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PRODUCTION TRENDS, MARKET INSTABILITY AND REMEDIAL MEASURES IN BEVERAGE CROPS

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ABSTRACT

This paper essentially dwells on the present status of India's major beverage crops in respect of their production, export and prices. It is concerned with stability, viability and growth; and those activities contemplated in the immediate future. Stress has been laid on rejuvenation and replanting programmes. This paper also suggests that the most effective way to reduce the uncertainties and to increase the profit margins of the smallholders would be to encourage multispecies cropping systems. Futuristic projections are beyond its purview.

INTRODUCTION

Beverage crops, namely, tea and coffee are the most vital segments of the plantation industry in India. They make significant contributions to the Indian economy and the welfare of its people. It is a matter of great satisfaction that the key role played by the beverage crops was recognised quite early in the post-independent period at the policy planning level of the Government of India. As a result, a host of promotional schemes have been implemented through successive Five Year Plans in order to support and strengthen the beverage crops sector. Both tea and coffee have shown considerable growth by offering large supplies to the Society. While the recent R&D efforts put India ahead of most of the beverage crops producing countries, here still exists a considerable demand-supply gap because of too many impediments. We shall be briefly reviewing the situation in this paper.

The sources of data used for the analyses are: (i) Government of India (Directorate of Economics and Statistics, Ministry of Agriculture) for area, production and yield of tea and coffee; (ii) Tea Board and (iii) Coffee Board for export earnings and unit value, current prices and working force for respective crops.

THE STATE OF ART

Production trend in tea:

Although tea cultivation in India is hardly 150 years old, it is remarkable that this country is the largest producer of tea in the world. Among the five major tea producing countries, currently India's share in the world production is somewhere around 30 per cent followed by China (21 per cent), Sri Lanka (9 per cent), the USSR (7 per cent) and Kenya (6 per cent).

The production of Indian tea has registered an increase from about 275,000 t in 1950-51 to the record output of some 657,000 t in 1985-86. This phenomenal

growth in Indian tea sector is however the combined effect of the area and yield expansions during the period under reference. It is observed that while the tea area rose from nearly 314,000 ha to around 400,000 ha, the average productivity of Indian tea plantations almost doubled from 876 kg to 1643 kg per ha (Table I). The compound growth rates (CGR) in respect of the area, yield and production of tea during 1950-51 to 1985-86 are estimated at 0.72 per cent, 1.81 per cent and 2.54 per cent, per annum respectively.

The relative contribution of area and yield improvements to output growth is studied with the help of the Minhas-Vaidyanathan decomposition technique* for decennial ending 1959-60, 1969-70 and 1979-80. The analysis reveals that the relative shares of area and productivity to the growth in production of Indian tea during the fifties and sixties were more or less of similar order, but there was a departure during the seventies. While the yield effect, for example, has shown an improvement from around 66 per cent to 74 per cent, the area effect has taken a downward trend from 29 per cent to 19 per cent, during later period. The interaction effect is however observed to be marginal in all the three periods (Table II). It is evident that land availability for tea plantations is now tending to become scarce and the yield improvement programmes are assuming greater importance for maintaining a steady growth in tea industry. Even the smallholders are now adopting drought tolerant, pest and disease resistant, high yielding and high quality clones in their replanting, infilling as well as new planting schemes. (Sharma, and Ranganathan, 1985).

