

C H A P T E R - I I

HORTICULTURE PRODUCTION AND FOOD PROCESSING

- A. FOOD PROCESSING INDUSTRY IN INDIA

- B. HORTICULTURE PRODUCTION IN SIRSI
TALUKA

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Chapter II

Horticulture Production and Food Processing

A) Food Processing Industry in India :-

India is a country where by and large fruits and vegetables are consumed afresh. The need and utility of processing was not realised till recently. Even the most traditional process like fruit can or preparation of pulp etc. are also still at their infant stage and technologically quite behind the other developed countries. Of late it was realised that expansion of fruits and vegetable processing industry will boost the farming of fruits and vegetables and will expand market in other countries.

1. Availability of

Fruits and Vegetables :-

India produces around 70 lakh million tonnes of fruits and vegetables annually. It includes vegetables to the extent of 57% and fruits 43% (40 lakh and 30 lakh tonnes). India is the world's largest producer of mangoes. It is the fifth largest country in the world producing fruits and vegetables.¹ The production of apple, guava, grapes, pineapple, banana, citrus and other tropical fruits are significant ones. Among vegetables potato

forms 30% of total production.

Out of the total production of 70 lakh tonnes of fruits and vegetables together, 5% of production is being exported, some 30% is being wasted. So according to the estimates available only 45 to 50 lakh tonnes of production is being consumed and out of these 40 to 45 lakh tonnes almost 90% of the total production is consumed in the fresh form, while less than 10% in the form of processed fruits and vegetables.²

2. Inadequate Investment :-

In the last decade the growth rate was 4.8% per annum. According to the confederation of Indian Food Trade and Industry, the food processing industry is the largest determinant of G.N.P. accounting for 19% of the total industrial production and employing around 18% of the national labour force. The investment in this sector, however, constitutes less than 10% of the total gross investment in the industrial sector.³

3. Untapped Potential :-

There are an estimated 3,000 units with capacity to handle only about 1.5% of the total output of fruits and vegetables. The existing capacity utilisation is about 38%.

8 Million tonnes of mango, the king of fruits are produced annually. All of this arriving in the market within 70 days of mango season. Post harvest wastage is high at about 40%.

Another important sector of the food processing industry comprises the bakery units. There are an estimated 75,000 units including those in the small scale and cottage sector with an annual turnover of Rs. 2,000 crores. The annual rate of growth of this segment is estimated at 5%. In terms of employment generation too, this industry plays a significant role. Production by confectionery industry has been stagnant at around 25,000 tonnes against the capacity of over 50,000 tonnes.³

Table No.1

Key Variables of Agro-Industry in Relation to Total Industry.

Description	Number of factories	Fixed capital (Rs.lakhs)	Working capital (Rs.lakhs)	Invested capital (Rs.lakhs)	Total persons employed (Number)	Total emoluments	Total inputs (Rs.lakhs)	Value of output (Rs.lakhs)	Net value added (Rs.lakhs)
	N	FC	WC	K	L	EML	I	O	NVA
1. Agro-food industries	18,179	2,36,568	28,55,462	5,21,930	10,25,424	79,223	11,72,811	15,81,136	1,94,301
2. Agro-non-food industries	21,258	4,62,414	3,51,661	8,14,075	17,39,516	1,99,683	11,85,339	15,67,770	2,97,964
3. Total Agro-industries	39,437	6,98,882	6,37,123	13,36,005	27,64,940	2,78,906	23,58,150	31,48,906	49,92,265
4. Non-Agro industries	61,579	5,30,642	21,65,534	74,75,176	48,19,067	8,29,207	68,90,689	88,66,634	18,34,382
5. Total industries	1,01,016	60,08,524	28,02,657	88,11,181	75,84,007	11,08,113	92,48,839	120,15,540	23,26,647
6. Percentage of agro-food industries to total industry	18.00	3.94	10.19	5.92	13.52	7.15	12.68	13.16	8.35
7. Percentage of agro-non-food industries to total industry	21.04	7.7	12.55	9.24	22.94	18.02	12.82	13.05	12.81
8. Percentage of total agro-industries to total industry	39.04	11.63	22.73	15.16	36.46	25.17	25.50	26.21	21.16

Source : Government of India (1989 a).

