An Economic Analysis of Arabica Coffee in India

[1]Asha. H, S, [2]Dr. S.N. Yogish
[1]Research scholar, Department of Economics, Kuvempu University.
[2]Professor, Department of Economics, Kuvempu University.

Abstract: Plantation agriculture is a vast commercial operation dominated by a single cash crop cultivated on large-scale plantations of estates. The term plantings refer to plants grown on a wide scale and owned and maintained by a person or a corporation, within the contiguous region. Cultivated products include tea, chocolate, rubber, cocoa, chocolate, arecanut, palm oil, palm and cassava. Coffee is botanically part of the Rubiaceae family's genus. There are more than 70 commercially cultivated species under the genus Coffea, most of which are native of Africa, including two species in India viz., Coffea arabica and Coffea canephora. India is the third-largest producer and exporter of coffee in Asia, and the sixth-largest producer and fifth-largest exporter of coffee in the world.

Key Words: *Plants, Plantation, arabica coffee.*

Introduction

Plantation agriculture is a vast commercial operation dominated by a single cash crop cultivated on large-scale plantations of estates. The term plantings refer to plants grown at a wide scale and owned and maintained by a person or a corporation, within the contiguous region. Cultivated products include tea, chocolate, rubber, coca, chocolate, arecanut, palm oil, palm and cassava. It is necessary to be technically advanced and have effective methods of production and instruments, including fertilisers, irrigation systems and transport facilities since this system is a capital-shrinked system. Examples of this kind of agriculture include Assam and West Bengal tea plantations, Karnataka coffee plantations, Tamil Nadu and Kerala and Maharashtra rubber plantations. These are more economically important commercial crops of high value that play a vital part in the enhancement of indian economies, especially with regard to export capacity, jobs and the eradication of poverty in the rural areas. The Ministry of Agriculture is charged with cocoa, cashewnut, cacao, arecanuts and oil palms and handling tea and coffee and rubber.

Coffee is botanically part of the Rubiaceae family's class of coffee. Coffee, mostly originally from Africa, but two species in India, namely Coffea arabica and Coffea canephora, are more than 70 commercially cultivated species. Coffea liberica is another plant cultivated in a small way. Coffee is grown for optimum production in India as a silvi-horti culture under a tree canopy. Orange, pepper and cardamom cultivation as interplants in the coffee plantation is a source of additional production. Basically, there are two varieties of coffee that emerge from the two major species of coffee plants, Arabica and Robusta, most widely eaten globally. While several coffee crops are available, from a commercial point of view, Arabica and Robusta are the most important.

The delicate flavour and balanced scent of Arabica coffee (or Arabicas) is accompanied by sharp and sweet taste. They have caffeine in comparison to Robustas about two. Arabicas are harvested from November to January and usually grow in cold, humidity-rich, and subtropical conditions at higher altitudes between 600 and 2000 metres.

They need soil rich in nutrients to meet the highest international requirements for coffee. Kents Coffee, S.795 Coffee Cauvery Coffee, SLn.9 (Selection 9) Coffee, is four common varieties of Arabica Coffee.

History of arabica coffee

In six hundred with the discovery of Arabica, the growth of coffee according to tradition began. The tale is that in the mountain forests of what is now called Ethiopia a goat herder by the name of Kaldi herded his goats. Kaldi wandered about with a nap and his goats. Hours later, when Kaldi awakened, his goats were gone. Kaldi panicked his animals and went to search. The strangest thing caught his attention when he actually spotted them. He dances on his hind legs and very busy his goats. Further research found that they ate from a strange red cherries tree. Kaldi was also more worried and scared that after eating his funny cherries, his goats might get ill. Kaldi took quite a while, but he eventually managed to collect and get his animal's home. The next day he took his goats off, they immediately returned to the same bush and began again to feed! Kaldi did not tell his parents anything. Kaldi even took some cherries when he saw that the cherries did not appear to hurt his goats. He quickly found the result and felt vigorous and very awake!

