 1990s and early 2010s, experiences fluctuations in its comparative advantage. Other major exporting countries, including Singapore, USA, Netherlands, and Spain, generally exhibit lower RCA values, suggesting a comparatively limited specialization in cumin production and export. The temporal variations in RCA values reflect the changing competitive positions of these countries in the global cumin market. India's consistent high RCA values underscore its sustained competitiveness, while Türkiye's fluctuating values highlight the need for adaptive strategies. This analysis aids in understanding each country's strategic positioning in cumin trade, providing policymakers and stakeholders with valuable information for informed decision-making and trade policy formulation.

Conclusion

The study provides an in-depth analysis of Indian cumin's trade performance in the post-1991 economic reform period, a time marked by trade liberalization and increased global market integration. It highlights how cumin evolved into a globally competitive export commodity. This transformation was driven by favourable policy changes, expanding international demand, and India's strategic advantages in spice production. The analysis captures key

Table 7. Revealed comparative advantage of cumin with major exporting countries

Year	India	Türkiye	Singapore	USA	Netherlands	Spain
1991-1995	24.07	30.43	32.43	0.11	0.22	0.14
1996-2000	26.08	27.20	17.10	0.05	0.52	0.55
2001-2005	7.04	6.35	7.72	0.04	0.09	0.05
2006-2010	17.41	4.50	3.88	0.05	0.17	0.09
2011-2015	20.61	4.03	0.86	0.02	0.20	0.15
2016-2022	34.31	3.31	0.29	0.01	0.08	0.11
2012	10.52	1.67	1.28	0.01	0.15	0.22
2013	22.23	4.19	1.20	0.01	0.17	0.15
2014	24.59	3.03	0.81	0.01	0.19	0.10
2015	27.63	3.36	0.55	0.01	0.20	0.12
2016	32.21	5.53	0.49	0.02	0.08	0.09
2017	32.46	3.52	0.47	0.02	0.10	0.10
2018	36.44	3.73	0.31	0.01	0.07	0.15
2019	36.98	2.21	0.20	0.01	0.05	0.12
2020	36.29	2.23	0.16	0.01	0.09	0.10
2021	31.47	2.66	0.12	0.01	0.12	0.12
2022	37.77	2.85	0.10	0.01	0.13	0.08

Source: UNCOMTRADE

trends in cumin exports, production dynamics, and market competitiveness, offering valuable insights into India's strengthened position in the global spice trade.

India has witnessed significant expansion in the cultivation area, production, yield, and export of cumin since the 1991 economic liberalization. This growth reflects the positive impact of market-oriented reforms that opened up trade, encouraged private investment, and integrated Indian agriculture with global markets. The expansion of cumin exports has created increased income opportunities for farmers by driving higher farm-level prices and improving their earning potential. However, while the cultivated area has expanded, yield growth remains slow, underscoring the need for productivity support through better seed varieties, soil management practices, and farmer training programs. Additionally, with greater exposure to international markets, farmers face heightened risks from price volatility and changing global demand. Furthermore, the rising export demand catalysed infrastructural development in processing, storage, and logistics, strengthening cumin's position as a key export-oriented agricultural commodity in India's spice economy. The Compound Annual Growth Rates (CAGR) for area, production, and export quantity reflect the strong upward trajectory driven primarily by policy reforms, market integration, and infrastructure improvements. Export value growth overtook export quantity, indicating enhanced profitability and improved global pricing. The study reveals that liberalization reduced trade barriers, increased market access, and fostered competitiveness, allowing India to consolidate its dominant position in global cumin trade, especially with new markets like China emerging. However, yield improvements lagged behind area expansion, signifying the need for focused agricultural innovation.

Despite these successes, challenges remain. India's export unit value growth is modest compared to competitors, suggesting opportunities for value addition through better processing, branding, cold storage, grading units, and quality control. Market diversification has increased, but dependency on a few major importers persists, necessitating continued efforts to expand global reach. To sustain and enhance India's cumin trade competitiveness a country should prioritize the improving productivity through advanced agronomic practices, high-yield seed varieties, and farmer training, investing in post-harvest processing, packaging, and quality certification to increase export unit value and meet international standards, enhancing trade infrastructure and logistics to reduce costs and improve supply chain efficiency, expanding market access by exploring new geographies and negotiating favourable trade agreements and supporting farmer welfare via better credit, insurance, and market information to stabilize production and incomes. Hence, these measures will ensure India not only retains but also strengthens its leadership in the global cumin market amid increasing international competition.

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