



सत्यमेव जयते

REPORT
OF THE
**AD-HOC COMMITTEE ON FRUIT
AND VEGETABLE PRESERVATION
INDUSTRY**

1959

**DEPARTMENT OF COMMERCE AND INDUSTRY
GOVERNMENT OF INDIA**

**REPORT OF THE AD-HOC COMMITTEE ON FRUIT AND VEGETABLE
PRESERVATION INDUSTRY IN INDIA**

TABLE OF CONTENTS

PART No.		PAGE
	Preface	(i)
1	Introduction	1
2	Production	4
3	Fruit Products Order	30
4	Raw-Materials	35
5	Equipment and Machinery	44
6	Tariff Enquiries	46
7	Exports	48
8	Research and Investigational Work	57
9	Second Five Year Plan	60
10	Suggestions for Future Development of the Industry	65
11	Summary and Recommendations	69

APPENDICES

A.	Recommendations of the Chutney Sub-Committee	73
B.	Recommendations of the Morabba Sub-Committee	76
C.	List of machinery and equipment required by the industry	79
D.	List of machinery Fabricators	81
E.	Resolution of the Govt. on the Tariff Commission's Recommendations	83
F.	Summary of the development Programme in the Second Five Year Plan as recommended by the Panel on Fruit and Vegetable Preservation Industry	86
G.	Model Scheme—Small Scale Factory	90
H.	Model Scheme—Large Scale Factory	95

**REPORT OF THE AD-HOC COMMITTEE ON FRUIT AND
PRESERVATION INDUSTRY IN INDIA**

PREFACE

Ministry of Commerce and Industry, Government of India vide letter No. 23(1)/57-MC dated 24th January, 1958 constituted an *Ad Hoc* Committee to review the development of the preserved fruit and vegetable industry in India. The Committee consisted of the following :—

- (1) Shri T. R. Sathe, Special Officer, Ministry of Commerce and Industry—*Chairman*.
- (2) Shri V. A. Mehta, Development Officer (Food), Ministry of Commerce and Industry—*Member*.
- (3) Shri P. H. Bhatt, Senior Marketing Development Officer (Fruit Products), Ministry of Food & Agriculture, Directorate of Marketing and Inspection, Nagpur—*Member-Secretary*.

As Shri T. R. Sathe resigned his post subsequently, the report has been signed by the remaining two members only.

1.2. The terms and reference of the Committee were as follows—

- (i) To review the steps so far taken to develop preserved fruit and vegetable industry in India on the basis of recommendations made by various bodies like Planning Commission, Tariff Commission, etc.
- (ii) To examine the present position of the industry in regard to installed capacity, production, consumption, availability of raw materials and export of finished products.
- (iii) To assess the scope for further development of the industry in different regions of the country keeping in view the available facilities.
- (iv) To examine the extent and future scope for the indigenous production of different types of chemicals, raw materials and machinery required for the fruits and vegetable preservation industry.
- (v) To make such recommendations as the Committee may consider necessary having regard to the objective of developing fruit and vegetable preservation industry.

(ii)

1.3. The Committee held its first meeting on the 27th February, 1958 and subsequently met at Calcutta on the 22nd and 23rd March, 1958, along with the annual Convention of All India Food Preservers' Association. The Committee requested the fruit and vegetable products manufacturers in India and their associations to furnish material for drafting of the report according to the terms of reference. The Committee also requested the manufacturers to supply figures of production for the year 1957. The State Directors of Industries, horticulturists and Chambers of Commerce in various States were also addressed in order to obtain necessary information. Out of the large number of questionnaires sent, replies have been received from 13 manufacturers. Among the State Governments, replies have been received from Uttar Pradesh, Andhra Pradesh, Madhya Pradesh, Manipur and Himachal Pradesh. The Marketing Development Officers (Fruit Products) who are working under the Directorate of Marketing and Inspection and who are stationed at Calcutta, Madras, Bombay, Delhi and Amritsar were also requested to survey their respective zones and submit detailed report according to the terms of the reference of the Committee. These reports have been received and have been found useful in the preparation of this report.

1.4. The Committee has studied the previous reports published on the subject and has made reference to them in the body of the report. The Committee has endeavoured to collect as much information as possible in relation to the terms of reference. Some of the information has not been forthcoming. Attempt has however been made to include all the important aspects of the industry in this report.

1.5. The Committee takes the opportunity of thanking all those who have been kind enough to show their factories to the members of the Committee and discussed various problems of the industry with them. Valuable information was made available to the Committee by the Directorate of Marketing and Inspection, Ministry of Food & Agriculture.

1.6. The Committee places on record its appreciation of the efficient work done by Shri P. H. Bhatt, the Member-Secretary.

V. A. MEHTA, *Member.*

P. H. BHATT,

Member-Secretary.

NEW DELHI:

Dated the 22nd January, 1959.

CHAPTER 1

INTRODUCTION

1.1. The need for fruit and vegetable either fresh or preserved from the point of view of human nutrition is well recognised all over the world. Man does not live by bread alone. Protective foods whether derived from fresh fruits or vegetables or from other sources are equally essential. General malnutrition of our population is attributed not only to lack of optimum quantity of cereals or staple foods but also to lack of protective foods in our diet. The diet has to be a balanced one for the healthy growth of our population. The question of consumption of fruits and vegetables and their products assumes greater importance owing to the fact that a large percentage of our population is vegetarian.

1.2. Methods of preservation of fruits and vegetables may be broadly classified as (1) drying or dehydration, *e.g.* sundrying of fruits, (2) pickling or fermentation, as in the case of pickles, (3) high concentration of sugar, as the case of jam and 'murrabba', (4) chemical preservation as in the case of squashes or fruit beverages, (5) sterilization by heat as in the case of canned fruit and vegetables, (6) refrigeration as in the case of cold storage and preservation by freezing. The art of food preservation has now developed into a technology which embraces the principles of various sciences like agriculture, horticulture, chemistry, bio-chemistry, microbiology etc. Most of the advanced countries have taken the fullest advantage of the scientific developments in this direction and have developed the fruit and vegetable industry on a large scale. It is, therefore, but proper that India too should progress in this field.

1.3. The progress of fruit and vegetable preservation industry in India in recent years has not been very significant. The existing annual production is estimated to be of the order of 1,30,000 tons of fruit and vegetable products which does not take into account, the small quantities prepared in the household. The world production of canned fruits and vegetables is estimated at 10 million tons in 1952. The production in the U.S.A. is estimated at 6 million tons, in the U.K. at 4,18,000 tons, in Canada 3,16,000 tons and in Australia at 1,58,000 tons. Even in a small country like Malaya, where the conditions cannot be said to be more favourable than those in India the estimated production of canned fruits is over 14,000 tons. It is, therefore, high time that this industry is developed in India on the lines of its counterpart in other countries.

1.4. As far as fruit and vegetable preservation industry is concerned, India does not lack in adequate resources. The potentialities for developing this industry in this country are immense. At present only 0.12 per cent of the production of fresh fruits and vegetables is utilised by the industry and nearly 15 to 20 per cent of the production goes to waste owing to transport and other bottlenecks. Apart from the existing available resources, it may be mentioned that horticulture in the country is expanding rapidly. Several

regions offer possibilities of further horticultural development because the growers have no alternative to horticultural crop. Farmers in the foot-hills of Assam, as for example, have either to take to cultivation of oranges, pine apples or other suitable horticultural crops or allow their land to turn into forests. The vast areas in the foot-hills of Himalayas from Kashmir to Assam also, afford immense possibilities for horticultural development. These areas are not only suitable for the cultivation of temperate region fruits, but also for a large variety of fruits which are generally grown in lower altitudes. Further, the development of the River Valley Projects and others, during the first two phases of the planned economy in the country are likely to bring about a revolutionary change in the agri-horticultural pattern of the country. Large areas which are today in arid condition when brought under irrigation would bring into existence regions which are likely to be predominantly horticultural, in view of the fact that an acre of horticultural crop gives higher net income to the farmer. The Indian Council of Agricultural Research is sponsoring a scheme for increasing the area under horticulture by about 300,000 acres by the end of the Second Five Year Plan period, at the rate of 60,000 acres per year. It must be emphasised that horticultural development and the development of fruits and vegetable preservation are interlinked with each other. Larger production can only be profitable to the primary producer if a simultaneous and co-ordinated development of horticulture and fruit preservation industry is planned. In countries like the U.S.A. and Australia, the horticultural development has been fundamentally brought about by the expansion of the preservation industry.

1.5. Primary producers of fresh fruits and vegetables suffer from inadequate returns due to innumerable reasons, such as gluts during peak period of production, low prices below the economic return, inadequacy of quick transport, absence of other alternative uses, absence of efficient marketing system and marketing intelligence etc. It is well-known that at present neither the producer nor the small-scale dealer has any other choice in disposing of his produce than to send it to the nearest consuming centre and sell it at whatever price it fetches. Fruit and vegetable preservation industry can play an important part in ensuring against uneconomic returns to the primary producer, against hazards of loss through spoilage or break down in transport and can act as an agency for providing alternative uses for valuable food that would otherwise go to waste.

1.6. Every orchard produces different grades of fruits and besides the first and second grade fruits there is a sizeable quantity of fruits which are at present wasted due to damage and blemishes. A number of varieties of fruit products can be manufactured from these otherwise unutilised fruits which would give an additional income to the grower. It will be beneficial to the grower to retain low grade fruits with him and send only first and second grade fruits to the market for consumption as fresh fruits as that would bring him better returns. Development of fruit and vegetable preservation will not only create alternative occupation for the grower but will give him by-products like cattle-feed, manure, etc.

1.7. India is a country with varied soil and climatic conditions. Several varieties of fruits and vegetables which are available in one part of the country

are not found in the other. For instance, Alphonso mangoes of Bombay, litchies of Uttar Pradesh and Bihar, pineapples of the South and Assam are fruits which can easily be made available to the other parts of the country by converting into preserved fruit products. Moreover, the seasons of various fruits and vegetables are short and if these fruits and vegetables are to be made available during the off season and to other parts of the country the best means is to preserve them.

1.8. India can boast of a number of fruits and vegetables which are indigenous to it. Amongst these, the more important ones are mangoes, guavas, litchies, papayas, mandarin oranges and some vegetables. There is a demand for these fruits and vegetables from a very large number of our nationals abroad and from people who have lived in India. There are also other connoisseurs of these products. Export market for such indigenous fruits and vegetables can therefore be easily expanded by means of preservation.

1.9. Fruits and vegetable preservation industry can be developed on cottage, small and large-scale basis. It can be moulded to suit any pattern of development. In the rural areas where simple methods of preservation can be propagated, it will give occupation to a large number of people particularly in seasons when there is considerable unemployment. The growth and development of fruit preservation industry in urban areas would bring into existence large number of small units which may cater to the local requirements, thereby creating additional employment. The large-scale sector will be able to supply the nation-wide demand for varieties of fruit products. The scope of labour employment in the fruit and vegetable preservation units in India is also comparatively greater as this industry involves a number of manual operations.

CHAPTER 2

PRODUCTION

1.1. Although there is tremendous scope for development of fruit and vegetable preservation industry in a predominantly agricultural country like India, the present state of the industry is far from satisfactory. Statement 1 below indicates the production of various categories of fruit products for the years 1953 to 1956.

In the year 1956 there has been an increase in production by nearly nine thousand tons, *i.e.*, from 14,063 tons in 1955 to 23,146 tons in 1956. This has been largely due to increase in the production figures by 5,000 tons of pickles, 2,000 tons of carbonated fruit beverages, 900 tons of canned vegetables, 800 tons beverages, 320 tons preserves, 175 tons vinegar, 135 tons jams, jellies and marmalades and 70 tons of tomato products. There has been an overall increase in the production of almost all items of production. However, there has not been comparative increase in the value of the total production due to the fact that major increase in the production was on account of pickles which is comparatively a cheaper item.

1.2. Production of fruit products in different States in India during 1954, 1955 and 1956 is indicated in Statement No. 2. There has been a significant increase in the production in the States of Punjab, Bombay and Delhi. Production in Madhya Pradesh appears to have gone down due to re-organisation of that State. Production in States like Kerala, Madras, Mysore, Uttar Pradesh and West Bengal has shown a steady increase.

1.3. The production data given in Statements is based on the figures submitted by the manufacturers licenced under the Fruit Products Order, 1955. Fruit and vegetable preservation industry was brought under control since 1946 in order to regulate the industry and bring about its healthy development. Details of the working of the Fruit Products Order will be discussed later. The figures given above relate to the production reported by the manufacturers. The figures of production estimated are on the lower side as large number of manufacturers may not have given the correct production returns and further there is also some production which has not been covered under the licences issued. To arrive at realistic figures the Panel constituted in 1955 by the Government of India for drawing out Development programme for fruit and vegetable preservation industry, estimated an additional production of 6,500 tons. This assumption seems to be valid even now. The total estimated production, therefore, for the year 1956 could be taken as 29,646 tons or say 30,000 tons valued at Rs. 334 lakhs.

1.3.1. Statements No. 2A and 2B indicate the production of various items of fruits and vegetable products for the year 1957 and the state-wise production respectively. It will be observed that although the tempo of increase in production has not been maintained as compared to the previous year, the increase in production of certain items is very significant. Mention may be made here of increase in the production of canned fruits and vegetables, jams, jellies, marmalades, beverages and preserves. The increase of production is significant in the States of Bombay, Delhi, Uttar Pradesh and West Bengal.

