

*AN ECONOMIC ANALYSIS OF SPICES TRADE IN INDIA:*

*A STUDY ON THE GROWTH AND PROSPECTS OF*

*MAJOR SPICES EXPORT FROM INDIA*

Dissertation submitted to

St. Teresa's college (Autonomous), Ernakulam

*(Affiliated to Mahatma Gandhi University, Kottayam)*

*In partial fulfillment of the requirement for the degree of*

**BACHELORS OF ARTS IN ECONOMICS**



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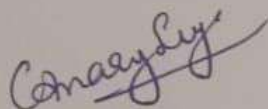
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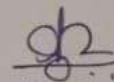
## CERTIFICATE

This is to certify that the Project titled "AN ECONOMIC ANALYSIS OF SPICES TRADE IN INDIA: A STUDY ON THE GROWTH AND PROSPECTS OF MAJOR SPICES EXPORT FROM INDIA" is bonafide record of the original research work done by the project group under my guidance, submitted in partial fulfillment of the requirements for the award of the degree in Bachelors of Arts in Economics (Affiliated to Mahatma Gandhi University, Kottayam). The research work has not previously formed on the basis for the award of any Degree, Diploma, Associateship, Fellowship or any other similar title and it represents a contributory work on the part of the candidate.



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## DECLARATION

We hereby declare that the Project titled "AN ECONOMIC ANALYSIS OF SPICES TRADE IN INDIA: A STUDY ON THE GROWTH AND PROSPECTS OF MAJOR SPICES EXPORT FROM INDIA" submitted by us for the B.A. Degree in Economics is my original work and this work has not been previously formed the basis for the award of other Academic qualification, fellowship of other similar title of any other university or board.


Signature of the supervisor



Ms. Anju George

Signature of the candidates

Aleena John



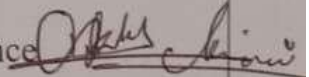
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Aleena John

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# **CHAPTER 1**

## **INTRODUCTION**

## 1. INTRODUCTION

Nature has created a wide variety of plants, and humans have utilized some of them out of those varieties for their own benefits. Spices are one of the best varieties and it is most commonly used plant all over the world. Even though spices are required in very small amount, it has its own properties and benefits. Some are used for medicines, scents etc.

The name spice is derived from the word species, which was applied to groups of some exotic foodstuffs in the ancient times. Spice is a plant product with fragrance utilized by the humans as a flavouring or condiment. It is a well-known appetizer, normally refers to the derivatives from certain herbs like seeds, leaves, bark, roots etc. They are utilized predominantly for upgrading taste of the food. Spices are one of the major demands in the food processing industry.

India is known as “The origin and Land of spices”. There is no other country in the world that produces as much kind of spices as India. India is dominating in producing spices due to the environmental condition. The moderate Indian climate is suitable for almost all spices grow here. In India, spices are one of the important commercial crops from the point of view of both domestic consumption and exportation. Besides, large quantities of spices are also being consumed within the country for flavouring foods and are also used in other areas like medicine, pharmaceutical, perfumery, cosmetics and the same has been exported to several other countries which increase the export ratio in the country. India is the world’s largest producer in terms of spices, the country produces about 75 varieties of spices and exporting a huge amount. India has especially important place in the world spice export among all countries in the world including those which do not produce spices or spice products.

Some of the southern and northern states in India are Kerala, Karnataka, Andhra Pradesh, Rajasthan and Tamil Nadu plays vital role in producing the spices. Kerala, Karnataka, Tamil Nadu produces Pepper and Small Cardamom whereas Large Cardamom is produced in the northern states like Sikkim and West Bengal. Some other states like Andhra Pradesh, Madhya Pradesh, Mizoram, Chhattisgarh, Uttaranchal and Meghalaya produces Ginger which is very essential. States like Orissa, Tamil Nadu, West Bengal, Tripura, Assam, and Bihar are the producers of Turmeric. On the other hand, Rajasthan, Gujarat and Uttar Pradesh are the producers of Cumin. Likewise, India is one of the major and significant spice producers among the world.

CATEGORIES OF SPICES IN INDIA				
MAJOR SPICES	SEED SPICES	TREE SPICES	HERBAL SPICES	MISCELLANEOUS SPICES
Black pepper	Coriander	Tamarind	Marjoram	Vanilla
Cardamom (Small & Large)	Fenugreek	Cinnamon	Thyme	Garlic
Ginger	Celery	Nutmeg / Mace	Basil	Saffron
Turmeric	Fennel	Clove	Oregano	Juniper Berry
Chillies	Caraway	Tejpat	Savoury	Pepper Long
Cumin	Aniseed	Cam bodge	Tarragon	Greater Galaga
	Dill seed	Kokum	Rose Mary	Curry powder
	Poppy seed	Curry leaves	Horse radish	Spice Oils
	Mustard	Cassia	Hyssop	Spice Mixtures
	Parsley	Asafoetida	Lovage	
	Ajwan	Pomegranate		

India has a monopoly over spices. India is one of the largest producers and exporters of spices. According to Spices Board, there are fifty two varieties of spices cultivated in India. There is a total area of 2.3 million hectares of land under spices cultivation in India. Its annual production is estimated at 27 lakh tonnes valued at 1300 crores.

More than 2.5 lakh farmers in rural areas in India are dependent on spices for livelihood and employment. It has a share of about 44 per cent in quantity and 36 per cent in value in world spices trade (Spices Board, 2010).

India being the World's largest producer, consumer, and exporter of spices produce nearly half of the global trading in spices. Out of 109 varieties of spices listed by the International Organisation for Standardisation (IOS), India produces about 75 varieties of spices. The Spices board of India works for the development and the promotion of Indian spices.

The spices board provides:

- Quality control and certification
- Registers exporters
- Documents trade information
- Provides inputs to Central Government on Policy matters.

India exports its spices to nearly 180 destinations. Among this, China, USA, Bangladesh, Thailand, UAE, Sri Lanka, Malaysia, UK, Indonesia and Germany are the top destinations.

Last year, our country showed an increase in 34% of its export compared to the previous year.

The Government of India has taken many initiatives like Spice Parks and many financial schemes for the development of Spice tourism. India with its abundant quality of spices production will thrive and will contribute to the development of our Country.

Considering the importance of spices as a big foreign exchange earner of the country and as a source of livelihood for a good number of rural people, the Government of India has set up the Spices Board of India in the year 1987. It is the apex institution for the development of spices sector in the country. Its functions consist of overall development of cardamom, post-harvest improvement of all spices as well as their export promotion. For the benefit of cultivators other than cardamom, apart from post-harvest improvement, the Board undertakes adaptive research, organises planter's meet, imparts training on better production methods, encourages organic farming, conducts policy maker's workshops, etc.

## **2. REVIEW OF LITERATURE**

Spices constitute an important segment of the agricultural economy of the world in terms of production, employment and world trade. This sector has been a matter of extreme interest for academicians and planners and a good number of studies have been conducted on its various aspects such as production, marketing, world trade etc. The findings of these studies appear in the form of Books, Articles and Reports. A brief review of these, Books, Articles and Reports is made below:-

**Fredrick (1969)** 'The Book of Spices' stated that the important spices producing regions of Java and Sumatra, which were scientifically developed, were destined to remain under Dutch control until world war II. Through their efficient administration and new advances in tropical agricultural techniques, spices production increased tremendously by 1938. For example, in 1938 over 55000 tons of Indonesian black and white pepper was exported, while in the same year India exported only 700 tons of pepper. During sixties, the situation has changed and India also joined Indonesia as one of the world leading pepper producers and each country exports between 20000 and 25000 tons of pepper annually.

**Nair and Pushpangadan (1989)** 'The Pepper Economy of India' reported that the price analysis shows that Indian pepper has lost its premium to Indonesia and Malaysian varieties. As a result, Indian pepper has to compete in the world market in order to maintain its market share. Its competitive position is weakened during mid-eighties due to its low productivity and high unit cost of production. The increased uncertainty may be a factor that caused the stagnation of pepper production. Therefore the Government has to take urgent step to stabilize price and reduce uncertainty.

**Khan (1990)** 'Spices in Indian Economy' examined the trends in area, production and productivity of black pepper in different states. In case of area there was significant improvement in Tamil Nadu (35 per cent). In Kerala and Karnataka also area increased by 27 per cent and 18 per cent respectively. Production, however declined by 4 per cent and 56 per cent in Karnataka and Tamil Nadu, but it increased by 13 per cent in Kerala.

**Pruthi (2001)** 'Minor Spices and Condiments- Crop Management and Post-harvest Technology' evaluated the need for reducing cost of production of spices. One of the major handicaps in the international spices trade for India is the high cost of production of its spices which do not permit an effective market competition. It suggested various means to reduce cost such as the use of high yielding varieties, efficient use of fertilizers, and adoption of scientific cultivation practices. In addition to this, it recommends inter cropping, mixed cropping and crop rotation as the other means of reducing cost of production.

**Sanjeev et al (2001)** 'Seed Spices-Quality and Export' reported that India produces about 52 spices and the important ones among them that occupy a sizeable area and enter the national or international trade are black pepper, cardamom, ginger chilli, clove, coriander, cumin, fennel, etc. The seed spices are mainly cultivated in the states of Rajasthan and Gujarat. The Indian seed spices have the advantage of superior intrinsic quality. However, Indian spices industry is facing challenges on four fronts namely- productivity, equity, quality and value addition.

**Economic Review (1982)** published by the Government of Kerala stated that the important problem for the cardamom industry in India is the tough competition it has to face in international market especially from Guatemala. The export price since 1978-79 has been showing a continuously declining trend. Compared to the price level in 1978-79 there has been a decline of 35 per cent in export price in 1981-82 both for Kerala and all India, and this trend adversely affects the industry. Planting new varieties, avoidance of crop loss by improving the curing process, etc. are some of the suggestions recommended in the report for bettering the prospects of cardamom.

**Santhosh (1985)** 'Cost of Cultivation And Marketing of Pepper in Kannur District' pointed out that pepper proved to be a labour intensive crop and labour cost accounts for more than 50 per cent of total cost. The study reported that the situation of scarcity of agricultural labour and high wage rates have caused gradual decline in pepper cultivation. Though Idukki is leading in cultivation, the profitability of the crop is higher in Kannur. It also estimate the benefit-cost ratio of pepper as only 1.09 in Idukki as against 1.16 in Kannur

**Baby (1985)** 'A Blue Print for Export Development of Kerala- a Study on Selected Agricultural Products' suggested that a comprehensive time bound programme incorporating strategies to increase production and productivity, to recapture the lost market share, to develop new markets, to maintain consistency of quality, to promote new products and to attain an overall growth rate commensurate to the increasing world demand for spices has to be adopted on a primary basis.

**Indian Institute of Foreign Trade (1989)** in its survey titled 'Base Line Survey of Major spices in Kerala- prepared for International Trade Centre Geneva' explained the socio economic impact of export trade. The total employment generated by the spices industry in Kerala is estimated to have grown from 71300 in 1982-83 to around 74900 in 1986-87, 92.4 per cent of which constituted farm labours. In the same year self- employed farm labourers were about 27100 of which 21100 were cardamom growers and the rest in pepper and other spices.

**Common Wealth (1996)** in its report titled 'The Global Spice Trade and Uruguay Round Agreements' presented at Geneva quoted that the spice sector has been characterized by unplanned production, resulting in volatile markets with widely fluctuating prices. Unplanned production has also turned spice producing countries into 'price followers' rather than 'price setters'. Some spice producing countries have fallen in the low quality – low price trap. Because of the small quantities produced and their indifferent quality, these countries have been forced to sell spices at low prices and these sales have had the effect of bringing down international prices significantly to lower levels.

**Madan (2000)** in the article ‘Indian Black Pepper, Economics and Marketing’ states that Kerala is the major producer of pepper in India. Among other producing states, Karnataka contributes a sizable quantity to the total production. Pepper has a high contribution on rural employment and farmers’ income in these regions of production. Although pepper price fluctuates sharply, pepper farming still exists and is extended to new areas with the hope of getting better returns on investment. This condition will strengthen the Indian pepper industry in the global competition.

**Sindhu (2001)** ‘Trade Liberalization and Export Performance of Kerala’ revealed that, in spite of trade liberalization and export growth rate being higher in the world export, Indian export shows declining trend in recent years. The growth rate of export during post EXIM policy period was 2.29 per cent as against 6.86 per cent of pre EXIM policy of 1991.

**Anitha (2004)** ‘Trend Analysis of Spices Export at Cochin Port Trust’ pointed out that the decrease in demand for pepper from Kerala was due to the fact that most of the upcoming markets for pepper abroad were getting Sri Lanka pepper imported via Mumbai. If, brought from Kochi, the transportation cost alone would come around 5 per Kg in addition to taxes. This accounted for the lower exports from Kochi.

**Peter, Nybe and Shylaja (2005)** ‘Spices Production and Export from India’ discussed the spices production and exports from India for the last five decades. The study reported that the quantity exported and export earnings showed an increasing trend during the period from 1960-2000. Based on an analysis of growth in export and earnings at five year interval, it is seen that the quantity showed a decreasing trend in the 5 year period ending 1970-71 and 1985-86 and increasing trend are noticed in all other quinquenniums. It also reported that the export earnings from spices during 1960-61 was 16 crores and the earnings increased to 2025 crores during 1990.



**Thomas (2009)** ‘Problems and Prospects of Spices Trade in Kerala’ expressed the view that a major problem in the domestic market of pepper in Kerala is the sale of imported pepper. It suggested that pepper imported for value addition and re-export should be re-exported within the prescribed time and should not allowed to be sold in the domestic market. The study also recommended that the Government should announce WTO compatible export subsidy for pepper in order to increase the pepper export from Kerala.

**Mary. PU (2012)** “Role of Spices Board in the cultivation and export of spices: A study with particular reference to Kerala”. It explained the role played by the Board in respect of cultivation, postharvest operation and export. The study traces the evolution of the Board and its expansion over the years, production and productivity of spices, value addition of spices, organic cultivation, export and import of spices etc. The study indicates that most of the schemes for the cultivators are underutilized by them due to technical reasons, lack of timely information, lack of initial funds etc. But the schemes for the export promotion have been utilized by exporters to a remarkable extent.

### **3. STATEMENT OF THE PROBLEM**

Low productivity of many of the spices in India compared to that of other producing countries is a serious issue confronting the farmers of spices. For instance, yield per hectare for pepper in Thailand is eleven times larger than that in India. Like- wise, productivity of cardamom is only 174 kg/hectare in India while for Guatemala, it is 315 kg/per hectare (Singh, 2007). Low productivity makes Indian spices costlier as well as less competitive in international market. Further, incidence of diseases and attack of pests, low input efficiency and senility of plants, non- popularisation of elite cultivars and depletion of soil fertility continue to plague spices plantations. It is also reported that this sector experiences lack of sufficient skilled labour and there is no long term investment for improving productivity (Jaimol, 2007).

In the sphere of international trade, entry of Vietnam, Indonesia, Malaysia, Brazil, Mexico, Sri Lanka, Thailand and Madagascar in pepper trade and Guatemala in cardamom has caused stiff competition to India since such countries can offer them at lower prices (Radhakrishnan, 1993).

The new regulations imposed by the importing countries regarding quality cause headache to cultivators and exporters. In the light of the above revelations, it has been proposed to conduct a detailed study on the production and export performance of spices in India. The study on the growth and instability of major spices export have also been included in the study. The study is titled “An economic analysis of spices trade in India: A study on the growth and prospects of major spices export from India”.

#### **4. OBJECTIVES OF THE STUDY**

- To analyse the Growth Rate and Instability in Area and Production of major spices in India
- To examine the export of major spices from India during the period of 5 years from 2017- 18 to 2021- 22
- To estimate the growth of total export from India (2002- 03 to 2021- 22)

#### **5. THEORETICAL FRAMEWORK**

Theory of comparative cost advantage Trade is considered one of the important engines for economic development. The term trade refers to the rate at which the goods of one country are exchanged for the goods of another country. It is a measure of the purchasing power of export of a country in terms of its imports and is expressed as the ratio between export prices and import prices. In relation to prices of imports and exports, the rise in export is said to be improved in trade and rise in import is said to be deteriorated in trade.

As per this process, there was a Theory of comparative cost which was presented by the famous economist David Ricardo in his book "On the Principles of Political Economy and Taxation"(1817). This theory is also known as Theory of Comparative Cost Advantage.

The basic premises of the theory is that trade enable countries to specialise in producing the products that they can produce at a comparatively lesser cost of production. According to the theory specialisation, free trade will benefit all trading partners, even those who are relatively less efficient producers. The theory implies that comparative costs are different in different countries because the abundance of factors which may be necessary for the production of each commodity does not bear the same relation to the demand for each commodity in different countries.