Table I. *Trend in area, production and yield of tea in India during 1950-51 to 1985-86.*

Year	Area (000 ha)	Production (000 t)	Yield (kg/ha)
1950-51	314	275	876
1960-61	331	321	971
1970-71	354	419	1182
1980-81	382	570	1491
1981-82	384	560	1458
1982-83	395	561	1420
1983-84	396	581	1467
1984-85	398	640	1608
1985-86	400	657	1643
CGR (%)	0.72	2.54	1.81

Export trend in tea:

India also continues to maintain its position throughout as the world's largest exporter of tea. During the year 1950-51, the export of Indian tea was of the order of 183,000 t and it was 215,000 t in the year 1985-86. The CGR of tea export from this country is estimated at 0.15 per cent per annum during the period under reference. It is however noticed that

*$Pn-Po = Ao\,(Yn-Yo) + Yo\,(An-Ao) + (An-Ao)\,(Yn-Yo)$

where:

Pn = *Level of output in the terminal year n*
Po = *Level of output in the year o*
An = *Area under the crop in the year n*
Ao = *Area under the crop in the year o*
Yn = *Productivity per unit area in the year n*
Yo = *Productivity per unit area in the year o*

unlike the production trend in tea, its export growth is not at all steady. It has fluctuated between 167,000 t and 238,000 t during the last 35 years and the record export was in the year 1956-57. In other words, the export figure of Indian tea is hovering around 200,000 t. On the other hand, the growth in the export earnings from tea was more or less stable because of the impressive growth in the unit value realisation during the same period. The unit value is observed to rise from Rs. 3.93/kg in 1950-51 to Rs. 30.49/kg in 1985-86 and as a result, the export earnings have gone up to Rs. 6560 million in 1985-86 from Rs. 719 million in 1950-51 (Table III).

While the world tea trade has been rising at the rate of 3 per cent per annum during these years, it is a matter of great concern that Indian tea exports in quantitative term is more or less stagnating. As a result of this, India's share in the export market is rapidly declining. During 1950-51, for instance, India's export amounted to 45 per cent of world export. In the year 1968 it was reduced to 33.5 per cent and by 1982 further declined to 23 per cent. Despite higher levels of production, a strong demand for tea in the domestic front kept export prospect down. (Fig. 1).

In the first half of the sixties, India's exports as percentage of production was little over 60 and it was reduced to 50 in the second half of the sixties. The share

Table II. *Percentage contribution of area, yield and their interaction to the growth of tea production in India.*

Period	Area Effect	Yield Effect	Interaction Effect	Total
1950-51 to 1959-60	29.20	67.11	3.69	100.00
1960-61 to 1969-70	29.26	65.75	4.99	100.00
1970-71 to 1979-80	19.07	74.48	6.45	100.00

Table III. *Trend in export, export earnings and unit value of Indian tea during 1950-51 to 1985-86.*

Year	Export (000 t)	Export earnings (Million Rs.)	Unit value (Rs/kg)
1950-51	183	719	3.93
1960-61	193	1199	6.21
1970-71	199	1482	7.44
1980-81	232	4353	18.78
1981-82	224	4068	18.15
1982-83	194	3694	19.03
1983-84	202	5575	27.56
1984-85	217	7404	34.12
1985-86	215	6560	30.49
CGR%	0.15	5.48	3.32