STATEMENT NO. 1

Estimated production itemwise of fruit and vegetable products in India from 1953 to 1956

Item	1953			1954			1955			1956		
	Quantity in tons	% tons to total tons	Value Rs. (000)	Quantity in tons	% tons to total tons	Value Rs. (000)	Quantity in tons	% tons to total tons	Value Rs. (000)	Quantity in tons	% tons to total tons	Value Rs. (000)
1. Fruit beverages	1,079	7.6	2,387	1,099.5	9.5	2,180	1,662.9	11.5	3,565	2,408.7	10.4	4,633
2. Synthetic syrups	767	5.4	1,150	537.0	4.7	1,111	608.7	4.3	1,278	613.8	2.7	1,349
3. Juices & Pulps	478	3.4	256	400.0	3.7	729	737.5	5.3	1,340	725.3	3.1	1,567
4. Vinegar	532	3.7	444	422.5	3.7	381	455.3	3.3	457	629.5	2.7	516
5. Chutney	630	4.5	1,238	654.0	5.7	1,254	842.6	6.0	1,456	824.1	3.6	1,531
6. Preserves	1,015	7.1	1,157	1,193.0	10.3	1,519	1,362.8	9.7	1,602	1,661.7	7.2	1,920
7. Crystallised fruits	136	1.0	293	100.0	.8	155	88.0	.6	172	75.9	.3	139
8. Jams, jellies and marmalades ..	413	2.9	920	401.0	3.5	938	554.2	3.9	1,350	688.1	3.0	1,628
9. Tomato products and other sauces	218	1.5	422	193.0	1.7	403	277.2	2.0	559	344.1	1.5	712
10. Pickles	1,737	12.6	1,058	1,726.0	15.0	1,089	2,240.9	15.9	1,436	7,247.9	31.3	1,923
11. Canned fruits	696	4.9	1,512	896.5	7.8	2,021	1,030.1	7.3	2,093	949.3	4.1	1,936
12. Canned vegetables	544	3.8	793	1,126.0	9.7	1,596	1,059.3	7.5	1,500	1,923.9	8.3	2,749
13. Aerated fruit beverages	5,702	40.1	3,345	2,737.0	23.9	2,759	2,839.3	20.2	3,371	4,941.7	21.4	4,835
14. Others	210	1.5	219	..	..	..	346.3	2.5	149	112.0	.4	196
Total	14,157	100.0	15,194	11,485.5	100.0	16,135	14,105.1	100.0	19,928	22,946.0	100.0	25,634

or

STATEMENT NO. 2

Statewise estimated production of fruits and vegetables products for 1954 to 1956 in India

Item	1954		1955		1956	
1. Andhra	191·00	5,75,027	177·00	1,78,893	417·20	5,78,960
2. Assam	24·00	55,718	27·70	57,178	54·80	1,22,732
3. Bihar	29·00	46,081	25·70	43,723	29·30	68,764
4. Bombay	3,266·00	46,31,598	3,959·70	61,27,078	6,050·10	83,64,974
5. Delhi	2,273·00	24,36,709	2,811·60	40,38,250	4,391·60	56,40,662
6. Kerala	362·00	6,81,888	227·90	4,98,357	427·90	7,67,409
7. Madras	245·00	4,59,645	243·70	3,67,614	385·00	5,93,376
8. Madhya Pradesh	460·00	9,44,871	635·70	9,08,958	9·30	24,152
9. Mysore	184·50	4,27,899	253·80	6,24,781	377·4	8,50,887
10. Punjab (Pepsu)	1,610·00	13,63,562	1,857·60	15,41,897	6,705·7*	19,56,021
11. Rajasthan	42·00	75,629	30·00	52,652	47·6	80,629
12. Uttar Pradesh	1,191·00	16,84,188	1,630·00	21,77,509	1,758·7	23,85,388
13. West Bengal	1,625·00	27,00,855	2,146·50	35,62,380	2,491·4	36,00,360
14. Himachal Pradesh	4·00	6,524	3·26	7,547*	Included in Punja .	
15. Hyderabad	21·00	38,493	12·20	14,520†	Included in Andhra.	
16. Madhya Bharat	14·00	31,444	18·10	29,942‡	Included in Madhya Pradesh.	
Total	11,541·50	1,61,60,131	14,060·46	2,03,31,279	23,146·004	2,50,34,314

8

STATEMENT No. 2A

Production of different Fruit and Vegetable products in India in 1957

Serial No.	Name of the product	Production in Tons	Value in Rs.
1	Synthetic Syrups	558·36	13,85,914
2	Fruit beverages	2,493·24	53,65,719
3	Juices and pulps	1,017·09	21,11,124
4	Vinegar	704·34	5,28,856
5	Chutney	783·65	16,65,990
6	Preserves	1,832·03	21,26,834
7	Crystallised fruits	86·21	1,52,790
8	Jams, jellies and marmalades	885·11	22,20,648
9	Tomato products and sauces	454·47	9,91,713
10	Pickles	6,546·30	19,92,293
11	Canned fruits	1,335·13	28,55,450
12	Canned vegetables	2,733·43	44,17,142
13	Aerated fruit beverages	5,988·14	53,89,376
14	Others	158·85	4,32,451
Total		25,576·35	3,16,35,700

STATEMENT No. 2B

Statewise production of Fruit and Vegetable in India in 1957

Serial No.	Name of the State	Quantity in tons.	Value in rupees
1	Andhra	237·13	3,96,144
2	Assam	109·10	2,11,128
3	Bihar	12·50	28,444
4	Bombay	7,378·50	1,05,78,386
5	Delhi	5,508·94	63,39,225
6	Kerala	554·69	11,65,975
7	Madras	406·10	6,45,785
8	Madhya Pradesh	18·79	30·229
9	Mysore	537·60	10,54,712
10	Punjab	5,100·48	21,62,115
11	Rajasthan	57·76	1,05,968
12	Uttar Pradesh	2,886·40	47,03,645
13	West Bengal	2,768·36	42,13,944
Total		25,576·35	3,16,35,700

The production for 1957 would be about 32,000 tons valued at Rs. 388 lakhs.

1·4. Production of fruit and vegetable products is carried out in different parts of India almost all round the year. Statement No. 3 gives the months in which different fruit and vegetable products are produced in various states.

1.4.1. The progress in the production of different items of fruit products is discussed below in detail.

Beverages

1.4.2. The beverage industry covers (i) fruit beverages (ii) synthetic syrups and sherbats (iii) juices, pulps and (iv) aerated fruit beverages. Statement No. 4 shows the production of these four categories. It may be observed that the beverage industry has major share of the industry as it contributed 37.6 per cent of the total production of fruit products in the country in 1956.

1.4.1.2. In the Statement No. 5 statewise distribution of production of the fruit beverage industry *i.e.*, squashes, crushes, cordials, barley water, concentrates etc. is indicated. It will be seen that the production is concentrated in the Bombay State which contributes 62 per cent of the total production. Fruit beverages production is concentrated in Delhi, Mysore, West Bengal and Punjab. There is a considerable scope for increase in production in Uttar Pradesh, Andhra, Assam, Madras and Kerala States where there is no shortage of raw materials. Some of the Union territories like Himachal Pradesh, Tripura and Manipur can also take up the production of fruit beverages.

1.4.1.3. The production of synthetic syrups as indicated in Statement No. 6 has been more or less steady. The figures, however, do not give a correct picture of production within the country as there is sizeable quantum of production which is unauthorised with reference to Fruit Products Control Order.

The Bombay State contributes the major share of 42 per cent in the production.

1.4.1.4. The production of juices and pulps is increasing steadily. The scope for this item is improving every year. The production figures shown in Statement No. 7 show higher share of Bombay State which is the main supplier of mango pulp and orange juice. Kerala State contributes mainly pineapple juice while Uttar Pradesh contributes apple, apricot and other pulps.

1.4.1.5. The carbonated fruit beverages are being marketed mainly in important towns in India as is evident from Statement No. 8. The possibilities of increased production of these items are immense. More and more carbonated beverages with fruit juice as the base are being now marketed as for example carbonated orange and mango juice beverages.

Canned fruit and vegetables

1.4.2. The production of canned fruits and vegetables has increased since 1953 as shown in Statements No. 9 and 10. The production of canned fruits in 1956 remained almost the same as in 1955 but in the case of canned vegetables there has been a considerable increase. Statement No. 9 shows that Kerala State took a lead in the production of canned fruits in the year 1956. This was mainly due to expansion of the production of canned pineapple. The other important centres are in Andhra, Delhi, Uttar Pradesh and Bombay. The major items of production in case of canned fruits have been pineapples and mangoes. Fruits like orange, pears, peach, cherries, apricots and papaya are also canned. Canning of litchies, guavas, jack fruit, banana and other fruits however needs further attention.

STATEMENT NO. 3

Monthly chart of manufacture of fruit and vegetable products

State	Synthetic Syrup	Fruit Beverages	Vinegar	Chutney	Tomato Products & Sauces	Preserves & crystallised Fruits	Canned Fruits	Canned vegetables	Pickles	James, Jellies and Marmalades
Andhra	.. Mar.-July	Mar.-June Nov.-Dec.	..	..	..	..	May	Dec.	Mar.-May	June.-Nov.
Assam	.. ..	Jan.-Aug. Nov.-Dec.	..	April-May	Feb.-March	..	Feb.-Mar. July-Aug.	..	..	Mar.-April July-Oct.
Bihar	.. Apr.-May	Apr.-May	Apr.-May Aug.-Oct.	..	Jan.-Feb.	Nov.	July	March Nov.-Dec.	Jan.-Feb. May-Dec.	Jan.-Feb. June-July December.
Bombay	.. Feb.-June Oct.-Nov.	Jan.-Dec.	Jan.-Dec.	Jan.-Dec.	Jan.-April Oct.-December	Sept.-Dec.	Jan.-Dec.	Jan.-Dec.	Mar.-Oct.	Jan.-Dec.
Delhi	.. Jan.-June	Jan.-June	Jan.-Dec.	..	Jan.-Dec.	Jan.-Feb.	Feb.-July Oct.-Dec.	Mar.-June Oct.-Dec.	Jan.-June Aug.-Oct.	Jan.-Dec.
Madhya Pradesh	.. Apr.-June	..	..	..	..	..	..	..	..	..
Madras	.. Jan.-Dec.	Jan.-Dec.	Jan.-Dec.	Jan.-Dec.	Jan.-Dec.	..	Apr.-May Oct.-Dec.	..	Jan.-Dec.	Jan.-Dec.
Mysore	.. Mar.-May	Feb.-Apr.	Jan.-Dec.	Jan.-Dec.	Jan.-Dec.	Nov.-Dec.	June-July	..	Jan.-Dec.	June-Aug. Nov.-Dec.
Punjab	.. Mar.-July	Jan.-Aug.	Apr.-July	Apr.-July	May-July	Jan.-Dec.	..	..	May-Dec.	June-Aug.
Rajasthan	.. Jan.-May	Jan.-June	Apr.-May	..	..	Aug.-Sept.	..	..	May-Aug.	..
Uttar Pradesh	.. Mar.-June	Apr.-July	Jan.-Dec.	May-July	Jan.-Feb.	Jan.-Feb. Aug.-Dec.	Jan.-Feb. July-Aug. December	Feb.-March June-Sept.	Jan.-Feb. July	Jan.-Feb. June-Nov.
W. Bengal	.. Jan.-Oct.	Jan.-Dec.	Jan.-Dec.	Jan.-Dec.	Jan.-Dec.	Jan.-Oct.	Jan.-Dec.	Jan.-Dec.	Jan.-Dec.	Jan.-Dec.
Kerala	.. ..	..	..	..	..	..	Apr.-June Sep.-Dec.	Jan.-Mar. Oct.-Dec.	..	Jan.-Dec. May-July Sept.-Dec.

