



# Performance of India's Ginger Export: A Comparative Study of Major Ginger Exporting Countries of the World

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## ABSTRACT

Ginger (*Zingiber officinale* Rosc.) is cultivated in different agro-climatic zone of India. On the production front, India has been the largest producer of Ginger in the world by producing 42 percent of world production and export wise, it occupies second position by exporting 10 percent of world export among major exporting countries. There has been fluctuate and declining trend in export share of Indian ginger in the world market, according to available data. Given this background, the present study attempts to analyze the instability and Growth Rate in area, production, yield, export quantity, export value and export unit value of Indian ginger comparing with other major exporting countries. Revealed comparative advantage was calculated to know the export performance of ginger in global market by using Secondary data from the period of 1991-1992 to 2019-2020. India's growth performance of ginger in terms of export quantity and value found to be not significant and declining but in terms of production it has been increasing and having positive trend.

**Key words:** Ginger, Instability, Growth Rate, comparative advantage, Export Performance

## I. INTRODUCTION:

India is the world's largest producer, exporter and consumer of spices in the world so it is rightly called as 'Spice bowl of the world', and from the available data, India is the largest producer of ginger in the world by producing 42 percent of world production. Interestingly the below mentioned countries like China mainland, Indonesia, Nepal, Thailand and including India produces around 72 percent of ginger out of the total production of the world in 2020. Export wise, India occupies second position in terms of quantity and fourth position in export earning among major exporting countries. India's share in world export was 17.17 percent during 1991, 2.35 percent in 2001, 5.43 in 2011 and 10.61 in 2020 so the study

says that there is more fluctuation and declining trend in export share of Indian ginger in the global market. The export share of Indonesia, Nepal and Thailand during 1991 was 12.35, 4.21 and 12.24 percent respectively and drastically decreased to 0.24, 0.74 and 6.15 during 2020. But interestingly China remains the largest exporter of the world from many decades by exporting 17.90 percent of the world during 1991, 69.71 in 2001, 74.61 in 2011 and 51.60 percent in 2020 so, from the available data China was enjoying increasing export share of ginger till 2011 but it has been declining in the last decade from 2011 to 2020.

Now the question arises that what are the factors responsible for fluctuation and decline in the share of India's ginger export in the world. Given this backdrop, the present study attempts to evaluate the export performance of Indian ginger and comparative study made with the other major ginger exporting countries. From the review of earlier studies, it is evident that, earlier studies mainly focused on India's own experience without comparing with the performance of other major ginger exporting countries of the world. There is a need for further study which can focus on performance of India's ginger export in comparison with the performance of other major ginger exporting countries of the world.

## II. MATERIALS AND METHODS:

To achieve the objectives of the study, time series data were collected on production, yield, area of production and export from FAO Statistics. Data obtained from 1991 to 2020 and it has been classified into three sub-period like 1991-2000, 2001-2010 and 2011-2020 for the analysis purpose. To examine the growth in Area, production, yield and export performance of ginger, statistical tool like Exponential growth function is applied. The instability index associated with Area, production, yield and export quantity, export value and export unit value of ginger. Revealed



Symmetric Comparative Advantage (RSCA) used to identify the comparative advantage or disadvantage of a particular country with respect to another country or group of countries for a specific commodity

### Growth Rate Analysis

Compound Growth Rate of ginger is estimated for three sub periods like 1991-2000, 2001-2010 and 2011-2020. This classification has done mainly to examine and compare the export performance of Indian ginger with compare to other major exporting countries. The growth performance in Area, production, yield, export quantity and value of ginger estimated by using the exponential growth function in the below form.

$$Y_t = ab^t e^{ut}$$

Where,

$Y_t$  = Area/ Production/ Yield/ Export quantity/Export 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  $\ln Y_t = \ln a + t \ln b + u_t$

Growth Rate =  $(\text{Antilog of } b - 1) * 100$

### Instability Analysis

The degree of instability in a crop is influenced by many different elements, including the crop's nature, production methods, weather, financial factor and the availability of inputs. A sustainable agricultural development requires both high growth and minimal volatility. As a result, the Instability Index of the following form was used to measure instability in the Area, Production, Yield, and Export of Ginger.