Note : 1. It includes manufacture of food products (200 to 219) and manufacture of beverages (220 to 224).

2. It includes manufacture of cotton textiles (230 to 231), wool, silk and synthetic fibre textiles (240, 241 and 249), jute, hemp and mesta, textiles (250, 263 and 259), wood and wood products (furniture and fixtures, paper and paper products (280 to 283), leather and leather products, and rubber and rubber products (300 to 302).

Table No.2

Key Structural and Technical Ratios of Agro-Industries

Code No.	Description of Industry	Fixed Capital per factory (M.lakh)	Percentage of working capital to invested capital	Fixed capital/ Net value added	Capital labour ratio	Capital productivity	Labour Productivity	Share of emoluments in value	Net value added to total output
(1)	(2)	FC N (3)	(4)	FC NVA (5)	FC L (6)	NVA K (7)	NVA L (8)	EML NVA (9)	NVA O (10)
A	20-21* Total agro-based food industries	13.008	54.69	1.217	0.230	0.821	0.1894	0.4077	0.122888
B	23-30* Total agro-based non-food industries	21.752	43.19	1.551	0.265	0.644	0.1712	0.6701	0.190055
A + B	Total agro-based industries	17.721	47.68	1.419	0.252	0.704	0.1780	0.5665	0.156328
C	Non-agro-industries	86.224	28.96	2.894	1.101	0.345	0.3806	0.4520	0.206885
A+B+C	Total Industries	59.480	31.80	2.582	0.792	0.387	0.3067	0.4762	0.193636

Source : Government of India (1989 a).

* As per the details explained in footnote to Table No.1

Agro-Industries are Unique

compared to Non-Agro :-

The working capital as a percentage of the total capital employed is about 48 in Agro-Industries as compared to 28 in non-agro industries.

Capital labour ratio is only 0:25 in the total agro-based industries as compared to 1:1 in non-agro industries indicating the labour intensive character of agro-based industries.

Capital productivity of agro-based industries is almost double (0:7) that of non-agro based industries (0:35).

The ratio of net value added to total output in agro-industries is only marginally lower than that of the non-agro based industries.

Agro-processing units account for 39% of all factories, 15% of total capital invested in the industry in the organised sector. This is 15% of capital employed, generated 36% of total employment, 26% of output, 21% of net value added.⁴

In India, there are 39,437 registered agro-based factories involving a fixed capital investment of Rs. 6,98,882 lacs. Agro-food processing industries.

in the cottage and unorganised sector include 79,000 rice hullers, 2,66,000 flour chakkis, 10,000 dal mills, 2,20,000 oil mills, 50,000 bakeries, 5,000 pesta goods units, 15,000 traditional food units, 2,000 phova making units. In all these cases 90% of the total value added comes from only primary processing.⁵

Table No. 3

Export of Agro-based Commodities from India
(Value Rs crores)

Commodities	Export of Agro-based Industries		
	1985-86	1986-87	1987-88
Total agro-based exports	4,308.8	4,943.87	5,511.80
Total exports	10,894.6	12,452.40	15,741.20
Percentage of agro-based exports to total exports	39.5	39.7	35.0

Source : Govt. of India (1989 b).

Table No. 4

Value of fresh fruits and vegetables exported from India.

(in lakh Rs.)

Year	Fresh Mangoes	Other Fresh Fruits	Fresh Vegetables	Fresh Onions	Fresh Potatoes	Total Exports
1976-77	211	176	198	1582	593	2760
1977-78	325	255	225	915	4	1724
1978-79	384	536	203	1374	181	2678
1979-80	948	598	172	1136	211	3065
1980-81	644	454	372	2776	121	4367
1981-82	672	578	778	2943	52	5023
1982-83	1064	637	1554	3117	196	6568
1983-84	1121	621	2079	3542	226	7589
1984-85	1422	3597	2085	5430	72	12606
1985-86	1944	1100	1822	2921	-	7787
1986-87	1200	1300	1960	5846	-	10306
1987-88	1730	1250	2100	4213	5	9298

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Table No.5

Value of Processed Fruits and Vegetables Exported from India

(in lakh Rs.)

