

1

Chapter

Introduction

TABLE 1: Key recent economic, agronomic, and demographic parameters

<i>India</i>	<i>Key recent parameters</i>	<i>Brazil</i>
3287590	Total area in sq km	8511965
2973190	Total land area in sq km	8456510
314400	Total area covered by water in sq km	55455
Tropical in south to temperate in north	Climate	Mostly tropical but temperate in south
1703000	Total arable land in sq km (2008)	674000
100000	Total arable land under permanent crops in sq km	77000
1270190	Total non arable land in sq km	7782510
558080	Total irrigated land in sq km	29200
22.80%	Total forest area (%)	56.50%
677010	Total forest cover in sq km	4776981
1110	Total population (2008) in million	189
1.70%	Population growth rate	1.50%
84.70%	Urban population (%) (2008)	29.00%
2726	GNI (PPP) (2008) in US\$ billion	1647
911.8	GDP (Official exchange rate) (2008) in US\$ billion	1067.5
821	GDP per capita (2008) in US\$	5648
2726	GNI Per Capita (PPP) (2008) in US\$	8700
9.20%	GDP real growth rate (2008)	3.70%
18.60%	% of GDP from agriculture sector (2005)	8.40%

27.60%	% of GDP from industry sector (2005)	40%
53.80%	% of GDP from services sector (2005)	51.60%
Under developing	Country status	Under developing
496.4 million	Total labor force (2005)	90.41 million
60%	% of labor force in agriculture	20%
17%	% of labor force in industry sector	14%
23%	% of labor force in service sector	66%
8.90%	Unemployment rate	9.80%
29%	Population below poverty line (2008)	22%
99.45	Total exports f.o.b.(2005) in US\$ billion	118.3
138.09	Total imports f.o.b.(2005) in US\$ billion	77.62
-38.64	Net exports f.o.b. (2005) in US\$ billion	40.68
28.1% GDP	Total Investment (gross fixed) (2005)	19.9% of GDP
7.90%	Industrial production growth rate (2005)	3.40%
US\$ 136 billion	Forex reserves and gold	US\$ 53.8 billion
₹ 44.1011 per US\$	Official exchange rate (2005)	2.434 reals per US\$
341	No. of airports	4276
60.0 million	Internet users	25.9 million
Federal republic	Constitution of the government	Federal republic
Was Portuguese colony & got independence in 1822	History	Was British & Portuguese colony got independence in 1947
Coal, iron ore, manganese, mica, bauxite, NG, limestone, diamond, Petroleum, arable land	Natural resources	Bauxite, gold, iron ore, manganese, nickel, phosphate, platinum, tin, uranium, petroleum, timber

Source: The little green and red book series of world bank and FAO statistical year book series of UN publications

TABLE I: Major fruit producing countries of the world, their production, % contribution and CGR (Compound Growth Rate):

Qty: 000'Tonnes

<i>Countries</i>	<i>Quantity (2003)</i>	<i>% contribution</i>	<i>CGR</i>
China	72003	13.60	6.70
India	45911	9.54	3.04
Brazil	34064	7.75	-1.16
USA	29125	6.66	-0.29
Italy	15728	3.76	-0.50
Spain	17071	3.31	3.48
France	9730	2.38	-1.18
Turkey	11200	2.28	2.07
Mexico	14716	2.89	3.00
Philippines	11804	2.29	4.95
Thailand	7521	1.61	1.16
Iran	12712	2.54	3.63
Others	198665	41.39	1.41
Total	480250	100.00	2.05

Source: FAO Production year books for the years 1996 to 2003 (Refer Appendix-I)

TABLE II: Major mango producing countries of the world, their production, % contribution and CGR (Compound Growth Rate):

Qty: 000'Tonnes

<i>Countries</i>	<i>Quantity (2003)</i>	<i>% contribution</i>	<i>CGR</i>
India	10500	45.47	CGR
China	3413	11.34	-0.86
Thailand	1750	5.75	11.3
Mexico	1503	6.21	2.32
Pakistan	1036	3.97	0.85
Philippines	890	3.52	4.85
Indonesia	731	3.663	9.08
Brazil	845	2.63	4.88
Nigeria	730	2.87	6.18
Egypt	326	1.16	3.55
Others	3839	13.45	5.54
Total	25563	100	14.05

Source: FAO Production year books for the years 1996 to 2003 (Refer Appendix-II)

Preamble

From Table 1, it is clear that India and Brazil are both developing countries with open market economies share the common history. Both had been the colonies of Portuguese. Brazil became independent in 1822, where as India got its independence in 1947. After independence both countries opted to have democratic rule in their nations, resulted in India becoming the greatest democracy in the world with the population of 1110 million and Brazil, the democracy with the population of 189 million as on 2008¹.