STATEMENT NO. 4

Estimated production of Beverages in India from 1953 to 1956

Items	1953		1954		1955		1956	
	Quantity in tons	Value in Rs. (in thousand)	Quantity in tons	Value in Rs. (in thousand)	Quantity in tons	Value in Rs. (in thousand)	Quantity in tons	Value in Rs. (in thousand)
1. Fruit Beverages ..	1079	2,387	1099.5	2,180	1622.9	3,565	2408.7	4,633
2. Synthetic Syrups ..	767	1,158	537.0	1,111	608.7	1,278	613.8	1,349
3. Juices and Pulps ..	478	256	408.0	729	737.5	1,340	725.3	1,567
4. Aerated Fruit Beverages	5702	3,345	2737.0	2,759	2839.3	3,371	4941.7	4,835
	8026	7,146	4781.5	6,779	5808.4	9,554	8689.5	12,844

STATEMENT NO. 5

Estimated Production of Fruit Beverages in India from 1953 to 1956

State	1953			1954			1955			1956		
	Tons	Rs.	% tons to total tons	Tons	Rs.	% tons to total tons	Tons	Rs.	% tons to total tons	Tons	Rs.	% tons to total tons
1. Andhra ..	..	..	..	10	28,001	0.9	15.3	46,578	0.9	22.3	51,808	.9
2. Assam ..	..	..	..	18	39,712	1.7	23.1	48,165	1.4	36.7	82,577	1.5
3. Bihar ..	..	..	..	2.60	4,828	.2	2.3	4,828	0.1	0.7	1,823	neg.
4. Bombay ..	528.0	11,98,522	49.6	563.0	9,79,991	51.2	469.0	9,73,118	28.7	1492.1	10,74,997	62.0
5. Delhi ..	25.0	42,765	2.4	30.0	55,815	2.7	577.0	12,85,130	36.4	425.9	14,43,823	17.7
6. Madras ..	23.0	66,620	2.2	27.0	53,557	2.5	17.2	29,130	1.1	10.2	31,993	.4
7. Kerala ..	..	..	..	..	..	..	0.02	68	..	0.5	1,225	..
8. Madhya Pradesh	98.0	1,87,901	9.2	56.0	1,23,529	5.1	59.4	1,15,041	3.7	..	..	..
9. Mysore ..	91.0	1,98,712	8.5	104.6	2,42,929	9.5	119.9	3,27,513	7.4	141.1	3,38,726	5.9
10. Punjab ..	143.0	2,93,372	13.4	127.0	2,54,728	11.6	123.8	2,91,921	7.7	123.7	3,05,138	5.2
11. Rajasthan ..	..	..	..	6.0	12,740	.5	3.3	7,371	.2	2.0	4,428	.1
12. Uttar Pradesh	22.0	44,205	2.1	30.0	64,052	2.7	23.4	50,422	1.4	13.2	30,883	.5
13. West Bengal	134.0	3,41,308	12.6	122.0	3,14,371	11.1	177.3	3,51,671	10.9	140.3	3,65,225	3.5
14. Others ..	..	..	..	3.33	8,158	.3	2.4	5,156	.1	..	..	..
Total ..	1064.00	23,73,405	100.00	1090.05	21,82,411	100.0	1622.9	35,65,391	100.00	2408.7	46,32,646	100.00

STATEMENT NO. 6

Estimated Production of Synthetic Syrups in India from 1953 to 1956

State	1953			1954			1955			1956		
	Tons	Rs.	% of tons to total tons	Tons	Rs.	% of tons to total tons	Tons	Rs.	% of tons to total tons	Tons	Rs.	% of tons to total tons
1. Andhra ..	..	..	..	2.00	4,444	.4	1.4	3,976	0.2	7.4	16,005	1.2
2. Assam ..	..	..	..	0.66	1,543	.1	0.2	565	neg.	0.3	905	..
3. Bihar ..	..	..	..	4.00	7,079	.7	2.9	5,766	0.5	7.8	21,333	1.3
4. Bombay ..	238.0	561,794	31.9	199.0	4,58,933	37.1	227.9	625,599	37.5	257.0	615,667	41.9
5. Delhi ..	295.0	106,583	39.6	72.0	1,08,661	13.4	82.3	118,434	13.51	74.1	143,651	12.1
6. Madras ..	43.0	81,687	5.8	47.0	82,470	8.8	78.8	113,324	12.91	10.8	123,057	11.6
7. Kerala ..	..	..	..	..	..	..	0.5	282	neg. ¹	..	..	..
8. Madhya Pradesh	13.0	29,959	1.8	14.0	32,746	2.6	12.6	29,990	2.6	7.4	19,867	1.2
9. Mysore ..	2.0	4,963	.2	2.1	3,410	.4	4.5	8,332	0.7	10.4	30,220	1.7
10. Punjab ..	24.33	40,382	3.2	39.33	87,070	7.3	37.3	72,484	6.1	51.9	99,784	8.4
11. Rajasthan ..	18.0	33,237	2.4	31.0	56,447	5.8	21.6	43,141	3.5	30.2	62,199	4.9
12. Uttar Pradesh	26.0	48,451	3.5	42.0	81,331	7.8	38.8	17,983	6.4	38.2	70,482	6.2
13. West Bengal	73.0	162,589	9.8	65.0	173,651	12.1	87.4	144,347	14.0	58.3	146,171	9.5
14. Others ..	13.0	27,292	1.8	19.0	43,195	3.5	12.8	33,572	2.1	..	..	..
Total ..	745.33	10,96,937	100.0	537.0	11,40,980	100.0	608.71	12,77,792	100.0	613.81	13,49,341	100.00

STATEMENT NO. 7

Estimated Production of Juices and Pulps in India from 1953 to 1956

State	1953			1954			1955			1956		
	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons
1. Andhra ..	..	..	..	..	..	..	2.4	5,527	0.3	11.8	18,852	1.6
2. Assam ..	..	..	..	2.0	4,165	.5	1.9	2,500	0.3	4.0	7,580	.6
3. Bihar ..	..	..	..	0.60	1,010	.1	0.5	1,010	..	0.1	252	..
4. Bombay ..	327.0	5,94,789	62.4	121.0	1,82,162	28.3	303.2	7,97,540	41.1	406.8	10,59,912	56.1
5. Delhi ..	29.0	44,785	5.5	29.0	45,455	6.8	41.7	74,043	5.7	43.4	74,182	6.0
6. Madras ..	14.0	12,304	2.7	15.0	17,172	3.5	11.8	13,667	1.6	11.7	13,806	1.6
7. Kerala ..	94.0	1,88,928	17.9	133.0	2,62,151	31.1	33.68	66,191	4.6	94.6	1,85,036	13.1
8. Madhya Pradesh	25.0	48,804	4.8	92.0	1,53,213	21.5	206.6	1,29,872	28.0	..	..	..
9. Mysore ..	9.0	11,090	1.7	13.7	27,360	3.2	22.3	35,156	3.0	47.8	72,016	6.6
10. Punjab ..	4.0	8,995	.8	.66	1,905	.1	1.7	1,651	.3	10.7	20,464	1.4
11. Rajasthan ..	..	..	..	..	..	..	..	..	..	..	..	..
12. Uttar Pradesh	9.0	15,057	1.7	9.0	15,267	2.1	103.4	1,97,761	14.0	82.7	93,087	11.4
13. West Bengal	13.0	20,100	2.5	12.0	19,562	2.8	8.2	16,156	1.1	11.7	21,459	1.6
14. Others ..	..	..	..	..	..	..	..	..	..	..	..	..
Total ..	524.0	9,44,852	100.0	428.0	7,29,422	100.0	737.6	13,40,874	100.0	725.3	15,66,646	100.0

15

STATEMENT No. 8

Estimated Production of Aerated Fruit beverages in India from 1953 to 1956

State	1953			1954			1955			1956			
	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons	
1. Andhra	
2. Assam	
3. Bihar	
4. Bombay	..	4,334	23,23,805	76.0	1,185	11,79,724	43.0	1486.5	15,69,894	52.4	1330.7	13,24,756	26.9
5. Delhi	..	136.8	10,21,505	24.0	997	9,39,816	36.1	732.0	9,86,466	25.8	2235.5	19,522	45.2
6. Madras
7. Kerala
8. Madhya Pradesh.
9. Mysore
10. Punjab	1.0	885	Neg.	1.0	925	Neg.	..
11. Rajasthan
12. Uttar Pradesh	240	2,39,600	8.7	159.4	1,19,600	5.6	281.1	1,39,957	5.7	..
13. West Bengal	335	4,00,000	12.2	460.4	6,94,152	16.2	1093.4	8,17,503	22.2	..
14. Others
	57.02	33,45,310	100	2,757	27,59,140	100.0	2839.3	33,70,997	100.0	4941.7	42,35,397	100.0	..

STATEMENT No. 9

Estimated Production of Canned Fruits in India from 1953 to 1956

State	1953			1954			1955			1956		
	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons
1. Andhra ..	..	..	..	128.0	4,36,470	14.3	140.8	1,92,845	13.7	184.8	2,84,980	19.5
2. Asaam ..	..	..	..	1.3	2,862	.1	0.5	730	..	7.1	12,995	.7
3. Bihar ..	..	..	..	7.00	10,859	.8	6.8	10,859	.6	5.4	15,345	.6
4. Bombay ..	225.0	5,36,770	32.7	140.0	3,54,328	15.6	110.5	2,70,644	10.7	135.4	6,63,672	14.3
5. Delhi ..	77.0	1,50,149	11.1	72.0	1,46,151	8.0	140.6	3,20,454	13.7	166.4	3,96,711	17.5
6. Madras ..	71.0	1,10,893	10.3	40.0	53,359	4.5	52.3	76,882	5.2	2.0	4,944	.2
7. Kerala ..	193.0	4,29,446	28.1	187.5	3,37,485	20.9	172.12	3,77,044	16.7	213.7	4,06,560	22.5
8. Madhya Pradesh	42.0	95,932	6.1	179.0	4,19,616	20.0	225.0	3,86,567	21.9	..	..	..
9. Mysore ..	6.0	1,2,993	.8	12.7	30,324	1.4	30.0	55,659	2.9	48.1	72,659	5.1
10. Punjab —	..	..	..	..	..	..	..	..	..	..	..	..
11. Rajasthan —	..	..	..	..	..	..	..	..	..	..	..	..
12. Uttar Pradesh	24.0	52,258	3.5	37.0	78,914	4.1	88.1	2,90,304	8.5	139.7	2,87,923	14.7
13. West Bengal	50.7	1,07,409	7.4	92.0	1,51,099	10.3	62.9	1,29,055	6.1	46.7	90,407	4.9
14. Others ..	..	..	..	..	..	..	..	..	..	..	..	..
Total ..	688.7	14,95,850	100.0	896.5	20,21,476	100.0	1030.1	20,43,043	100.0	949.3	19,36,202	100.0

12

STATEMENT No. 10

Estimated Production of Canned Vegetables in India from 1953 to 1956

State	1953			1954			1955			1956		
	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons
1. Andhra ..	..	..	..	48.0	1,01,069	4.3	5.0	8,020	0.5	161.8	1,65,837	8.4
2. Assam ..	..	..	..	..	..	..	..	..	..	0.06	144	..
3. Bihar ..	..	..	..	5.0	7,297	1.5	4.5	7,297	0.5	8.4	13,789	.5
4. Bombay ..	52.0	97,380	10.1	31.0	65,543	2.8	78.6	1,43,275	7.4	666.3	10,29,182	43.6
5. Delhi ..	82.0	1,05,680	16.0	93.0	1,21,379	8.2	141.1	1,77,348	13.3	187.3	2,60,795	9.7
6. Madras ..	38.0	37,111	7.9	29.0	45,636	2.6	0.4	825	Neg.	0.6	1,140	..
7. Kerala ..	7.0	11,562	1.3	18.0	33,377	1.6	0.24	585	Neg.	102.3	1,44,543	5.3
8. Madhya Pradesh	56.0	2,41,243	30.4	78.0	1,16,300	6.9	81.5	1,25,590	7.7	..	..	..
9. Mysore ..	..	..	..	..	..	..	..	..	..	..	..	..
10. Punjab ..	..	..	..	..	..	..	..	..	..	..	..	..
11. Rajasthan ..	..	..	..	..	..	..	..	..	..	..	..	..
12. Uttar Pradesh	49.4	71,162	9.0	445.0	6,49,508	39.0	390.3	5,66,930	36.8	661.4	8,93,556	34.4
13. West Bengal	130.2	1,91,373	25.3	379.0	5,54,114	33.6	357.7	4,70,330	33.8	135.8	2,40,197	7.1
Total ..	514.2	7,58,511	100.0	1,126.0	15,94,223	100.0	1,059.3	1,500,200	100.0	1,923	2,749,183	100.0

1.4.2.2. In the case of canned vegetables the major share of production has been divided between West Bengal and Uttar Pradesh which together contribute 69 per cent of the production. The States of Delhi, Andhra, Bombay and Kerala contributed the rest of the production. Vegetable canning industry needs to be further developed in several States particularly Punjab, Mysore, Assam and Bihar.

1.4.2.3. Statement No. 11 gives information regarding items of products manufactured from different types of fruits and vegetables, months of manufacture and the main centres of production. It may be stated that substantial production of canned fruits and vegetables is at present supplied to the Army. Statement No. 12 indicates the purchase of canned fruits and vegetables by the Army Purchase Organisation during last five years. It may be observed that the percentage of purchase for the army is 40% and 80% for canned fruits and vegetables respectively. Almost the entire production of canned vegetable except certain quantities of canned peas is at present manufactured exclusively for the army. Scope for civilian market as well as for export of canned vegetables needs to be further explored.

STATEMENT No. 11

Monthly chart of manufacture of canned fruit & vegetable products

Name of fruit or vegetable (1)	Products (2)	Months (3)	Main centres of production (4)
Mango	.. Canned mango slices in syrup, mango pulp, juice, etc.	April-July ..	Bombay, Calcutta, Kadium, Delhi, Mathura, Bangalore and Vijayawada.
Pineapple	.. Canned pineapple slices, juice, etc. ..	Nov.-Dec. .. Mar.-June ..	Trichur, Bangalore, Bombay, Calcutta and Silchar.
Orange	.. (i) Canned orange segments, concentrate, canned juice. (ii) Barreled juice or juice for squash.	July-Aug. .. Nov.-Dec. Feb.-April.	Assam and West Bengal Nagpur. Nagpur, Calcutta, Bombay, Bangalore, Amritsar, Delhi, Gauhati (Barnihat), Silchar.
Guava	.. Canned halves ..	Dec.-Jan.	Allahabad, Calcutta, Bombay, and Mathura.
Papaya	.. Canned cubes ..	Aug.-Jan.	Bombay, Mathura, Calcutta, Nagpur.
Cherry, Peach, Apricot.	Canned	May-Aug.	Delhi, Mathura, Bombay, Srinagar, Pathankot, Haldwani.

STATEMENT NO. 11—*contd.*

(1)	(2)	(3)	(4)
Pear, Plums ..	Canned ..	.. July-Sept.	Mathura, Delhi, Haldwani, Pathan- kot, Bombay.
Peas ..	Canned peas ..	Jan.-April	Mathura, Delhi, Lucknow, Nagpur, Allahabad, Bombay, Calcutta.
Tomatoes ..	(i) Canned tomatoes in tomato juice.	Oct.-Nov. Jan.-March.	Mathura, Nagpur, Calcutta, Bombay, Delhi, Trichur.
	(ii) Tomato juice and ketchup	Do.	Bombay, Delhi, Calcutta, Nagpur, Mathura, Amritsar, Madras.
Potatoes ..	Canned in brine ..	Feb.-April	Mathura, Nagpur Bombay, Calcutta, Delhi and Trichur.
Cabbage ..	Do.	Nov.-March	Do.
Cauliflower ..	Do.	Nov.-Jan.	Do.
Spinach ..	Do.	Sept.-Dec.	Do.
Carrots ..	Do.	Nov.-Feb.	Do.
French beans	Do.	Aug.-Nov.	Do.