Year	Fruit Juice	Canned & bottled fruits	Canned vegetables	Dehydrated vegetables	Pickles & chutneys	Total
1976-77	526	439	228	-	276	1469
1977-78	466	376	95	88	403	1428
1978-79	449	365	143	229	588	1774
1979-80	436	272	177	151	751	1787
1980-81	617	410	117	142	800	2086
1981-82	1049	1196	368	191	668	3472
1982-83	1830	3879	171	306	791	6977
1983-84	694	2817	133	336	668	4618
1984-85	1367	1837	533	533	448	4718
1985-86	1535	3155	201	405	693	5989
1986-87	533	3401	172	167	620	4893
1987-88	245	2682	163	143	680	3913

- 42 -

Countrywise Exports of Selected Fruits and Vegetables from India (86-87)

(Quantity : Tonnes) Value = 000 Rs.

Name of the Country	Potatoes	Tomato	Orange	Banana	Apple	Grapes	Mangoes
Maldives	299 (1253)	-	-	-	6 (47)	-	-
Nepal	1704 (3643)	34 (62)	24 (73)	170 (664)	8 (33)	-	14 (86)
Qatar	4 (26)	-	-	-	-	31 (357)	369 (3957)
Saudi Arab	-	-	-	-	-	473 (6862)	2645 (34832)
Singapore	-	-	-	-	-	-	40 (373)
U. Arab EMTS	113 (573)	-	30 (140)	-	68 (280)	1664 (22662)	9790 (98993)
U.K.	6 (32)	-	-	-	-	-	644 (11218)
U.S.A.	1 (14)	-	-	-	-	1 (13)	40 (998)
U.S.S.R	3 (7)	-	-	-	2 (16)	188 (2837)	1843 (29353)
Oman	-	-	-	-	-	9 (129)	36 (381)
Shrilanka	54 (154)	-	-	-	-	-	-
Bahrain IS	-	-	1 (9)	-	-	48 (620)	616 (8454)
Bangladesh	-	-	8506 (22592)	-	6013 (2821)	741 (4719)	-
Others	-	-	-	-	20	-	215
T O T A L :	2184	34	8601	170	6117	3155	16252

The total exports of fresh fruits and vegetables from India was of Rs. 9,298 lakhs compared to exports of preserved fruits and vegetables in (Rs. 3,913 lakhs) in 1988. Almost 70% of processed fruits and vegetables are in the form of canned fruits and vegetables. Thus the share of Hi-tech products is very small in exports.

However, India is exporting not even 10% of its total production of fruits and vegetables even after including exports in the fresh form. Share of India in the world exports is as small as 0.48% which when compared with the fact that India is the fifth largest producer of fruits and vegetables in the world looks much smaller.⁶

Current Developments :-

Demand is increasing. It is generated mainly from army and defence, hotel and catering services, airlines and also civilians. 33% of production is being consumed by army. During the last 5 years demand has increased by 15%, and the production increase is by 5%. This indicates a huge potential market to be exploited.⁶ Looking at this opportunity last year (1989) many units have planned to enter into this industry.

1. NERMAC has introduced 'Pineap' in September, 1989 in Tripura.
2. North Eastern Regional Agricultural Marketing Corporation Ltd., a Government enterprise is planning to set up two more fruit concentrate plants in Manipur and Meghalaya in the coming year in collaboration with Soviet Union.
3. Vadilal Industries Ltd., is planning to diversify into the field of frozen foods and vegetables at the cost of Rs. 500 lakhs.
4. Rheinhold and Mahla of West Germany, a subsidiary of the Bayer group has offered to execute turnkey projects.
5. The Government has allowed foreign collaboration in fruits and vegetables processing industries to encourage exports of processed fruits and upgrade technology in this sector.
6. Cimmco-a recognised trading house has teamed up with Pinexco, a Vietnamese Company to set up 100% EOU multi fruit processing unit in Vietnam with capacity of 6,000 tonnes a year.
7. For proper dietary supplementation, it is estimated that the country would need at least 250 million tonnes of fruits and vegetables.