When Kaldi found the cherries, words echoed across the Middle East about the refreshing cherries. Coffee cherries came to Arab Peninsula from Ethiopia and were grown in what is now known as Yemen. The skin of the cherry used to produce a kind of tea in Yemen. This coffee, as we know, was found just after it hit Turkey, as people were starting to roast the coffee beans. The Arabs attempted to protect the coffee secret at that period. No one has been permitted to fly live with coffee or beans. Coffee may only be shipped in roasted form. Though coffee in roast form was already available in England and in other European countries around 1640, non-Arabs were still unable to view live seeds and plants.

The Netherlands was not able to traffic a coffee plant from Yemen until early 1700 and the world was actually acquainted with coffee. The Netherlands initially brought it to Java, Indonesia and it spread rapidly from there. Coffee houses expanded rapidly all over Europe, becoming centres. Coffee was established in 1700's on a long journey through the Atlantic in the Americas by a French Infantry Capitan. Transplanted into the Caribbean Island of Martinique, this single plant was the ancestor of more than 19 million trees on the island.

Data analysis strategy

The article is rendered from the collection from books and internet outlets and corresponding studies from different institutions and organisations with different knowledge on coffee production. In the Study Report secondary data were used and data was primarily obtained from the Indian coffee archive, market research and intelligence unit, and the Coffee Board. The quantity of coffee region, output and yields, year of wise production and so on have been gathered from the Indian Coffee Database. Data concerning region and production is analysed using the Annual Compound Growth Rate in some cases (CAGR).

World coffee scenario

Coffee is consumed by more than 125 countries, with about 50 percent producing coffee. The world's largest coffee producing nations include Africa, North and Central America, South America, Asia and Oceania. The world's biggest source of coffee is Brazil. 69% of the Brazilian coffee for the Arabica species, while 31% for the rest for Robusta. Brazil, Indonesia, Indonesia, Mexico, India, Guatemala, Ethiopia, Honduras, Uganda and many others are the leading coffee-producing countries. Brazil is the first country to cultivate coffee in the region and in production.

It accounted for 33.16% of world demand, led by Vietnam and Indonesia. Brazil is the leading seller of Arabica beans of the highest quality to the US, the leading buyer. The share of coffee-growing countries above was approximately 75%, and the other coffee-growing countries contributed the remaining 25%. More than 20 million people worldwide are believed to live on coffee. Most of them participate in their development and 40% regularly drink coffee. Therefore, in many countries' markets and in global commerce generally coffee is of extreme importance. **Indian coffee scenario**

India is Asia's third-largest coffee producer and exporter and the sixth-largest coffee producer and fifth-largest exporter worldwide. Countries make up 3.14% (2019-20) of the world supply of coffee. The production of coffee during 2019–20P amounted to 299.3 million tonnes (MT). Between April and November 2019, coffee exports totalled US$ 490,59 million. From April to November 2020, coffee exports totalled 459.87 million dollars, and 45.13 million dollars for November 2020. 70% of the gross Indian coffee is exported and 30% is domestically consumed.

Coffee in India is an important crop planted primarily in the southern Karnataka states (57 percent). In non-traditional areas such as Andhra Pradesh, Kerala (24 percent) and Tamil Nadu (9 percent) and to a lesser degree. Orissa and the North-East (10 percent). Chikkamagaluru, Coorg and Hassan districts of Karnataka are the most important coffee growing regions. In Kerala and Pulneys, in Shevroys, in Anamalai and in Nilgiris in Tamil Nadu, Wynad, Idukkki, and Nelliampathys.

In 2018-2019, India produces approximately 299 300 MT of coffee per annum, both the commercially important coffee species, namely arabica and rust-producing coffee, covering an area of 4,59,895 ha. Around 1.78.308 coffee holdings, almost 98.8 percent of which are limited with less than 10 ha per domestic stock. These smallholdings occupy 74.6% of the coffee region and account for some 70% of the total coffee production in the world. The remaining 1.2% of vast holdings occupy 25.4% of the region and account for 30% of overall output. The Arabica and Robusta productivity amounts to 470 kg/ha and 1,047 kg/ha. the state average productivity is 767 kg/ha. during 2018-19, respectively.

