

## **CULTIVATION PRACTICES OF BLACK PEPPER IN INDIA – A REVIEW**

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**Abstract**—Nature has blessed mankind with so many spices, out of which man has utilized some for his benefit to make his life enjoyable. Among them pepper has made our life happier. Black pepper is popularly known as the King of Spices and mainly cultivated in the southern parts of India. India is a major producer, consumer and exporter of black pepper. The production of pepper aiming at international market will be more prone to the movements in world trade scenario. It needs some changes which will ultimately affect the pepper economy of India. Therefore, the liberalization policies adopted by the nation surely have its impact for the pepper economy of India. Hence, the study theoretically analyzes the cultivation practices of Black Pepper in India. Secondary data has been used for the study which includes reports from Spices Board of India, Indian Agricultural Statistics and other national and international journals.

**Keywords**—Black Pepper, Mono-Cropping, Pepper Cultivation, Spices, White Pepper.

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### **INTRODUCTION**

Nature has blessed mankind with so many spices, out of which man has utilized some for his benefit to make his life enjoyable. Among them pepper has made our life happier. Though it is required in small quantities, it has manifold properties and beneficial uses. Black pepper known as the 'King of Spices' has remained the most precious and valuable form of spices in the world. It is also called as 'Black gold' due its durability and value. Black Pepper is the 3<sup>rd</sup> most added ingredient in food among the all range of spices. The production of pepper aiming at international market will be more prone to the movements in world trade scenario. It needs some changes which will ultimately affect the pepper economy of India. Therefore, the liberalization policies adopted by the nation two decade ago surely have its importance and impact for the pepper economy of India. Hence the study theoretically analyzes the cultivation practices of black pepper in India.

### **REVIEW OF LITERATURE**

According to Ashish Bhatt & Jency Valasan (2016), India produces a wide variety of spices including cardamoms, chilies, black pepper, mustard, coriander. The demand of Indian spices is high in the global market due to their rich aroma, texture, and taste. The major importers of Indian spices are the US, China, Vietnam, the UAE and Malaysia. The primary spices imported from India are pepper, chili, turmeric, coriander, cumin, and fennel.

Chakravorthy. R & Parvin Banu. I (2017) pointed out that, the export performance of pepper by India as one of the major producing countries increasing gradually because of the high consumption of pepper in food and other products like pharmaceutical, cosmetics etc. They also insisted that, out of the total exports of spices, pepper has a major share in quantity as well as in value. Further, Indian pepper is treated as a premium produce and hence premium price is charged for Indian pepper.

Hena .M (2016) concluded in her study that, if India able to increase the productivity by following mono-culture practice, using high yielding vines and proper fertilizer use etc, India would avail high quality pepper and need not depend on other countries and export could also be boosted. At the same time, our nation should concentrate on the quality aspect of pepper too as it the quality which determines the future of pepper products in the international market.

Regeena. S (2014) insisted through her study that, by ensuring planting of improved high yielding varieties like Panniyoor 1 to Panniyoor 8 depending on availability of sunlight, proper and scientific crop management, ensuring prophylactic

measures for pest and disease management, promoting good agricultural practices and a more regulated system of planting with standards of uniform height will be helpful in improving overall production and productivity of Proper.

Thangaselvabal. T, et al. (2008) pointed out that, the demand for black pepper and its products is getting increased year by year in the world market but the production is not up to the level. At present the productivity in India is very low due to non-adoption of good agricultural practices. They concluded in their study that, the increasing productivity and extending area to non-traditional regions are going to be the major thrust areas for the future and all these emerging positive developments provide strength to profitable pepper farming and to meet the challenges of global competition.

### OBJECTIVES OF THE STUDY

The study has the following objectives:

- To study the present status of world pepper industry.
- To understand the pepper cultivation practices in India.
- To study about the pepper cultivation in Kerala.

### SCOPE OF THE STUDY

The scope of the study is extended to understand the pepper cultivation as well as the cultivation practices of Black Pepper in India.