Instability Index = Standard deviation of natural logarithm  $(Y_{t+1}/Y_t)$

Where,  $Y_t$  = Area / Production / Yield and export in current year 't' and  $Y_{t+1}$  = 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  $Y_{t+1}/Y_t$  varies more, which denotes greater variable instability.

### Revealed Comparative Advantage (RCA) Analysis

An examination of India's ginger export performance in relation to the other major exporting countries was calculated by using the RCA index. Revealed Comparative Advantage

(RCA) was first introduced by Bela Balassa (1965) who defines index as a country's share of world exports of a commodity divided by its share of total world exports. It uses relative export share of the individual countries to examine the comparative advantage and hence the export potential of any economy. The RCA identifies the comparative advantage or disadvantage of a particular country with respect to another country or group of countries for a specific commodity.

The index for country i and commodity j is calculated as follows:

$$RCA_{ij} = \frac{(X_{ij}/X_{ik})}{(X_{nj}/X_{nk})}$$

Here,

$X_{ij}$  = Exports of country 'I' (India/China mainland/Indonesia/Nepal/Thailand) of commodity 'j'

$X_{ik}$  = Exports of country 'I' (India, China mainland, Indonesia, Nepal and Thailand) of a total agricultural commodity 'k'

$X_{nj}$  = Exports of a world 'n' of commodity 'j', and

$X_{nk}$  = 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 and disadvantage of ginger in this analysis.

## III. Results and Discussion

### World trend in ginger Production and Export

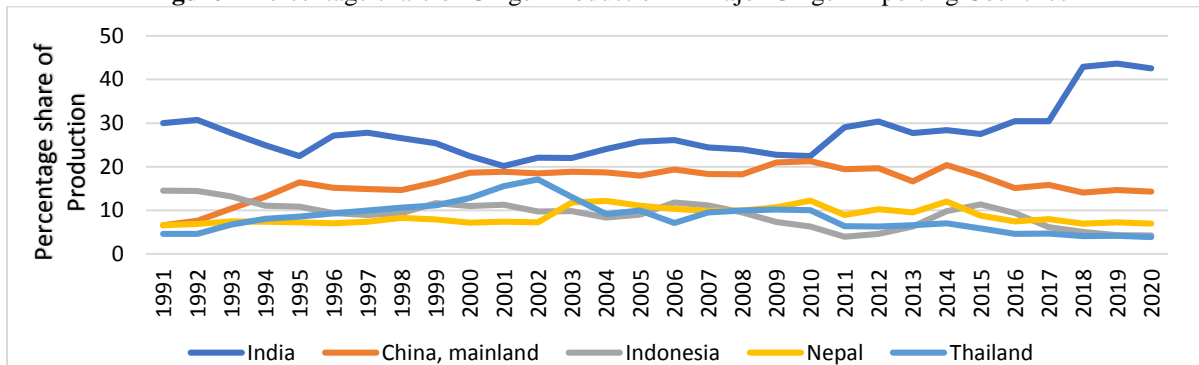
On the production front India has been largest producer and it remains the largest producer of the world from many decades by covering 42 percent of world production during 2020.



Interestingly the below mentioned countries like China mainland, Indonesia, Nepal, Thailand and including India produces around 72 percent of ginger out of the total production of the world in 2020. As shown in Figure1, production share of the other major countries like China mainland, Indonesia, Nepal and Thailand were declining from last five years, but India has occupied that share of production and showing increasing trend in

production. During 1991 India was sharing around 30 percent of world production and the share has increased to 42 percent in 2020. Even China mainland has increased its production share 6.56 percent to 14.30 percent from 1991 to 2020 but Indonesia decreased its share from 14.52 percent to 4.24 percent from 1991 to 2020. Remaining two countries like Nepal and Thailand remain stable in its production share.