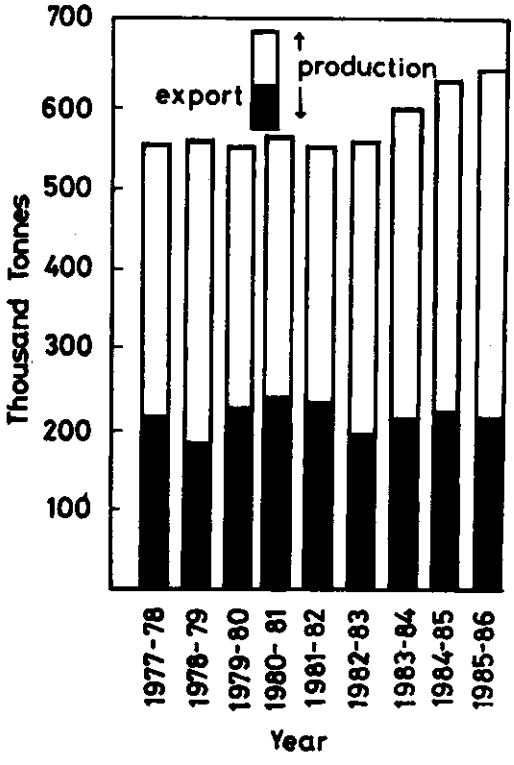

Fig.1 Production & export of tea

of export to total production continued to fall due to growing internal market and in the first half of the eighties it accounted for 36.5 per cent (Table IV). In other words, about two-thirds of India's tea output is now being consumed in the domestic market market. The growth in India's internal tea trade is estimated to be around 6 per cent per annum. In order to cope up with the demand from the home market, India's output growth needs to be further accelerated very fast. It may be mentioned here that the Government of India resorted to ban on the export of CTC tea in December 1983 with a view to avoid a possible shortage of common type tea in domestic market. Though this ban was fully lifted from May 1984 the Government fixed a quota of 215,000 t for export as an unpleasant compromise with the situation.

Besides the widening of the demand-supply gap in the internal tea trade, Indian tea industry is being subject to stiff competition in the international market. The most important competitors are the East African tea growing countries, namely, Kenya, Tanzania and Malawi. Moreover, China, a traditional exporter of green tea has now-a-days stepped up its export of black tea. On account of these factors, India's export base is gradually getting eroded.

Price trend in tea:

Indian tea prices show a highly unstable and violent trend. During the fifties, average wholesale prices of tea fluctuated between Rs. 3870 and Rs. 5970

Table IV. *India's average production and export of tea during 1960-61 to 1984-85.*

Period	Production (000 t)	Export ('000 t)	Export as % of production
1960-61 to 1964-65	348	210	60.3
1965-66 to 1969-70	384	193	50.2
1970-71 to 1974-75	454	204	45.0
1975-76 to 1979-80	533	212	40.0
1980-81 to 1984-85	582	213	36.5

per tonne. In the next decade it ranged between Rs. 4480 and Rs. 5910 and in the seventies it moved between Rs. 5990 and Rs. 16300. During the first half of the eighties, price behaviour was equally erratic as it ruled between Rs. 12660 and Rs. 26970 per tonne.

It is observed that the current price of tea in Indian market is largely influenced by the overall supply position of this commodity in world market rather than India's output position in the corresponding period. For instance, in spite of a bigger crop of Indian tea in the year 1974-75 its current price in home market suddenly made a quantum jump. Similar things were repeated during the period 1977-78, 1983-84 and 1984-85. The unprecedented price rise in those years was because of the narrowing of total supply in world tea trade and Indian tea being an export oriented crop, this sort of behaviour in prices is quite understandable. The general improvement in the current prices of tea in Indian domestic market is however a combined effect of growing internal and external demands for this beverage. (Fig. 2).