8. Well-known companies from U.S.A., U.S.S.R., U.K., West Germany, Yugoslavia and Japan are looking for investment in India in this field.
9. Government has approved proposal of Sunsip Ltd., Bombay for its foreign collaboration with Swedish Match AB for the manufacture of processed canned and bottled fruits and vegetables.
10. Proposal of Clean Foods Corporation Ltd., of Bangalore with AB for the canned food and vegetables is approved.
11. SPI Beverage has got approval to collaborate with Bafag A6 under 100% EOU scheme for beverages, fruit juices etc.
12. The proposal of Zuari Agro Chemicals Ltd., Goa for foreign collaboration with Pillsbury for manufacture of canned button mushrooms and beans under EOU.
13. L & T and Pic-up is putting up plant to process potatoes, other vegetables and fruit products for distribution in the domestic market. The cost of the project is Rs. 13 crores.
14. Grape processing plant has been set up in MIDC at Miraj.

15. The industry is opened for FERA, MRTP Companies.
16. Double Cola manufacturing company is entering in collaboration with Alfa Level of Sweden for the supply of machinery needed for its fruit and vegetable processing plant. It is expected to be in market in two years.

B) Horticulture Production in Sirsi Taluka :-

Origin and Growth :-

Agriculture is the main occupation of the people in the taluka. Horticulture began as an allied activity along with agriculture and animal husbandry. Initially horticulture was not on commercial basis. Fruits and vegetables were grown just for family consumption. Areca, coconut, banana, elaichi, cashew, mango were grown in the garden. The taluka can be divided into two parts based on the nature of the soil and rainfall viz. Eastern region and western region. There is more forest in the western part. Here the horticulture crops are more than the basic agricultural crops. Slowly commercial horticulture started in this taluka only after 1970s.

Pleasure garden culture was mainly confined to rich and upper middle class people. Certain -

Ayurvedic doctors (Vaidyas) developed some garden consisting of plants having medicinal value. Dr. Patwardhan's garden in the town is notable one.

Alongwith the increase in population, the demand for fruits and vegetables increased. Changing life style of the people, increase in the urban population, rise in the literacy level, and increase in the number of working women has resulted in dramatic changes in the horticulture production and processing.

More than 4,000 hectares of vacant land was available for cultivation in the taluka. (Other than agricultural land under cultivation.) In 1980s there was gradual development of commercial horticulture alongwith emergence of certain processing units.

Management of Horticulture :-

There are four categories of agencies contributing to the horticulture development in Sirsi taluka.

1. Govt. Departments, District Level and Taluka level.
2. Private Commercial Horticulture Centres.
3. Research Stations.
4. Co-operative Concerns.

5. Individual Horticulture Farming.

Government Departments :-

Uttar-Kannada District Horticulture office is located here at Sirsi. There is also taluka level Horticulture office. The department is maintaining a horticultural farm at terakanahalli village near Sirsi. Horticulture nursery, fruit farms are organised and managed by the horticulture department. State level, district level, plans are implimented through this department. Technical advice is given to farmers, quality seed and saplings are distributed. Educative programs are organised periodically. Government Financial assistance is also given to farmers.

Private Commercial Horticulture Centres :-

These are in fact, trading centers in the field of horticulture. "Krashi Bharati" in the town is a notable centre. It undertakes to sell the seeds, fruit plants and various flower plants. A good nursery is maintained.

Research Station :-

University of Agricultural Sciences Dharwar, has set-up a research station at Banwasi Road, Near Sirsi.

Studies and various experiments are carried at this research station. Agricultural scientists, plant pathologists, often interact with various persons in the field, and provide necessary guidance. It has helped in controlling plant diseases too.