Review of literature

Suganda Ramamoorthi, & Jeyalakshmi (2016) In an attempt to analyse planting area growth efficiency, coffee production and productivity in India. It is based largely on a time series; data from 1970 to 1971 to 2013-2014 have been obtained. For research the sample timeframe is split into two sub-periods: the 1970-71 to 1991-92 period of pre-liberalization and the 1992-93 to 2013-14 period of post-liberalization. The trend analysis and the compound growth rate are measured in order to consider the improvements in the cycles before and after

liberalisation. The results showed that after trade liberalisation there was a substantial increase in area under coffee growing.

Sunanda and Nagaraja (2014) an summary of Karnataka coffee production was analysed. Their analysis showed that Arabica's output was 1.7 times higher compared to Robusta between 1950 and 1951, but reversed in 2010/11, i.e. that Robusta's output was about 1.8 times higher than Arabica's output. The productivity of both between 1960-61 and 1980-81 is nearly equal, but Robusta's productivity is higher in the remaining years. If we look in the field of coffee planted from Chikmagalur district, only a 0.1% decrease in Arabica and a 01% growth in Robusta will be noted for the six-year term 2006-07 to 2011-12. Even the total planted area is also increased by just 01%. However, a clear signal of 01% shift from Arabica to Robusta in the total planted area for this period.

Gholam Abbas Darvishi & Indira (2013), an study was conducted on the basis of time series data consisting of two periods from 1970-71 to 1989-90 (Pre – Liberalization) and 1990-91 to 2009-10 (Post - Liberalization) and data analytics data, which were examining patterns in the region, production and productivité of two large plantation crops exported from India In order to explain the improvements over the years pre and post-liberalization the compound growth rate (C.G.R) was estimated. The results indicate that both before and after the liberalisation phase, compound growth was steady.

Avinash Kumar (2011) The coffee yield in Karnataka district of Chikkamagaluru was analysed. In selecting sample farmers, a multi-stage random sampling protocol was used. In small and big plantations respectively, the cost per hectare of setting up coffee was 393371.00 and 361860.00. In small and large plantations respectively, maintenance costs per hectare during the bearing period were as low as 110761.90 and 102968.20. The average yield per hectare was 3143.80 kg and 3125.96 kg for big plantation. Net return from small plantations was 201634.40 and big plantations were 215664.67.

Objective

- To Study the trend in area production and productivity of Arabica coffee in India.

Result and discussion

Table 1. Area, Production and yield of coffee in India.

Source - Indian coffee database, Market research and intelligence unit, Coffee board.

Year	Area (in ha)	Annual growth rate	Production (in MT)	Annual growth rate	Yield (MT per ha)	Annual growth rate
1990-91	127,934		78,311		722	
1991-92	126,889	-0.82 %	88,320	12.78 %	814	12.74 %

1992-93	141,546	11.55 %	73,120	-17.21 %	674	-17.20 %
1993-94	143,491	1.37 %	98,300	34.44 %	906	34.42 %
1994-95	142,644	-0.59 %	79,000	-19.63 %	728	-19.65 %
1995-96	145,901	2.28 %	103,250	30.70 %	860	18.13 %
1996-97	143,239	-1.82 %	90,450	-12.40 %	724	-15.81 %
1997-98	143,928	0.48 %	99,300	9.78 %	760	4.97 %
1998-99	160,671	11.63 %	97,000	-2.32 %	678	-10.79 %
1999-00	168,453	4.84 %	119,000	22.68 %	815	20.21 %
2000-01	167,679	-0.46 %	104,400	-12.27 %	713	-12.52 %
2001-02	165,892	-1.07 %	121,050	15.95 %	812	13.88 %
2002–03	171,180	3.19 %	102,125	-15.63 %	696	-14.29 %
2003-04	170,294	-0.52 %	101,950	-0.17 %	687	-1.29 %
2004-05	174,315	2.36 %	103,400	1.42 %	675	-1.75 %
2005-06	177,728	1.96 %	94,000	-9.09 %	620	-8.15 %
2006-07	179,096	0.77 %	99,700	6.06 %	657	5.97 %
2007-08	184,418	2.97 %	92,500	-7.22 %	613	-6.70 %
2008-09	189,511	2.76 %	79,500	-14.05 %	508	-17.13 %
2009-10	193,995	2.37 %	94,600	18.99 %	592	16.54 %
2010-11	197,930	2.03 %	94,140	-0.49 %	575	-2.87 %
2011-12	201,070	1.59 %	101,500	7.82 %	597	3.83 %
2012-13	205,775	2.34 %	98,600	-2.86 %	560	-6.20 %
2013-14	209,385	1.75 %	102,200	3.65 %	564	0.71 %
2014-15	213,462	1.95 %	98,000	-4.11 %	527	-6.56 %
2015-16	221,379	3.71 %	10,3500	5.61 %	537	1.90 %
2016-17	223,816	1.10 %	95,000	-8.21 %	486	-9.50 %
2017-18	228,910	2.28 %	95,000	0.00 %	478	-1.65 %
2018-19	233,081	1.82 %	95,000	0.00 %	470	-1.67 %
CGAR	2.09 %		0.67 %		-2.47 %	