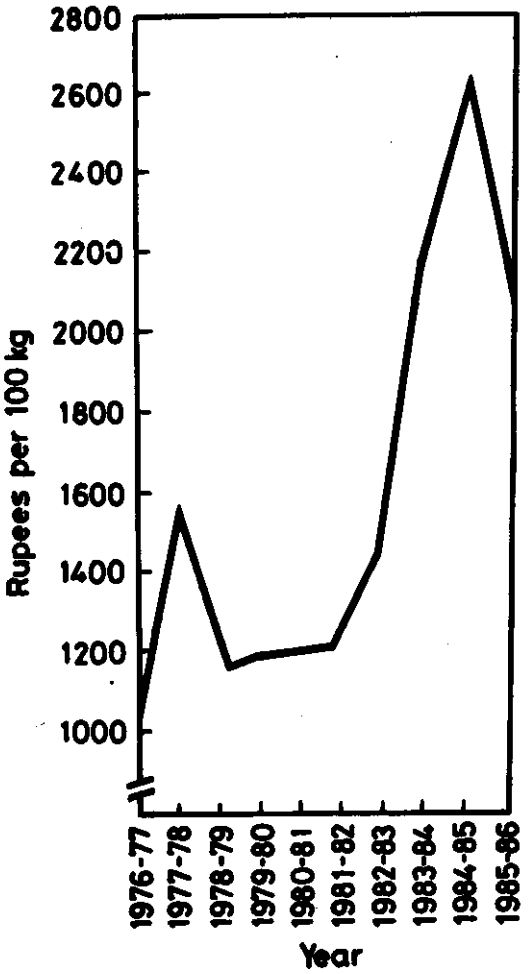

Fig.2 Wholesale price of tea

But when we look to the price trend of tea in real term the picture appears to be altogether different from that of the current prices. The relative price index which is the indicator for the real price, reveals that Indian tea prices have rather declined in five out of 10 years covering the period 1976-77 to 1985-86 (Table V). In other words, tea industry has failed to maintain the parity with the general inflationary trend of the country. (Fig. 3).

Production trend in Coffee :

Indian coffee industry registered remarkable progress between 1945 and 1975. During this period, the area under coffee was doubled, its productivity improved by three times and there was a seven fold increase in the production. Today India occupies tenth position among the leading producers of coffee in the world.

According to the official statistics, the

Table V. *Average wholesale price and relative price indices of tea in India.*

Year	Wholesale price		Wholesale price	
	Rs./100 kg	Index Number (Base: 1970-71)	Index of all comodities	Relative price indices
1976-77	1117	186	177	105
1977-78	1630	271	186	146
1978-79	1232	205	186	110
1979-80	1255	208	218	95
1980-81	1266	210	257	82
1981-82	1282	213	281	76
1982-83	1539	256	289	88
1983-84	2288	380	315	121
1984-85	2697	448	337	133
1985-86	2144	356	357	99

area under coffee has gone up steadily from about 91,000 ha in 1950-51 to 235,000 ha in 1985-86. The productivity also has improved from 275 kg/ha to 518 kg/ha during the same period. As a result, India's coffee production has reached the level of 172,000 t from a small 25,000 t some 35 years ago. However, the production in recent years is not showing any stability. The violent fluctuations in the yield rate and resultant instability in coffee production could be attributed to adverse weather condition. The CGR for area, yield and

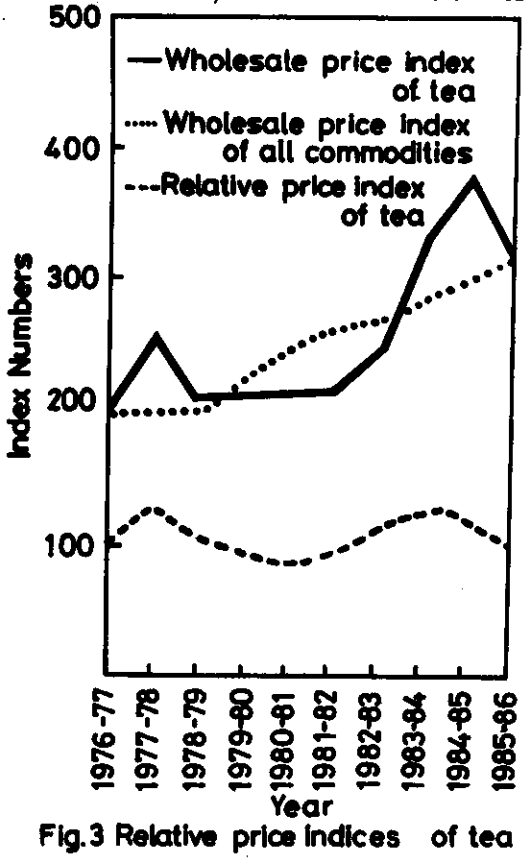

Fig.3 Relative price indices of tea

Table VI. *Trend in area, production and yield of coffee in India during 1950-51 to 1985-86.*

Year	Area (000 ha)	Production (000 t)	Yield (kg/ha)
1950-51	91	25	274
1960-61	114	43	377
1970-71	135	110	814
1980-81	208	118	567
1981-82	211	105	497
1982-83	227	130	573
1983-84	232	105	452
1984-85	234	197	842
1985-86	235	122	518
CGR (%)	2.93	5.49	2.50