Chutney

1.4.3. The production of chutney is concentrated in Bombay and Calcutta as would be evident from Statement No. 13. These two States contribute 98.5 per cent to the total production. The rest of the production is mostly in Madras and Mysore. A report on the chutney industry in India has been recently prepared by a Sub-Committee of the Central Fruit Products Advisory Committee. Recommendations of this Sub-Committee are given in Appendix A.

Preserves

1.4.4. The production of preserves or murrabbas is concentrated in the Punjab and Delhi which together contribute 80 per cent of the production as given in Statement No. 14. The only other state where there is a sizeable production of preserves is Uttar Pradesh. A Sub-Committee of the Central Fruit Products Advisory Committee prepared a report on Murrabba industry in the year 1956. Summary and recommendations of this report are given in Appendix 'B'.

STATEMENT NO. 12

Purchase of Fruit and Vegetable Products for Defence Services by the Army Purchase Organisation from 1953-54 to 1957-58

Item	1953-54			1954-55			1955-56			1956-57			1957-58		
	Quantity in tons	Value in Rs.	%age to total	Quantity in tons	Value in Rs.	%age to total	Quantity in tons	Value in Rs.	%age to total	Quantity in tons	Value in Rs.	%age to total	Quantity in tons	Value in Rs.	%age to total
Canned Fruits	286.00	5,82,317	32.3	546.00	10,51,488	31.0	283.50	5,55,660	29.6	450.00	9,72,033	19.8	583.1	12,92,170	23.6
Canned Vegetables.	547.00	7,31,414	61.8	1152.64	15,93,827	65.4	593.00	8,05,839	61.9	1740.48	31,77,534	76.6	1,796.9	34,82,318	72.9
Canned Jams Jellies & Marmalades.	46.27	89,977	5.2	55.67	1,15,047	3.2	68.63	1,39,336	7.2	76.00	1,68,382	3.4	78.0	1,91,598	3.2
Dehydrated Onions.	5.89	18,087	0.7	6.50	41,405	0.4	13.26	85,536	1.3	5.25	30,878	0.2	8.51	50,053	0.3
Total	885.16	14,21,795	100	1760.81	28,01,767	100	958.39	15,86,371	100	2271.73	43,47,027	100	2286.51	50,16,139	100

STATEMENT No. 13

Estimated production of chutney in India from 1953 to 1956

States	1953			1954			1955			1956		
	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons
1. Andhra .. ..	..	..	..	..	..	..	..	..	..	..	..	..
2. Assam .. ..	..	..	..	0.60	1,865	0.1	..	..	..	0.2	678	..
3. Bombay	231.0	4,18,090	36.2	202.0	3,86,272	30.9	188.9	3,77,256	22.4	235.5	3,89,152	28.6
4. Bihar .. ..	..	..	..	..	..	..	0.1	463	Neg.	..	..	..
5. Delhi	6.0	9,362	1.0	6.0	9,544	.9	4.7	7,412	-5	3.6	6,633	-4
6. Madras	10.0	32,537	1.6	8.0	37,534	1.2	..	..	..	4.3	21,763	.0
7. Kerala .. ..	..	..	..	..	..	..	..	..	..	..	..	..
8. Madhya Pradesh .. ..	..	..	..	..	..	..	..	..	..	..	..	..
9. Mysore	2.0	11,712	.3	4.4	17,002	.7	3.5	17,834	.4	2.4	11,566	.3
10. Punjab	2.0	5,093	.3	1.0	1,191	1.2	0.7	713	.1	0.8	1,083	.1
11. Rajasthan .. ..	..	..	..	..	..	..	..	..	..	..	..	..
12. Uttar Pradesh	2.0	5,216	.3	2.0	5,487	.3	2.3	4,707	.3	1.0	1,825	.1
13. West Bengal	385.1	7,48,020	60.3	430.0	7,94,757	65.7	642.4	10,47,795	76.3	576.3	10,98,235	69.9
14. Others .. ..	..	..	..	..	..	..	..	..	..	..	..	..
Total	638.1	12,30,030	100.0	654.0	12,36,650	100.0	842.6	14,56,180	100.0	824.1	15,30,955	100.0

STATEMENT No. 14

Estimated production of preserves and crystallised fruits in India from 1953 to 1956

States	1953			1954			1955			1956		
	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons
1. Andhra ..	..	..	..	..	..	..	..	..	..	..	..	..
2. Assam ..	..	..	..	..	..	..	..	..	..	..	..	..
3. Bihar ..	..	..	..	..	..	..	..	..	..	..	..	..
4. Bombay ..	62.2	1,50,888	5.4	32.0	36,411	2.5	420.1	6,33,523	34.1	7.8	25,743	.4
5. Delhi ..	451.0	5,45,574	39.3	436.0	6,19,549	33.7	495.3	53,132	1.4	593.4	7,65,795	34.1
6. Madras ..	3.0	7,793	.3	0.80	1,895	.1	0.7	1,261	.1	..	..	..
7. Kerala ..	..	..	..	..	..	..	..	..	..	..	..	..
8. Madhya Pradesh	0.38	625	.1	..	..	..	..	..	..	..	..	..
9. Mysore ..	1.0	3,512	.1	2.6	6,435	.2	1.8	4,268	.1	2.2	6,369	.1
10. Punjab ..	474.0	5,34,896	41.3	638.3	7,51,694	49.3	714.2	7,93,778	49.2	887.5	9,33,634	51.1
11. Rajasthan ..	2.0	2,579	.2	0.3	687	..	0.2	302	..	9.6	10,953	.6
12. Uttar Pradesh	147.0	1,93,324	12.8	178.0	2,44,895	13.8	208.7	2,62,292	14.4	208.9	2,66,907	12.1
13. West Bengal	6.10	16,858	.5	5.0	11,922	.4	10.3	25,578	.7	28.2	49,279	1.6
14. Others ..	..	..	..	..	..	..	..	..	..	..	..	..
Total ..	1,147.0	14,56,049	100.0	1293.0	16,73,488	100.0	1,451.3	17,74,134	100.0	1737.6	20,53,680	100.0

Tomato Products

1.4.5. There has been a growing demand for tomato products within the country. The production has increased during last four years from 150 tons to 344 tons i.e. more than double in course of four years. The important centres of production as will be observed from Statement No. 15 are in Bombay and Delhi States which together contribute 68 per cent while West Bengal contributes another 14.6 per cent to the total production. There is also some production in Uttar Pradesh, Mysore, Madras and the Punjab. Tomato products industry requires to be developed also in many other States. The raw material position for this industry would be quite favourable. With the existing ban on the import of fruit products, the demand for indigenously manufactured tomato products is likely to go up considerably in the near future. Most of the manufacturers of tomato ketchup are at present unable to satisfy the demand of the market.

Jams, jellies and marmalades.

1.4.6. The production of jams, jellies and marmalades has shown an increase of about 288 tons in course of four years. Although this would not be called a considerable increase, the industry seems to have established a definite market and the demand is growing. Recent ban on the import of fruit products is particularly helpful to this sector of the industry. The State-wise break up of production is given in Statement No. 16.

The main centres of production of jams, jellies and marmalades are Uttar Pradesh and Bombay which together contribute 53 per cent to the total production. The production in West Bengal, Mysore and Delhi together add another 38 per cent. The production in other states is negligible. There is considerable scope for developing this industry in the Punjab, Bihar, Assam, Andhra, Madras and Kerala States.

Pickles

1.4.7. As already mentioned above the production of pickles has increased considerably during the year 1956. The production has increased four fold in comparison with the production in 1953.

The main production centres as would be seen from Statement No. 17 for pickle are in the Punjab which alone contribute 77 per cent to the total production. Bombay, Delhi and Madras contribute about 22 per cent to the total production while in the rest of the states there is hardly any organised production of pickles. It has already been mentioned that the production of pickles is being done in many places by units who have evaded license under the Fruit Products Order. In a large number of states pickle industry exists on a cottage scale basis which has not yet been brought within the purview of the Fruit Products Order. In a large number of states people consume only home-made pickles and hence there is lack of development of the organised industry. There is however a considerable scope for developing the pickle industry in the states of Uttar Pradesh, Andhra, Bihar, West Bengal, Mysore, Kerala, Himachal Pradesh and in Rajasthan where demand is quite sizeable.

STATEMENT NO. 15

Estimated production of Tomato Products and other sauces in India from 1953 to 1956

States	1953			1954			1955			1956		
	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons
1. Andhra ..	..	..	..	0.43	675	.2	..	..	..	0.8	1,609	.2
2. Assam ..	..	..	..	..	..	..	..	..	..	1.5	5,445	.4
3. Bihar ..	..	..	..	0.30	822	.2	0.30	822	.1	..	..	..
4. Bombay ..	28.2	78,534	18.7	47.0	96,625	24.2	73.6	1,53,254	27.0	113.6	2,78,697	34.5
5. Delhi ..	58.0	1,04,823	38.7	75.0	1,29,129	38.0	85.5	1,45,072	31.4	115.6	1,93,839	33.6
6. Madras ..	6.5	18,987	4.3	5.0	18,512	2.6	3.2	12,070	1.2	8.4	24,649	2.4
7. Kerala ..	..	..	..	..	..	..	..	..	..	..	..	..
8. Madhya Pradesh	20.0	55,220	13.4	22.0	53,845	11.4	26.9	58,979	9.9	..	..	..
9. Mysore ..	2.0	4,869	1.3	5.6	17,396	2.9	6.6	16,746	2.4	20.3	44,762	5.9
10. Punjab ..	4.2	6,866	2.6	2.0	4,813	1.0	5.0	12,165	1.8	4.7	9,005	1.4
11. Rajasthan ..	..	..	..	..	..	..	..	..	..	..	..	..
12. Uttar Pradesh	6.0	12,374	4.2	8.0	18,581	4.1	17.2	34,235	6.3	24.0	43,747	7.0
13. West Bengal	25.2	63,072	16.8	27.0	59,906	13.9	54.0	1,26,053	19.9	50.2	1,10,594	14.6
14. Others ..	..	..	..	0.70	2,540	.4	..	..	..	..	..	..
Total ..	149.9	3,44,745	100.0	193.0	4,02,844	100.0	100.0	5,59,396	100.0	344.1	7,12,347	100.0

STATEMENT No. 16

Estimated production of Jams, Jellies and Marmalades in India from 1953 to 1955

States	1953			1954			1955			1956		
	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons
1. Andhra ..	..	..	..	3.0	5,222	.7	11.5	20,817	2.1	16.4	30,249	2.4
2. Assam ..	..	..	..	1.43	4,016	.4	2.0	5,218	.4	4.8	11,938	.7
3. Bihar ..	..	..	..	2.0	5,287	.5	1.9	5,287	.3	2.0	4,869	.3
4. Bombay ..	116.0	2,25,063	28.4	146.0	3,42,994	36.4	140.7	3,66,157	25.3	150.7	4,01,146	21.9
5. Delhi ..	37.0	82,060	9.1	28.0	57,169	7.0	37.4	77,802	6.7	61.8	1,31,832	9.0
6. Madras ..	12.0	27,782	2.9	11.0	28,590	2.8	7.4	18,886	1.3	14.5	35,850	2.1
7. Kerala ..	2.0	4,759	.5	22.0	47,193	5.4	20.52	52,903	3.7	9.0	22,963	1.3
8. Madhya Pradesh	18.0	41,548	4.4	11.0	24,952	2.8	5.1	12,370	.9	..	..	..
9. Mysore ..	12.0	25,759	2.9	22.9	5,819	5.7	53.9	1,22,413	9.7	86.9	2,23,492	12.6
10. Punjab ..	11.60	24,456	2.8	11.75	28,893	2.9	6.4	14,459	1.2	11.2	25,157	1.6
11. Rajasthan ..	..	..	..	..	..	..	..	..	..	..	..	..
12. Uttar Pradesh	64.0	1,43,731	15.7	78.0	1,70,291	19.5	167.8	3,95,383	30.3	212.9	4,39,015	31.0
13. West Bengal	135.7	3,25,972	33.3	63.0	1,63,947	15.7	99.6	2,57,939	18.1	117.9	3,01,841	17.1
14. Others ..	..	..	..	0.90	3,240	.2	..	..	..	..	..	..
Total ..	408.3	9,01,150	100.0	401.0	8,81,794	100.0	554.2	13,49,634	100.0	688.1	16,28,352	100.0

STATEMENT NO. 17

Estimated production of Pickles in India from 1953 to 1956

States	1953			1954			1955			1956		
	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons
1. Andhra ..	..	..	..	..	..	..	0.6	960	neg	0.9	1,575	Neg.
2. Assam ..	..	..	..	0.08	464	Neg.	..	..	..	0.4	170	Neg.
3. Bihar ..	..	..	..	0.33	449	..	0.3	449	Neg.	2.5	6,439	Neg.
4. Bombay ..	264.0	3,98,543	14.9	399.0	4,23,892	23.1	661.5	6,14,950	29.5	844.5	6,25,874	11.7
5. Delhi ..	555.0	1,76,272	31.3	403.0	2,64,839	23.3	421.6	1,67,611	18.8	444.8	2,28,089	6.1
6. Madras ..	32.0	86,700	1.8	34.0	81,287	2.0	39.0	51,499	1.8	237.7	3,02,268	3.3
7. Kerala ..	..	..	..	..	..	..	..	..	..	..	..	..
8. Madhya Pradesh ..	1.0	1,829	.1	..	..	..	..	..	..	0.5	2,240	Neg.
9. Punjab ..	778.0	2,25,383	43.8	766.0	2,49,052	44.4	943.6	3,33,516	42.1	5,589.9	5,38,168	77.1
10. Mysore ..	..	..	..	7.2	28,264	.4	6.3	33,202	0.3	8.3	40,184	.1
11. Rajasthan ..	0.75	804	..	..	..	..	4.0	965	0.2	4.9	1,857	..
12. Uttar Pradesh ..	105.0	54,036	5.9	86.0	69,217	4.9	75.0	64,452	3.3	62.1	57,464	.9
13. West Bengal ..	31.7	74,368	1.8	29.0	68,453	1.7	81.0	1,66,143	3.6	61.8	1,19,106	.8
14. Others ..	7.0	13,829	.4	1.50	3,520	Neg.	8.0	4,200	.4	..	..	..
Total ..	1,774.5	10,31,664	100.0	1,726.0	10,61,173	100.0	2,240.9	14,35,947	100.0	7,247.0	19,23,434	100.0

Vinegar

1.4.8. Vinegar industry contributes about 630 tons to the total production out of which as shown in Statement No. 18, 62 per cent is contributed by Bombay State. The production in other States except in West Bengal, Delhi, Madras, the Punjab and Uttar Pradesh is negligible. The major production of vinegar is of synthetic variety. Brewed vinegar industry has not been developed on a sound footing because of severe competition with synthetic vinegar. There is also lack of proper appreciation by the consumers of the superior quality of brewed vinegar.