**Figure-1** Percentage share of Ginger Production in Major Ginger Exporting Countries



**Table-1** Percentage share of Ginger Export in Major Exporting Countries

Year	India		China, mainland		Indonesia		Nepal		Thailand		Others	
	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value
1991	17.17	11.44	17.90	16.47	12.35	25.90	4.21	4.22	12.24	5.70	36.12	36.29
1992	8.15	8.29	10.71	13.14	34.15	20.97	3.32	2.56	17.01	13.51	26.67	41.53
1993	11.94	9.17	15.78	19.66	41.83	27.10	2.59	2.22	3.25	4.77	24.61	37.08
1994	7.47	5.75	37.05	35.32	26.89	15.55	2.49	1.70	2.94	3.94	23.17	37.74
1995	8.71	9.10	47.31	44.31	18.67	10.50	3.67	2.18	2.84	3.94	18.80	29.97
1996	17.47	10.91	25.26	43.71	25.95	13.00	4.41	1.60	3.47	4.58	23.44	26.20
1997	16.25	13.78	25.40	35.20	19.84	12.62	6.60	2.02	8.02	7.86	23.88	28.52
1998	5.62	9.11	34.00	34.15	21.36	9.13	4.84	2.57	9.06	9.16	25.12	35.88
1999	4.34	5.87	40.34	35.50	21.17	11.57	3.27	1.88	12.54	9.87	18.35	35.32
2000	2.85	4.49	63.26	48.46	5.90	4.40	3.38	2.10	11.42	13.97	13.18	26.57
2001	2.35	3.61	69.71	58.94	3.26	2.82	3.71	2.39	9.65	8.97	11.32	23.27
2002	2.93	3.93	67.88	57.31	2.57	3.12	5.05	2.47	9.25	6.97	12.33	26.20
2003	1.48	3.11	71.90	59.93	1.45	2.86	5.78	2.10	7.86	6.28	11.53	25.72
2004	4.99	4.46	64.63	68.67	5.18	2.61	4.43	0.81	2.74	2.02	18.02	21.43
2005	2.86	3.26	63.10	68.60	0.63	0.68	4.88	1.08	11.01	3.27	17.51	23.11
2006	2.51	4.17	72.75	66.47	0.44	0.75	7.73	2.12	4.35	3.55	12.22	22.94
2007	1.99	3.10	65.36	59.47	0.92	0.63	9.98	3.26	7.15	5.78	14.59	27.76
2008	2.10	3.38	63.15	62.01	2.65	1.23	8.54	2.09	9.30	7.61	14.27	23.68
2009	2.45	3.51	68.36	69.17	1.47	0.83	5.37	1.28	10.01	6.12	12.34	19.09
2010	4.42	3.82	65.07	69.61	0.91	0.56	6.60	1.00	6.81	4.58	16.19	20.43
2011	5.43	8.60	74.61	63.65	0.21	0.19	3.14	0.75	4.45	4.13	12.15	22.68



2012	5.08	9.15	69.35	55.76	0.16	0.29	8.12	2.29	4.28	4.66	13.01	27.85
2013	4.30	5.13	63.08	59.97	3.73	2.24	5.83	1.20	6.64	5.01	16.42	26.45
2014	8.78	5.30	49.53	56.88	11.58	5.09	3.78	0.40	5.07	4.02	21.25	28.30
2015	4.79	6.23	64.53	57.41	3.97	2.34	3.64	0.57	3.24	3.29	19.83	30.17
2016	2.46	5.62	69.04	55.05	2.82	1.58	2.27	0.78	5.69	4.15	17.72	32.83
2017	3.19	3.99	59.44	48.75	2.98	1.59	1.52	0.45	10.90	12.14	21.97	33.08
2018	2.46	3.31	58.23	50.34	0.38	0.39	2.74	0.75	8.74	9.27	27.46	35.94
2019	3.03	4.30	60.67	55.15	0.46	0.48	1.20	0.40	7.31	5.38	27.32	34.30
2020	10.61	6.52	51.60	49.21	0.24	0.30	0.74	0.25	6.15	4.18	30.66	39.53