Table VII. *Percentage contribution of area, yield and their interaction to the growth in coffee production in India.*

Period	Area effect	Yield effect	Interaction effect	Total
1950-51 to 1959-60	26.10	60.67	13.24	100.00
1960-61 to 1969-70	30.52	60.26	9.22	100.00
1970-71 to 1979-80	132.28	(–)21.60	(–)10.68	100.00

production of Indian coffee for the period 1950-51 to 1985-86 was worked out as 2.93 per cent, 2.50 per cent and 5.49 per cent, respectively, per annum (Table VI).

The relative contribution of area and productivity to output growth is studied. The result indicates that the relative shares of area and yield to the production of Indian coffee during the fifties and sixties were, by and large, similar in nature. The yield effect was very strong and more than double that of area effect in those two decades. Interaction effect was very weak. This analysis, however highlights that during the seventies both the yield effect and interaction effect were negative, while the area effect was phenomenal (Table VII). It is clear from this study that the production growth in coffee in recent years has taken a different path and it is also very different strategy wise from tea sector. However, the factors contributing to the negative yield effect needs an indepth investigation.

Export trend in Coffee:

Like tea, historically coffee is an important export oriented crop for India. From a small 2,700 t export in 1950-51 the figure has gone up to 99,300 t in 1985-86. But the growth was rather uneven because of the unstable production. When one looks at the unit value realisation one could find that it had during the fifties stabilised around Rs. 6 per kg of coffee export from India. In the following decade, instead of any improvement, it exhibited a sign of decline. In the first half of the seventies there was a marginal increase in unit value and it was in the neighbourhood of Rs. 8, but in the second half of the seventies it was stepped up considerably and fluctuated between Rs. 24 and Rs. 39. In the first half of the eighties the unit value crashed to certain extent.

As far as the growth in export earnings from coffee is concerned it was really phenomenal despite year to year fluctuations. From Rs. 13.4 million in 1950-51 the figure went up to Rs. 72.2 million in 1960-61, to Rs. 251.1 million in 1970-71 and to Rs. 2150.0 million in 1980-81. Thereafter, though it was adversely affected during 1981-82 to 1984-85 because of the shrinkage in the volume of exports on the one hand and lowering in the unit value of export on the other, the year 1985-86 however experienced an unprecedented record export earnings of Rs. 2749.8 million from this beverage crop due to a sizeable enhancement in the volume of export. The estimated CGRs for export volumes unit value and export earnings of Indian coffee during

Table VIII. *Trend in export, export earnings and unit value of Indian coffee during 1950-51 to 1985-86.*

Year	Export (000 t)	Export earnings (Million Rs.)	Unit value (Rs./Kg)
1950-51	2.7	13.4	4.96
1960-61	19.7	72.2	3.66
1970-71	32.2	251.1	7.80
1980-81	89.0	2150.0	24.16
1981-82	83.8	1668.8	19.91
1982-83	76.7	1871.2	24.40
1983-84	71.2	1750.5	24.59
1984-85	68.9	2096.8	30.43
1985-86	99.3	2749.8	27.69
CGR (%)	10.60	17.08	5.90

the period 1950-51 to 1985-86 were estimated at 10.60 per cent, 5.90 per cent and 17.08 per cent respectively per annum (Table VIII).