Economic condition of the two countries is also comparable. Gross Domestic Product (GDP) of India was US\$ 911.8 billion for the year 2008 where as the GDP of Brazil was US\$ 1067.5 billion during the same year. Total Indian exports were worth US\$ 99.45 billion during year 2005 where as the total Brazilian exports were worth US\$ 118.3 billion during the same year. India imported goods and services worth US\$ 138.09 billion during year 2005 where as Brazilian imports were worth US\$ 77.62 billion during the same year. Exports and imports structure, both region wise and commodity wise, of both nations are comparable. Inflation, unemployment rate, GDP growth rate, and poverty rate are also comparable.

Both countries enjoy almost the similar climatic conditions, i.e., both are tropical with vast agro climatic variations leading to enormous bio diversity. Hence they share the long history of crop husbandry. As shown in Table 1, both countries lead the world in the production of fruits. In 2003, India produced 46 million metric tons (mmt) of fruits where as Brazil produced 34 mmt of fruits, contributing to 9.55 percent and 7.09 percent of global production, respectively² (Refer Table 1).

In spite of the above commonalties and similarities between the two nations, both countries stand miles apart when one compare the size and growth of fruit processing industry and also the total loss of fruits due to wastage and value destruction at various levels. Following discussion prove this statement.

Brazil processes 70 percent of the total fruit production with a minimum loss of around 20 percent³, whereas India processes just 2 percent of the total production with an alarming loss of around 40-50 percent⁴. The comparison of exports of fruits and processed fruit products between the two nations reveal that Brazilian exports of fruits and processed fruit products were worth US\$ 719 million during year 2004, whereas Indian exports of the same were worth US\$ 109 million in the same year (around 15 percent of the Brazilian exports). If we include all the major groups related to FPI (Fruit Processing Industry) as

detailed in the Appendix-VII, the Brazilian exports stand at US\$ 822 million where as Indian exports of the same stand at US\$ 127 million during the same year (around 15.50 percent of Brazilian exports)⁵.

Indian Fruit Processing Industry seems to be in its infancy stage and growing at a very slow pace. In year 1998-99 there exist over 4000 Fruit Processing units in India with an aggregate capacity of 1.2 million metric tons which was less than 4 percent of total fruit production. This industry is growing at around 20 percent every year. Moreover the industry is dominated by large no of smaller units (cottage scale/home scale/small scale) having small capacities ranging from 20 tons to 250 tons per year. Only 20 percent of the production of processed fruits is being exported⁶.

In spite of several serious measures taken by the Govt. of India to re-vitalize the industry like;

1. Formation of altogether separate ministry called Ministry of Food Processing Industries to take care of this Industry.
2. Liberalization of import of technology.
3. Allowing equity participation.
4. Drastic reduction of duties on import of capital goods required for Food Processing.
5. De licensing all food processing industries except beer, potable alcohol and wine
6. Automatic approval of foreign investment up to 51 percent except few items reserved for small scale sector.
7. Foreign technology tie-ups, etc.

The position of the Indian Fruit processing industry seems to be improving rather very slowly⁷.

Considering the following facts about this industry:

1. It has a very high multiplier effect on economy than that of power and telecom sectors.
2. Vast export potential
3. Rapid growth in the domestic demand for processed fruit products because of;
 - (i) Smaller nuclear family set-ups.
 - (ii) Percentage of working women is increasing rapidly.

- (iii) Income levels are rising, especially income of the middle-class population. The sheer size of the middle-class population is also increasing at a phenomenal rate.
 - (iv) Tangible changes in the eating habits of people.
 - (v) People in general have become health conscious.
4. Fruits and vegetables are the food of the future⁸.
 5. Horticulture – The focus of the next phase of green revolution⁹.
 6. India has the unique distinction of being able to grow almost all types of fruits and vegetables.

It is being argued that India has a huge potential and can be the largest food factory in the world¹⁰.

The possible reasons for the poor growth of this industry in India include;

1. Low productivity at the farm level because of the following problems which leads to higher cost of raw material;
 - (i) Inferior quality of seeds/seedlings/saplings
 - (ii) Mechanisms for assessing Quality of seeds, seedlings/saplings are not made available to cultivators
 - (iii) Predominance of old and senile orchards
 - (iv) Hi-tech horticulture is being adapted on a very limited scale¹¹.
2. Non availability of ideal processing varieties of fruits. Too many varieties (over 3000 varieties of mango for example) have been grown in India and majority of them are table varieties which are not suitable for processing.
3. Indian production is made up of produce of large number of varieties and therefore lacks uniformity in physiochemical characteristics. This leads to poor o/p due to poorer yield.