Source: Calculate from FAO

And the above table 1, explains that Export share of ginger in major exporting countries, from the available data, India occupies second position in terms of quantity by exporting 10 percent of ginger and fourth position in export value by sharing 6 percent of world ginger among major exporting countries. India's share in world export was 17.17 percent during 1991, 2.35 percent in 2001, 5.43 in 2011 and 10.61 in 2020 so from the available data there is more fluctuation and declining trend in export share of Indian ginger in the global market. The export share of Indonesia, Nepal and Thailand during 1991 was 12.35, 4.21 and 12.24 percent respectively and drastically decreased to 0.24, 0.74 and 6.15 during 2020. But interestingly China remains the largest exporter of the world from many decades by exporting 17.90 percent of the world during 1991, 69.71 in 2001, 74.61 in 2011 and 51.60 percent in 2020 so, from the available data China was enjoying increasing export share of ginger till 2011 but it has been declining in the last decade from 2011 to 2020.

Before analysing the export performance of Indian ginger with major exporting countries, it's better to study the consumption pattern of each

country because the domestic demand and supply play very significant role in export performance any product. Let us glance over the structure of production, export and consumption of each major exporting country of ginger in the table 2. So, the table explains that the relative share of domestic consumption and exports from production, in major exporting countries of the world from 1991 to 2020 and the data classified into six parts for the analysis purpose. India's domestic consumption from production increased over a period by consuming 91.92 percent during 1991-95 and increased to 97.52 in 2016 to 2020 so here from one side Nepal, Indonesia and including India's consumption increasing from production and from the other side share of export from production was decreasing but reverse to above situation, the countries like China mainland and Thailand having increasing trend in export share and decreasing trend in domestic consumption share. So, the factors may responsible for the above both phenomena are increasing population, increasing per capita income, domestic price, export unit value, consumption pattern and increasing demand for ginger in world market respectively.

**Table-2** Trends in Relative Share of Export and Consumption in Production of Ginger in Major Exporting Countries.

Year	1991-1995	1996-2000	2001-2005	2006-2010	2011-2015	2016-2020
<b>India</b>						
Export Share	8.08	6.73	3.05	3.07	4.72	2.48
Consumption share	91.92	93.27	96.95	96.93	95.28	97.52
<b>China, mainland</b>						
Export Share	48.87	45.95	87.64	91.63	82.39	87.28
Consumption share	51.13	54.05	12.36	8.37	17.61	12.72



**Indonesia**

Export Share	46.59	36.3	6.51	4.04	10.39	4.43
Consumption share	53.41	63.7	93.49	95.96	89.61	95.57

**Nepal**

Export Share	9.54	11.61	12.03	19.45	12.11	4.96
Consumption share	90.46	88.39	87.97	80.55	87.89	95.04

**Thailand**

Export Share	26.73	15.86	15.66	21.38	17.64	39.21
Consumption share	73.27	84.14	84.34	78.62	82.36	60.79

Source: Calculated from FAO

Note: consn indicates that the word consumption

**Growth and Instability Analysis**

The compound growth rate and instability in area, production and yield of ginger in major exporting countries observed in Table 3. India, Indonesia and China's Ginger instability is significantly high in terms of yield and area of production during 1991-2000. The instability in terms of yield of ginger may influenced by the rainfall, draught and other climatical conditions of the country. Remarkably only India's growth rate in area, production, and yield of ginger shows positive trends over a period by 3.77, 8.14 and 4.22

respectively from 1991 to 2020 and specifically on the production front India's growth rate remains in the increasing trend over the study period. While China's growth rate in area and production is quite high by 15.57 and 18.29 respectively during 1991 - 2000 compare to remaining two sub period and at the same time its growth rate in terms of Area, production and yield of ginger remains decreasing trend during the all-sub period. Indonesia and Nepal's growth rate is not significant but Thailand shows negative growth in the second sub period in terms of area, production and yield.