Thus, specialisation based on comparative cost advantage clearly represents a gain to the trading countries in so far as it enables more of each variety of goods to be produced cheaply by utilising the abundant factors fully in the country concerned and to obtain relatively cheaper goods through mutual international exchange. Ricardo's theory pleads the case for free trade. He stresses that free- trade is the pre-requisite of gains and improvement of world's welfare. Free trade "by increasing the general mass of production diffuses general benefit and binds together by one common tie of interest and intercourse, the universal society of nations throughout the civilised world."

## **6. RESEARCH METHODOLOGY**

### **Sample design**

This study is attempted for analysis of major spices data in terms of growth rate & instability in area and production to examine the export performance of major spices in India.

The major 5 spice products under study,

- Pepper
- Cardamom (S)
- Nutmeg & Mace
- Chilli
- Turmeric

These are selected by using Convenient Sampling Method (CVM) for analysis.

### **Data sources**

The study used only secondary data which has been obtained from Spice Board of India Annual Reports and from various publications which is cited in the references, official records and web source such as Handbook of Indian Spice Board.

### **Period of study**

The research study covers a period of 5 years data from 2019- 2018 to 2021- 2022 for the spice- wise area, production and export of spices in India. Whereas a period from 2002- 03 to 2021- 22 is taken to study the total exports of spices from India.

## Geographical area of spices covered

Southern and Northern states in India like Kerala, Karnataka, Madhya Pradesh, Andhra Pradesh, Tamil Nadu, Maharashtra, Telangana and Rajasthan etc. are the major spice producers and these geographical areas are taken for analysis to examine the growth rate and instability.

### 6.1 STATISTICAL RESEARCH ANALYTICAL TOOLS:

- **Compound Annual Growth Rate Analysis (CAGR)**

CAGR is used to study the growth rate of area, production, productivity, import, export etc. of a particular crop or commodity.

In order to estimate we require Time series data to calculate CAGR based on exponential function.

In the study it is used to measure the Growth rate of major spice for Area, Production and exports of spices. The CAGR was worked out using the formula given below,

Formula

$$\text{CAGR} = \left( \frac{V_{\text{final}}}{V_{\text{begin}}} \right)^{1/t} - 1$$

CAGR = compound annual growth rate

$V_{\text{begin}}$  = beginning value

$V_{\text{final}}$  = final value

$t$  = time in years

- **Instability Analysis**

To measure the instability of major spice area, yield and production, the coefficient of variations (CV) was worked out using the formulae given below

$$\text{CV} = (\text{Standard Deviation} / \text{Mean}) * 100$$

- Other analytical tools like Linear regression, ratios, percentage, graphs and diagrams were used.

## 7. SCHEME OF THE STUDY

The scheme of the study is organized in the following ways:

➤ CHAPTER 1: Introduction

First chapter deals with introduction, review of literature, objectives, statement of the problem, theoretical framework and methodology.

➤ CHAPTER 2: Spice Trade in India: An Overview. Second chapter discusses export trends, major export destinations, and governing body: spices board of India and its main functions, most important Indian spices: origin and distribution, uses, factors affecting spices export in India.

➤ CHAPTER 3: An economic analysis of export of major spices from India. Secondary data analysis of data regarding aspects of area, production and export of major spices in India and total exports from India.

➤ CHAPTER 4:

Findings, recommendations and conclusion on the topic “An Economic analysis of spices trade in India: A study on the growth and prospects of major spices export from India.

## **CHAPTER 2**

# **SPICE TRADE IN INDIA:** **AN OVERVIEW**

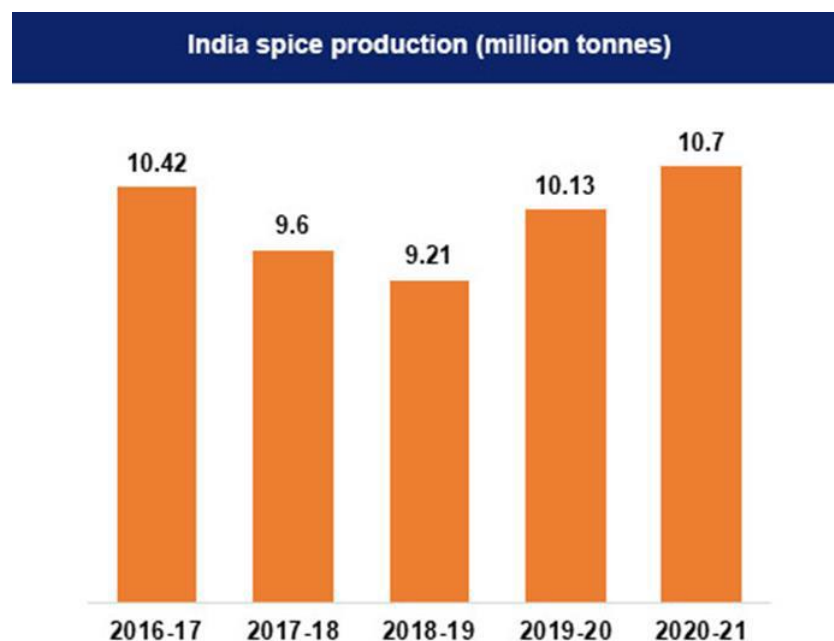
## 2.1 INTRODUCTION

India is the largest producer of spices in the world. Moreover, it is the biggest importer and exporter of spices. Throughout the past few years, there has been a sharp increase in the manufacturing of various spices. The amount of production in 2021–2022 was 10.88 million tonnes. The export of spices hit a record high in 2020–21 in terms of both value and volume, growing by 17% in US\$ value terms and 30% in volume terms.

The single most popular spice that India exported in 2021–2022 was chilli, which was followed by spice oils and oleoresins, mint products, cumin, and turmeric.

The International Organization for Standardization lists 109 types, of which roughly 75 are produced in India (ISO). The spices that are most frequently produced and exported are pepper, cardamom, chilli, ginger, turmeric, coriander, cumin, celery, fennel, fenugreek, garlic, nutmeg, and mace, along with spice oils and oleoresins. Around 76% of the production of these spices is made up of the following: coriander, cumin, ginger, turmeric, and chilli.

Madhya Pradesh, Rajasthan, Gujarat, Andhra Pradesh, Telangana, Karnataka, Maharashtra, Assam, Orissa, Uttar Pradesh, West Bengal, Tamil Nadu, and Kerala are the states that produce the most spices in India.



Source: Spices Board of India



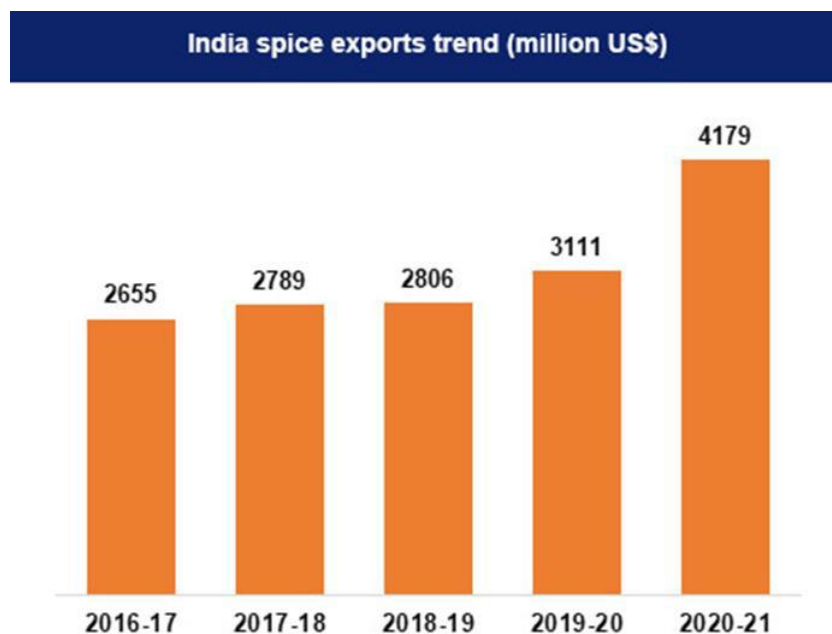
## 2.2 EXPORT TRENDS

India is the main exporter of spices and related products. The value of the nation's spice exports for 2021–2022 was \$4,102.29 million USD.

Indian spice exports climbed by 6.62% to US\$ 330.46 million in September 2022. India exported 1.53 million tonnes of spices in 2021–22. The total amount of goods exported from India increased at a CAGR of 10.47% between 2017–18 and 2021–22.

In total, 0.55, 0.21, 0.15, and 0.14 million tonnes of ginger, turmeric, cumin, and other spices were exported in FY22.

The export of chillies, ginger, cardamom (small and big), coriander, turmeric, celery, cumin, fennel, fenugreek, other seeds including ajwain seed, mustard, aniseed, nutmeg, and mace, as well as other spices like asafoetida, tamarind, etc. increased both in value and volume from 2019-20 to 2020-21. Even the export of goods with value-added, such as spice oils and oleoresins, climbed in both value and volume; curry powder/paste exports rose in both value and volume; and mint products exports rose in both.



Source: Spices Board of India

## **2.3 MAJOR EXPORT DESTINATIONS**

In 2020–21, India exported spices and spice-related items to 180 countries and regions. They ranked China, the USA, Bangladesh, Thailand, the UAE, Sri Lanka, Malaysia, the UK, Indonesia, and Germany as their preferred travel destinations. In 2020–21, exports to these nine places accounted for more than 70% of total revenue.

In 2020–21, exports to China totalled Rs.627155.48 lakhs (US\$ 791.5 million), or 23% of all exports. In 2020–21, the USA bought spices worth Rs.465000.00 lakhs (US\$ 586.8 million), or 17% of the country's total exports. During the aforementioned time, Bangladesh bought spices worth Rs.251280.47 lakhs (US\$ 317.1 million) from India, making up 9% of India's overall export value. In 2020–21, UAE exported spices from India valued Rs.165298.53 lakhs (US\$ 208.6 million), approximately 6% of the country's total exports.

The most popular Indian spice exported was chilli. Chilli imports from China totalled Rs.3144 crores (US\$ 396.9 million) in 2021–2022. Cumin imports from China totalled Rs.1397.4 crores (US\$ 176.4 crores) for the same time period. China brought in Rs.1779.6 crores (\$227.2 million) in mental products during the same time period.

The primary imports from the USA include items made of celery, cumin, curry powder, fennel, fenugreek, garlic, chilli, and mint.

## **2.4 GOVERNMENT INITIATIVES**

### **Export Development and Promotion of Spices**

This initiative by the Spices Board of India aims to support the exporter to adopt high tech processing technologies and upgrade the existing level of technology for the development of industry and to meet the changing food safety standards of the importing countries.

The initiative provides benefits of infrastructure development, promoting Indian spice brands abroad, setting up infrastructure in the major spice growing centres, promoting organic spices and special programmes for north-eastern entrepreneurs.

### **Setting up and maintenance of infrastructure for common processing (Spices Parks)**

Spices Board has launched 8 crop specific Spices Parks in key production/market centres with an aim to facilitate the farmers to get an improved price realization and wider reach for their produce. The purpose of the park is to have an integrated operation for cultivation, post-harvesting, processing, value-addition, packaging and storage of spices and spice products. The common processing facilities for cleaning, grading, packing, and steam sterilization will help the farmers to enhance the quality of the produce, resulting in better price realization.

### **Spice Complex Sikkim**

Spices Board submitted a project proposal to the State's Cell for setting up a Spice Complex in Sikkim seeking financial assistance for facilitating and demonstrating common processing and value addition in spices to help farmers and other stakeholders in the state.

## **2.5 GOVERNING BODY**

### **Spices Board of India**

The Spices Board of India is set up for the development and global promotion of Indian spices. It acts as a link between the Indian exporters and importers abroad. The main activities of the board involve promotion, maintenance and monitoring of quality, development of better production methods, guidance, financial and material support to growers, infrastructure facilitation and research.

### **Main Functions**

- Research, development and regulation of domestic marketing of small & large cardamom
- Post-harvest improvement of all spices
- Promotion of organic production, processing and certification of spices
- Development of spices in the North East
- Provision of quality evaluation services
- Export promotion of all spices through support for technology up-gradation, quality

Up-gradation, brand promotion and research & product development

## 2.6 MOST IMPORTANT INDIAN SPICES

### ➤ **Black Pepper**

Black Pepper is the dried mature berry of *Piper nigrum*, a climbing, perennial shrub mostly found in hot, moist region of Southern India. Under cultivation pepper vines are trailed over support as columns, 5-6 m tall and 1- 2 meter diameter. The fruit is a single seeded drupe often called berry. It is spherical in shape, green in colour, changing to red on ripping.

#### **Origin and distribution**

Pepper is considered originated in the hills of South Western Ghats of India. It is now grown in Indonesia, Malaysia, Sri Lanka, Thailand, China, Vietnam, Cambodia, Brazil, Mexico, and Guatemala apart from the country of origin. Pepper requires hot and humid climate and grows between 20 degree North and South latitudes, from sea level to up to 1500 meters above MSL. The crop tolerates temperatures between 10 degree and 40 degree C. A well-distributed annual rainfall of 125 to 200 cm is considered ideal for pepper.

#### **Uses**

Pepper is largely used by meat packers and in canning, pickling, baking, considering for its preservative value. It has the ability to correct the seasoning of dishes, therefore used as a final dash at the end of cooking to effectively adjust the flavour. It is an important component of culinary seasoning of universal use and is an essential ingredient of numerous commercial foodstuffs. It is also used as an ingredient in spice mixes. White pepper is used in products like mayonnaise where, black specks of black pepper is not liked. Other products in use are pepper oil, oleoresin, micro encapsulated pepper, green pepper in brine, dehydrated green pepper, frozen pepper etc. Black pepper is an essential ingredient in Indian system of medicine. Piperine, the pungent principle in pepper oleoresin helps to enhance bio-availability and therefore used in pharmaceuticals. The major functional properties of pepper are analgesic, anti-pyretic, anti-oxidant and anti-microbial.

### ➤ **Cardamom (s)**

Cardamom of commerce is the dried ripe fruit (capsules of cardamom plant) often referred as the “Queen of Spices” because of its very pleasant aroma and taste. Cardamom is a perennial, herbaceous, rhizomatous plant. Based on the nature of panicles, three varieties are recognized viz. Malabar with prostrate panicle, Mysore with erect panicle and Vazhukka with semi erect panicle.

Indian cardamom is offered to the international markets in different grades: Alleppey Green Extra Bold (AGEB), Alleppey Green Bold (AGB) and Alleppey Green Superior (AGS) are names that register instant appeal worldwide. Cardamom oil is a precious ingredient in food preparations, perfumery, health foods medicines and beverages. India, a traditional exporter of cardamom to the Middle East countries where it goes mostly into the preparation of 'Gahwa' a strong cardamom, coffee concoction without which no day is complete or no hospitality hearty for an Arab. Indian cardamom enjoys a premium preference in the Middle East, Japanese and Russians who relish it for its distinct enriching properties.

### **Origin and distribution**

Cultivation of cardamom is mostly concentrated in the ever green forests of Western Ghats in South India. Besides India, cardamom is grown as a commercial crop in Guatemala and on small scale in Tanzania, Sri Lanka, El Salvador, Vietnam, Laos, Thailand, Cambodia, Honduras, and Papua & New Guinea. The optimum altitudinal range on growing cardamom is 600 to 1500 m. The cardamom growing regions of South India lies within 8 - 30 degree N latitudes and 75-78 degree longitudes.

### **Uses**

The major use is for the preparation of 'Gahwa' a strong cardamom coffee concoction which is a symbol for hospitality among Arabs. Apart from this cardamom is widely used as a flavouring material in whole and ground form. In Asia, it can add a lingering sparkle to every kind of dishes both traditional and modern. In Scandinavian countries it is used in baked goods and confectionaries. In Europe and North America it is an ingredient in curry powder and in some sausages products. Cardamom oil and oleoresin has applications in flavouring processed foods, cordials, and liquors and in perfumery and in Ayurvedic medicines.

### ➤ **Nutmeg & Mace**

Nutmeg & Mace are two distinctly different spices produced from a fruit of an evergreen tree usually 9-12 m high. Mace is the dried reticulated 'aril' of the fruit and nutmeg is the dried seed kernel of the fruit. The trees are normally unisexual, bearing either male or female flowers. The male flowers are born in clusters, whereas female flowers are often solitary. Fruit is a fleshy drupe, spherical in shape, pale yellow in colour with a longitudinal groove in the centre. When the fruit mature it burst open along the groove exposing the bright attractive mace, covering the hard black, shiny shell of the seed called nutmeg.

#### **Origin and distribution**

Nutmeg tree is indigenous to Moluccas. The major nutmeg growing areas are Indonesia and Granada. It also grows on a smaller scale in Sri Lanka, India, China, Malaysia, Zanzibar, Mauritius and Solomon Island. Nutmeg thrives well in places with warm humid climate from sea level up to 600 m MSL. It grows on a variety of soils from sandy to clayey loams and red laterite soils with good drainage. A well-distributed annual rainfall of 250 cm is ideal for the crop.