Production capacities of various units.

1.5. Fruit preservation industry is largely carried out on a small scale basis. Statements No. 19 and 20 indicate the categorisation of licensed manufacturers into various groups, statewise and itemwise respectively on the basis of value of production in 1956.

1.5.2. Statement No. 19 shows that the largest group comprising of about 48 per cent falls in the category of manufacturers having production valued at Rs. 4,000 and less per year. Second biggest group of 21 per cent falls in the next category of manufacturers having production valued between Rs. 4,000 to Rs. 10,000. In the State of Bihar, Madhya Pradesh and Rajasthan there are no factories having a production valued at more than Rs. 50,000 while in the case of Assam there is only one factory having a production valued between Rs. 50,000 to 1,00,000. Factories having a production valued at Rs. 50,000 are mostly located in the states of Bombay, Delhi and West Bengal. The total number of factories having a production valued at over Rs. 1,00,000 is only 51. Factories having a production valued above Rs. 5 lakhs are situated in Bombay, Delhi, Mysore, Uttar Pradesh and West Bengal.

1.5.3. Statement No. 20 gives the number of licence holders on the basis of value of production of different categories of products. It may be seen that a very large number of items are produced by the manufacturers working on small scale basis. The first three categories contribute over 94 per cent of the items. Turnover valued at Rs. 5,00,000 and more per year is confined to only items like fruit beverages, chutney, canned vegetables and carbonated beverages.

STATEMENT No. 18

Estimated production of Vinegar in India from 1953 to 1956

State	1953			1954			1955			1956		
	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons	Tons	Rs.	%age of tons to total tons
1. Andhra ..	..	..	..	..	..	..	..	..	..	11.0	8,045	1.8
2. Assam ..	..	..	..	0.30	416	.1	..	..	..	0.1	300	..
3. Bihar ..	..	..	..	0.15	463	.1	6.1	6,942	1.3	2.4	4,914	.4
4. Bombay ..	318.0	1,88,745	61.1	199.0	1,19,495	47.1	190.0	1,61,834	41.7	391.9	2,33,994	62.3
5. Delhi ..	26.0	28,394	5.1	32.0	39,202	7.6	42.9	43,676	9.4	39.8	43,056	6.3
6. Madras ..	25.0	35,312	4.8	28.0	39,450	6.6	32.6	38,650	7.2	24.8	33,907	3.9
7. Kerala ..	0.10	152	.1	1.33	1,682	.3	1.17	1,284	.4	7.8	7,082	1.3
8. Madhya Pradesh ..	9.0	11,996	1.7	8.0	11,725	1.9	6.2	8,901	1.4	1.4	2,045	.2
9. Mysore ..	2.0	1,941	.4	17.6	18,457	4.1	5.2	3,658	1.1	9.5	8,506	1.5
10. Punjab ..	18.33	18,781	3.5	28.0	21,514	6.6	23.9	22,325	5.2	24.3	22,663	3.9
11. Rajasthan ..	2.0	1,112	.4	3.30	3,180	0.8	0.9	851	0.2	0.9	1,192	.1
12. Uttar Pradesh ..	26.0	19,674	5.0	30.0	28,958	7.1	31.6	28,584	6.9	20.2	24,391	3.2
13. West Bengal ..	89.20	1,21,873	17.1	66.0	89,073	15.6	105.3	1,33,161	23.1	95.4	1,25,883	15.1
14. Others ..	5.00	2,429	.9	8.80	7,088	2.1	9.7	7,490	2.1	..	..	..
Total ..	520.63	4,30,409	100.0	422.5	13,80,703	100.0	455.3	4,57,356	100.0	629.5	5,15,878	100.0

STATEMENT NO. 19
Categorisation of manufacturers

State	Rs. upto 4,000		Rs. 4,000 to Rs. 10,000		Rs. 10,000 to Rs. 50,000		Rs. 50,000 to Rs. 100,000		Rs. 1 lakh to Rs. 2 lakhs		Rs. 2½ lakhs to Rs. 5 lakhs		Above 5 lakhs		Total	
	1955	1956	1955	1956	1955	1956	1955	1956	1955	1956	1955	1956	1955	1956	1955	1956
1. Andhra ..	8	8	1	1	3	4	..	..	1	..	..	1	..	..	13	14
2. Assam	2	2	1	3	2	1	..	1	..	..	..	..	..	..	5	7
3. Bombay	65	76	30	35	26	22	7	9	2	4	5	4	5	5	140	155
4. Bihar ..	4	3	1	1	2	2	..	..	..	..	..	..	..	..	6	6
5. Delhi ..	11	12	9	12	13	5	6	13	4	2	1	1	2	4	46	49
6. Kerala	3	5	1	3	1	1	..	..	1	2	1	1	..	..	7	12
7. Madras ..	41	37	10	10	9	9	1	..	..	3	..	..	..	..	61	59
8. Madhya Pradesh..	12	6	5	1	2	1	..	..	..	..	..	..	..	..	19	8
9. Mysore	9	13	1	3	3	3	..	2	1	..	1	..	..	1	15	22
10. Punjab	50	57	16	20	14	12	4	6	5	5	..	1	..	..	89	101
11. Rajasthan	12	11	3	4	2	2	..	..	..	..	..	..	..	..	17	17
12. Uttar Pradesh	28	24	13	6	8	9	5	4	1	1	1	1	1	1	57	46
13. West Bengal	16	22	9	20	15	19	5	7	6	1	2	3	2	2	55	74
Total ..	261	276	100	119	99	90	28	42	21	18	11	12	10	13	530	570

STATEMENT No. 20
Categorisation of manufacturers

Item	Rs. 1—4,000		Rs. 4,000— Rs. 10,000		Rs. 10,000— Rs. 50,000		Rs. 50,000— Rs. 100,000		Rs. 1 lakh Rs. 2½ lakh		Rs. 2½ lakh to Rs. 5 lakh		Above 5 lakh		Total	
	1955	1956	1955	1956	1955	1956	1955	1956	1955	1956	1955	1956	1955	1956	1955	1956
1. Fruit Beverages	83	73	17	24	23	20	4	5	5	5	1	2	2	2	135	131
2. Synthetic syrups	207	213	50	47	14	21	..	2	3	1	..	..	..	..	274	284
3. Juices and pulps	26	17	7	6	5	12	3	3	2	3	2	2	..	..	45	43
4. Vinegar ..	158	156	17	19	8	7	1	2	..	..	..	..	..	..	184	184
5. Chutney	22	19	4	5	7	9	2	1	1	..	3	1	..	1	39	36
6. Persons ..	28	24	16	14	25	19	8	18	3	1	..	..	..	..	80	76
7. Jams, jellies and marmalades ..	38	39	14	14	16	17	5	3	3	5	..	..	..	..	76	78
8. Tomato products	48	44	18	17	9	11	2	1	..	2	..	..	..	..	77	75
9. Pickles]	120	117	42	42	25	31	2	4	3	1	..	1	..	..	192	196
10. Canned fruits ..	11	10	8	12	13	14	5	4	6	6	1	2	..	..	44	48
11. Canned vegetable	7	7	8	6	8	7	3	2	3	5	1	..	..	2	30	29
12. Carbonated fruit beverages	2	3	2	1	..	2	1	1	1	1	4	..	3	4	10	12
13. Others ..		2	1	3	2	2	1	1	..	..	..	..	..	..	5	8
Total ..	751	724	204	210	155	172	37	47	30	30	9	8	5	9	1,191	1,201

CHAPTER 3

FRUIT PRODUCTS ORDER

1.1. As already mentioned the industry is controlled under the Essential Commodities Act, 1955. The Fruit Products Order in its original form dates from 1946 and has two objectives in view (i) to make available to the consumer fruit products of satisfactory quality and (ii) to develop the fruit products industry on sound lines. The Fruit Products Order covers the following functions

- (a) Checking up the quality of fruit products at manufacturing premises, retail shops and other sale points.
- (b) Licensing of the manufacturers of fruit products with a view to ensuring the observation of certain specified standards in the manufacturing technique.
- (c) Inspection and analysis of samples.
- (d) Seizure, detention and destruction of sub-standard products.
- (e) Quality control and
- (f) Penal action where necessary.

1.2. For a period of three years from 1949 to 1952 the functions under the Fruit Products Order were decentralised and transferred to the States. This arrangement, however, did not find favour with the industry and the Government of India received several representations for re-centralisation of the Fruit Products Order. From 1st January, 1952, the Fruit Products Order was recentralised with the Agricultural Marketing Adviser to the Government of India as a licencing officer and administrator on recentralisation of the Fruit Products Order, it was felt that there was a need to revise not only the prescribed specifications of various fruit products but also various other provisions including the levy of licence fee. While examining the case of continuance of protection to certain categories of fruit products, the Tariff Commission in the year 1954 recommended a stricter enforcement of the provisions of the Fruit Products Order. The Tariff Commission observed that the question of economy should not be an impediment in its proper enforcement. The Tariff Commission also recommended the revision of licence fee under the Fruit Products Order, 1955. The Commodity Committee which reviewed the Order under the Essential Supplies (Temporary Powers) Act, 1946 which was to expire on the 25th January, 1955 recommended that the activities under the Fruit Products Order may be continued on a permanent footing.

1.3. A conference of the manufacturers was called by the Directorate of Marketing and Inspection in June, 1954. The question of licence fee and the revision of specifications were discussed at length, and recommendations were made to the Government for suitably amending the Fruit Products Order.

1.4. The present Fruit Products Order, 1955, was issued on the 3rd May, 1955 under the Essential Commodities Act, 1955 which was passed when the third amendment to the Constitution brought "foodstuffs" in the Concurrent List of the Schedule to the Constitution. The new Order was on the same lines as the Fruit Products Order, 1948 but incorporated several new features *e.g.* :—

- (i) Change of the basis of licence fee.
- (ii) Formation of the Central Fruit Products Advisory Committee.
- (iii) Revision of specifications and
- (iv) Grant of power of prosecution to the licensing authority.

1.5. The number of licence holders under the Fruit Products Order since 1953 is shown in the following Statement—

STATEMENT No. 21

Year	No. of licences issued
1953	602
1954	662
1955	654
1956	750
1957	885
1958	990

The number is on the increase ever since the recentralisation.

1.6. The distribution of licensed fruit and vegetable products factories in India is given in the following Statement—

STATEMENT No. 22

Statewise distribution of licenced manufacturers of Fruit and Vegetable products in 1957.

Name of the State	No. of licensed manufacturers	Percentage to total
1. Andhra	33	3.7
2. Assam	11	1.2
3. Bihar	12	1.4
4. Bombay	258	29.2
5. Delhi	71	8.0
6. Kerala	17	1.9
7. Madras	101	11.4
8. Madhya Pradesh	13	1.5
9. Mysore	27	3.1
10. Orissa	1	0.1
11. Punjab	124	14.0
12. Rajasthan	32	3.6
13. Uttar Pradesh	81	9.2
14. West Bengal	104	11.7
	885	100.0

1.7. It may be observed that the largest number of factories are located in the State of Bombay which is followed by the Punjab, West Bengal, Madras, Uttar Pradesh and Delhi. The number of manufacturers in other States excluding Orissa, Bihar and Assam are between 12 and 23.

1.8. Before issuing a licence to a manufacturer of fruit products his factory is inspected by the inspection staff and necessary improvements are suggested. Often the manufacturers are unaware of the provisions of licence under the Fruit Products Order. In such cases an attempt is made to regularise the production and ensure improvement in the conditions of the factory subsequently. In recent years inspection of each factory has been increased to three times a year. In the headquarters of the zones where large number of factories usually exist the inspection has been particularly intensified.