E.g. 16 tons of Indian pineapple produce one ton of concentrate where as only 8 tons of Philippine pineapple produce the same output.

E.g. 7 tons of Indian tomato produces 1 ton paste, where as 4 tons of Italian tomato produce the same output¹².
4. Poor post-harvest management leading to huge post harvest loss because of;
 - (i) Poor infrastructure facilities to store and transport.

- (ii) Weak processing infrastructure. Lack of sufficient number of processing units is a major bottleneck, as the crops are seasonal and are perishable.
5. Lack of necessary infrastructure facilities like cold storage units, cold chain, drying yards, freeze drying units, pre-cooling centers, etc., surrounding major cultivation areas. This leads to non availability of raw material to processing units throughout the year.
6. Huge storage and transportation costs; because farms, raw material markets, cold storage units and processing centers (units) are situated in distant locations. This results in higher prices of raw material. This is the reason prices of Indian products (both fruits and processed fruit products) are higher than the prices prevailing in the international markets (E.g. Indian export prices of pineapple and oranges are two to four times higher than the prices prevailing in the international markets¹³).
7. Majority of the small FPIs (Fruit Processing Industries) function only during the harvesting season of the crop and remain idle for the rest of the year. Fruits need very specific handling and storing requirements if their quality and freshness are to be maintained. Moreover products need to be stored at specific temperature and humidity levels. Cold chain is required right from the farm gate till the end product reaches customer. This will ensure continuous supply of raw material to such industries.
8. Horticulture crops were treated as one of the several means of land use of secondary importance, with food grain crops receiving prime attention. Hence it leads to reduced production of fruits and thus inadequate supply of raw material to Fruit Processing Industry.
9. Domestic demand for processed fruits is quite meager because of economic conditions and eating habits of people. Indian people, in general, prefer fresh fruits and vegetables than processed fruit products.
10. Non availability of credit facilities by the banks and financial Institutions to the fruit processors in order to meet the seasonal financial requirements of this sector.
11. Less 'R&D' work is being undertaken in this sector. It is carried out by few national Institutions like ICAR (Indian

Council for Agriculture Research), CFTRI (Center for Food Technology Research Institute), etc.

12. Poor sanitary and phyto-sanitary measures.
13. Lack of innovation with respect to packaging.

Looking at the above problems/constraints facing this industry, it is clear that they involve following stake holders;

1. Fruit cultivators
2. Private and public fruit processors
3. Government Departments/Nodal bodies like/Concerned Institutions like; **NHB** (National Horticulture Board), **NHM** (National Horticulture Mission), **MOFPI** (Ministry of Food Processing Industry), **APEDA** (The Agriculture and Processed Food Products Export Development Authority), **ICAR** (Indian Council for Agriculture Research), **CFTRI** (Center for Food Technology Research Institute, Mysore), **SAUs** (State Agriculture Universities), etc.
4. Ministry of Agriculture (of both State and Central Government), the APEX body which frames strategies and policies for the future.
5. Cold chain members
6. Cultivators co-operative organizations, Processors co-operative organizations, Other Associations, NGOs, etc.
7. Middle men
8. Retailers, Wholesellers, Super markets, and other channel members

It becomes clear that all the stake holders involved are pursuing their own interests without much co-ordination amongst them, leading to poor growth of this industry. Hence a coordinated, integrated and strategic effort of all the above bodies (stake holders) is must to turnaround this industry. Fruit Processing Industry of India has to undergo a radical shift to address all the above constraints and reap the enormous advantages/benefits/profits which this sector is to offer and be the world's largest fruit processing factory. Problems/constraints have to be studied in wholesome, integrated and strategic manner rather than adopting piecemeal approach.

Some work has been done in this direction, but lot more needs to be done to exploit the tremendous potential, which the India has in this sector. This definitely requires an in-depth comparative study (Bench-

marking Study) of the Indian Fruit Processing Industry with the leading countries like Brazil (Bench-marking partner).

Needless to say that this particular study (Bench-marking Study) would have been done with other major fruit producing countries such as USA and others. But other conditions including; Economical, Agrarian, Agronomical, Climatic, Technological, etc., being dissimilar, such a comparison becomes an infeasible one and would be of little use to India.

“So there lies a strong need to pursue an in depth study on the fruit processing industry so that the road map to turnaround the Indian fruit processing industry can be laid in a similar fashion as that of turnaround of dairy industry during 1980s.”