#### **Uses**

Both nutmeg and mace are used as condiment particularly in sweet foods. The spice in the ground form is mainly used in the food processing industry especially as a standard seasoning in many Dutch dishes. Nutmeg oleoresin is used in the preparation of meat products, soups, sauces, baked foods, confectionaries, puddings, seasoning of meat and vegetable etc. The fleshy outer cover of the fruit is crystallized or pickled or made into jellies. Mace is used in savoury dishes. It is used as a drug in Eastern countries because of its stimulant, carminative, astringent and aphrodisiac properties. Excessive doses have a narcotic effect. Nutmeg oil is used in cosmetics and toiletries.

## ➤ Chilly

Chilly is the dried ripe fruit of the genus *Capsicum*. *Capsicum annuum* is an annual sub shrub, the flowers of which are borne singly and fruits usually pendent, which provide red peppers, cayenne, paprika and chillies and sweet pepper (bell pepper) a mild form with large inflated fruits. *Capsicum frutescense* is a perennial chilly with small sized pods which are highly pungent. It is commonly known as 'bird chilly' and 'Tabasco'.

Different varieties:

- Bird eye chilli (Dhani)
- Byadagi (Kaddi)
- Ellachipur Sannam- S4 Type
- Guntur Sannam- S4 Type
- Hindpur S7
- Jwala
- Kanthari- White
- Kashmiri Chilli
- Madhya Pradesh GT Sannam

### **Origin and distribution**

Chilly is reported to be a native of South America and is widely distributed in all tropical and subtropical countries including India. It was first introduced in India by Portuguese towards the end of 15th Century. Now it is grown all over the world except in colder parts.

### **Uses**

Dry chilly is extensively used as spice in curried dishes. It is also used as an ingredient in curry powder and in seasonings. Bird chilly is used in making hot sauces as pepper sauce and Tabasco sauce. Paprika, Bydagi chilly, Warangal chapatta and similar high colour less pungent varieties are widely used for colour extraction. This colour is highly popular among food and beverage processors for its use as a colourant, since this being a 'natural plant colour'. As a medicine it is used as a counter irritant in Lumbago, Neuralgia, and Rheumatic disorders.



### ➤ **Turmeric**

Turmeric is the boiled, dried, cleaned and polished rhizomes of *Curcuma longa*. The plant is a herbaceous perennial, 60-90 cm high, with a short stem and tufted leaf. There are 7 to 12 leaves, the leaf sheaths forms the pseudo stem. The lamina is green above and pale green below and has a length of 30-40 cm and width 8-12 cm. Inflorescence is a central spike of 10-15 cm length. 1-4 flowers are born in axil of the bract opening one at a time. About 30 flowers are produced in a spike. Seeds are produced in capsules and there will be one to numerous sunken capsules in an inflorescence.

### **Origin and distribution**

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### **Uses**

Turmeric is used to flavour and to colour foodstuffs. It is a principal ingredient in curry powder. Turmeric oleoresin is used in brine pickles and to some extent in mayonnaise and relish formulations, non-alcoholic beverages, gelatins, butter and cheese etc. The colour curcumin extracted from turmeric is used as a colourant. Turmeric is also used as a dye in textile industry. It is used in the preparation of medicinal oils, ointments and poultice. It is stomachic, carminative, tonic, blood purifier and an antiseptic. It is used in cosmetics. The aqueous extracts has biopesticidal properties.

## 2.7 FACTORS AFFECTING SPICES EXPORT IN INDIA

- Low Productivity

Low productivity in Spice sector is one of the main problem faced by the Indian Spice industry. Result in low competitiveness in international markets. Spice producers face many challenges in the pre-production and production phases. They often lack knowledge and access to technologies that would improve crop handling. Another problem is the overuse of pesticides. The high pesticide residues negatively affect the quality of spices and thus their exportability. In addition, excessive use leads to water pollution, soil degradation, and erosion. However, production not only has a negative impact on the quality of spices and the environment, but in many cases damages the health of workers.

- Poor Product Quality

Poor product quality at farm level is another problem hindering reasonable price realization by the producer. Insufficient infra-structure facilities for cleaning, scientific methods of processing, storage and packing. Spice quality to be kept in check by conducting timely spices quality testing by spices industries or spices exporters/traders at a recognised testing facility. To ensure that the spice quality is maintained as per set standards and that they are safe from any contaminants like pesticide, metals, and other adulterations, spice testing is done to maintain the quality and its true taste. Spices quality testing ensures that your spices meet the national standards and international standards for export as well.

- Insufficiency of Legal Provisions

Our present legal provisions relating to many elements that constitute Sanitary and Phytosanitary (SPS) measures are insufficient. SPS measures include all relevant regulations, requirements, and procedures used to ensure the safety of agricultural products for people, plants, and animals. India does not have a National Standard covering all the requirements of the agreement under SPS measures. The regulations under AGMARK are only optional and not mandatory and are not even comprehensive. Similarly, the provisions existing under the PFA are also not comprehensive and provide loopholes for import of cheap spices from other countries of origin.

- Some Indigenous Varieties are Disappearing

The rapid disappearance of some indigenous varieties of spices due to mixing of planting material results in loss of genetic purity. The scope and demand for spices in whole world was increasing. And lack of availability of demanded indigenous varieties become lower which effects the exports of spice trade. This may be levelled by the equal mixing and plantation of spices according to the demand.

Example: Cochin ginger, Alleppey finger turmeric, Byadagi chilli, etc.

- Poor Post-harvest Handling

In agriculture, postharvest handling is the stage of crop production immediately following harvest, including cooling, cleaning, sorting and packing. The instant a crop is removed from the ground, or separated from its parent plant, it begins to deteriorate. This reduces problems of contamination. Our natural comparative advantages in production are being whittled away due to the poor quality of the produce. It can be avoided by Assess Maturity, Check Your Water Quality, Check Your Water Temperature, Avoid Injury, Keep Your Produce Cool, Proper Storage.

- Insufficient mechanization of spices production and processing

The level of mechanization has a significant positive impact on the cost, output value, income and return rate of all types of crops. Lack of desired level of value -addition at the primary processing level of results in lesser returns to the farmers and farm labourers.

- Competition

India is the world's largest spice producer. India facing stiff competition from other producing countries that supply spices in whole form. Most of these countries have no domestic market for the spices they are producing forcing them to sell they produce even at cost price. Example: cardamom from Guatemala, pepper from Vietnam, cloves from Indonesia.

- Rejection and export materials

Farmers of spices like cardamom, chilly and ginger are heavily dependent on chemicals for pest and diseases control and fertilizers. Indiscriminate use of chemicals results in pesticide residues beyond tolerable limits, leading to rejection of many consignments of spices from India. Trade restrictions on contaminated food or feeds have the greatest effect on countries like India, which currently have limited, or no available means of monitoring aflatoxin levels.

The toxins are particularly carcinogenic in humans and eating contaminated food often results liver cancer, amongst other diseases.

- Agricultural extension is not market -oriented

Extension is not focused on the needs of the market, especially the export market. The available market information service is limited to a few areas and to a few section and often fails to recognise indigenous methods and factor to get a competitive edge in export of spices.

- Raw material shortages

Many of the locations in developing countries across the world which are major production hubs for spices have been severely affected, causing raw material shortages to the spice industry.

# **CHAPTER 3**

## **AN ECONOMIC** **ANALYSIS OF** **EXPORT OF** **MAJOR SPICES FROM** **INDIA**

## **3.1 INTRODUCTION**

World's Spice Bowl- India is the world's largest producer of spices. In the global spice trade, India holds a commanding position. Indian spices are well-known for their flavour and scent in both home and foreign markets. Almost 75 of the 109 spices recognised by the ISO (International Standards Organization) are produced in India's varied climate zones. India is one of the world's major producers, consumers, and exporters of spices.

### **3.1.1 ANALYSIS CRITERIA**

This chapter focuses on the secondary data that have been collected from the publications of Indian spices Board, Ministry of Commerce, Government of India viz. Annual reports, Brochures and Websites.

The nation's overall exports include a substantial amount of spices, which are important to the health of our economy. The export of spices is a significant industry. Due to their total naturalness and superior to artificial food additives as seasonings and flavours, customers are using more and more spices on a global scale. The demand for spices is constantly rising, and countries that import them look to India as a reliable supply. Thus, in the past ten years, a rising trend in spice export has been noted. For the purpose of analysing the growth and prospects of export of spices from India can be discussed.

### 3.2 MAJOR SPICES EXPORTED FROM INDIA: CURRENT STATUS

The major spices exported from India under study are:

1. Pepper
2. Cardamom (s)
3. Nutmeg & Mace
4. Chilli
5. Turmeric

**Table 3.2**

**Current status in area, production and export of major spices in India (2021- 22)**

SR. NO	SPICE	AREA (2021- 22)	PRODUCTION (2021- 22)	EXPORT (2021- 22)		
		Lakh ha	Lakh Tons	QUANTITY	VALUE	
				Tonnes	Rs. Crore	%
1	PEPPER	2.88	0.6	21882	754	5.93
2	CARDAMOM (S)	0.69	0.23	10572	1376	10.82
3	NUTMEG & MACE	0.24	0.15	3596	218	1.71
4	CHILLI	6.94	18.66	557168	8582	67.50
5	TURMERIC	3.50	13.31	153154	1784	14.03
<b>TOTAL</b>		<b>14.25</b>	<b>32.95</b>	<b>746372</b>	<b>12714</b>	<b>100.00</b>

Source: State Agri/Hort. Departments/DASD Kozhikkode

The current status in area, production and exports of major spices in India (2021- 22) is presented in Table 3.2. It shows that:

India produced about 0.6 lakh tons of pepper from an area of 2.88 lakh hectare out of which 21882 tonnes of pepper were exported.

Similarly, it produced about 0.23 lakh tons of cardamom (s) from an area of 0.69 lakh hectare out of which 10572 tonnes of cardamom (s) were exported.

In case of Nutmeg & Mace, India produced about 0.15 lakh tons of nutmeg & mace from an area of 0.24 lakh hectare out of which 3596 tonnes were exported.

In case of chilli, the country produced about 18.66 lakh tons from an area of 6.94 lakh hectare and exported about 557168 tonnes of chilli.

Whereas in case of turmeric, India produced about 13.31 lakh tons from an area of 3.50 lakh hectare out of which 153154 tonnes were exported.

### 3.4 DEVELOPMENT AND OUTLOOK

Future potential and expansion in the production and export of major spices during the year 2017- 18 to 2021- 22 have been discussed spice wise in the subsequent subject matter of this chapter.

### 3.5 AREA AND PRODUCTION: PEPPER

The growth and instability in area and production of pepper in India during the year 2017- 18 to 2021- 22 is presented in Table 3.5(a) and in Figure 1, it can be observed that:

The production of pepper has increased at a compound annual growth rate (CAGR) of 1.76% from 64000 tons in 2017- 18 to 65000 tons in 2020- 21. This growth was due to the rise in area 25.37% during the same period.

The area under pepper has increased from 139487 hectare in 2017- 18 to 288118 hectare in 2021- 22.

The estimated CAGR of area and production under pepper was positive which was estimated to be 25.37% and 1.76%.

**Table 3.5(a)**

#### **Growth and instability in area and production of Pepper in India**

<b>SR. NO</b>	<b>YEAR</b>	<b>AREA (ha)</b>	<b>PRODUCTION (tons)</b>
1	2017- 18	139487	64000
2	2018- 19	137588	48000
3	2019- 20	259148	61000
4	2020- 21	309335	65000
5	2021- 22	288118	60000
	<b>CV (%)</b>	<b>36.37</b>	<b>11.42</b>
	<b>CAGR (%)</b>	<b>25.37*</b>	<b>1.76*</b>

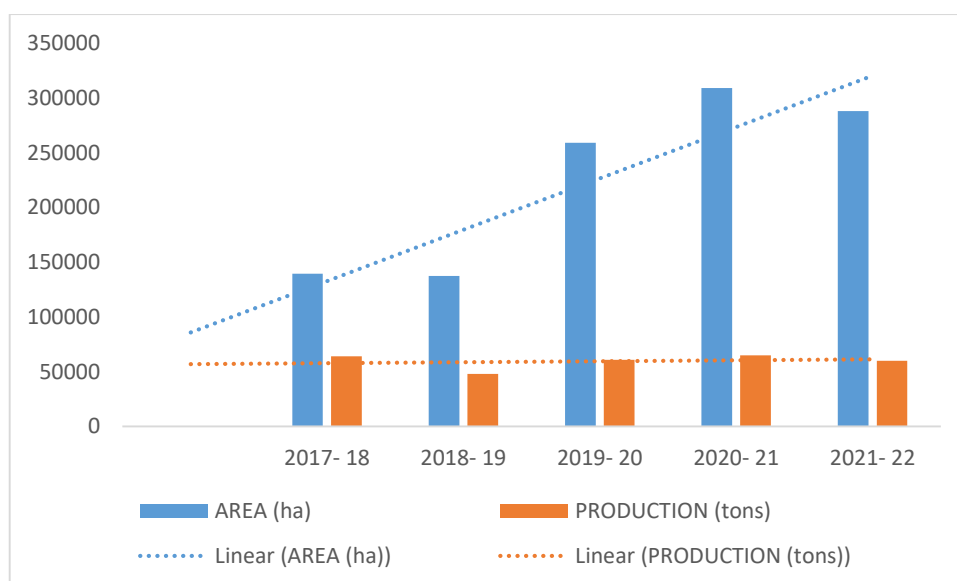
Source: State Agri/Hort. Departments/DASD Kozhikkode

Note: \*indicates significant at 1% level



**Figure 1**

**Growth and instability in area and production of Pepper in India**



In India black pepper is mainly grown in Karnataka, Kerala, Tamil Nadu, Konkan Pondicherry and Andaman and Nicobar Islands. India is number one producer consumer and exporter of black pepper in the world. Kerala itself produces 90% of Total production of black pepper. This spice has good economic importance due to its earning of export from foreign exchange. It is also called as Black gold due to its international trade factor.

The major pepper producing states in India (2021- 22) is presented in Table 3.5(b) and in Figure 2.

**Table 3.5(b)**

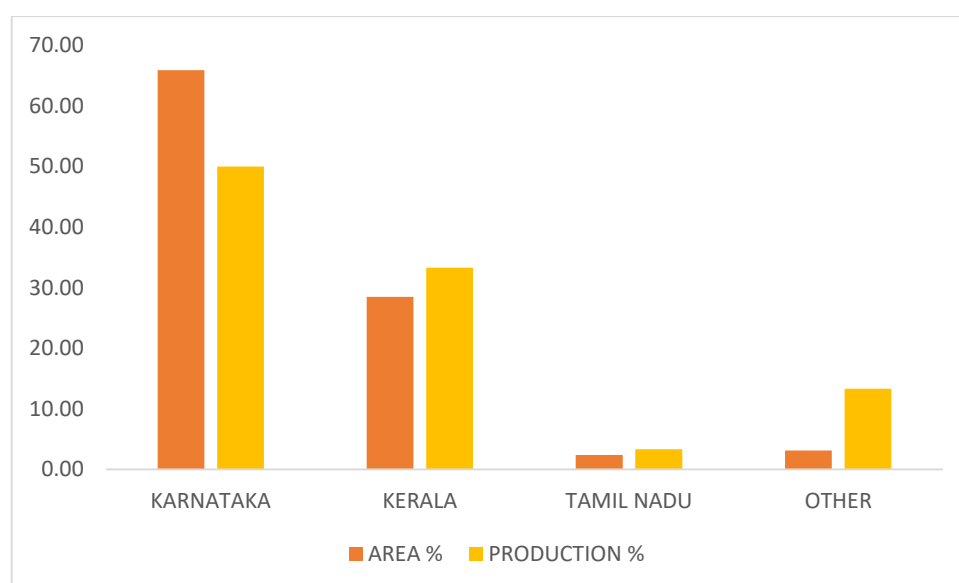
**Major Pepper producing states in India (2021- 22)**

SR. NO	STATE	AREA		PRODUCTION	
		ha	%	Tons	%
1	KARNATAKA	190000	65.95	30000	50
2	KERALA	82087	28.49	20000	33.33
3	TAMIL NADU	6963	2.42	2000	3.33
4	OTHER	9068	3.15	8000	13.33
	<b>TOTAL</b>	<b>288118</b>	<b>100</b>	<b>60000</b>	<b>100</b>

Source: State Agri/Horti Departments/DASD Kozhikkode

**Figure 2**

**Major Pepper producing states in India (2021- 22)**



From Table 3.5(b) and Figure 2, it can be observed that:

Karnataka was leading in the production of pepper. Annual production of pepper in Karnataka in 2021- 22 ranked 1<sup>st</sup>. The state accounts for 50% of pepper produced in India, cultivated over 190000 hectares. Yield: 187 kg/hectare.