### RESEARCH METHODOLOGY

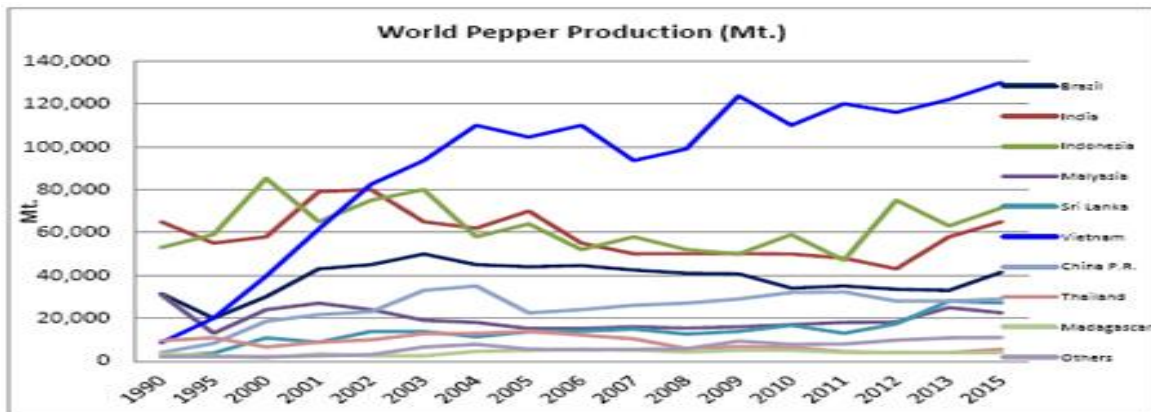
Being an explanatory research, it is based on the secondary data. The data collection is done through various sources like newspapers, reports from Spices Board of India, Indian Agricultural Statistics and articles from different journals. Considering the objectives, the descriptive research design is adopted for the study.

### WORLD PEPPER INDUSTRY – PRESENT STATUS

Pepper is the most popular and widely used spice in the world. It is used widely in the cooking art as well as in meat processing industry, world systems of medicine etc. Black pepper is the most traded spice in the world. Pepper is grown in about 26 countries and occupies 4, 67,708 hectares with productivity of 790.2 kg per hectare. At the International level, there are 3 leading producers such as India, Malaysia and Indonesia formed the activities of the Pepper Industry with a view to achieve maximum economic development. Among them, India is the leading producer of black pepper in the world with more than 40 per cent share of area contributes about 23 per cent of the world production.

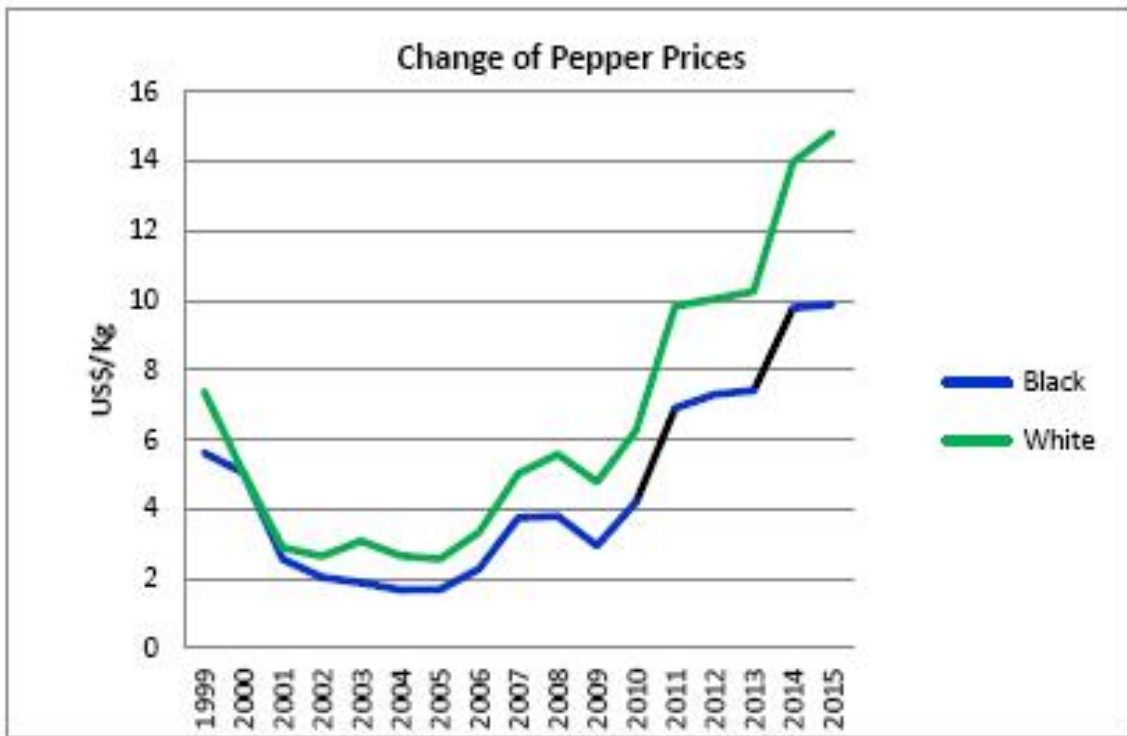
- Despite of the variable productions reported, India maintains its position as a steady supplier by maintaining the export volume (Fig.1).
- The drop of pepper prices with the onset of 21st century, ended with many speculations on future prices. By 2009, price of pepper increased beyond all the predictions on future prices and still no strong prediction on price stability for future is made based on systematic analysis (Fig. 2).
- Production and export volumes of pepper in Indonesia, India and Sri Lanka fluctuate considerably over the years but Malaysia show only minor changes (Fig.3).