**Table-3** Instability and Growth in Area, Production and Yield of Ginger in Major Exporting countries.

Year	India		China, mainland		Indonesia		Nepal		Thailand	
	Inst	CAGR	Inst	CAGR	Inst	CAGR	Inst	CAGR	Inst	CAGR
<b>1991- 2000</b>										
Area	0.16	2.33	0.26	15.57	0.37	-5.38	0.08	8.77	0.07	-2.5
Production	0.13	4.53	0.09	18.29	0.12	2.76	0.08	8.33	0.1	19.53
Yield	0.26	2.15	0.1	2.35	0.34	8.51	0.01	-0.39	0.15	22.69
<b>2001-2010</b>										
Area	0.08	4.51	0.09	5.98	0.2	0.58	0.08	7.09	0.22	-0.55
Production	0.07	6	0.06	6.09	0.19	0.99	0.17	8.64	0.24	-0.72
Yield	0.06	1.43	0.04	0.11	0.14	0.41	0.11	1.45	0.16	-0.17
<b>2011-2020</b>										
Area	0.08	2.14	0.07	3.86	0.25	1.29	0.09	1.87	0.01	0.1
Production	0.2	13.78	0.09	3.84	0.27	6.44	0.1	3.13	0.02	1.01
Yield	0.18	11.4	0.03	-0.02	0.18	5.08	0.1	1.23	0.02	0.91



**Overall 1991-2020**

Area	0.12	3.77	0.10	8.00	0.26	0.84	0.08	6.38	0.13	0.24
Production	0.17	8.14	0.11	8.53	0.19	3.68	0.12	7.67	0.17	4.79
Yield	0.18	4.22	0.06	0.49	0.22	2.81	0.08	1.22	0.15	4.54

Source: Calculated from FAO Statistics

Note: Inst indicates that the word Instability

The below table 4 represent the growth and instability in export quantity, export value and export unit value of ginger in major exporting countries. Export of India's ginger in terms of quantity, value and unit value shows identical fluctuations in all sub periods through instability index and at the same time growth rate of India's ginger was quite significant in terms of export quantity, export value and export unit value only during 2001-2010 but India's Overall growth rate in export unit value is quite significant and high compare to other major exporting countries by showing 3.92 of growth rate. China's growth rate was positive in all sub periods but much significant

in the first sub period with 24.49 in export quantity and 19.78 in export value, one of the reasons behind this phenomenon is declining trend of domestic consumption of ginger in China and increasing share of export in the world. Indonesia's growth rate was negative in first two sub periods and impressively positive during 2011-2020 and the above situation of Nepal is quite opposite with Indonesia because Nepal's growth rate was positive during first two sub periods but negative in last sub period and even its overall growth rate of export unit value is -1.75. Thailand shows positive growth rate over a period of time.

**Table-4** Instability and Growth in Export quantity and value of Ginger in Major exporting countries (1991 to 2020)

Country	India		China, mainland		Indonesia		Nepal		Thailand	
	Inst	CAGR	Inst	CAGR	Inst	CAGR	Inst	CAGR	Inst	CAGR
<b>1991- 2000</b>										
Qty	0.56	-4.67	0.53	24.49	0.68	-0.32	0.32	11.23	0.66	12.21
Value	0.46	1.41	0.38	19.78	0.46	-9.02	0.31	1.73	0.51	14.07
Unit Value	0.30	6.38	0.42	-3.78	0.59	-0.09	0.27	-8.54	0.31	1.66
<b>2001-2010</b>										
Qty	0.52	17.2	0.15	6.78	0.96	-3.57	0.32	14.49	0.83	7.59
Value	0.42	17.2	0.33	19.51	0.6	-3.17	0.34	12.38	0.38	15.75
Unit Value	0.23	6.93	0.44	11.93	0.54	0.41	0.18	-1.84	0.59	7.58
<b>2011-2020</b>										
Qty	0.57	3.97	0.25	3.99	1.39	1.99	0.63	-12.95	0.4	13.84
Value	0.36	2	0.28	6.51	1.13	5.85	0.5	-5.68	0.55	14.21
Unit Value	0.31	-1.90	0.49	2.43	0.41	3.79	0.24	8.35	0.43	0.33
<b>Overall 1991-2020</b>										
Qty	0.53	4.06	0.34	11.94	1.01	-6.36	0.44	5.6	0.61	7.39
Value	0.43	8.14	0.32	14.08	0.77	-3.51	0.36	3.76	0.46	9.55