Annual production of pepper in Kerala in 2021- 22 ranked 2<sup>nd</sup>. The state accounts for 33.33% of pepper produced in India, cultivated over 82087 hectares. Yield: 239kg/hectare.

Annual production of pepper in Tamil Nadu in 2021- 22 ranked 3<sup>rd</sup>. The state accounts for 3.33% of pepper produced in India, cultivated over 6963 hectares. Yield: 493kg/hectare.

### 3.5.1 EXPORT OF PEPPER

India is the largest producer, consumer and exporter of black pepper in the world. The total global production of black pepper is around 350000- 400000 tonnes per annum. India produces around 260000 tonnes per annum, which constitutes around 75% of the total world pepper production.

Growth and instability in export of pepper from India during the year 2017- 18 to 2021- 22 is presented in Table 3.5.1(a) and Figure 3, it can be observed that:

India exported 21882 tonnes of pepper during the year 2021- 22. Looking to the trends, the export quantity of pepper has increased at a compound annual growth rate (CAGR) of 9.56% from 16840 tonnes in 2017- 18 to 21882 tonnes in 2020- 21.

The overall export value of pepper has dropped to -1.65% of CAGR from 82078 lakhs in 2017- 18 to 75393 lakhs in 2021- 22.

The CAGR of quantity exported of pepper was positive which was estimated to be 9.56%.

**Table 3.5.1(a)**

**Growth and instability in export of pepper from India during the year  
2017- 18 to 2021- 22**

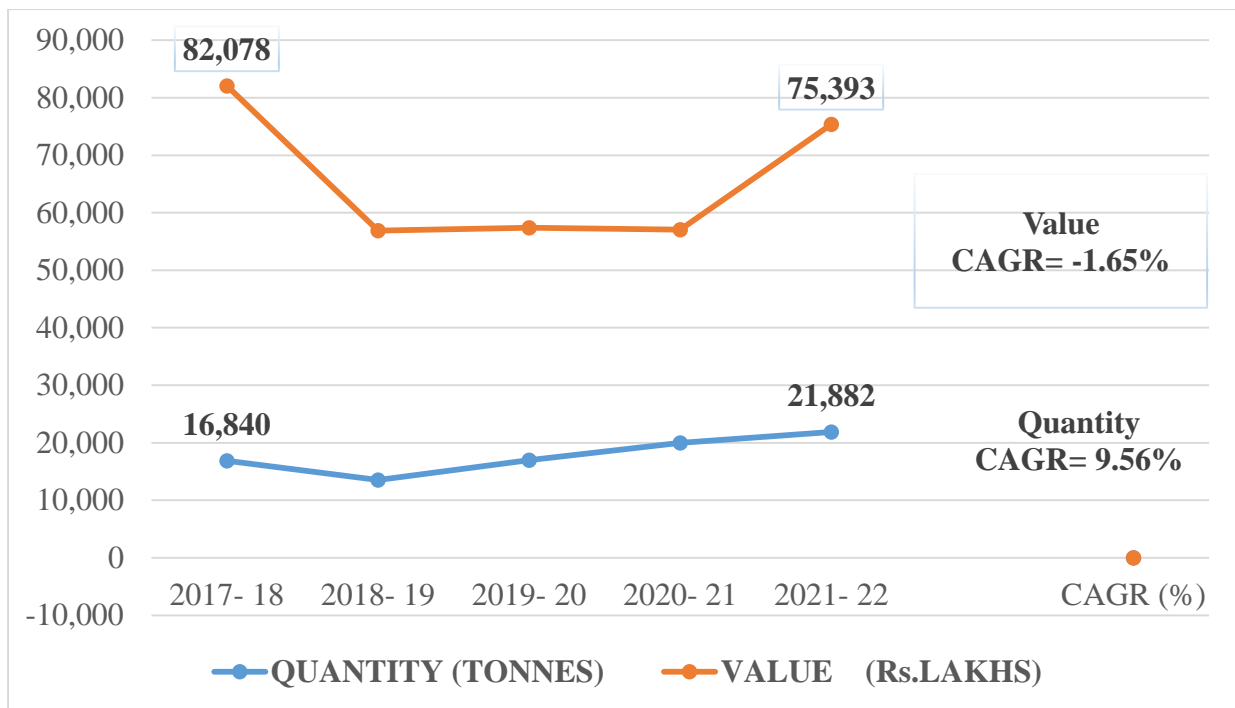
<b>SR. NO</b>	<b>YEAR</b>	<b>QUANTITY (TONNES)</b>	<b>VALUE (RS. LAKHS)</b>
1	2017- 18	16,840	82,078
2	2018- 19	13,540	56,868
3	2019- 20	17,000	57,371
4	2020- 21	19,980	57,069
5	2021- 22	21,882	75,393
	<b>CV (%)</b>	<b>17.96</b>	<b>18.38</b>
	<b>CAGR (%)</b>	<b>9.56*</b>	<b>-1.65*</b>

Source: State Agri/Horti Departments/DASD Kozhikkode

Note: \*indicates significant at 1% level

**Figure 3**

**Growth in Export of pepper from India**



**EXPORT DESTINATIONS**

India exports most of its pepper to United States, United Kingdom and Canada. India is the largest exporter of Black pepper in the World. The top 3 exporters of Black pepper are India with 73,359 shipments followed by Vietnam with 65,308 and Sri Lanka at the 3rd spot with 10,050 shipments.

**GLOBAL TRADE**

The global black pepper export volume in the first quarter of 2020 was about 45,000 tons, down 18% over the same period last year. Compared with the previous quarter, it decreased by 15%. The decline in global pepper exports has a large impact on its major exporting countries. Vietnam's exports in the first quarter of 2020 were 3,500 tons, a decrease of 21% over the same period last year. Compared with the previous quarter, it decreased by 31%. India's exports in the first quarter of 2020 were around 8,000 tons, down 16% over the same period last year. Compared with the previous quarter, it decreased by 26%.

**Table 3.5.1(b)**

**Major export destinations for Indian Pepper (2021- 22)**

<b>RANK</b>	<b>COUNTRY</b>	<b>QUANTITY (Tons)</b>	<b>VALUE (Lakhs)</b>	<b>% TO TOTAL VALUE</b>
1	U.S.A	8382.33	27784.77	36.85
2	SWEDEN	1205.93	5199.66	6.90
3	U.K	1255.33	5167.75	6.85
4	GERMANY	924.99	5024.46	6.66
5	CANADA	1241.88	4324.59	5.74
6	NETHERLANDS	798.28	3590.36	4.76
7	U.A.E	1125.23	3126.99	4.15
8	JAPAN	411.61	2399.13	3.18
9	AUSTRALIA	577.49	2261.43	3.00
10	ITALY	497.98	1820.16	2.41
11	PHILLIPINES	460.17	1347.2	1.79
12	POLAND	484.28	1126.43	1.49
13	MALAYSIA	236.63	1086.36	1.44
14	SPAIN	570.6	839.16	1.11
15	TURKEY	238.03	780.59	1.04
16	CHINA	209.44	770.12	1.02
17	SOUTH AFRICA	188.16	729.81	0.97
18	FRANCE	82.26	614.38	0.81
19	VIETNAM(SOUTH)	67.94	568.24	0.75
20	BELGIUM	82.28	445.71	0.59
21	OTHER	2841.16	6385.83	8.47
	<b>INDIA (TOTAL)</b>	<b>21882</b>	<b>75393.13</b>	<b>100</b>

Source: DGC&S Kolkata/Exporters returns/DLE from customs upto 2019-20 and 2020-

21/2021-22 figure are taken from DGC&S/MoC only

### 3.6 AREA AND PRODUCTION: CARDAMOM (S)

The growth and instability in area and production of cardamom (s) in India during the year 2017- 18 to 2021- 22 is presented in Table 3.6(a) and Figure 4, it can be observed that:

The production of cardamom (s) has increased at a compound annual growth rate (CAGR) of 8.32% from 20650 tons in 2017- 18 to 23340 tons in 2020- 21.

Whereas the area under cardamom (s) has decreased from 69330 hectare in 2017- 18 to 69190 hectare in 2021- 22.

The estimated CAGR of area under cardamom (s) was negative which was estimated to be -0.03% whereas the estimated CAGR of production under cardamom (s) was positive with 8.32%.

**Table 3.6(a)**

#### **Growth and instability in area and production of Cardamom (s) in India**

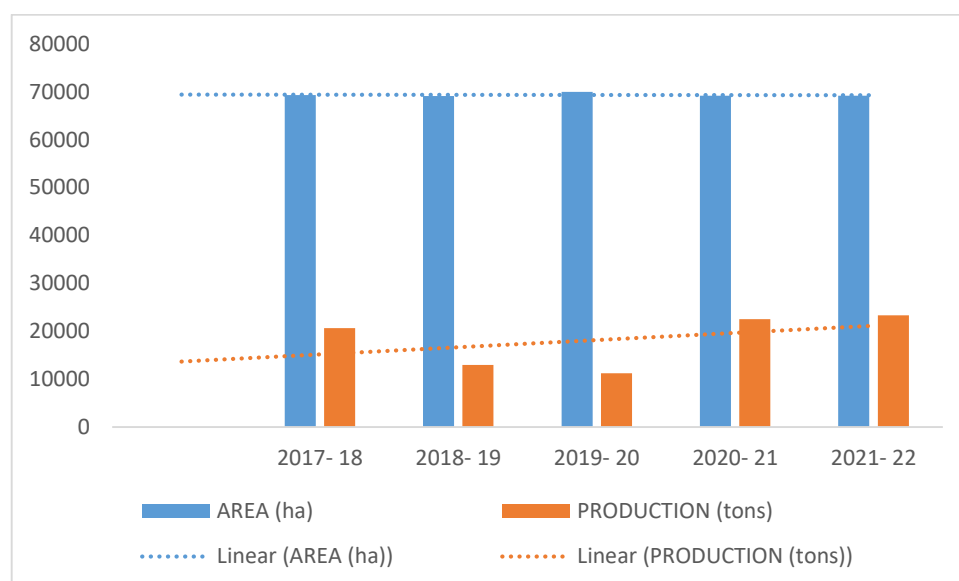
<b>SR. NO</b>	<b>YEAR</b>	<b>AREA (ha)</b>	<b>PRODUCTION (tons)</b>
1	2017- 18	69330	20650
2	2018- 19	69132	12940
3	2019- 20	69994	11235
4	2020- 21	69190	22520
5	2021- 22	69190	23340
	<b>CV (%)</b>	<b>0.52</b>	<b>31.10</b>
	<b>CAGR (%)</b>	<b>-0.03*</b>	<b>8.32*</b>

Source: State Agri/Horti Departments/DASD Kozhikkode

Note: \*indicates significant at 1% level

**Figure 4**

**Growth and instability in area and production of Cardamom (s) in India**



In India, small cardamom is mainly cultivated in Kerala, Karnataka and Tamil Nadu. India is a major producer, consumer and exporter of small cardamom. Indian Small Cardamom is famous in the world over decades for its quality, colour and standards. Cardamom is traded all around the world. Small cardamom is one of the most expensive spices in the world. It is popularly known as queen of spices.

The major pepper producing states in India (2021- 22) is presented in Table 3.6(b) and in Figure 5.

**Table 3.6(b)**

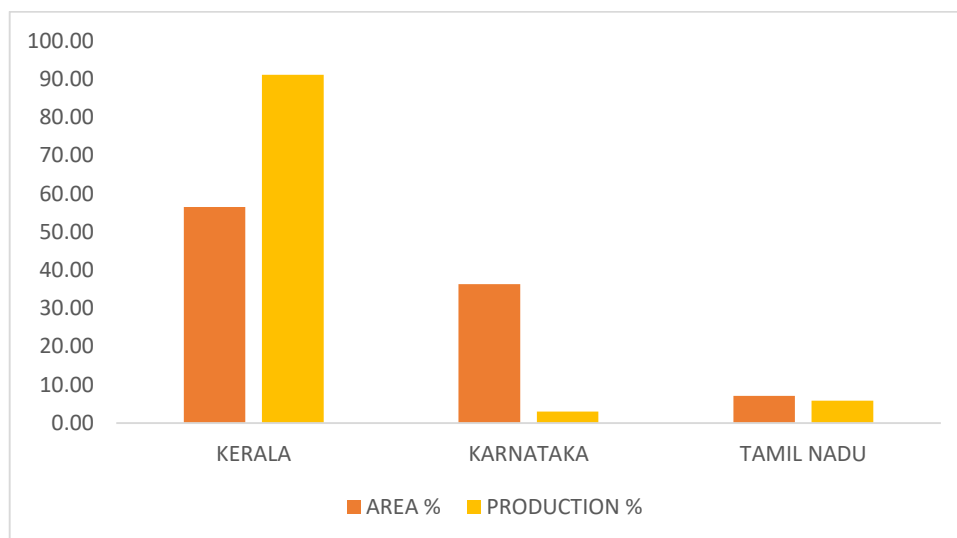
**Major Cardamom (s) producing states in India (2021- 22)**

SR. NO	STATE	AREA		PRODUCTION	
		ha	%	Tons	%
1	KERALA	39143	56.57	21270	91.13
2	KARNATAKA	25135	36.33	697	2.99
3	TAMIL NADU	4912	7.10	1373	5.88
	<b>TOTAL</b>	<b>69190</b>	<b>100</b>	<b>23340</b>	<b>100</b>

Source: State Agri/Horti Departments/DASD Kozhikkode

**Figure 5**

**Major Cardamom (s) producing states in India (2021- 22)**



From Table 3.6(b) and Figure 5, it can be observed that:

Kerala was leading in the production of cardamom (s). Annual production of cardamom in Kerala in 2021- 22 ranked 1<sup>st</sup>. The state accounts for 91.13% of cardamom produced in India, cultivated over 39143 hectares.

Annual production of cardamom (s) in Karnataka in 2021- 22 were 697 tons. The state accounts for 2.99% of cardamom (s) produced in India, cultivated over 25135 hectares.

Annual production of cardamom (s) in Tamil Nadu in 2021- 22 were 1373 tons. The state accounts for 5.88% of cardamom (s) produced in India, cultivated over 4912 hectares.



### 3.6.1 EXPORT OF CARDAMOM (S)

India is a major producer, consumer and exporter of small cardamom. Indian Small Cardamom is famous in the world over decades for its quality, colour and standards. Cardamom is traded all around the world. There are almost 125 countries and territories, which actively import Cardamom from India. The combined value of total export is 29.99 USD million.

Growth and instability in export of cardamom (s) from India during the year 2017- 18 to 2021- 22 is presented in Table 3.6.1(a) and Figure 6, it can be observed that:

India exported 10572 tonnes of small cardamom during the year 2021- 22. Looking to the trends, the export quantity of small cardamom increased at a compound annual growth rate (CAGR) of 22.93% from 5680 tonnes in 2017- 18 to 10572 tonnes in 2021- 22.

The overall export value of cardamom (s) had a significant growth 31.79% of CAGR from 60908 lakhs in 2017- 18 to 137570 lakhs in 2021- 22.

The CAGR of quantity exported of pepper was positive which was estimated to be 22.93%.

**Table 3.6.1(a)**

**Growth and instability in export of Cardamom (S) from India during the year  
2017- 18 to 2021- 22**

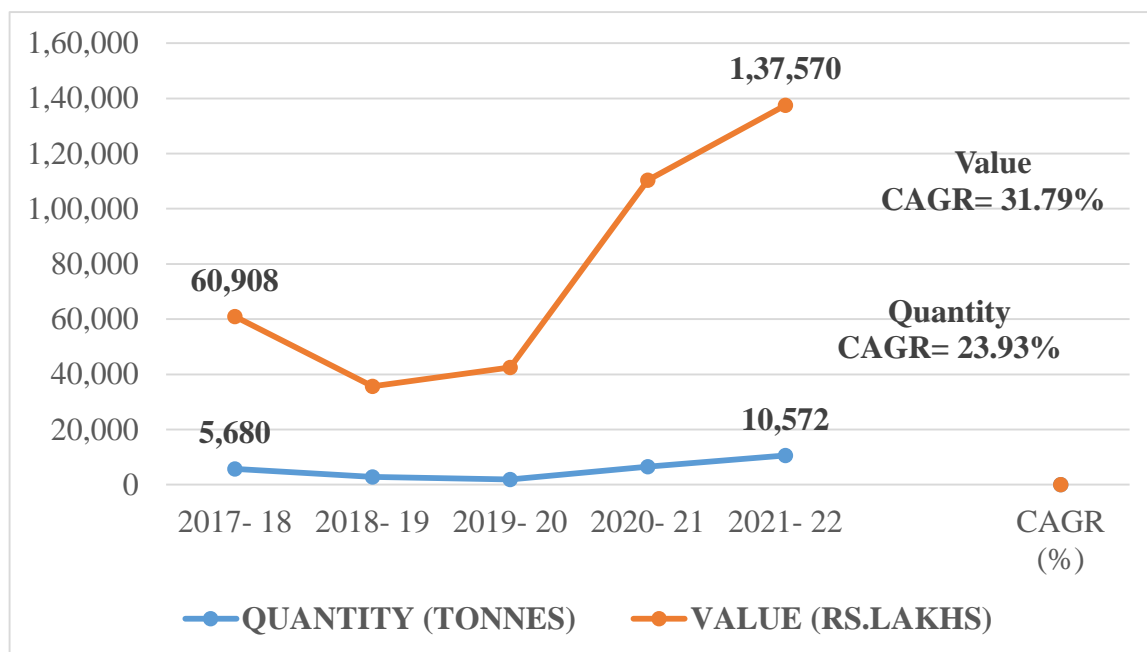
SR. NO	YEAR	QUANTITY (TONNES)	VALUE (RS. LAKHS)
1	2017- 18	5,680	60,908
2	2018- 19	2,850	35,625
3	2019- 20	1,850	42,537
4	2020- 21	6,486	1,10,347
5	2021- 22	10,572	1,37,570
	<b>CV (%)</b>	<b>62.51</b>	<b>57.56</b>
	<b>CAGR (%)</b>	<b>22.93*</b>	<b>31.79*</b>

Source: State Agri/Horti Departments/DASD Kozhikkode

Note: \*indicates significant at 1% level

**Figure 6**

**Growth in Export of Cardamom (s) from India**



**EXPORT DESTINATIONS**

India exports most of its Cardamom to United States, United Arab Emirates and Saudi Arabia. India is the largest exporter of Cardamom in the World.