1.8.2. An attempt has been made to categorise factories on the basis of performance in the year 1956. Category 'A' factory fulfils all conditions required under the Fruit Products Order, 1955. Category 'B' relates to units capable of fulfilling the prescribed requirements and category 'C' is meant for units which are beyond the stage of improvement. Details of the categorisation of factories is indicated in the following Statement.—

STATEMENT No. 23

	'A' Category	'B' Category	'C' Category	Total
Andhra	3	20	..	23
Assam	2	6	..	8
Bihar .. .. .	..	5	1	6
Bombay	31	196	22	249
Delhi	3	44	5	52
Kerala	6	8	..	14
Madhya Pradesh .. .. .	..	12	..	12
Madras	9	43	18	70
Mysore	5	17	..	22
Orissa .. .. .	..	1	..	1
Punjab	6	64	42	112
Rajasthan .. .. .	..	16	5	21
West Bengal	19	46	16	77
Uttar Pradesh	5	59	4	68
Total	85	537	113	735

1.9. The highest percentage of factories obviously belongs to 'B' category. Attempt is being made to improve such factories so as to bring them up to the level of category 'A'. The number of factories in category 'A' is at present small due to a strict Code which is employed in judging the performance of the factors. Factories in category 'C' are advised to move to new premises as the present ones are unhygienic and beyond further improvement. It has to be realised in this context that this industry has been carried on so far by cottage scale manufacturing units usually located in small and congested localities of towns and cities. It will take time to persuade such manufacturers to shift to new and open localities. The State Governments have been requested by the Government of India to allot new land and premises to such manufacturers as far as possible.

1.10. Item-wise production of the above manufacturers in the different categories mentioned above is indicated in Statement No. 24 on the next page,

STATEMENT No. 24

Estimated production of Fruit and Vegetable Products of 'A', 'B' and 'C' Category Manufacturers.

Item	Total		'A' Category			'B' Category			'C' Category		
	Qty. in tons	Value in Rs. (000)	Qty. in tons	Value in Rs. (000)	% to total production	Qty. in tons	Value in Rs. (000)	% to total production	Qty. in tons	Value in Rs. (000)	% to total production
1. Fruit beverages ..	2,408.7	4,633	1,687.03	2,679	70.0	704.21	1,909	29.2	17.46	45	0.8
2. Synthetic syrups ..	613.8	1,349	185.94	4,447	30.0	39.8	821	62.8	36.05	81	6.0
3. Juices and pulps ..	725.3	1,567	661.39	1,452	91.1	58.61	2,107	8.1	5.30	8	0.8
4. Vinegar ..	629.5	516	352.80	224	56.0	250.04	263	39.7	26.86	29	4.3
5. Chutney ..	824.1	1,531	528.06	1,062	64.1	292.77	440	35.5	3.27	2	0.4
6. Preserves and dry fruits	1,737.6	2,059	17.65	51	1.0	1,320.87	1,595	76.0	399.08	413	23.0
7. Jams, jellies and marmalades ..	688.1	1,628	625.57	1,473	90.9	45.37	119	6.6	17.16	36	2.5
8. Tomato products and other sources ..	344.1	712	136.98	355	39.8	195.57	340	56.8	11.55	17	3.4
9. Pickles ..	7,247.9	1,923	1,650.59	612	22.8	4,232.07	1,158	58.4	1,365.24	153	18.8
10. Canned fruits ..	949.3	1,936	783.16	1,444	82.5	107.06	360	11.3	59.08	132	6.2
11. Canned vegetables ..	1,923.9	27.49	1,630.04	2,475	84.7	237.95	195	12.4	55.91	79	2.9
12. Aerated fruit beverage ..	4,941.7	48.35	4,826.7	4,725	97.7	115.0	105	2.3	..	..	..
13. Others ..	118.0	196	22.62	70	19.2	9.95	12	8.4	85.43	114	72.4
Total ..	1,23,152.0	25,634	13,108.05	17,069	56.6	7,961.3	9,424	34.4	20,823	1,111	141.5

1.10.2. It may be observed from the Statement No. 24 that out of the total production, 56% is produced by factories which fully conform to the standards of hygiene, and sanitation required under the Fruit Products Order, 1955. This production coupled with that of 'B' category factories amounts to 91% of the total production. The production of factories in the category 'C' is only 9% of the total production.

1.10.3. Production of certain items like aerated fruit beverages, jams, marmalades, juices, pulps, canned fruits and vegetables is mainly confined to 'A' category group of factories. In 'B' category group, the production is mainly of beverages, preserves, tomato products and pickles. The majority of production of the factories in category 'C' is of preserves and pickles. Most of the larger units in the country come under 'A' category.

CHAPTER 4
RAW MATERIALS

1.1. The major raw materials required by the industry are—

Fruits and vegetables, cans, bottles, fuel, barrels, pectin, citric acid, acetic acid, preservatives, food colours, essences and flavours, salt, spices, edible oils, water softening agents, detergents, labelling and packing materials. The total annual requirements of these raw materials on the basis of present production are estimated as under—

STATEMENT No. 25

Items	Estimated annual requirement (In Tons)
1. Fruit and vegetables	20,000
2. Sugar	5,500
3. Packing material—	
(i) Tin-plate	
(a) open top sanitary cans	1,000
(b) other types of containers	1,000
(ii) Bottles	6,000
(iii) Barrels	7,500 Numbers
(iv) Caps and closures—	
(a) Crowncocks	26,000 Thousands
(b) Other types of closures	5,000 "
(v) Cases	2,80,000 Numbers
(vi) Labels	10,000 Thousands
4. Chemicals—	
(i) Pectin	7 Tons
(ii) Citric acid	30 "
(iii) Acetic acid	37 "
(iv) Preservatives	5 "
(v) Food colours	3.5 "
(vi) Essences, essential oils and flavours	2 "
5. Salt	225 "

1.2. It is difficult to estimate the exact requirement of different types of fuel used by the industry. The major consumption is of coal. A few units have installed boilers working on oil. The total requirements of fuel would not however be very heavy and so far there has not been much difficulty in obtaining the same except in the case of a few factories located in Uttar Pradesh where allotment of coal wagons have been sometimes delayed.

Fruits and vegetables

1.2. The quantity of fruits and vegetables at present required by the industry would not appear to be substantial when compared to the total production of fruits and vegetables in the country which is estimated to be over 10 million tons. However, it may be stated that fruit and vegetable preservation industry often faces shortage of particular type of fruits or vegetables. This is particularly felt in the case of temperate fruits like peaches, pears, cherries, plums, apricots, straw-berries, raspberries and pineapples which are grown only in selected areas. The cultivation of grapes in a few regions is improving but preservation of this item has not been developed due to its non-availability in areas where the factories are located. In the case of vegetables like tomatoes, peas and potatoes they are in general demand and there has not been serious difficulties in obtaining the same for preservation purpose. Some of the major units of the industry have realised the importance of suitable location and have started new operations in suitable regions in India so that they may utilise the local produce to the maximum extent possible and produce items of better quality.

The industry has been clamouring for graded fruits and vegetables of specific varieties. Grading of fruits is not yet done on a significant scale. If the industry is willing to pay a premium for graded fruits there is no reason why grading would not be encouraged. In many cases, *e.g.*, mangoes, the Industry has been concentrating on fine table varieties like alfanso, daseri, langra and badami for which higher price has often to be paid resulting in high cost of the finished products. Due to lack of data regarding the suitability of different types of fruits and vegetables for processing, the industry has been mainly concentrating on better qualities which are as a matter of fact more suitable for table purposes. The industry would do well to explore the possibilities of using country varieties of mangoes which are available in large quantities at a very reasonable price. In procuring fruits and vegetables, the industry faces the problem of location. Large number of factories located in important consuming centres conveniently purchase their requirements from the local markets. The industry should obtain requirements as far as possible from the sources of supplies and for this purpose there is need for the manufacturers to establish liaison with the growers or their co-operatives and obtain the requirement by advance contracts so that the supply of particular type or variety of vegetable or fruits could be ensured in required quantities for the purposes of processing. In countries where this industry has fully developed, such an arrangement has played a very important role.

Sugar

1.3. The requirements of sugar for the industry is hardly 0.3% of the total production of sugar in the country. Serious difficulty has not been faced by the industry in obtaining supply at any place in India.

Packing material

1.4. The statement on the next pages shows the types of packing used by the industry, the percentage of production which packed in them as well as the products which are generally packed.

STATEMENT No. 26

Estimated percentage of production of fruit products packed in different types of packing

Type of packing	% of production packed	Products packed
1. Tin-plate		
(a) Open top sanitary cans ..	19.7	Canned fruits, canned vegetables jams, jellies and marmalades, juices and pulps. Preserves and pickles.
(b) Tin cannisters of various sizes	28.3	
	48.0	Preserves, orystalised fruits and pickles.
2. Bottles		
	47.1	Fruit beverages, synthetic syrups and sharbats, aerated fruit beverages, jams, jellies and marmalades, vinegar, juices chutney and bottled fruits.
3. Barrels and casks		
	4.9	Chutney, pickles, fruit juices and pulps, vinegar.
	100.0	

It may be observed that tin containers and bottles are used in equal proportion for packing nearly 96% of the production while barrels are used for packing the rest of the material. Alternative type of packing such as polythene, aluminium foils and collapsible tubes have not yet been used in India for the packing of fruit and vegetable products.

Tinplate*Open Top Sanitary Cans.*

1.4.1. (a) Canning industry requires a hermetic packing for the purpose of processing. Open-top sanitary cans fabricated from suitable tinplate are essential for the processing of foods and development of the canning industry. The requirements of this special type of tin plate used for one-fifth of the total production of the industry has been estimated as 1,000 tons per year. This demand is, however, likely to increase in the near future in view of the anticipated development of the canning industry.

The requirements for the remaining two years of the Plan are estimated as 1120 and 1400 tons respectively.

1.4.1.2. At present, open-top sanitary cans are manufactured from suitable type of imported tin-plate. The production of tin-plate within the country is not yet sufficient to meet the demand of various industries and therefore the country is importing substantial quantities of tin-plate. The demand of canning industry for special type of tin-plate is limited and production of this type of tin-plate by the only factory namely the Tin Plate Company of India Ltd., Jamshedpur may not be very profitable. Moreover the quality of the indigenous Charcoal II type of tin-plate which is suitable for the canning industry is not yet comparable with the quality of the imported tin-plate which is cold-reduced hot-dipped type of tin-plate and is made

of a better quality of steel. The quality of tin-plate is very important to the canning industry particularly for packing our products for the export market. Considering these points, it would be necessary to continue the use of imported tin-plate till the indigenous production of cold-reduced hot-dipped tin-plate manufactured from a suitable quality of steel has commenced. Foreign exchange for the import of tin-plate for this industry is estimated to be of the order of Rs. 15 lakhs per year. This is not very substantial considering the possibilities of export of large quantities of finished products from India.

1.4.1.3. At present open-top sanitary cans are manufactured by the Metal Box Company of India Ltd., at Calcutta and Bombay. It is likely that two more manufacturers namely Poysa Industries, Bombay and Midland Fruit and Vegetable Products, Mathura may go into production shortly. The aggregate capacity of production of these units would be quite considerable. Fruits and vegetable preservation industry would benefit by the operation of these three units and it is expected that supplies to the units located in various regions would be possible at a reasonable price.

1.4.1.4. The high cost of open-top sanitary cans has been one of the major handicaps of the industry. In the Second Five Year Plan there was a provision for a subsidy on tin-plate involved in the open-top sanitary cans used by the fruit and vegetable preservation industry. The operation of the scheme started from 19th June, 1958 and it has been further discussed in Chapter 8.

Tin Plate for Other Types of Containers

1.4.2. The requirement of ordinary type of tin-plate used for packing murrabba, pickles, crystalised fruits and other miscellaneous items is estimated at 1,000 tons per year. The products packed in ordinary and special type of tin-plates cover 48% of the production. The murrabba and pickle industry is the major consumer of containers fabricated from ordinary type of tin-plate. The murrabba manufacturers at present use new tins while the pickle manufacturers use second hand ones. Prolonged storage of acid products particularly in this type of containers is likely to increase the metallic contamination in the products. The Report of the Murrabba industry in India included a recommendation that for the healthy development of the murrabba industry in India a compulsory packing of the product in the open top sanitary cans should be enforced. This recommendation was, however, not implemented because of non-availability of seaming machines and adequate supplies of imported special type tin-plate for the fabrication of open-top sanitary cans. It is suggested that the Central Food Technological Research Institute, Mysore may immediately undertake the study of effects of packing of varieties of products in ordinary tin-plate containers and advisability of discontinuing such a pack in the public interest.

Bottles

1.4.3. Fruit and vegetable products such as beverages, vinegar, sauces, chutney, jams, jellies, marmalades, pickles and preserves are packed in bottles. Bottling of fruits is done on a very small scale in India while practically no vegetables are bottled.

1.4.3.2. It is estimated that fruit and vegetable preservation industry consumes 10% of the total production of bottles in the country. This is quite substantial. The quality of indigenous glass bottles has considerably improved during the last few years. Specifications for bottles required by the fruit and vegetable preservation industry have been drafted by the Indian Standards Institution but have not yet been finalised. A few samples of bottles have been examined and it has been found that none of the samples could meet the draft standards stipulated for alkalinity. Many of the fruit products have a low pH and hence the alkalinity of the glass is an important factor. It is, therefore, necessary to determine optimum tolerance of alkalinity in glass for packing fruit products. Once the Indian Standards Institution specifications are finalised, the fruit preservation industry would be in a position to stipulate the requirements while placing contracts with the glass manufacturers.

1.4.3.3. At present there are only a few glass manufacturers in India with automatic bottle making plant which only can give uniformity in size, shape, appearance and finish of the bottles. The shape and size of the neck of the bottle are also very important to the fruit preservers. In recent years made to restricted supply of corks large number of manufacturers have introduced pilfer-proof-roll on screw caps which require accurate dimensions of the neck in order to ensure proper closure.