India's export of coffee as percentage of production during the first half of the sixties amounted to 57.4. Then for a decade long time the share of export to the country's total production declined to the level of 43 per cent even though both the production and export rose in their absolute terms. In other words, the increase in the volume of exports was less than proportionate to the enhancement in the level of production between 1965-66 and 1974-75. Thereafter, the size of exports showed considerable improve-

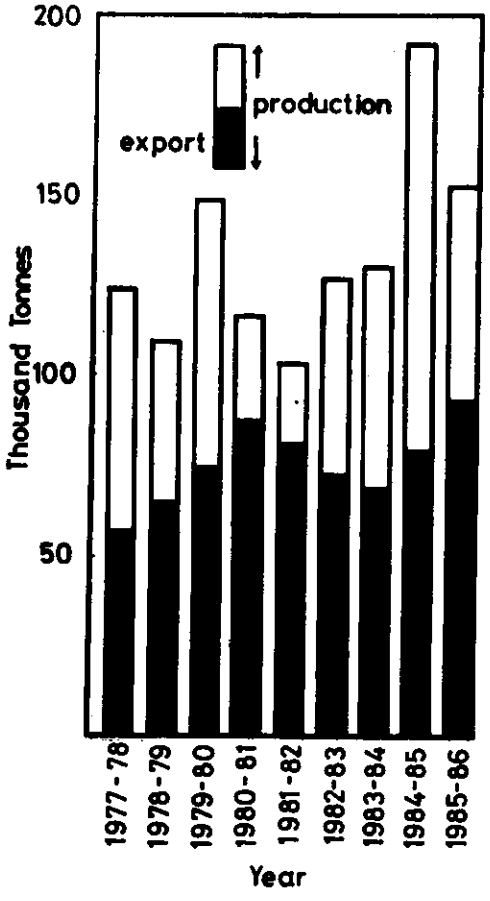

Fig.4 Production & export of coffee

Table IX. *India's average production and export of coffee during 1960-61 to 1984-85.*

Period	Production ('000 t)	Export ('000 t)	Export as % of production
1960-61 to 1964-65	43	24.7	57.4
1965-66 to 1969-70	67	29.4	43.8
1970-71 to 1974-75	89	37.7	42.3
1975-76 to 1979-80	114	58.8	51.5
1980-81 to 1984-85	131	77.9	59.5

ment along with the impressive growth in the production and the share of exports to production stood at the level of 59.5 per cent during the first part of the eighties (Table IX). In other words nearly 4 kg of coffee out of every 10 kg of its production is presently consumed in home market and the remaining goes to global market. Inspite of the fact that the demand for coffee in the international market has nearly stagnated because of the growth in the shares of other beverages India's export performance in recent years is a unique achievement. (Fig. 4).

Price trend in Coffee:

Current prices of Indian coffee per tonne in domestic market ruled between Rs. 3680 and Rs. 4950 during the fifties, between Rs. 4460 and Rs. 7080 in the sixties, between Rs. 6870 and Rs. 10,440 in the seventies and between Rs. 10,460 and Rs. 17,020 in the first half of the eighties. Price trend of Indian coffee seems to be relatively stable as compared to tea eventhough it is an important export oriented crop. This price stability was the result of export controls established within the framework of the International Coffee Agreements of 1962, 1968, 1976 and 1982.

An unprecedented price rise in domestic market during the period 1984-85 and 1985-86 could be attributed