The top 3 exporters of Cardamom are India with 73,281 shipments followed by Guatemala with 5,147 and Germany at the 3rd spot with 3,947 shipments.

**GLOBAL TRADE**

During the year 2020-2021 (Apr-Nov), Indian exporters nearly exported 29.99 USD Million of Cardamom to the top global markets. India's Cardamom export volume to United Arab Emirates is around 288689, which holds the top position with the share of 19.81% of the total quantity. With the quantity of 170350, Bangladesh takes runner up position in the global importers of Cardamom. The total quantity of Cardamom export to the top 5 countries is 864729.

**Table 3.6.1(b)**

**Major export destinations for Indian Cardamom (s) (2021- 22)**

<b>RANK</b>	<b>COUNTRY</b>	<b>QUANTITY (Tons)</b>	<b>VALUE (Lakhs)</b>	<b>% TO TOTAL VALUE</b>
1	U.A.E	3584.48	48954.64	35.59
2	SAUDI ARABIA	1452.33	20457.75	14.87
3	BANGLADESH	1268.05	12224.04	8.89
4	U.S.A	481.88	8603.33	6.25
5	KUWAIT	599.11	7913.91	5.75
6	JORDAN	312.95	3560.4	2.59
7	CANADA	198.1	3014.11	2.19
8	AFGHANISTAN	203.15	2343.55	1.70
9	U.K	168.21	2343.24	1.70
10	MALAYSIA	166.53	2084.71	1.52
11	IRAQ	145.22	1974.05	1.43
12	AUSTRALIA	125.64	1708.95	1.24
13	IRAN	130.49	1670.24	1.21
14	OMAN	125.56	1562.36	1.14
15	SINGAPORE	137.91	1435.55	1.04
16	QATAR	88.19	1359.83	0.99
17	JAPAN	18.39	333.32	0.24
18	OTHER	1365.89	16026.46	11.65
	<b>INDIA (TOTAL)</b>	<b>10572.08</b>	<b>137570.44</b>	<b>100</b>

Source: DGCI&S Kolkata/Exporters returns/DLE from customs upto 2019-20 and

2020- 21/2021-22 figure are taken from DGC&S/MoC only

### 3.7 AREA AND PRODUCTION: NUTMEG & MACE

The growth and instability in area and production of nutmeg & mace in India during the year 2017- 18 to 2021- 22 is presented in Table 3.7(a) and Figure 7, it can be observed that:

The production of nutmeg & mace has increased at a compound annual growth rate (CAGR) of 0.52% from 15110 tons in 2017- 18 to 15384 tons in 2020- 21.

The area under nutmeg & mace has also increased at a CAGR of 0.82% from 23470 hectare in 2017- 18 to 24080 hectare in 2021- 22.

The estimated CAGR of area and production under nutmeg & mace was positive which was estimated to be 0.82% and 0.52%.

**Table 3.7(a)**

#### **Growth and instability in area and production of Nutmeg & Mace in India**

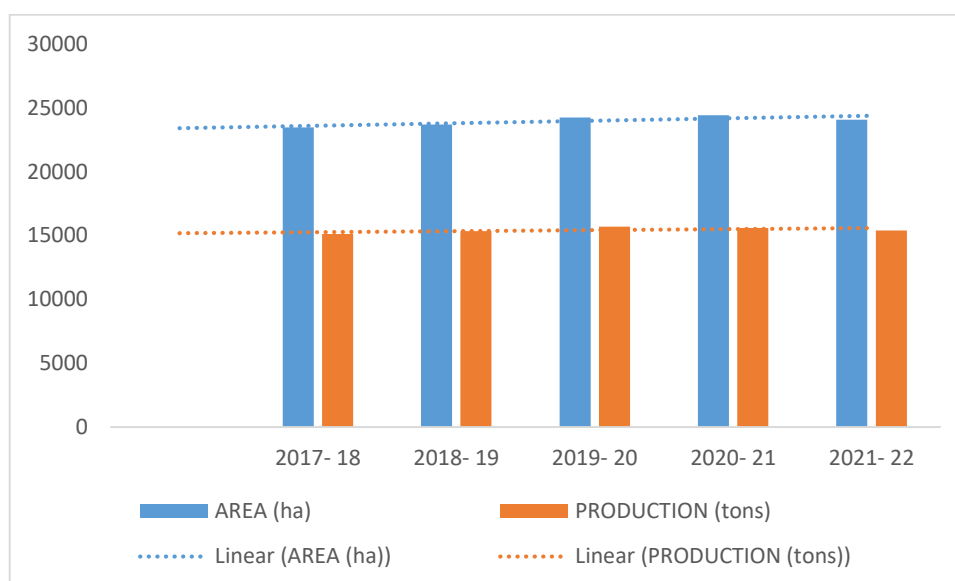
<b>SR. NO</b>	<b>YEAR</b>	<b>AREA (ha)</b>	<b>PRODUCTION (tons)</b>
1	2017- 18	23470	15110
2	2018- 19	23703	15353
3	2019- 20	24252	15688
4	2020- 21	24431	15595
5	2021- 22	24080	15384
	<b>CV (%)</b>	<b>1.65</b>	<b>1.46</b>
	<b>CAGR (%)</b>	<b>0.82*</b>	<b>0.52*</b>

Source: State Agri/Horti Departments/DASD Kozhikkode

Note: \*indicates significant at 1% level

**Figure 7**

**Growth and instability in area and production of Nutmeg & Mace in India**



In India, nutmeg & mace is mainly cultivated in Thrissur, Ernakulam and Kottayam districts of Kerala, Nutmeg of commerce is a seed of *Myristica fragrans* and mace is the aril that surrounds the seed. Nutmeg is an evergreen tree belonging to the family Myrticaceae. India is a Second Large Nutmeg Producer in the world. Annual Production of Nutmeg is 16,000 Metric Tons in India, with Kerala accounting for more than 90%. The Nutmeg Growing States in India are Kerala, Karnataka and Andaman & Nicobar and also in some parts of Kanyakumari and Tirunelveli districts in Tamil Nadu. In India Nutmeg is mainly cultivated in the Thrissur, Ernakulam and Kottayam districts of Kerala. The climatic conditions of Kerala suit nutmeg. The major nutmeg & mace producing states in India (2021- 22) is presented in Table 3.7(b) and in Figure 8.

**Table 3.7 (b)**

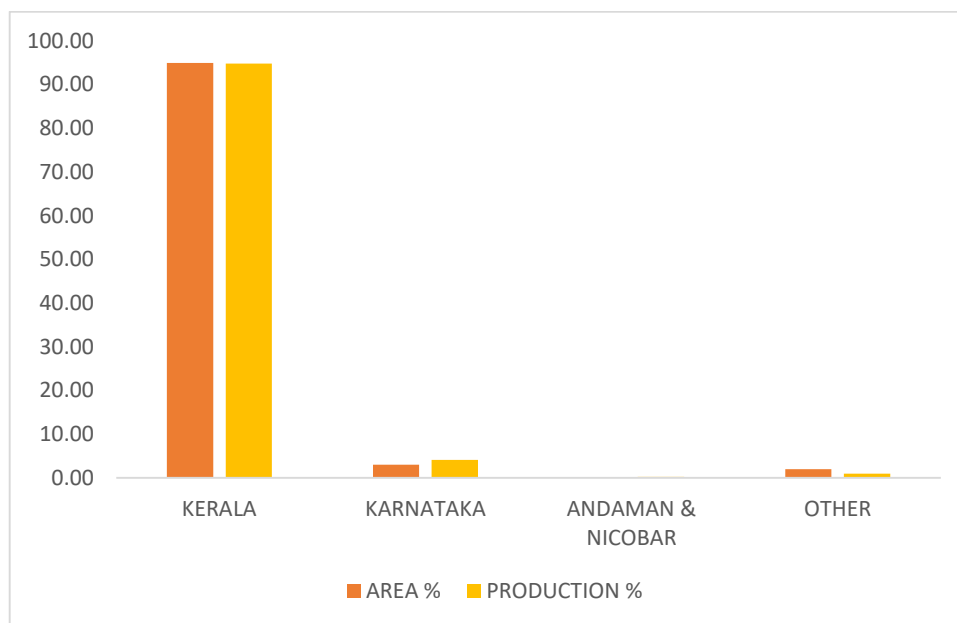
**Major Nutmeg & Mace producing states in India (2021- 22)**

SR. NO	STATE	AREA		PRODUCTION	
		ha	%	Tons	%
1	KERALA	22875	95.00	14589	94.83
2	KARNATAKA	713	2.96	625	4.06
3	ANDAMAN & NICOBAR	27	0.11	29	0.19
4	OTHER	465	1.93	141	0.92
	<b>TOTAL</b>	<b>24080</b>	<b>100</b>	<b>15384</b>	<b>100</b>

Source: State Agri/Horti Departments/DASD Kozhikkode

**Figure 8**

**Major Nutmeg & Mace producing states in India (2021- 22)**



From Table 3.7 (b) and Figure 8, it can be observed that:

Kerala was leading in the production of nutmeg & mace. Annual production of nutmeg & mace in Kerala in 2021- 22 ranked 1<sup>st</sup>. The state accounts for 94.83% of nutmeg & mace produced in India, cultivated over 22875 hectares.

Annual production of nutmeg & mace in Karnataka in 2021- 22 were 625 tons. The state accounts for 4.06% of nutmeg & mace produced in India, cultivated over 713 hectares.

Annual production of nutmeg & mace in Andaman & Nicobar in 2021- 22 were 29 tons. The state accounts for 0.19% of nutmeg & mace produced in India, cultivated over 27 hectares.

### 3.7.1 EXPORT OF NUTMEG & MACE

Nutmeg is traded all around the world. Over 50% of the world's export of nutmeg and mace is from Indonesia. Grenada is the second largest exporter of nutmeg and mace in the world.

The export analysis of nutmeg & mace shows that there are almost 90 countries and territories, which actively import Nutmeg from India. The combined value of total export is 6.14 USD million.

Growth and instability in export of nutmeg & mace from India during the year 2017- 18 to 2021- 22 is presented in Table 3.7.1(a) and Figure 9, it can be observed that:

India exported 3,596 tonnes of nutmeg & mace during the year 2021- 22. Looking to the trends, the export quantity of nutmeg & mace decreased at a compound annual growth rate (CAGR) of -6.81% from 5500 tonnes in 2017- 2018 to 3596 tonnes in 2021- 22.

The overall export value of nutmeg & mace had a positive CAGR of 2.17%, from 22094 lakhs in 2017- 18 it decreased to 13280 lakhs in 2019- 20 but then the export value increased to 21799 lakhs in 2021- 22.

The CAGR of quantity exported of nutmeg & mace was negative which was estimated to be -6.81%.

**Table 3.7.1 (a)**

**Growth and instability in export of Nutmeg & Mace from India during the year  
2017- 18 to 2021- 22**

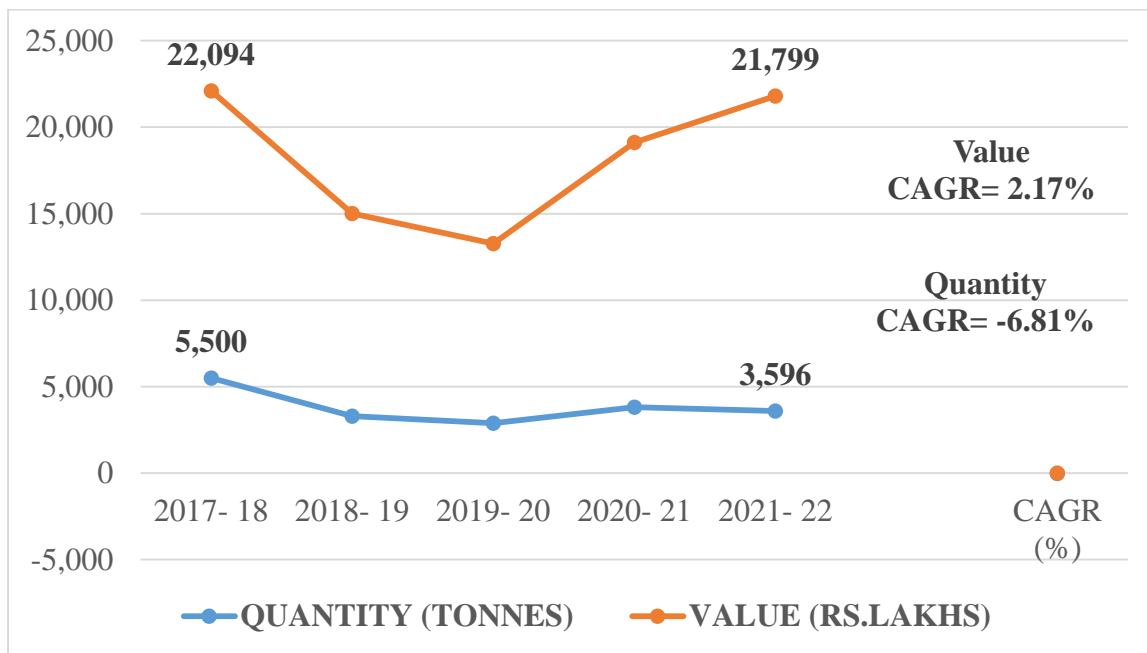
<b>SR. NO</b>	<b>YEAR</b>	<b>QUANTITY (TONNES)</b>	<b>VALUE (RS.LAKHS)</b>
1	2017- 18	5,500	22,094
2	2018- 19	3,300	15,015
3	2019- 20	2,900	13,280
4	2020- 21	3,812	19,115
5	2021- 22	3,596	21,799
	<b>CV (%)</b>	<b>26.13</b>	<b>21.78</b>
	<b>CAGR (%)</b>	<b>-6.81*</b>	<b>2.17*</b>

Source: State Agri/Horti Departments/DASD Kozhikkode

Note: \*indicates significant at 1% level

**Figure 9**

### Growth in Export of nutmeg & mace from India



### EXPORT DESTINATIONS

In 2021, India exported \$27M in Nutmeg, making it the 2nd largest exporter of Nutmeg in the world. At the same year, Nutmeg was the 1325th most exported product in India. The main destination of Nutmeg exports from India are: United Arab Emirates (\$9.32M), United States (\$2.6M), Nigeria (\$1.99M), Togo (\$1.17M), and Israel (\$1.05M).

The fastest growing export markets for Nutmeg of India between 2020 and 2021 were United States (\$991k), United Arab Emirates (\$787k), and Togo (\$777k).

### GLOBAL TRADE

In 2021, Nutmeg were one of the most traded product in the word, with a total trade of \$262M. Between 2020 and 2021 the exports of Nutmeg grew by 23.1%, from \$213M to \$262M. Trade in Nutmeg represent 0.000012% of total world trade. In 2021 the top exporters of nutmeg were Indonesia (\$134M), India (\$27M), Vietnam (\$17.5M), Netherlands (\$13.7M), and Sri Lanka (\$13.7M).