ACGR- Annual compound growth rate.

In India, coffee is traditionally grown in the Western Ghats spread over Karnataka, Kerala and Tamil Nadu, wherein Karnataka is the largest producer accounting for about 70 per cent of the total coffee production. Kerala is the second largest producer of coffee but lags far behind, accounting only for about 23per cent of the total production of the country. Tamil Nadu is the third largest producer where India's 6 per cent of the coffee is produced. About half of Tamil Nadu's coffee is produced in the Nilgiri district and is a major Arabica growing region.

Area, Production and productivity (Yield per ha) of India from past three decades are presented in Table 1. with their respective annual crop growth rate to analyse the pattern followed by arabica coffee. From past three decades i.e., 1990-91, an increasing trend has been observed in area of cultivation of arabica coffee. But in case of production and productivity, certain trend is not following implying to that observing fluctuation regarding production and productivity of arabica coffee. During 1990-91 area under cultivation of arabica coffee was 127,934 ha, production is about 78,331 MT and productivity was about 722 MT per ha. There was a drastic increase in case

of area during 1992-93 of about 11.55% and during 1998-99 of about 11.63 %. After this area under cultivation of arabica coffee was in approximately constant pattern. During 1992-93 there is drastic increase in production from 73,120 MT to 98300 MT of about 34.44%. In recent times, during 2015-16 there is increase in area (3.71 %), production (5.61 %) and productivity (1.90 %). On observing overall trend of area, production and productivity of arabica coffee, there is increase in area of about 2.09 % and productivity is in edge increase of about 0.67 % and productivity is not in satisfactory level.

Discussion

Analysis of the arabica coffee region, production and productivity indicates that the arabica coffee area is increasing drastically and continually but the production and productivity of arabica coffee is not improving significantly. That is because farmers lack adequate information about the latest technology that increase coffee farming productivity. Erratic rainfalls and new precipitation trends affect the production and productivity of arabica coffee in our region. Furthermore, coffee beans are vulnerable in all areas of the supply chain and need security. Therefore, the whole time from the production to the treatment of arabica coffee is difficult to control. There are some main factors for reducing the productivity pattern of arabica coffee. In Kumareshwaran, 2019 even the compound growth rate and the same optimistic trend about cultivation area are used to study the area and development up to 2015 and negative effects on productivity are observed because farmers are not adequately informed, there is a shortage of skilful labour, irregular rainfall patterns and a lack of new technology.

Suggestions and conclusions

On the basis of the analysis on the secondary data on the location, development and productivity of arabica coffee, the required plant security measures should be suggested that the safe and disease-free planting material should be used. Famers should receive adequate advice on sustainable cultivation practises and subsidies from governmental and coffee-boards organisations. Skilled labour has been used to produce high efficiency successfully. Pesticides and pests must be avoided in shadow control and land management. In order to escape the problems of the intermediaries, we need to allow farmers to follow successful marketing tactics to get more value.

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