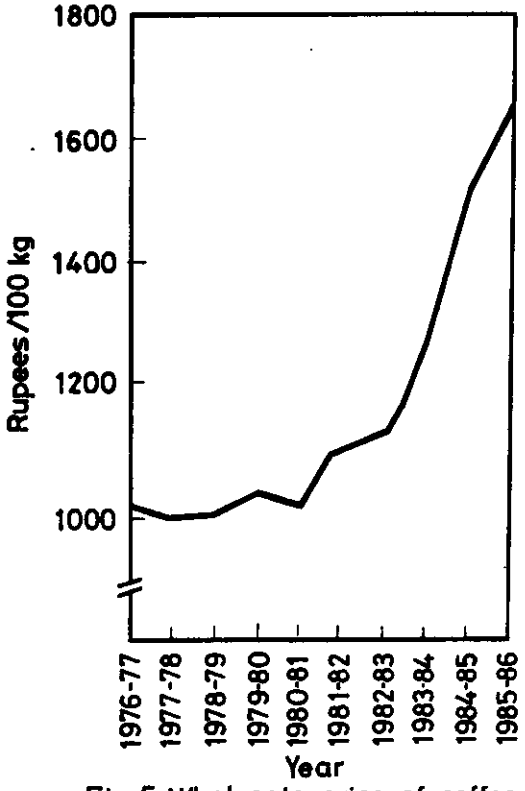

Fig.5 Wholesale price of coffee

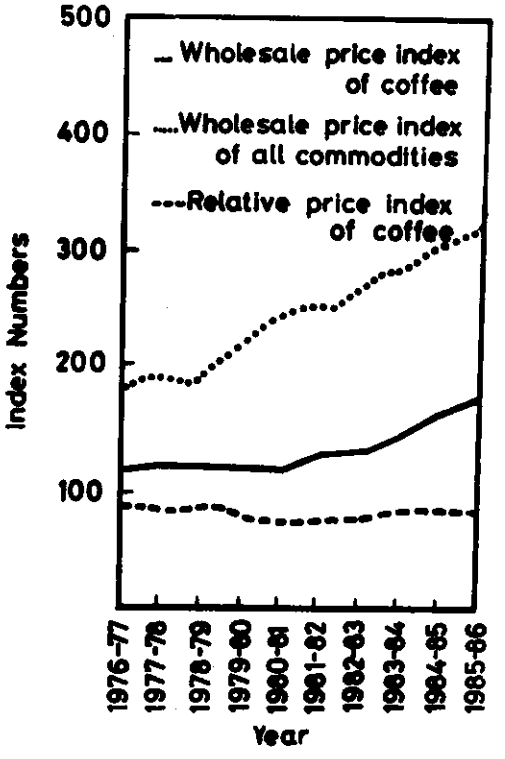

Fig.6 Relative price indices of coffee

Table X. *Average wholesale prices and relative price indices of coffee in India.*

Year	Wholesale price		Wholesale price Index of all comodities	Relative price indices
	Rs./100 kg	Index Number (Base: 1970-71)		
1976-77	1035	130	177	73
1977-78	1025	128	186	69
1978-79	1023	128	186	69
1979-80	1044	131	218	60
1980-81	1046	131	257	51
1981-82	1168	146	281	52
1982-83	1195	150	289	52
1983-84	1366	171	315	54
1984-85	1571	197	337	58
1985-86	1702	213	357	60

to the drastic reduction in world coffee stocks on account of the drought effect on Brazilian crop. (Fig. 5) Since Brazil alone accounts for nearly 30 per cent of the world output of coffee, the adverse weather conditions such as frost and drought are bound to affect the export and price trends elsewhere.

Though current prices in domestic market showed an upward trend, it is surprising to notice that the prices in real term during the last 10 years followed a declining trend (Table X). As far as the real prices are concerned, Indian coffee position seems to be worse than Indian tea. (Fig. 6).

Prospects and challenges

In India, coffee is dominated by small and medium sized plantations. Similarly, as far as South Indian tea is concerned, it is predominately dominated by the small holders, whereas the tea gardens in the Eastern and North-Eastern regions of the country are mostly larger plantations. The annual turnover of the beverage crops in current prices is of the order of some Rs. 18,250 million (about Rs. 15670 million from tea and Rs. 2580 million from coffee). The export earnings from them now amount to nearly Rs. 9400 million annually and it is in the increasing order.

The production sector in tea provides direct and regular employment to nearly 800,000 agricultural labourers, 50 per cent of which are women workers. The processing sector in tea industry again provides direct employment to another 100,000 workers in factories throughout the year. In the case of coffee, around 250,000 agricultural labour force gets regular employment in the production sector, of which one-third are women. Another 10,000 labour force finds gainful employment in coffee processing sector and 80 per cent of them are women. In total approximately 1,160,000 field and factory labourers, besides a sizeable other categories of workers are absorbed in production, processing of tea and

coffee. These field and factory labourers are, by and large, landless tribals who are located in remote hill areas and who do not have alternate source of employment near their habitats. They are fortunate in the sense that their welfare is well protected through various legislative measures unlike nonplantation workers.