**Table 3.7.1(b)**

**Major export destinations for Indian Nutmeg & Mace (2021- 22)**

<b>RANK</b>	<b>COUNTRY</b>	<b>QUANTITY (Tons)</b>	<b>VALUE (Lakhs)</b>	<b>% TO TOTAL VALUE</b>
1	U.A.E	1343.16	7629.8	35.00
2	U.S.A	309	2576.81	11.82
3	NIGERIA	337.45	1677.71	7.70
4	ISRAEL	129.7	908.48	4.17
5	AUSTRALIA	69.53	549.54	2.52
6	BRAZIL	86.58	542.99	2.49
7	EGYPT	74.2	506.06	2.32
8	VIETNAM(SOUTH)	65.26	396.82	1.82
9	CANADA	43.23	384.29	1.76
10	SOUTH AFRICA	75.21	348.8	1.60
11	DOMINICAN REOUBLIC	54	284.03	1.30
12	OTHER	1008.9	5993.37	27.49
	<b>INDIA (TOTAL)</b>	<b>3596.22</b>	<b>21798.7</b>	<b>100</b>

Source: DGCI&S Kolkata/Exporters returns/DLE from customs upto 2019-20 and

2020- 21/2021-22 figure are taken from DGC&S/MoC only

### 3.8 AREA AND PRODUCTION: CHILLI

The growth and instability in area and production of chilli in India during the year 2017- 18 to 2021- 22 is presented in Table 3.8(a) and Figure 10, it can be observed that:

The production of chilli has increased at a compound annual growth rate (CAGR) of 4.78% from 1718200 tons in 2017- 18 to 1866108 tons in 2020- 21.

The area under chilli has also increased at a CAGR of 0.38% from 678880 hectare in 2017- 18 to 694313 hectare in 2021- 22.

The estimated CAGR of area and production under chilly were positive which was estimated to be 0.38% and 4.78%.

**Table 3.8(a)**

#### **Growth and instability in area and production of Chilly in India**

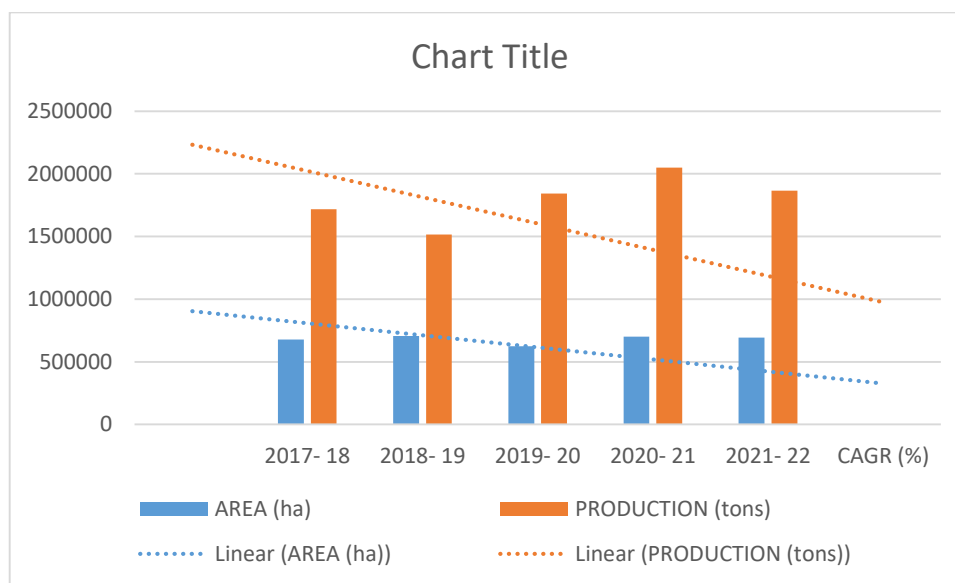
<b>SR. NO</b>	<b>YEAR</b>	<b>AREA (ha)</b>	<b>PRODUCTION (tons)</b>
1	2017- 18	678880	1718200
2	2018- 19	706710	1515560
3	2019- 20	623446	1841800
4	2020- 21	702047	2049213
5	2021- 22	694313	1866108
	<b>CV (%)</b>	<b>4.98</b>	<b>10.98</b>
	<b>CAGR (%)</b>	<b>0.38*</b>	<b>4.78*</b>

Source: State Agri/Horti Departments/DASD Kozhikkode

Note: \*indicates significant at 1% level

**Figure 10**

**Growth and instability in area and production of Chilly in India**



The important chilli growing states of India are Andhra Pradesh, Maharashtra, Karnataka, Orissa and Tamil Nadu forming more than 70 percent acreage of India. The per unit production is high in the States Andhra Pradesh, Tamil Nadu where the chilli crop is raised under irrigated condition than in Maharashtra and Karnataka, where the crop is raised mainly under rainfed situations.

Andhra Pradesh ranks first both in area, production and productivity in India. Chilli is cultivated in all districts of Andhra Pradesh, but the most important districts are Guntur, Prakasam, Krishna, Khammam, Warangal and Karimnagar. During last two decades, area under chilli in Dharwad district varies from 31 to 82 thousand hectares. The area under chilli crop in Dharwad district mainly depends upon price of chilli in the previous year and weather conditions.

The major chilli producing states in India (2021- 22) is presented in Table 3.6(b) and in Figure 11.

**Table 3.8(b)**

**Major Chilly producing states in India (2021- 22)**

SR. NO	STATE	AREA		PRODUCTION	
		ha	%	Tons	%
1	ANDHRA PRADESH	160000	23.04	700000	37.51
2	TELANGANA	85000	12.24	433122	23.21
3	MADHYA PRADHESH	118295	17.04	303069	16.24
4	KARNATAKA	100000	14.40	184533	9.89
5	ORISSA	71699	10.33	69257	3.71
6	TAMIL NADU	53518	7.71	24117	1.29
7	GUJARAT	11990	1.73	22359	1.20
8	ASSAM	20691	2.98	19648	0.99
9	MAHARASHTRA	5648	0.81	18546	0.99
10	PUNJAB	8265	1.19	15882	0.85
11	RAJASTHAN	7598	1.09	12915	0.69
12	UTTAR PRADHESH	13619	1.96	11885	0.64
13	WEST BENGAL	4507	0.65	7781	0.42
14	NAGALAND	1377	0.20	1748	0.09
15	OTHER	32106	4.62	41246	2.21
	<b>TOTAL</b>	<b>694313</b>	<b>100</b>	<b>1866108</b>	<b>100</b>

Source: State Agri/Horti Departments/DASD Kozhikkode

From Table 3.8(b) and Figure 11, it can be observed that:

Andhra Pradesh was leading in the production of chilli. Annual production of chilli in Andhra Pradesh in 2021- 22 ranked 1<sup>st</sup>. The state accounts for 37.51% of chilli produced in India, cultivated over 160000 hectares.

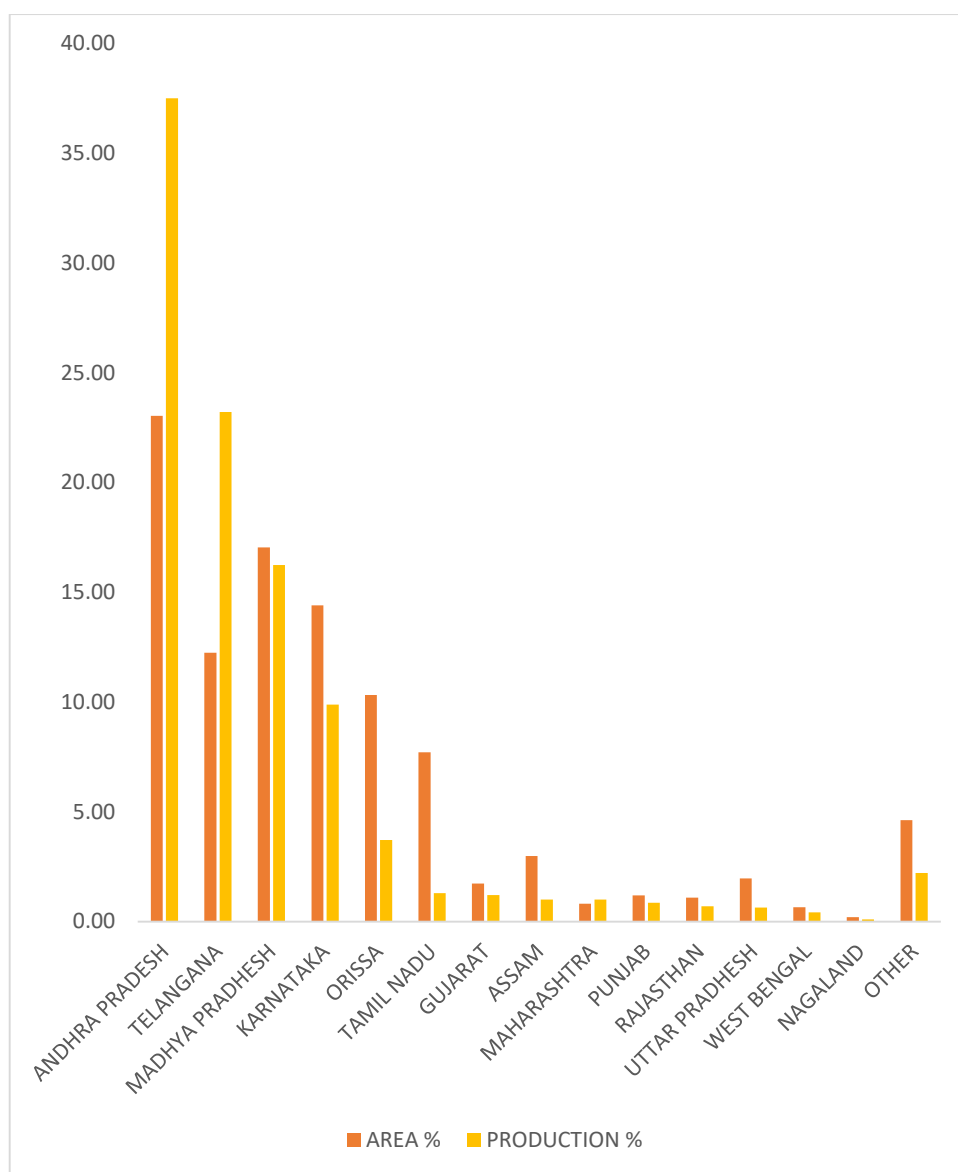
Annual production of chilli in Telangana in 2021- 22 were 433122 tons. The state accounts for 23.21% of chilli produced in India, cultivated over 85000 hectares.

Annual production of chilli in Madhya Pradesh in 2021- 22 were 303069 tons. The state accounts for 16.24% of chilli produced in India, cultivated over 118295 hectares.

Other states that produced chilli were Karnataka, Orissa, Tamil Nadu, Gujarat, Assam, Maharashtra, Punjab, Rajasthan, Uttar Pradesh, West Bengal and Nagaland.

**Figure 11**

**Major Chilly producing states in India (2021- 22)**



### 3.8.1 EXPORT OF CHILLI

Chilli is traded all around the world. Chilli is exported to over 144 countries. In the year 2020-2021 (Apr-Nov), India has exported Chilli worth of 78.81 USD million.

India is also one of the top producers and exporters of dried red chillies in the world.

According to data released by Spices Board India, chilli exports from India in 2020-21 stood at 402922 tonnes valued at Rs 5784 crore. India exports most of its dried chilli to Sri Lanka, China and Vietnam. It is the largest exporter of dried chilli in the World.

Growth and instability in export of chilli from India during the year 2017- 18 to 2021- 22 is presented in Table 3.8.1(a) and Figure 12, it can be observed that:

India exported 557168 tonnes of chilli during the year 2021- 22. Looking to the trends, the export quantity of chilli increased at a compound annual growth rate (CAGR) of 8.13% from 443900 tonnes in 2017- 2018 to 557168 tonnes in 2021- 22.

The overall export value of chilli increased at a CAGR of 21.3% from 425633 lakhs in 2017- 18 to 858189 lakhs in 2021- 22.

The CAGR of quantity exported of chilli was positive which was estimated to be 8.13%.

**Table 3.8.1(a)**

#### **Growth and instability in export of Chilly from India during the year**

**2017- 18 to 2021- 22**

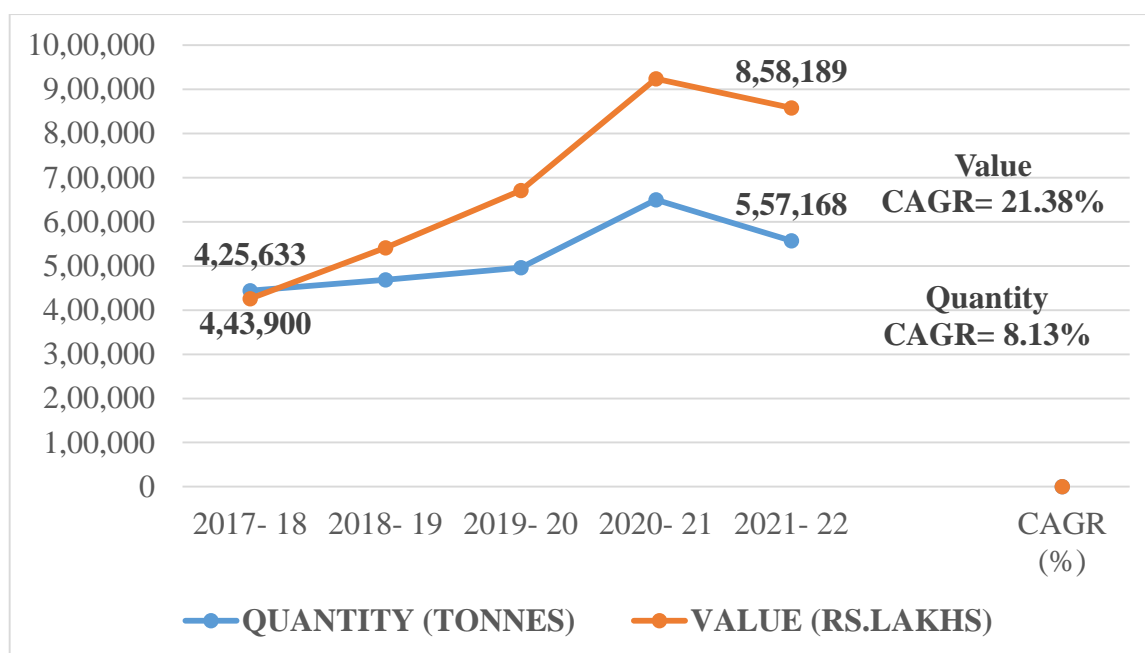
<b>SR. NO</b>	<b>YEAR</b>	<b>QUANTITY (TONNES)</b>	<b>VALUE (RS.LAKHS)</b>
1	2017- 18	4,43,900	4,25,633
2	2018- 19	4,68,500	5,41,118
3	2019- 20	4,96,000	6,71,040
4	2020- 21	6,49,815	9,24,127
5	2021- 22	5,57,168	8,58,189
	<b>CV (%)</b>	<b>15.77</b>	<b>30.61</b>
	<b>CAGR (%)</b>	<b>8.13*</b>	<b>21.38*</b>

Source: State Agri/Horti Departments/DASD Kozhikkode

Note: \*indicates significant at 1% level

**Figure 12**

**Growth in Export of chilli from India**



**EXPORT DESTINATIONS**

India is the largest exporter of dried chilli in the world which has more than % of the global market. Chilli exports from India have shown a significant increase for the year 2020 due to its demand for spice mixtures and seasonings, sauces, ready-to-eat foods, meat products.

Chilli is exported to over 144 countries from India. India exported most of its dried chilli to Sri Lanka, China and Vietnam. In the year 2020-2021 (Apr-Nov), India has exported Chilli worth of 78.81 USD million. The spice exports from India were valued at USD 730 million in 2017-18.

**GLOBAL TRADE**

In the Global Export of chilli, export shipments stood from World at 56.7K, exported by 1764 world exporters to 3511 buyers. The top 3 exporters of chilli are India with 50508 shipments followed by China with 2335 and Vietnam at the 3rd spot with 1684 shipments. The global market for chilli is forecasted to grow at a CAGR of 4-5% during the period 2021-2022.

**Table 3.8.1(b)**

**Major export destinations for Indian Chilly (2021- 22)**

<b>RANK</b>	<b>COUNTRY</b>	<b>QUANTITY (Tons)</b>	<b>VALUE (Lakhs)</b>	<b>% TO TOTAL VALUE</b>
1	CHINA	191391.48	313175.95	36.49
2	U.S.A	45336.26	94259.54	10.98
3	THAILAND	43838.61	79534.96	9.27
4	SRI LANKA	50457.73	69257.39	8.07
5	INDONESIA	37809.52	55959.63	6.52
6	BANGLADESH	49272.99	49777.61	5.80
7	MALAYSIA	22215.61	44011.31	5.13
8	U.A.E	44742.45	39883.77	4.65
9	U.K	6008.29	13492.2	1.57
10	NEPAL	11620.99	10400.67	1.21
11	SAUDI ARABIA	4611.55	6925.05	0.81
12	QATAR	6580.24	6758.27	0.79
13	VIETNAM(SOUTH)	3471.66	5546.47	0.65
14	AUSTRALIA	1883.51	4776.47	0.56
15	OTHER	37927.26	64429.3	7.51
	<b>INDIA (TOTAL)</b>	<b>557168.15</b>	<b>858188.59</b>	<b>100</b>

Source: DGCI&S Kolkata/Exporters returns/DLE from customs upto 2019-20 and

2020- 21/2021-22 figure are taken from DGC&S/MoC only



### 3.9 AREA AND PRODUCTION: TURMERIC

The growth and instability in area and production of turmeric in India during the year 2017-18 to 2021-22 is presented in Table 3.9(a) and Figure 13, it can be observed that:

The production of turmeric has increased at a compound annual growth rate (CAGR) of 10.80% from 863460 tons in 2017-18 to 1330932 tons in 2021-22.