1.4.3.4. The development of glass industry has taken long strides in foreign countries thanks to the fruit and vegetable preservation industry. More and more glass is being used in other countries for packing food products due to advantage of visual appeal and freedom from corrosive action as in the case of tin containers. In India too, the trend for packing in glass is likely to improve if there are no major obstacles e.g. (i) high price of glass bottles (ii) bottles not suitable for packing hermetically sealed products (iii) need for better closures made of different types of materials like tin-plate, plastics, rubber, etc., and (iv) higher cost of transport of bottles due to heavier gross weight. More attention needs to be paid in improving the types of containers and closures and introducing some of the conventional types which are very popular in foreign countries. The role of closures is becoming important in order to avoid post adulteration after packing of the products. The customer is now getting more and more conscious about the advantages of packed materials and more articles are now reaching the consumer in a packed condition rather than in loose packs.

1.4.3.5. To sum up, the fruit and vegetable preservation industry has been facing considerable difficulties in obtaining good quality bottles at reasonable price. The supplies are particularly difficult in the Southern region of the country. New types of pilfer-proof closures are in large demand.

Barrels

1.4.4. Barrels are used for the packing of chutney in India. Fruit juices, pulps, pickles and vinegar are also packed in barrels. The requirement of barrels has been estimated as 5,000 per year for chutney. The requirement of barrels for packing of pickles is estimated at 1,000 for fruit juices 750 and for vinegar 750, the total requirement being 7,500 barrels.

The barrel industry is located mainly at Calcutta and Bombay. Some of the manufacturers of fruit products have their own arrangements to make the

barrels. Teak wood is generally used in the manufacture of barrels. It is suggested that investigations may be carried out by the Forest Research Institute, Dehra Dun regarding the use of other types of woods such as oak wood for the manufacture of barrels. Oak wood would perhaps give barrels higher strength and another advantage may be that food products packed in such barrels may remain free from odour imparted by other type of woods. It would considerably help the development of the industry in the hill regions if local wood is found suitable for the manufacture of barrels.

1.4.4.2. The requirements of barrels are not at present very large. Pickle industry in foreign countries uses large quantities of barrels. The pickle industry in India would do well to adopt packing in barrels and abandon the existing method of packing in 4 gallon K. O. type tins made of ordinary type of tin plate.

Brewed vinegar industry is another important item which if developed would also require large number of barrels, as vinegar cannot be packed in metal containers.

Several manufacturers in India are not aware of the use of the right type of barrels, proper types of waxing compounds and the coopering techniques involved in the use of barrels. The Technological Institutes in the country have not been paying adequate attention to this type of packing. It is suggested that coopering should be made a part of training in the technological course for food technologists.

Caps and closures

1.4.5. As already mentioned, the industry has been adopting new types of caps and closures. Among the different types of closures used by the industry, the important ones are crown cork screw caps, pulfer-proof roll-on-screw caps, corks and aluminium capsules. The estimated annual requirement is 26 million crown corks and 5 million other types of closures. These are manufactured in India. Imported cork and lacquers are used in the manufacture of crown corks. The industry has been clamouring for better types of imported corks. Attractive designs have been adopted by a large number of manufacturers for printing the closures.

Cases

1.4.6. It is difficult to estimate accurately the total number of packing cases required by the industry. Approximately 280,000 cases are used per annum by the manufacturers in connection with the products sent to out-stations. Different standards of packing cases are used by the industry e.g., 24×30 oz (A2½ cans) cases for canned fruits and vegetables, 12×26 oz squash bottles and 24×13 oz bottles for ketchup and sauces. The availability of packing cases in recent years has been fairly satisfactory in almost all centres of production. Special attention is paid by the manufacturers of fruit products to use superior type of packing cases for export purposes. The cost of packing cases has been on the increase in recent years in line with the general increase in prices.

Labels

1.4.7. It is difficult to assess accurately the total annual requirements of labels. Some of the products are packed in barrels, casks and in large tin

containers which are stenciled and not labelled. However, it may be said that about 35 per cent of the production is packed in smaller sized containers which are labelled. On this presumption the estimated annual requirements of labels would be nearly 10 million.

1.4.7.2. The majority of the labels which are used on cans and bottles are litho-printed in attractive colours and designs. The labelling requirements as stipulated under the Fruit Products Order, 1955 and the Prevention of Food Adulteration Rules are generally followed by the manufacturers.

1.4.7.3. Sometimes there have been complaints in regard to the non-availability of suitable type of paper for printing of labels. It has been reported that imported paper is not only cheaper but is superior in quality for the purpose of litho-printing. However, by and large, the indigenous paper has been found to be suitable and supplies have been satisfactory.

Straw covers, strapping, hooping, etc.

1.4.8. Straw covers are used very widely for packing bottles. It is difficult to estimate their requirements. Bottled products which are sent to out-stations are generally packed in straw covers. Strapping is used for packing cases. Difficulties have sometimes been faced by the industry in obtaining strapping due to import restrictions. Iron hoops for barrels have also been in short supply in recent years.

Chemicals

Pectin

1.5.1. Pectin is an essential ingredient in jams and certain jellies. It is also used in some beverages and sauces. At present there is no indigenous production of pectin and the industry has to import it. The estimated total annual requirement of pectin is 7 tons. The industry had been often facing difficulty in obtaining pectin in view of foreign exchange difficulties.

1.5.1.2. A suggestion has been made for developing the production of pectin in India. Pectin is also used in pharmaceutical and textile industries. The scope for the manufacture of pectin from apple and citrus wastes requires to be explored. A pilot plant may also be established either in Kumaon which is an apple growing region or in any other citrus growing area after detailed investigation of the project.

Citric acid.

1.5.2. The indigenous production of citric acid has not yet been developed and the industry has to depend upon imports. Citric acid is mainly used by the manufacturers of beverages, jams, jellies, marmalades, canned fruits, juices, sauces, etc. It is an essential ingredient in the manufacture of several food products as a standardising ingredient.

The production of citric acid within the country would enable the industry to obtain their requirements indigenously at a reasonable price.

Acetic acid

1.5.3. Acetic acid is mainly used in the manufacture of chutney, synthetic, vinegar and in the fortification of brewed vinegar. Pickle industry in foreign

countries uses considerable quantities of vinegar ; but in India vinegar pickles are not largely consumed.

1.5.3.2. Glacial acetic acid of suitable quality is not still produced in India in sufficient quantities and hence it is required to be imported. It is hoped that the requirements of the industry which is only 37 tons per year would be met from indigenous sources in the near future. Over and above the existing two units, three new units for the manufacture of acetic acid had been licensed by Ministry of Commerce and Industry.

Preservatives

1.5.4. Only two chemical preservatives are permitted to be used in fruit products under the Fruit Products Order, 1955 and the Prevention of Food Adulteration Rules. The permitted preservatives are sodium benzoate and sulphur dioxide. Their annual requirements are estimated at 1.5 tons and 3.5 tons respectively. The use of preservatives is strictly controlled under the law. Not only the quantities to be used are specified but even the products in which preservatives may be added are stipulated. (Para 23 of the Fruit Products Order, 1955).

1.5.4.2. Sodium Benzoate or benzoic acid and potassium or sodium metabisulphite are generally imported. Potassium metabisulphite is manufactured in India but there have been often complaints against the quality of the products. Recently the import of this chemical has been banned and this has created some problems for the preservers *e.g.* adulteration of the preservatives and their high cost.

Food colours

1.5.5. The colouring of food products has become an essential part of processing due to the fact that the consumer has been accustomed to associate a particular colour to a particular product. The addition of edible colour to processed foods has been a controversial subject. This has resulted in a strict legislation by a large number of countries in the world in respect of use of food colours. A limited number of fifteen edible synthetic colours could only be used in fruit and vegetable products according to the Prevention of Food Adulteration Rules. Food colours are generally used in beverages, jams, jellies, marmalades, sauces, crystallised fruits, canned peas and cherries. Excessive use of food colours is however not desirable.

1.5.5.2. The estimated requirement of food colours by the industry is about 3.5 tons per year. At present there is no indigenous production of food colours and they have to be imported.

Essences, essential oils and flavours

1.5.6. Essences, essential oils and flavours are generally used in beverages and to a certain extent in case of jams and jellies. Certain types of flavours are also used in the manufacture of sauces. The estimated requirement of essences and flavours is about 2 tons per year. The manufacture of essences and flavours has been already started in India. The industry has been using alcoholic essences in the past, the availability of which is rather difficult, because at present most of the indigenous manufacturers produce non-alcoholic essences. The industry

would do well to reorient their methods and use non-alcohol essences and flavours. There has also been some attempts to produce indigenously natural essential oils of oranges and lime. The production is however not very substantial.

Salt, spices and edible oils

1.6.1. Salt is a natural preserving agent and has been used since time immemorial. The estimated annual requirement of salt on the basis of factory production of pickles, sauces and canned vegetables is approximately 225 tons. The manufacturers would be well advised to use salt of good quality. In certain areas, there is difficulty in obtaining refined salt at a reasonable price and hence the manufacturers continue to use unrefined salt.

1.6.2. Spices are used in a variety of products like chutney, sauces, ketchup, pickles and curried vegetables. Edible oil is used in the manufacture of oil pickles and curried vegetables. The consumption of both these items is not very appreciable and there has not been any difficulty in obtaining them. Recently attempt, has been indigenously made to produce extracts of spices for use in sauces so as to avoid "black neck" in such products.

CHAPTER 5

EQUIPMENT AND MACHINERY

1.1. Fruit and vegetable preservation industry in India could be broadly divided into organised and unorganised sectors. The organised sector of the industry is of recent origin, except a few manufacturers of chutney and murrabba. The unorganised sector has generally confined itself to the manufacture on a comparatively smaller scale of synthetic syrups, vinegar, pickles, murrabbas, fruit beverages, jams, jellies and tomato products. The organised sector, which contributes a fairly large share of the total production, besides handling some of the items mentioned above specialises in the manufacture of canned fruits and vegetables, jams, jellies, fruit beverages and chutney. The equipment and machinery requirements by the unorganised sector of the industry are practically insignificant. Most of the processing is done on open fire or by cold processing and the rest of the operations are done manually. The organised sector, however, employs, in most cases steam heating with suitable jacketted kettles, retort exhausters, etc. and operations like conveying, filling, juice extracting, sealing, etc. are carried out mechanically. However, even in the organised sector of the industry considerable amount of manual labour is employed. Only a few factories have taken up to complete mechanisation and it can be said that for some-time to come, complete mechanisation in fruit preservation factories as found in foreign countries will not be possible in this country.

1.2. A list of equipment and machinery required by the industry is given in Appendix C.

A number of equipments and machinery are required for special processing e.g., fruit juice concentration, de-aeration, pasteurization, processing of peas, tomato products, cutting or cubing, continuous blanching, exhausting, cooking, cooling and quality control equipment etc.

In recent years the fabrication of food processing machinery has been undertaken in India by a large number of concerns. A list of such fabricators is attached in Appendix D.

1.3. The fabrication of ordinary equipments, receptacles, tables, conveyors, jacketted kettles, juice extractors and certain other machinery including seamers for cans has been undertaken quite successfully within the country. Stainless steel is being used more extensively by the fruit processors since last few years. Some of the specialised equipment and machinery, temperature control laboratory and quality control equipments are still required to be imported. The value of such specialised equipment and machinery for imports is estimated at Rs. 4 lakhs to Rs. 5 lakhs. per year.

1.4. In the scheme of hire purchase of machinery and equipment operated by the National Small Scale Industries Corporation, the equipment and machinery required by the fruit and vegetable preservation industry have also been included. The industry has, however, not taken much advantage of the scheme and uptill now, equipment and machinery worth only Rs. 43,733 has been supplied to the industry. Fresh attempt has been made by the Government to approach the industry to explain the benefits of the scheme as well as the advantages of certain processes from the point of view of higher production, better hygiene and sanitation and better quality control of the finished product.

CHAPTER 6

TARIFF ENQUIRIES

1.1. Some of the products of the fruit and vegetables preservation industry have enjoyed tariff protection from 1947 to 1957 for a period of about 10 years. The first enquiry into the claims of the preserved fruit industry was undertaken by the Tariff Board in 1947. Subsequent enquiries have been made in 1949, 1951, 1954 and 1956.

1.2. On the basis of recommendations of the first enquiry, protective duties at the following rates were imposed from 12th January, 1948—

- (a) 60 per cent ad valorem on “canned or bottled fruits”
- (b) 80 per cent ad valorem on “jams, jellies and marmalades”
- (c) 40 per cent ad valorem on “Fruit juices, squashes, cordials and syrups”.

1.3. The second Tariff enquiry was held in 1949 and on the recommendations of the Tariff Board the protective duties as indicated at (b) and (c) above were continued upto 31st March, 1951. As regards (a), the Board's recommendations for a higher duty of 80 per cent ad valorem was not accepted by the Government.

1.4. The third enquiry was held in 1951 and on the recommendation of the Board, tariff item Nos. 20(1) (Fruit juices, squashes, cordials and syrups not otherwise specified) and 20(5) (juices either individually or in mixture of the following fruits, namely, apricots, cherries, grapes, pineapples, plums and prunes) were deprotected with effect from 1st April, 1951. The standard protective rate of duty on canned or bottled fruits was reduced from 60 per cent ad valorem to 36 per cent ad valorem and that on jams, jellies and marmalades and candied and crystallised fruits from 80 to 40 per cent ad valorem. An additional duty of one quarter of the amount leviable under the tariff Act was imposed on all fruit products. In 1951 the Tariff Board also enquired into the claim for assistance and protection for the canned and bottled vegetables industry. The Board did not recommend any protection to this industry. No further enquiry has been made on the claims of this industry although representations were received from the manufacturers.