Co-operative Concerns :

Kamadhenu Co-operative Milk and Fruit Processing Society Limited Gollikatta is a unique institution - established in 1962. As on 30.6.1989 there were 756 - individual members, 21 institutional members, and - Karnataka Government is also a member. Government had sanctioned land to the society for growing fruits. (on lease basis) Members of the society cultivate land. Mainly pineapple is grown. It produces jams, pulps, and juice. About 200 tons of pineapple fruits are processed annually at this co-operative society.

Totagars Co-operative Sale Society is helping the horticulture farmers by performing the function of marketing and financing. Mainly it deals with Arecanut and pepper cardmom, and also co-conuts.

Urban Co-operative Banks, D.C.C. Bankers are other financing agencies providing liberal credit facilities.

Individual Horticulture Farming :-

Sirsi consists of 226 villages with varied soil conditions, rainfall; other than agricultural land some vacant land is utilised for cultivating various kinds of horticulture crops. Areca and co-conut, pepper is grown in 5916 acrs of land. The value of annual production of arecanut comes to Rs.13 crores (based on 85-86 prices). 5551 small and marginal farmers and 6302 big farmers grow fruits and vegetables from negligible to considerable scale.⁸

Table No.7 and 8 highlights the area, quantity analysis of production of certain important horticulture products in the Sirsi Taluka.



Table No.7

Area under Production and the yield in Respect
of certain important Horticulture Products in the
Taluka.

Sl. No.	Name of the product	1984-85		1985-86		1986-87		1987-88		1988-89	
		AUP ⁺	YPH	AUP ⁺	YPH	AUP ⁺	YPH	AUP ⁺	YPH	AUP ⁺	YPH
1.	Mango	273	1	275	1	275	1	282.5	1	288	1
2.	Cashew	685	.5	693	.5	693	.5	693	.5	685	.5
3.	Chikku	186	7.5	187	7.5	187	7.5	180	7.5	185	7.5
4.	Pappai	18.5	8	18.5	8	18.5	8	16.5	8	15	8
5.	Tomato	30	6	35	6	35	5	25	5	15	5
6.	Pineapple	650	4	850	4	850	4	970	10	932	10
7.	Arecanut	2695	2.5	2700	2.5	2700	3	2710	3.5	2711	3.5
8.	Banana	285	10	249	10	249	10	191	10	180	10
9.	Jack-fruit	43	10	43	10	43	10	43	10	45	10
10.	Pepper	225	.6	255	.6	225	.5	158	.5	140	.5
11.	Co-conut*	1231	8	1261	8	1261	8	1301	8	1311	8
12.	Red Chilly	18	1	20	1	20	1	20	1	20	1
13.	Peru	51	2.5	48	3	48	3	38	3	28.5	3
14.	Elaichi	216	.12	226	.12	226	.13	126	.13	64	.13

AUP = Area Under Production YPH = Yield Per Hector

* Co-conut Yield Per Hector is mentioned in terms of thousands.

All other yield per hector is expressed in terms of tons.

+ AUP is expressed in terms of number of hectors.

Table No.8

Quantity of Horticulture Products

Produce in Sirsi Taluka during last Five years.

Sl.No.	Name of the product	1984-84 in tons	1985-86 in tons	1986-87 in tons	1987-88 in tons	1988-89 in tons
1.	Mango	273	275	275	282.5	288
2.	Cashew	342.5	346.5	346.5	346.5	342.5
3.	Chikku	1395	1402.5	1402.5	1350	1387.5
4.	Pappai	148	148	148	132	120
5.	Tomato	180	210	175	125	75
6.	Pineapple	2600	3400	3400	9700	9320
7.	Arecanut	6738.25	6750	8100	9486.75	9488.5
8.	Banana	2850	2490	2490	1910	1800
9.	Jack-fruit	430	435	438	450	450
10.	Pepper	153	153	112.5	79	70
11.	Red Chilly	18	20	20.5	20	20
12.	Peru	127.5	144	144	114	85.5
13.	Elaichi	27	28.25	29.38	16.38	8.32
14.	Co-conut *	9848	10088	10088	10408	10488

* Co-conut production is mentioned in terms of thousands
(Number of nuts)

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