The area under turmeric has also increased at a CAGR of 9.80% from 231637 hectare in 2017-18 to 349642 hectare in 2021-22.

The estimated CAGR of area and production under turmeric were positive which was estimated to be 9.80% and 10.80%.

**Table 3.9(a)**

#### **Growth and instability in area and production of Turmeric in India**

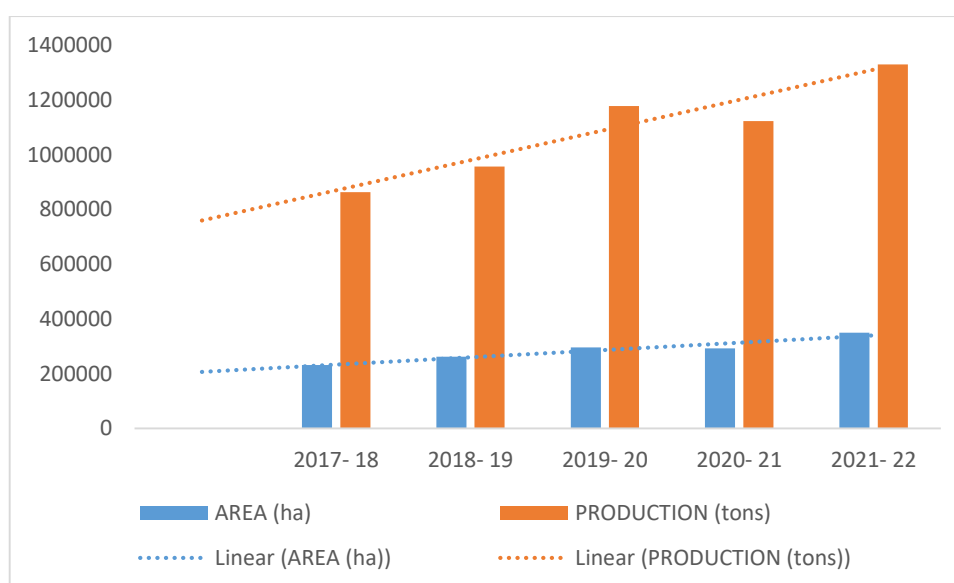
<b>SR. NO</b>	<b>YEAR</b>	<b>AREA (ha)</b>	<b>PRODUCTION (tons)</b>
1	2017-18	231637	863460
2	2018-19	261922	957130
3	2019-20	296181	1178750
4	2020-21	292876	1123857
5	2021-22	349642	1330932
	<b>CV (%)</b>	<b>15.35</b>	<b>16.91</b>
	<b>CAGR (%)</b>	<b>9.80*</b>	<b>10.80*</b>

Source: State Agri/Horti Departments/DASD Kozhikkode

Note: \*indicates significant at 1% level

**Figure 13**

**Growth and instability in area and production of Turmeric in India**



India is the largest producer, consumer and exporter of turmeric in the world. Indian turmeric is considered to be the best in the world market because of its high curcumin content.

Major turmeric producing states in India are the southern states of Telangana, Andhra Pradesh, Tamil Nadu and Karnataka, the eastern states of Orissa and West Bengal, and the western state of Maharashtra.

The highest acreage contribution of Turmeric is from Telangana followed by Odisha, Karnataka, Tamil Nadu, Andhra Pradesh and West Bengal. The major trading hubs of turmeric in India are mainly Nizamabad (Telangana), Duggirala (Andhra Pradesh), Sangli (Maharashtra) and Salem, Erode, Dharmapuri and Coimbatore (Tamil Nadu).

The major chilli producing states in India (2021- 22) is presented in Table 3.9(b) and in Figure 14.

**Table 3.9(b)**

**Major Turmeric producing states in India (2021- 22)**

SR. NO	STATE	AREA		PRODUCTION	
		ha	%	Tons	%
1	MAHARASHTRA	102625	29.35	367985	27.65
2	TELANGANA	50058	14.32	330257	24.81
3	KARNATAKA	21308	6.09	130970	9.84
4	TAMIL NADU	24221	6.93	104402	7.84
5	ANDHRA PRADHESH	25592	7.32	74687	5.61
6	MADHYA PRADHESH	19507	5.58	69886	5.25
7	ORISSA	31680	9.06	68826	5.17
8	WEST BENGAL	18795	5.38	50834	3.82
9	MIZORAM	7670	2.19	29572	2.22
10	ASSAM	16991	4.86	20885	1.57
11	GUJARAT	4281	1.22	16834	1.26
12	HARYANA	2520	0.72	7560	0.57
13	OTHER	24394	6.98	58234	4.38
	<b>TOTAL</b>	<b>349642</b>	<b>100</b>	<b>1330932</b>	<b>100</b>

Source: State Agri/Horti Departments/DASD Kozhikkode

From Table 3.9(b) and Figure 14, it can be observed that:

Maharashtra was leading in the production of turmeric. Annual production of turmeric in Maharashtra in 2021- 22 ranked 1<sup>st</sup>. The state accounts for 27.65% of turmeric produced in India, cultivated over 102625 hectares.

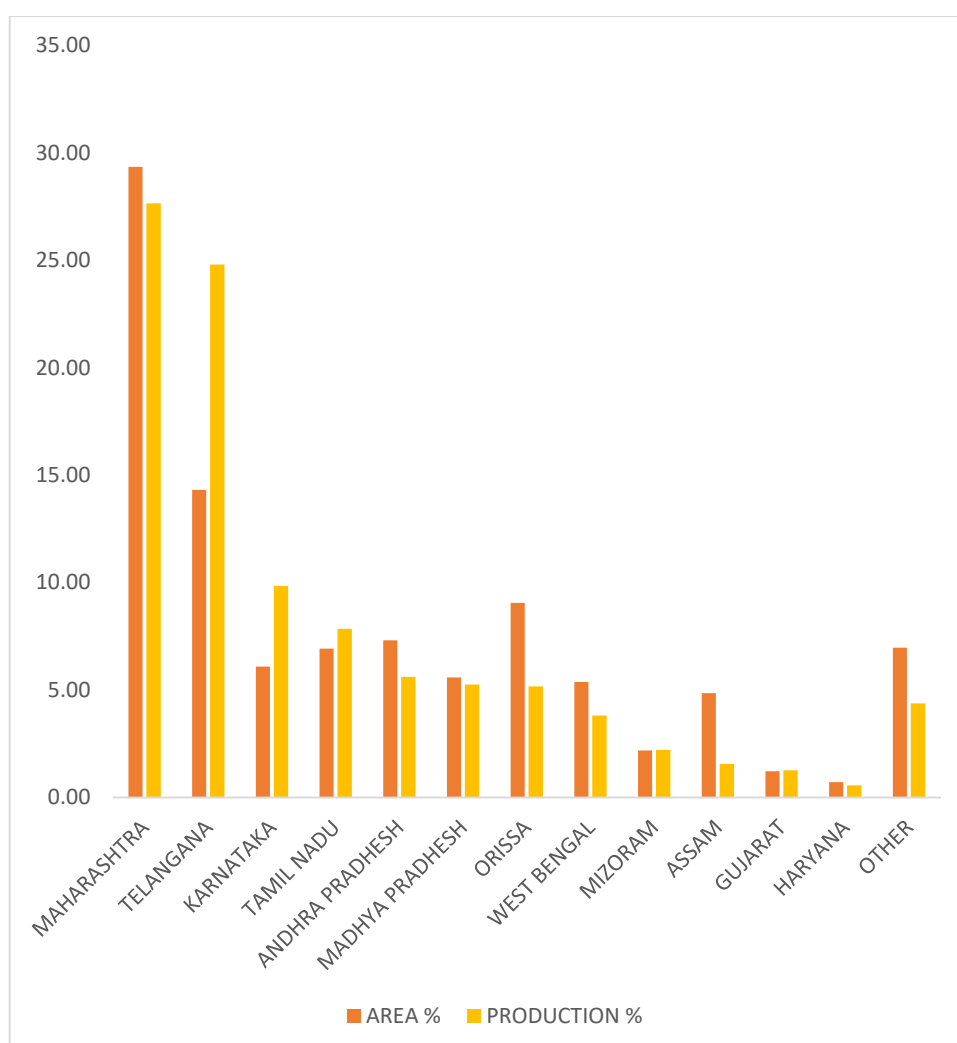
Annual production of turmeric in Telangana in 2021- 22 were 330257 tons. The state accounts for 24.81% of turmeric produced in India, cultivated over 50058 hectares.

Annual production of turmeric in Madhya Karnataka in 2021- 22 were 130970 tons. The state accounts for 9.84% of chilli produced in India, cultivated over 21308 hectares.

Other states that produced turmeric were Tamil Nadu, Andhra Pradesh, Madhya Pradesh, Orissa, West Bengal, Mizoram, Assam, Gujarat and Haryana.

**Figure 14**

**Major Turmeric producing states in India (2021- 22)**



### 3.9.1 EXPORT OF TURMERIC

Turmeric known as ‘Golden Spice of India’. It is an important commercial spice crop grown in India and known as “Indian saffron”.

India is the largest producer, consumer and exporter of Turmeric in the world. Indian Turmeric is considered to be the best quality due to its high curcumin content and thus it is increasingly used in medicinal and cosmetic applications.

Major Turmeric producing countries include Bangladesh, Pakistan, Sri Lanka, Taiwan and China. Major Turmeric exporting countries are India, Thailand, Taiwan, and several other Southeast Asian, Central and Latin American countries.

Growth and instability in export of turmeric from India during the year 2017- 18 to 2021- 22 is presented in Table 3.9.1(a) and Figure 15, it can be observed that:

India exported 15314 tonnes of turmeric during the year 2021- 22. Looking to the trends, the export quantity of turmeric increased at a compound annual growth rate (CAGR) of 10.86% from 107300 tonnes in 2017- 2018 to 153154 tonnes in 2021- 22.

The overall export value of turmeric increased at a CAGR of 13.7% from 103568 lakhs in 2017- 18 to 178434 lakhs in 2021- 22.

The CAGR of quantity exported of turmeric was positive which was estimated to be 10.86%.

**Table 3.9.1(a)**

**Growth and instability in export of Turmeric from India during the year  
2017- 18 to 2021- 22**

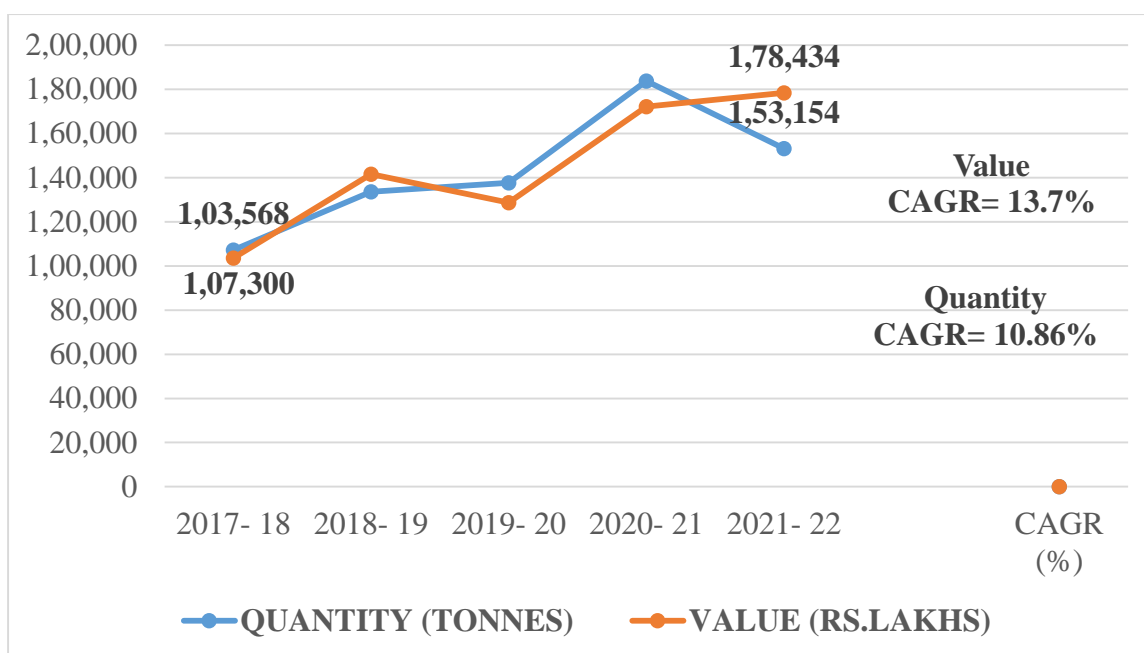
<b>SR. NO</b>	<b>YEAR</b>	<b>QUANTITY (TONNES)</b>	<b>VALUE (RS.LAKHS)</b>
1	2017- 18	1,07,300	1,03,568
2	2018- 19	1,33,600	1,41,616
3	2019- 20	1,37,650	1,28,691
4	2020- 21	1,83,868	1,72,265
5	2021- 22	1,53,154	1,78,434
	<b>CV (%)</b>	<b>19.65</b>	<b>21.42</b>
	<b>CAGR (%)</b>	<b>10.86*</b>	<b>13.7*</b>

Source: State Agri/Horti Departments/DASD Kozhikkode

Note: \*indicates significant at 1% level

**Figure 15**

**Growth in Export of turmeric from India**



**EXPORT DESTINATIONS**

India accounts for about 80 percent of world turmeric production and 60 percent of world exports. The major turmeric importing countries include Japan, Sri Lanka, Iran, UAE, US, UK and Ethiopia. India exports most of its Indian turmeric to Iran, United States and United Arab Emirates. India is the largest exporter of Indian turmeric in the World.

**GLOBAL TRADE**

In the Global Export of turmeric, Indian turmeric export shipments from India stood at 8.3K, exported by 548 Indian Exporters to 1,628 Buyers. In 2021, Turmeric (curcuma) were the world's most traded product, with a total trade of \$358M. Between 2020 and 2021 the exports of Turmeric (curcuma) grew by 0.73%, from \$356M to \$358M. Trade in Turmeric (curcuma) represent 0.000017% of total world trade.