Unit Value    **0.28**    **3.92**    **0.43**    **1.91**    **0.50**    **3.05**    **0.24**    **-1.75**    **0.24**    **2.01**

Source: Calculated from FAO Statistics

Note: Inst indicates that the word Instability

### Comparative Advantage of Ginger Export

A country's ability to address the challenges in international market depends on the export competitiveness of that country (Singh & Sain 2003). The table 5 shows that Revealed Symmetric Comparative Advantage (RSCA) of the major exporting countries for various time periods. From the below table it is clear that all countries having positive comparative advantage in the export of ginger except Indonesia.

The result of RSCA shows that India's and Thailand's comparative advantage in exports of ginger were becoming less competitive but China's RSCA is higher among all countries over a period of time because it's been the largest exporter of the world from many decades. Interestingly Nepal's Revealed symmetric advantage is also high compare to remaining countries. Only Indonesia has an export disadvantage during study period.

**Table -5** Revealed Symmetric Comparative Advantage of Major Exporting Countries

Year	India	China, mainland	Indonesia	Nepal	Thailand
1991	0.86	0.71	0.93	0.99	0.51
1992	0.82	0.67	0.91	0.99	0.75
1993	0.81	0.75	0.92	0.99	0.45
1994	0.75	0.85	0.85	0.99	0.36
1995	0.77	0.90	0.79	1.00	0.31
1996	0.80	0.90	0.82	0.99	0.37
1997	0.84	0.87	0.81	0.99	0.60
1998	0.77	0.87	0.77	0.99	0.69
1999	0.69	0.87	0.81	0.98	0.70
2000	0.60	0.89	0.57	1.00	0.77
2001	0.50	0.91	0.45	0.99	0.66
2002	0.54	0.90	0.38	0.98	0.57
2003	0.45	0.91	0.36	0.97	0.52
2004	0.60	0.93	0.25	0.96	0.00
2005	0.43	0.92	-0.43	0.97	0.26
2006	0.48	0.92	-0.45	0.99	0.25
2007	0.26	0.90	-0.52	0.99	0.47
2008	0.38	0.92	-0.36	0.99	0.54
2009	0.39	0.92	-0.46	0.96	0.47
2010	0.39	0.91	-0.68	0.97	0.30
2011	0.61	0.91	-0.89	0.96	0.18
2012	0.55	0.89	-0.82	0.98	0.31
2013	0.30	0.90	-0.06	0.97	0.37
2014	0.35	0.89	0.33	0.92	0.29
2015	0.47	0.88	-0.05	0.95	0.18
2016	0.46	0.87	-0.22	0.96	0.30
2017	0.30	0.86	-0.28	0.94	0.68
2018	0.22	0.86	-0.73	0.96	0.60
2019	0.36	0.87	-0.65	0.86	0.39
2020	0.50	0.86	-0.78	0.78	0.31

Source: calculated from FAO

### IV. CONCLUSION

The overall objective of the study was examining the export performance of India's ginger comparing with other major exporting countries.