**Figure1: Behaviour of the World Pepper Production During 1990 – 2015 (25 Years)**



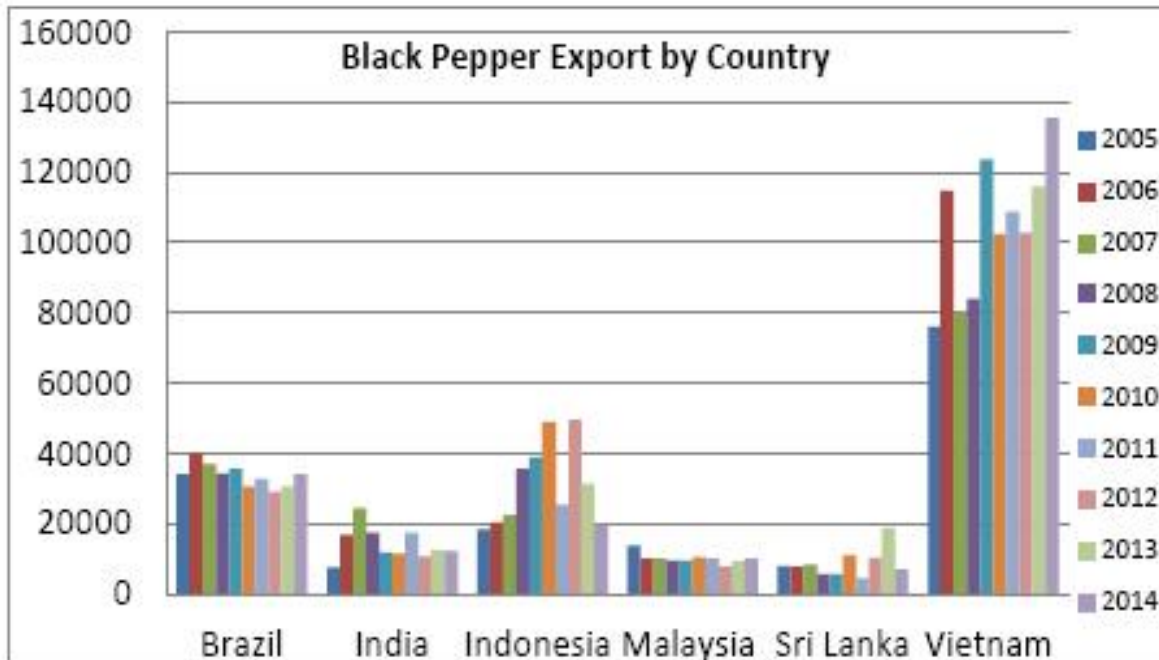
Source: International Pepper Community

Figure 2: World Pepper Price Trend During 1999 - 2015 (15 Years)



Source: International Pepper Community

Figure 3: Export of Black Pepper by Various Countries During 2005 - 2014



Source: International Pepper Community

## **BLACK PEPPER CULTIVATION IN INDIA**

India is the second largest pepper producer in the world. Black pepper the king of spices is one of the important spice commodities of commerce and trade in India since pre-historic period. It originated in the tropical evergreen forests of the Western Ghats of India. In India, pepper is mostly cultivated as a mixed crop and also in the farmstead gardens. In India, Kerala and Karnataka are the major pepper producing states. Kerala is the largest producer of pepper, accounting over 50 per cent of India's total output followed by Karnataka and Tamil Nadu. It is the major source of income and employment for rural households in the predominantly pepper growing states of India.