Apart from these aspects, the production of beverage crops is characterised by lower requirement of capital machinery. The planters in general and small-holders in particular, gain comparative advantage when they choose these crops in preference to other competing crops. The relevance of tea and coffee plantations in hill-terrain further stems from their inherent capability to sustain the fragile ecosystem of the region. Primary beverage sectors also promote a number of secondary and tertiary sectors in the economy.

Indian market for beverage commodities is fast growing because of the increase in population; rise in per capita income and disposable income and overall improvement in the standard of living of our people. It is a general apprehension that if each person drinks one more cup of tea or coffee per day, India may have nothing left to export (Mahanti, 1986). When we realise that in coming years more and more people will be involved with the production, processing and marketing of beverage produces, we also realise the challenges. They are concerned with stability, viability and growth of beverage sector.

The rising cost of energy inputs is a major threat. The input/output price ratio under the prevailing situation has become unfavourable as far as the economic sustainability is concerned. Indian beverage industry is in a cross road. On the one hand we are interested in keeping the production sector free from mechanisation to provide gainful employment to the socially handicapped and economically disabled people. On the other hand, we are overburdened with the mounting wage bills. The solution certainly does not lie with the mechanisation as India cannot afford to go for a compromise which would necessitate the displacement of labour. However, the challenge can be met through appropriate R&D efforts that will push up the existing productivity levels substantially without involving much of the energy inputs. New production technologies in tea and coffee which have been developed and tested by the premier Institutions namely, the United Planters' Association of South India, Tea Research Association, Tocklai, and Central Coffee Research Institute offer great promise.

One could see a considerable tendency towards traditional approach, particularly in the case of smallholders. Technology transfer should therefore, assume priority. However, one thing we may keep in our mind that the traditional approach followed by the smallholders is not because of their lack of progressive mind, but mainly due to their financial constraints. Since capital cost of replanting is very high, most of the small sized plantations are overaged and their productivity is severly affected for obvious reason. The financial disabilities of the smallholders are also found to be the major cause for the poor upkeep of their plantations as the recurrent costs are becoming formidable for them. The

planters are stifled with the heavy dose of taxations and are therefore unable to build up the finance for rejuvenation and replanting programmes from internal sources. At the same time, the smallholders are also having internal credit aversion because of the vulnerability of the beverage crops to price uncertainties. Besides the instability, the threat has come from the declining price trends in real term. The Government should therefore take note of the emerging danger to the beverage industry while formulating the fiscal policies from time to time and should provide corrective measures that will go a long way in motivating the planters for adopting new technologies; and undertaking rejuvenation and timely replanting programmes aimed towards increasing the productivity and reducing the cost of production per unit output.

Since it is extremely difficult to make the Indian beverage sectors free from the vulnerability to external market forces, we strongly feel that the monocropping approach in plantations should be substituted by the multispecies cropping system approach. It is a matter of great satisfaction that most of the coffee plantations are now switching over to mixed cropping patterns with training of black pepper on the shade trees, and planting orange and lime in between the rows of coffee. Similarly, when coffee is planted in valley, cardamom is grown in alternate rows with an objective of diversifying the income source as a measure to reduce the onfarm income uncertainty. However, tea based cropping systems have so far not taken root excepting in a few cases here and there. But casual observation suggests that tea based cropping systems with black pepper on the live standards that are already present to provide shade to the plantation could enhance the profitability of the planter, while reducing the dependence on a single crop. Some of the fruit crops namely pear, orange and lemon wherever they are found compatible also can be raised in tea plantations for generating income besides providing shade to the main crop (Bavappa, 1987).

These strategies are expected to bring about stability, viability and desired growth in the beverage sectors.

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