The study also examined the growth rate, several fluctuation, comparative and competitiveness of ginger in the world market. From the above study the significant note that we can mention here that,



even though India is largest producer of ginger from the decades but it's not a largest exporter of the world, India's ginger stands in second position in terms of quantity and fourth position in export earnings among major exporting countries but India's percentages share of export in the world market declining and due to that comparative advantage of India's ginger is also declining so major responsible factors for above mentioned subjects are ; increasing pattern of domestic consumption, population of the country, export unit value and increased per capita income etc., so, due to these observations India is losing its market in international market. In order to increase the export share of India's ginger in the world market, there is need to convey information to the Indian farmers and institutions on the international markets, price behaviour and other trade

matters to increase the efficiency in production, which may reduce the unit cost of ginger, improving market infrastructure, storage, transport of ginger and these all factors may influence to increase the export of ginger in the world market.

#### REFERENCES:

- [1]. Abraham, A. (2018) "The Trend in Export, Import and Production performance of Black pepper in India" International Journal of Pure and Applied Mathematics Volume 118 No. 18 2018, 4795-4802.
- [2]. ANGLES, S. (2012). An Economic Analysis of Trade Performance of Major Spices in Tamil Nadu And India. (Ph.D. Thesis submitted to Tamil Nadu Agricultural University, Coimbatore) Retrieved from <http://researchgate.net/publication>
- [3]. Angles, S., A. Sundar and M. Chinnadurai (2011) "Impact of Globalization on Production and Export of Turmeric in India – An Economic Analysis" Agricultural Economics Research Review Vol. 24 July-December 2011 pp 301-308.
- [4]. Aparna, V. (2018). A Study on the Impact of Trade Agreements on the Performance of Plantation Industry in India. (Ph.D. Thesis submitted to Mahatma Gandhi University, Kottayam.) Retrieved from [shodhaganga.inflibnet.ac.in](http://shodhaganga.inflibnet.ac.in)
- [5]. Bhatt, A., & Valasan, J. (2016). "Spices Export from Kerala Current Trends & Opportunities Ahead". IRA-International Journal of Management & Social Sciences (ISSN 2455-2267), 5(1), 54-65.
- [6]. Bhavani, T. and Kamalavalli, A. L. (2018) "Export Performance of Indian Spice Products", International Journal of Applied and Advanced Scientific Research, Volume 3, Issue 1, 2018.
- [7]. Chaitra, G.B. and Sonnad, J.S. (2019). "Export performance of chilli and cumin from India: An empirical analysis". Journal of Pharmacognosy and Phytochemistry 2019; 8(2): 2014-2020
- [8]. Felice Joy (2018) Performance of Spices Sector in Kerala: A Study with Special Reference to Post Liberalisation Era. (Ph.D. Thesis submitted to Mahatma Gandhi University, Kottayam). Retrieved from [shodhaganga.inflibnet.ac.in](http://shodhaganga.inflibnet.ac.in)
- [9]. Ganga Devi, and Jadav, K.S. (2018) "Growth Performance in Area, Production, Productivity and Export of Spices in India" ACTA SCIENTIFIC AGRICULTURE (ISSN: 2581-365X) Volume 2 Issue 11 November 2018.
- [10]. Hari Babu, P. (2017) "Export Performance of Spices In India: An Empirical Study" Parikalpana - KIIT Journal of Management.
- [11]. Ibrahim, Y.C. (2015). Export performance of Indian spices in the WTO regime: a disaggregated analysis. (Ph.D. Thesis submitted to Cochin University of Science and Technology.) Retrieved from <http://dyuthi.cusat.ac.in>
- [12]. Ibrahim, Y.C. (2017). "Impact of WTO And Related Policies on Composition and Direction of Indian Spice Export" International Journal of Research in Economics and Social Sciences, Vol. 7 Issue 11, November- 2017, pp. 20-29.
- [13]. Kallummal, M. and Ratna, R.S. (2012) "ASEAN India Free Trade Agreement (FTA) and its Impact on India: A Case Study of Fisheries and Selected Agricultural Products", Sage Journals Volume: 48 issue: 4, page(s): 481-497.
- [14]. Krishnan, S. (2012) Impact of WTO on Spices Sector in India – An Econometric Analysis. (Ph.D. Thesis submitted to Mahatma Gandhi University, Kottayam.) Retrieved from [shodhaganga.inflibnet.ac.in](http://shodhaganga.inflibnet.ac.in)
- [15]. Krishnadas, M. (2010) "Production and Export Performance of Major Indian Spices - An Economic Analysis", (Ph.D. thesis submitted to Kerala agricultural university) Retrieved from <http://researchgate.net/publication>