### **Climatic Requirements**

Being a crop of warm humid tropics, black pepper requires approximately 250 rainy days with a total annual rainfall of 2000 – 3000 mm for its energetic growth. The hot and humid climate of Western Ghats is ideal for the cultivation of black pepper and perhaps, this is the reason behind high productivity of black pepper plants in this region.

### **Soil Requirements**

Virgin soils are ideal for black pepper cultivation. Soil should be well-drained and rich in organic matter. Black pepper grows well on red, lateritic or alluvial soils that are rich in humus.

### **Commercial Varieties of Black Pepper**

**Panniyur 1:** Suited to all regions.

**Panniyur 2:** Shade-tolerant variety of black pepper.

**Panniyur 3:** Late-maturing variety of black pepper, suited to all pepper-growing regions.

**Panniyur 4:** Performs well under a variety of conditions.

**Panniyur 5:** Tolerant to nursery diseases and shade.

**Subhakara:** Suited to all pepper-growing regions.

**Sreekara:** Suited to all pepper-growing regions.

**Panchami:** Late-maturing, suited to all pepper-growing regions.

**Pournami:** Tolerant to root-knot nematode.

### **Cultivation Practices**

Black pepper can be cultivated either as a mono-crop or as a mixed crop. Being a climber, black pepper needs support for its growth and it is not an issue in a mixed cropping system as the growing vines can be trained on other crops like coconut, areca nut or jackfruit tree. But in a mono-cropping system, live standards should be raised before planting the cuttings in the main field.

### **Planting of Cuttings**

Ideal time for black pepper planting is at the onset of south-west monsoons.

### **Training and Pruning of Vines**

Training of vines on the support trees is highly recommended as it facilitates the energetic growth of the fruit-yielding branches.

### **Pruning of the Standards**

Pruning of the standards is normally done in March – April every year. Major purpose of this practice is to remove excessive growth of the live standards and to give them a proper shape.

### **Fertilizer Schedule**

An application of 140gN, 55g P<sub>2</sub>O<sub>5</sub> and 270g K<sub>2</sub>O/vine/year is optimum for major pepper growing tracts of southern India. NPK at 100:40:140 g/vine/year is recommended for Panniyur region, northern part of Kerala and similar agro-climatic conditions and NPK at 50:50:200g/vine/year is recommended for Kozhikode and similar agro-climatic regions.

### **Yield**

Black pepper starts yielding from third year onwards. Average pepper yield in India is 273kg/ha. Black pepper has an economic life of 20 years and after regular bearing for about 20 years, the vines start declining in yield.

### **Irrigation**

Frequent irrigation from November - December till the end of March is recommended and afterwards, irrigation must be withheld till monsoon break. This may increase pepper yield by about 50%.

### **Harvesting and Post-Harvest Management**

Pepper berries are ready for harvesting in 180 – 200 days of planting in the main field. Spikes are harvested when almost 90% of berries are mature. Then the mature berries are separated from spikes by threshing.

### **Major Products**

The major products are black pepper, white pepper, canned tender green pepper, bottled green pepper in brine, dehydrated green pepper, pepper oleoresin and pepper oil.

### **Black Pepper (Dried)**

Black pepper is produced by sun-drying the mature pepper berries for 3 – 5 days.

### **Heat Treatment of Pepper Berries**

Suitable quantity of separated berries will be collected and dipped with the container in boiling water for one minute, drained and spread on a clean surface for sun-drying.

### **Production of White Pepper**

White pepper is produced by collecting fully mature berries (yellow or orange), retting them in clear water for 5 – 7 days, removing the outer skin completely and drying the seed after thorough washing and cleaning.