**Table 3.9.1(b)**

**Major export destinations for Indian Turmeric (2021- 22)**

<b>RANK</b>	<b>COUNTRY</b>	<b>QUANTITY (Tons)</b>	<b>VALUE (Lakhs)</b>	<b>% TO TOTAL VALUE</b>
1	U.S.A	8624.43	38599.75	21.63
2	BANGLADESH	25256.46	20209.12	11.33
3	U.A.E	22505.88	18507.2	10.37
4	MALAYSIA	8058.89	8452.12	4.74
5	MOROCCO	9505.43	8054.31	4.51
6	GERMANY	4486.86	7383.26	4.14
7	JAPAN	3588.43	5770.91	3.23
8	U.K	4013.29	4626.03	2.59
9	NETHERLANDS	3245.37	4014.76	2.25
10	IRAN	4787.7	4010.61	2.25
11	SAUDI ARABIA	4145.25	3760.47	2.11
12	IRAQ	4293.65	3224.72	1.81
13	SOUTH AFRICA	2902.84	3184.91	1.78
14	TUNISIA	4004.46	2810.59	1.58
15	INDONESIA	2359.41	2712.72	1.52
16	NEPAL	2993.33	2688.04	1.51
17	LIBYA	2432.66	2086.72	1.17
18	BRAZIL	2292.63	2043.93	1.15
19	AUSTRALIA	940.38	2033.19	1.14
20	EGYPT	2334.6	1981.29	1.11
21	SPAIN	1759.82	1896.91	1.06
22	ALGERIA	2062.31	1647.5	0.92
23	CANADA	1151.47	1614.93	0.91
24	FRANCE	1249.31	1578.73	0.88
25	KOREA(SOUTH)	716.52	1381.28	0.77
26	RUSSIA	1526.75	1287.52	0.72
27	OTHER	21916.33	22872.14	12.82
	<b>INDIA (TOTAL)</b>	<b>153154.46</b>	<b>178433.66</b>	<b>100</b>

Source: DGCI&S Kolkata/Exporters returns/DLE from customs upto 2019-20 and

2020- 21/2021-22 figure are taken from DGC&S/MoC only

### 3.10 EXPORT OF TOTAL SPICES FROM INDIA (2002- 03 TO 2021- 22)

**Table 3.10**

**Export of total spices from India (2002- 03 to 2021- 22)**

<b>EXPORT OF TOTAL SPICES FROM INDIA</b>			
<b>Year</b>	<b>Quantity (Tonnes)</b>	<b>X (Time)</b>	<b>Y (Log Quantity)</b>
<b>2002-03</b>	<b>264107</b>	<b>1</b>	12.4841096
<b>2003-04</b>	<b>254382</b>	<b>2</b>	12.44659235
<b>2004-05</b>	<b>348524</b>	<b>3</b>	12.76146237
<b>2005-06</b>	<b>350363</b>	<b>4</b>	12.76672504
<b>2006-07</b>	<b>393692</b>	<b>5</b>	12.88332416
<b>2007-08</b>	<b>444250</b>	<b>6</b>	13.00414275
<b>2008-09</b>	<b>470520</b>	<b>7</b>	13.06159375
<b>2009-10</b>	<b>502750</b>	<b>8</b>	13.12784831
<b>2010-11</b>	<b>525750</b>	<b>9</b>	13.17258109
<b>2011-12</b>	<b>575270</b>	<b>10</b>	13.26259477
<b>2012-13</b>	<b>726613</b>	<b>11</b>	13.49614929
<b>2013-14</b>	<b>817250</b>	<b>12</b>	13.61370032
<b>2014-15</b>	<b>893920</b>	<b>13</b>	13.70337156
<b>2015-16</b>	<b>843255</b>	<b>14</b>	13.64502468
<b>2016-17</b>	<b>947790</b>	<b>15</b>	13.76188824
<b>2017-18</b>	<b>1028060</b>	<b>16</b>	13.84318409
<b>2018-19</b>	<b>1100250</b>	<b>17</b>	13.91104798
<b>2019-20</b>	<b>1208400</b>	<b>18</b>	14.00480773
<b>2020-21</b>	<b>1758985</b>	<b>19</b>	14.3802475
<b>2021-22</b>	<b>1531154</b>	<b>20</b>	14.24153251
<b>LOGEST</b>	<b>1.099110209</b>		
<b>CAGR (%)</b>	<b>9.9</b>		

Source: DGCI&S Kolkata/ Shipping Bills/Exporters' Returns/DLE from Customs/moc



**Figure 16**

**Export of total spices from India (2002- 03 to 2021- 22)**

**SUMMARY OUTPUT**

<i>Regression Statistics</i>	
Multiple R	0.9898893
R Square	0.9798807
Adjusted R Square	0.978763
Standard Error	0.0823057
Observations	20

**ANOVA**

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	5.938735799	5.9387358	876.665025	1.011E-16
Residual	18	0.121936249	0.0067742		
Total	19	6.060672047			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	12.386336	0.038233609	323.96462	2.3776E-35	12.30601059	12.466662	12.3060106	12.4666622
X (Time)	0.094501	0.00319168	29.60853	1.011E-16	0.08779548	0.1012064	0.08779548	0.10120642
Antilog(X)	1.099110							
CAGR (%)	9.9							

Total export of spices from India during (2002- 03 to 2021- 22) is presented in Table 3.8, it can be observed that:

There is a significant growth in export of spices from India during 2002- 03 to 2021- 22.

The annual compound growth rate of Indian spices export was accounted to 9.9 percent per annum at 5 percent and 1 percent significant level.

Looking to the trends, the export quantity increased at a compound annual growth rate (CAGR) of 9.9% from 264107 tonnes in 2002- 03 to 1531154 tonnes in 2021- 22.

It can be interpreted as over the period the quantity export of spices is increased at 9.9%.

### **3.11 CONCLUSION**

This chapter deals with the overall analysis of secondary data. The analysis were conducted for the export of major spices of India (2017 -18 to 2021- 22) and total export of spices from India (2002- 03 to 2021- 22).

The study showed a significant growth in export of spices from India during the study period. Export of major spices from India under study- namely, Pepper, Cardamom (s), Nutmeg & Mace, Chilli and Turmeric occupy a prominent place in the total basket of spices export of the country and plays a significant role in our national economy.

There has been ever increasing demand of spices from importing countries. The production and export of these spices has shown significant rise during last decade. The chapter thus helps in understanding the growth and outlook of export of Major spices from India. Overall observations will help us to understand and answer the objectives of the study.

**CHAPTER 4**

**FINDINGS,**

**SUGGESTIONS AND**

**CONCLUSION**

## 4.1 INTRODUCTION

“For the only way in which a durable peace can be created is by world-wide restoration of economic activity and international trade”- James Forrestal

From the previous chapters it is understood that India has the largest domestic market for spices in the world. The COVID-19 pandemic opened up new opportunities for Indian spices, fuelling a new wave of appreciation for Ayurveda and Indian cuisine, the demand for convenience, and the desire of people to experiment with different flavors. Currently, India produces 75 of the 109 varieties of spices listed by the International Organization for Standardization, of which 80% is for captive usage while only 15-20% get exported.

India, the land of spices and a prominent destination during the ancient spice trade, exported spices worth US\$ 4.1 billion in FY 2021-22. The country was even the top-most exporter of chilli, cumin, and turmeric in 2021. With the global market for spices and seasonings projected to reach US\$ 24.2 billion in 2028, it is imperative that this trajectory is maintained. The spice industry has played a significant role in the last seven decades. The major spices export of India under study namely, Pepper, Cardamom (s), Nutmeg & Mace, Chilly and Turmeric shows how constant marketing efforts and export strategies are needed to help India promote its spices on the international front. The study on growth and instability in area and production of spices and spices export provide an indication that India has tremendous scope for increasing production as well as export of spices in the future.

## 4.2 MAJOR FINDINGS

The major findings from the study focusing on the growth and prospects of export of spices from India are stated below. The findings are divided into three subsections on the basis of the objectives of the study.

### 4.2.1 PRODUCTION AND EXPORT OF MAJOR SPICES

#### ➤ **Pepper**

- India is the largest producer of pepper in the world contributing about 75% in production followed by Vietnam, Indonesia and Srilanka.
- India produced 0.6 lakh tons of pepper from 2.88 lakh hectare of land during the year 2021- 22.
- The area and production of pepper in India increased by 25.37 and 1.76 percent annually during the year 2017- 18 to 2021-22, respectively.

- Karnataka and Kerala emerged as the major pepper producing states in the country contributing about 50 and 33.33 percent, respectively.
- India exported 21882 tonnes of pepper during 2021- 22.
- The export of pepper from India reported 9.56% growth per annum in quantity and -1.65% in terms of value during the year 2017- 18 to 2021- 22.
- Vietnam emerged as the largest export destination for Indian pepper with a share of 32.07% followed by USA (8.43%), Bangladesh (7.86%) and UAE (6.60%).

➤ **Cardamom (s)**

- India is the 3<sup>rd</sup> largest producer of small cardamom in the world contributing about 30000 tonnes in production whereas Guatemala (3629 tonnes) and Indonesia (34385 tonnes).
- India produced 0.23 lakh tons of cardamom (s) from 0.69 lakh hectare of land during the year 2021- 22.
- The area of small cardamom decreased by -0.03 percent and production of small cardamom in India increased by 8.32 percent annually during the year 2017- 18 to 2021-22, respectively.
- Kerala and Karnataka emerged as the major cardamom producing states in the country contributing about 91.13 and 2.99 percent, respectively.
- India exported 10572 tonnes of cardamom (s) during 2021- 22.
- The export of small cardamom from India reported 22.93% growth per annum in quantity and 31.79% in terms of value during the year 2017- 18 to 2021- 22.
- UAE emerged as the largest export destination for Indian cardamom with a share of 35.59% followed by Saudi Arabia (14.87%), Bangladesh (8.89%) and USA (6.25%).

### ➤ **Nutmeg & Mace**

- India is a fine producer of nutmeg & mace in the world, Indonesia is the largest producer of nutmeg & mace.
- India produced 0.15 lakh tons of nutmeg & mace from 0.24 lakh hectare of land during the year 2021- 22.
- The area and production of nutmeg & mace in India increased by 0.52 and 0.82 percent annually during the year 2017- 18 to 2021-22, respectively.
- Kerala and Karnataka emerged as the major nutmeg & mace producing states in the country contributing about 94.83 and 4.06 percent, respectively.
- India exported 3596 tonnes of nutmeg & mace during 2021- 22.
- The export of nutmeg & mace from India reported -6.81% decrease in quantity and 2.17% increase in terms of value during the year 2017- 18 to 2021- 22.
- UAE emerged as the largest export destination for Indian nutmeg & mace with a share of 35% followed by USA (11.82%), Nigeria (7.70%) and Israel (4.17%).

### ➤ **Chilli**

- India is the largest producer of chilly in the world contributing about 43% in production followed by China, Ethiopia, Thailand, Pakistan and Bangladesh.
- India produced 18.66 lakh tons of chilly from 6.94 lakh hectare of land during the year 2021- 22.
- The area and production of chilly in India increased by 0.38 and 4.78 percent annually during the year 2017- 18 to 2021-22, respectively.
- Andhra Pradesh and Telangana emerged as the major chilly producing states in the country contributing about 37.51 and 23.21 percent, respectively.
- India exported 557168 tonnes of chilly during 2021- 22.
- The export of chilly from India reported 8.13% growth per annum in quantity and 21.38% in terms of value during the year 2017- 18 to 2021- 22.

- China emerged as the largest export destination for Indian chilly with a share of 36.49% followed by USA (10.98%), Thailand (9.27%) and Srilanka (8.07%).

➤ **Turmeric**

- India is one of the major producers of turmeric in the world contributing about 80% in production followed by China (8%), Myanmar (4%), Nigeria (3%) and Bangladesh (3%).

- India produced 13.13 lakh tons of turmeric from 3.50 lakh hectare of land during the year 2021- 22.

- The area and production of turmeric in India increased by 9.80 and 10.80 percent annually during the year 2017- 18 to 2021-22, respectively.

- Maharashtra and Telangana emerged as the major turmeric producing states in the country contributing about 27.65 and 24.81 percent, respectively.

- India exported 153154 tonnes of turmeric during 2021- 22.

- The export of turmeric from India reported 10.86% growth per annum in quantity and 13.7% in terms of value during the year 2017- 18 to 2021- 22.

- USA emerged as the largest export destination for Indian turmeric with a share of 21.63% followed by Bangladesh (11.33%), UAE (10.37%) and Malaysia (4.74%).

#### **4.2.2 GROWTH AND INSTABILITY OF AREA (HECTARE) FOR MAJOR SPICES**

As far as major spices considered in area wise, it shows the declining stage in Hectare. There was slight positive growth in Turmeric and Pepper. Remaining spices like Cardamom (Small), nutmeg & mace and Chilli shows the negative growth. Pepper and Cardamom (Small) cultivation is shrinking steadily due to poor weather condition and flood in Kerala because Kerala is the major cultivator of Pepper and Cardamom (Small). However the instability in area decreased throughout the period of study.

### 4.2.3 GROWTH AND INSTABILITY OF PRODUCTION (TONNES) FOR MAJOR SPICES

The result shows that growth rate of pepper production increased from 1718200 tons in 2017- 18 to 1866108 tons in 2021- 22. The analysis shows clearly that production has rapidly increased. In the period under study, it has steadily increased with some minor fluctuations. It was due to drought and untimely rains in major pepper growing states.

Turmeric and other spices like Cardamom (S), Nutmeg & Mace and Chilli had positive growth rate in production. Overall Instability in production is decreased throughout the period of study

### 4.2.4 EXPORT OF MAJOR SPICES FROM INDIA IN QUANTITY (TONNES)

It shows that the Pepper export from India has declined in terms of quantity when compared to previous years due to the competition in the global market and Vietnam stands top in pepper production during the period of study. India needs to boost its competitiveness in the face of the fierce challenge from exporters like Vietnam, Indonesia and Brazil.

Export of cardamom from India is significantly earning over decades. The export of cardamom from India has steadily increased with some fluctuations during the selected period. Among selected spices the largest quantity exported from India was found to be Chilli. The export of Chilli was increased even though the decrease in area. It might be due to enhancement in the production and productivity. The export of Turmeric increased and stands 1st position in the world. Whereas Nutmeg & mace decreased in its export quantity at -6.81% of CAGR. Instability in export performance has decreased in certain period when compare to previous years and that helps the India to export the spices in a better way.

### 4.2.5 EXPORT OF MAJOR SPICES FROM INDIA IN VALUE (RS LAKHS)

It shows the export of major spices from India in values during 2017- 18 to 2021 – 22. As far as CAGR & Instability is concern, the market value for all the selected spices shows positive growth. Chilli shows the highest export value which increases from 425633 in 2017- 18 to 858189 in 2021- 22. Other five spices like Pepper, Cardamom (s), Chilli, Turmeric shows the fluctuations in terms of production and productivity. Instability has increased in global export in terms of export values due to domestic and international dollar values.



#### 4.2.6 EXPORT PERFORMANCE OF INDIAN SPICES

The exports of Indian spices and the products of spices surged a volume of 1531154 tonnes in 2021- 22, supporting their strong interest in global business sectors in spite of firm rivalry.

During the year of 2002- 03, the country has exported a total of 264107 Tonnes of spices and its products. This means, over the period the quantity export of spices increased at 9.9% of compound annual growth rate (CAGR). The spices export during 2021- 22 surpassed the fixed objective in volume enlisting an expansion of 9.9 or 10 percent in volume.

The total number of spices and spice products exports stood at 215 of every 2021- 22 as against 219 in the previous years.

Chilli, mint products, cumin, spice oils and oleoresins and turmeric kept on being the major contributors in the spices crate contributing 80% of the total profit. Though the Indian spices are exported to 185 countries, China 24%, US 16%, Bangladesh 6%, Thailand 5%, UAE 6%, Sri Lanka, Malaysia, UK, Indonesia, and Germany are the major takers, adding to more than 70% of the fare income.

Chilli kept on being the most demanded spice in 2021- 22 with fares of 557168 tonnes enrolling an expansion of 8.13% growth per annum in quantity and 21.38% in terms of value percent.

#### 4.2.7 FINDINGS OF COMMODITY WISE EXPORT OF SIGNIFICANT SPICES FROM INDIA

- Pepper: The CAGR records growth of 9.56% in terms of export quantity and -1.65% in terms of export value.
- Cardamom (Small): CAGR records growth of 22.93% in terms of quantity and 31.79% in terms of value.
- Nutmeg & Mace: CAGR of -6.81% in terms of quantity and 2.17% in terms of value.
- Chilli continued to be the most exported and demand spice in the global market. The CAGR of 8.13% in terms of export quantity and 21.38% in terms of export value.
- Turmeric: The CAGR records growth of 10.86% in terms of export quantity and 13.7% in terms of export value.

### 4.3 SUGGESTIONS

- The government and the Ministry of Agriculture have to announce new agricultural schemes to boost agriculture and improve productivity.
- To create demand in the global market, quality of products should be cultivated by the farmers.
- Farm incentives should be provided to the farmers through agriculture ministry scheme to improve the production and productivity.
- Immediate funds to be raised to the farmers during the disasters and loss of production.
- Exporters can be rewarded for their better performances and can be motivated.
- The Latest technology packaging methods to be adopted for fast packaging of spice products to avoid damages.
- Provide proper warehouse to stock the spices based on the climatic condition.
- The government itself can procure spice products from the farmers and export, so that the farmers can get good price and the supply of goods can be maintained properly in the country for exports.
- Government should reduce the paper procedure for the exporters in order to increase the exports

## 4.4 CONCLUSION

India exports spices to more than 150 countries. The major share of India is about 44% in output and 36% in the international spice trade. World's major spice producers are India (1.6 million tonnes/annum), China (99,000 tonnes/annum), Bangladesh (48,000 tonnes/annum), Pakistan (45,000 tonnes/annum) and Nepal (15,000 tonnes/annum).

Increased spice value-addition is a top priority for the Indian government. The global market and corporate exposure to COVID-19 has impacted the supply chain and slowed down the world economies. The decrease in exports at the end of March 2020 was a major factor in India's international trade's negative growth year 2019–20. Yet, despite the COVID Epidemic, India's export of spices has continued to rise in 2021–2022 and has now surpassed the 3 billion US dollar threshold for the first time in the industry's history.

The estimated export during 2021- 22 has been 1531154 tonnes valued Rs 305764.32 crores as compared to the export during 2002- 02 which has been 264107 tonnes valued Rs 208671.02 crores. The spices export during 2021- 22 attained an all-time record in terms of both volume and value. Compared to last year.

It has shown an increase of 10% in rupee value and 9.9% in quantity. Still, it can possibly perform better, under such conditions the Government should plan strong policies and improvement of methodologies for spices sent out for exports.

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