- [16]. Meena, M.D., G. Lal., S.S. Meena, and N. K. Meena (2018) "Production and export performances of major seed spices in India during pre and post-WTO period", *International J. Seed Spices* 8(1), January 2018:21-30.
- [17]. Nagoor, B. H (2008) "World Trade Organisation and India's Agricultural Exports: Performance and Prospects". Thesis submitted to the University of Pune.
- [18]. Nagoor, B. H (2009) "Performance of India's Tea Export: A Comparative study of major Rea Exporting Countries of the world". IGIDR Proceedings/Project Report Series PP-062-21.
- [19]. Nagoor B H (2021) "Market integration and changing direction of Trade: Case of India's Trade in Trade". Centre for Development Studies.
- [20]. Nitesh Kumar Banjare (2016) *An Economic Analysis of Production and Marketing of Major Spices in Raigarh District of Chhattisgarh.* (Ph.D. Thesis submitted to Indira Gandhi Krishi Vishwavidyalaya, Raipur.) Retrieved from [semanticscholar.org/paper](https://www.semanticscholar.org/paper).
- [21]. Rajalakshmi, A. (2010) *Trade Liberalisation and Its Impact on Marketing of Selected Spices in Tamil Nadu.* (Ph.D. Thesis submitted to Gandhi gram Rural Institute - Deemed University Tamil Nadu.) Retrieved from [shodhaganga.inflibnet.ac.in](http://shodhaganga.inflibnet.ac.in)
- [22]. Raziya, M. (2018) "Impact of WTO On Spices; With Special Reference to Pepper and Cardamom", *International Journal of Research in Social Sciences* Vol. 8 Issue 4, April 2018.
- [23]. Sabu, S.S., A. Kuruvila, and K. Manojkumar (2019) "Price behaviour of black pepper in Indian and International markets: a comparative analysis" *Journal of Spices and Aromatic Crops* Vol. 28 (1) 27–33 (2019).
- [24]. SAKAMMA, S. (2009) *Export Trade of Major Spices of India: An Economic Analysis.* (Ph.D. Thesis submitted to Department of Agricultural Economics University of Agricultural Sciences, Bangalore.) Retrieved from [semanticscholar.org/paper](https://www.semanticscholar.org/paper).
- [25]. Srinivasa Rao, D. (2009) *An Econometric Analysis of Spices Exports from India.* (Dissertation Submitted to The Acharya Nagarjuna University, Nagarjuna Nagar.)
- [26]. Sunil, A. and Nair, K. (2018), "Marketing Opportunities and Export Competitiveness of Indian Spices: An Econometric Analysis". *European Journal of Business and Management*. Vol.10, No.36, 2018.
- [27]. Soumya, C., S.S. Burark., L. Sharma and H.K. Jain "Growth and instability in production and export of selected spices of India" *International J. Seed Spices* 4(2), July 2014:1-1.
- [28]. Thomas, L. and Sanil, P.C. (2019) "Competitiveness in spice export trade from India: A review". *Journal of Spices and Aromatic Crops* Vol. 28 (1): 01-19
- [29]. Vinod Naik, R., And Hosamani, S.B (2014) "Growth and export dimensions of Indian turmeric" *International Research Journal of Agricultural Economics and Statistics* Volume 4, Issue 1, March, 2013, 91-97.
- [30]. Yogesh, M. S. & Mokshapathy, S. (2014) "Growth of Indian Export And Import of Spices". *International Journal of Humanities, Arts, Medicine and Sciences*, ISSN 2348-0521 Vol. 2, Issue 9, Sep 2014.