**Table 1: Area, Production and Yield of Pepper in India**

<i>Year</i>	<i>Area (‘000 Hectares)</i>	<i>Production (‘000 Tonnes)</i>	<i>Yield (Kg/Hectare)</i>
2010-11	184.00	52.00	183
2011-12	200.30	40.60	203
2012-13	124.60	52.60	422
2013-14	123.81	50.87	411
2014-15	123.62	54.89	442

Source: Agricultural Statistics at a glance 2015

**Table 2: State-Wise Area and Production of Pepper**

<i>State</i>	<i>2014-15 (P)</i>		<i>2015-16 (P)</i>		<i>2016-17 (Est.)</i>	
	<i>Area (Hectare)</i>	<i>Production (Tonnes)</i>	<i>Area (Hectare)</i>	<i>Production (Tonnes)</i>	<i>Area (Hectare)</i>	<i>Production (Tonnes)</i>
Karnataka	32670	35000	32670	21000	32670	25000
Kerala	85430	30000	85430	22000	85430	24000
Tamil Nadu	4000	3000	4000	1500	4000	2000
Total Including Others	128780	70000	128870	48500	128870	55500

Source: Spices Board of India

P: Provisional & Est.: Estimate

### **PEPPER CULTIVATION IN KERALA**

In India, Kerala state is the spice garden. Kerala is the leading producer of black pepper popularly called the ‘King of Spices’, it enjoys a pride of place among all spices produced. More than 90 per cent of the production of black pepper in the country is restricted to Kerala. The important spices and condiments crops being cultivated in Kerala are pepper,

ginger, turmeric, cardamom, areca nut, tamarind, cloves, nutmeg etc. Major contribution of spices and condiments is from Idukki district in all the years and is 32 per cent during 2014-15. Pepper contributes 32 per cent area to the total area of spices. The total area under the cultivation of spices and condiments during the agricultural year 2014-15 is 2,63,438 Ha and a brief analysis of pepper is given below:

- The area under cultivation of pepper during the year 2014-15 is 85,431 Ha.
- Idukki district stands 1st position with an area of 43,852 Ha and the contribution to state total is 51 per cent.
- Wayanad and Kannur districts have the next two top positions in area during the last 10 years.
- Pepper cultivation is least in Alappuzha district and the contribution during the year 2014 -15 is only approximately 0.7 per cent.
- On analyzing the area of last 10 years, pepper is maximum during the agricultural year 2005-06 and the area is 2,37,998 Ha.

**Table 3: Area under Pepper Crop in Kerala during 2014-15**

<i>S. No.</i>	<i>Districts</i>	<i>Pepper Production (Area in Ha)</i>
1	Thiruvananthapuram	2401
2	Kollam	3244
3	Pathanamthitta	1661
4	Alappuzha	614
5	Kottayam	3135
6	Idukki	43852
7	Ernakulam	1913
8	Thrissur	1801
9	Palakkad	2695
10	Malappuram	2913
11	Kozhikode	3428
12	Wayanad	10064
13	Kannur	4626
14	Kasaragode	3084
State Total		85431

Source: Agricultural Statistics 2015

## **NEW TRENDS IN PEPPER CULTIVATION**

### **Mono-Cropping**

Mono-cropping is the new trend and farmers are realizing its benefits. Gradually, the shift would be towards mono-cropping and higher productivity for a given area of land under cultivation. It will raise the yield by 4 times and also increases the margin of profit. While the cost of production in inter-cropping is Rs.300 per kg of pepper, it comes down to Rs.200 in mono-cropping.

### **Electronic Trade**

In India, it is the physical, old mandi system and it is working fine. But, still electronic trade will be introduced soon for better pricing.

## **CONCLUSION**

For the pepper producing countries, maintaining their productivity is a challenge. Especially for the traditional producing countries like India, Indonesia and Sri Lanka, immediate action should be paid on productivity improvement by replanting of the old plantations, soil and moisture conservation to face the climate change uncertainties, adoption of more effective pest and disease control measures and safe use of pesticides. Quality is the most concern by the consumers as world is more and more health concern. After considering health of the consumers and environment as whole, possible use of natural pesticides and fertilizers should be given more emphasis. Over supply need to be monitored to keep the price stability with closer monitoring of the market from consumers end as well as the producers side.

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