1.5. The fourth Tariff enquiry on preserved fruits was held in 1954 and on the recommendation of the Tariff Commission the protective duties applicable to tariff item Nos. 8 [Fruits candied and crystallised 20(4) jams, jellies and marmalades, canned, bottled or otherwise packed] and 20(9) (Pineapples canned, bottled or otherwise packed) were maintained at the then prevailing rates. Government did not accept the Commission's recommendation for a reduction of duty on tariff item Nos. 29(3) and 20(8) (Fruits canned, bottled or otherwise packed). The standard protective rates of duty applicable to these items were allowed to remain at the prevailing rates and margin of preference for the goods manufactured in British colony was adjusted according to the provisions of relevant

Trade Agreements. These rates were to remain in force upto the 31st December, 1956 but their duration was extended after consultation with the Tariff Commission upto 31st December, 1957 by the Indian Tariff (Amendment) Act, 1956.

1.6. The fifth Tariff enquiry was held in 1957 and the Commission recommended that no continuance of tariff protection is required by the preserved fruit industry. This was accepted by Government with effect from 1-1-1958.

1.7. The reports of the Tariff Commission have been very useful in assessing the progress of fruit and vegetable preservation industry in India. The reports cover a wide field of observations besides the question of justification for protection. The protection to the industry has now been withdrawn due mainly to the present policy on restriction of imports which is likely to continue for sometime to come due to the present foreign exchange difficulties. The ban on imports has also given a fillip to the industry by creating a very good market within the country. The Tariff Commission has recommended that if and when the import policy of the Government is likely to change and the imports of fruit products are likely to affect the industry, the industry may come up to the Government for a request for another enquiry to consider the need for protection.

1.8. Government resolution on the Tariff Commission's last enquiry is given in Appendix E.

CHAPTER 7

EXPORTS

1.1. Pickles and chutney produced in India have been in the export trade for over a century. In recent years possibilities of exports of other commodities like canned fruits, and vegetables have also been explored and encouraging beginning has been made. The export figures for the last five years as given in Statement No. 27 indicate the pattern of export trade of fruit products. The main items of exports are:—(i) Chutney, (ii) pickles and (iii) canned fruits. Canned vegetables have also recently entered the export market. In Statements No. 28 and 29 export of chutneys, pickles, canned fruits and canned vegetables etc. to different countries of the world are indicated together with the total value of exports. It may be observed that nearly 44% of exports are to the U.K. followed by 8 per cent to the U.S.A. Exports to most of the other countries indicated in the statement are small. There are however as many as 47 countries of the world where some exports have been made in the past.

1.1.2. Export of chutney and pickles have remained almost at the same level during last few years. The figures for canned fruits had shown an increase in trend during 1955 but dropped down in the year 1956 due to failure of orange crop in Madhya Pradesh which had contributed a large portion to the overall exports in 1955.

1.2. In Tables No. 30 and 31, export figures for different items have been compared with the total indigenous production during the years 1953 to 1956. It may be observed that in the case of chutney nearly 90 per cent of the production is exported, while the exports of other categories of fruit products are very much less than the production. The indigenous demand for chutney has been limited due to lack of interest of the manufacturers in developing the indigenous market for this product. We have adequate production capacity within the country in order to meet the demand for different types of products in foreign markets.

1.3. Statement No. 32 presents the figures of exports from the ports of Calcutta, Bombay and Madras. The value of fruit products exported from Calcutta and Bombay and Madras are 41%, 58% and 1.5% respectively of the value of total exports.

1.4. Chutney and pickle manufacturers can substantially increase their exports if more intensive propaganda and publicity is undertaken and an intensive drive is made for export promotion. There is an unlimited market for the export of chutney and pickles in the European countries as well as in some of the countries which have large Indian population.

1.5.1. Canned fruit and pulp industry can also make substantial contribution to our export trade. High prices of the indigenous products due to cost of sugar, tinplate and to certain extent, fruits have so far stood in the way

of substantial exports. The schemes for export promotion which are not being put into operation are expected to remove many of these impediments. Amongst the canned fruits demand can be created for canned mangoes, guava, papaya and other tropical fruits. The mandarin oranges of Nagpur, Coorg, Assam and Sikkim offer substantial scope for export in the form of canned orange segments which are at present manufactured and exported to other countries by only Japan. The only difficulty in India is of manufacturing a product which is of standard quality, uniform size of the segments and attractive appearance. The Japanese product is manufactured from small seedless oranges which are much easier to handle while in our oranges, we have to remove the seeds from each segment. This process adversely affects the shape of the segments and the appearance and involves higher labour and supervision cost. The product from Japan is offered in foreign countries at much lower rates. The development of orange industry in Assam and Sikkim is likely to bring down the cost because of the availability of raw-material at more economic rates and it is hoped that in the near future we would be able to increase the exports of orange segments substantially.

1.5.2. Another important fruit which has an international market is pineapple. At present the production of pineapple within the country is just sufficient to meet the indigenous demand. If however, a substantial production is available at a reasonable price there is increased scope for exporting pineapple products for which there is a large demand in foreign countries.

1.5.3. The fruit pulp manufacturers at present export only mango pulp and juice. Export demand could also be created for pulps from tropical fruits like guava, papaya, banana, custard apple, jack fruit, jamun, amla, etc. for use in the manufacture of fruit beverages, Ice cream and sweet preparations. Ice cream containing fruits and fruit pulp is being largely produced now in foreign countries in order to provide the consumers with something different from the conventional flavours like vanilla, chocolate etc.

1.5.4. Enquiries were recently made from our Commercial Attaches abroad in connection with promoting export of fruit products. The difficulties pointed out by most of them were high prices of Indian products, lack of publicity and lack of knowledge of specific requirements of other countries.

Vegetables.

1.6. The export of preserved vegetables is at present confined to items like canned okra in tomato sauce, brinjals, bitter gourd and a few others. There is scope for exporting preserved vegetables in the West Asian Countries and Europe where taste is being developed for new types of vegetables. The main bottleneck has been the high price of the finished products. It is understood that several countries would be interested in importing large quantities of canned vegetables from India if the price and quality are according to their requirements.

Export Delegation

1.7. It is essential that an official delegation having representative of the manufacturers is sent as soon as possible to a few selected countries in order to explore the scope of exporting our food products.

1.8. A panel set up by the Planning Commission for recommending plans for the development of fruit and vegetable preservation industry recommended a target of 11,000 tons for the export of fruit products by 1960-61. The industry is capable of fulfilling this target provided the export market is explored expeditiously and developed on the right lines.

Export promotion needs, a more vigorous drive by means of active publicity of our products in foreign countries, participation in exhibitions and international fairs. The industry has complained that the exhibitions have not been as helpful as they should be. The major hurdle is that our products are not acceptable in quality or are not appreciate against competitive prices of similar products from other countries. To develop the export trade, it is necessary to prepare brochures giving detailed information regarding each product of the industry; how it is made, what it is made of, how it should be served, standards and quality control and also the prices.

1.9. A recent circular to our trade representatives abroad has brought forward some interesting observations about the export of fruit products. Many European countries are not willing to import Indian Chutneys from India but import the same from England due to the fear that the quality of our product may not be reliable. Although quality control as indicated in the previous chapter is exercised under the Fruit Products Order, 1955, it would be profitable if compulsory quality control is introduced in respect of items meant for export. This would ensure the quality of the indigenous products. It is understood that grade specifications of chutney, canned fruits, preserves and squashes have already been gazetted under the Agricultural Produce (Grading and Marking) Act, 1937 and comments of the industry thereon have been invited. Once these specifications are finalised, a scheme could be made operative for compulsory grading prior to exports. In the meantime the industry should voluntarily subject itself to compulsory check of exported products which should conform to the minimum specifications laid down under the Fruit Products Order, 1955. This would eliminate large amount of competition and would create much needed confidence in the products of the industry.

STATEMENT No. 27

Estimated Export of Fruit and Vegetable Products during the year 1953 to 1957 from India

Item	1953		1954		1955		1956		1957	
	Quantity in tons	Value in Rs.	Quantity in tons	Value in Rs.	Quantity in tons	Value in Rs.	Quantity in tons	Value in Rs.	Quantity in tons	Value in Rs.
1. Pickles ..	253·154	432,644	310·89	448,865	408·82	599,381	409·5	463,941	714·30	10,02,543
2. Chutney ..	769·160	1,363,494	732·69	1,280,155	764·39	1,356,934	733·9	1,288,984	774·35	15,36,193
3. Canned fruits ..	338·016	628,538	349·24	581,843	469·94	1,034,869	62·4	173,942	173·93	3,57,656
4. Canned vegeta- bles.	9·698	28,651	17·06	25,999	33·44	38,416	29·4	77,987	31·71	54,060
5. Others ..	62·250	110,586	31·903	75,141	34·08	79,235	42·8	36,186	68·70	1,63,000
Total ..	1,432·278	2,613,913	1,441·783	2,412,005	1,700·67	3,108,835	1,278·0	2,241,040	1,762·99	31,13,452

STATEMENT No. 28

Estimated Countrywise Figures of Export of Indian Fruit and Vegetable Products in 1957

Countries	Mango Chutney			Pickles			Canned fruits		
	Tons	Rs.	Percentage value to V.	Tons	Rs.	Percentage value to V.	Tons	Rs.	Percentage value to V.
1. U.K.	577.40	9,29,325	60.5	172.50	2,37,439	23.6	97.50	1,62,769	45.6
2. U.S.A.	73.95	2,11,992	13.8	9.85	18,762	1.9	12.95	26,329	7.4
3. Iraq .. ..	..	..	..	58.70	99,205	9.9	..	..	..
4. Syria	3.25	7,068	0.5	185.05	2,82,627	28.2	0.35	1,107	0.3
5. Aden Protectorate	3.15	6,626	0.5	7.95	11,748	1.2	10.20	30,434	8.5
6. Persian Gulf	2.65	7,218	0.5	19.45	47,555	4.7	6.50	19,207	5.4
7. Saudi Arabia	2.75	6,962	0.5	38.10	47,566	4.7	14.00	37,566	10.5
8. Switzerland	1.50	2,200	0.1	..	..	..	..	..	..
9. Canada	22.80	48,775	3.2	1.40	2,648	0.3	..	..	..
10. Hongkong	7.75	25,364	1.6	1.50	4,516	0.4	..	..	..
11. Singapore	20.00	66,825	4.3	2.40	6,805	0.7	2.50	5,218	1.5
12. Italy	1.10	2,933	0.2	0.20	210	..	0.25	600	0.2
13. Newzealand	2.65	4,562	0.3	4.75	5,675	6.6	0.35	280	0.1
14. Denmark	1.75	5,074	0.4	..	..	..	..	..	..
15. Seikhdom of Arabia	6.15	18,765	1.2	18.00	48,827	4.9	3.55	8,528	2.4
16. Malaya	6.50	27,159	1.8	2.40	8,916	0.9	1.85	5,152	1.4
17. Japan	18.25	42,823	2.7	..	..	..	..	..	..
18. Kenya	11.05	31,079	2.0	4.10	10,455	1.0	0.35	926	0.3
19. Germany	2.80	7,736	0.5	2.50	6,200	0.6	0.50	640	0.2
20. Other countries	9.35	84,006	5.4	185.45	1,63,389	16.3	23.08	58,900	16.5
	774.35	15,36,193	100.0	714.30	10,02,543	100.0	173.93	3,57,656	100.0

STATEMENT No. 29

Estimated Countrywise Figures of Export of India Fruit and Vegetable Products in 1957

Countries	Canned Vegetables			Others			Total		
	Tons	Rs.	Percentage value to V.	Tons	Rs.	Percentage value to V.	Tons	Rs.	Percentage value to V.
1. U.K.	21.56	34,840	68.7	5.85	10,990	6.7	879.95	13,82,363	44.4
2. U.S.A. .. ..	..	..	..	0.41	1,729	1.0	97.16	2,58,812	8.3
3. Iraq .. ..	..	..	..	1.15	2,501	1.5	59.85	1,01,708	3.2
4. Syria	5.85	11,705	19.2	0.05	220	0.1	194.55	3,02,727	9.7
5. Aden Protectorate .. ..	..	..	..	..	..	..	21.30	48,808	1.6
6. Persian Gulf .. ..	..	..	..	0.85	2,092	1.3	29.45	75,072	2.4
7. Saudi Arabia .. ..	..	..	..	2.70	4,001	2.5	57.55	96,095	3.1
8. Switzerland .. ..	..	..	..	..	..	..	1.50	2,200	0.1
9. Canada .. ..	..	..	..	0.47	1,739	1.1	24.67	52,853	1.7
10. Hongkong	0.30	598	1.0	1.65	7,956	4.9	11.20	38,434	1.2
11. Singapore	1.20	1,869	3.1	4.80	16,134	9.9	30.90	96,851	3.1
12. Italy .. ..	..	..	..	..	..	..	1.55	3,743	0.1
13. Newzealand .. ..	..	..	..	..	..	..	7.75	10,517	0.3
14. Denmark .. ..	..	..	..	0.05	120	0.1	1.80	5,194	0.1
15. Seikhdom of Arabia	0.70	1,300	2.1	0.10	315	0.2	28.50	77,736	2.5
16. Malaya	1.40	2,379	3.9	1.70	3,382	2.2	13.40	46,988	1.5
17. Japan .. ..	..	..	..	0.40	2,600	1.6	18.65	15,123	1.4
18. Kenya .. ..	..	..	..	0.20	950	.7	15.70	43,410	1.4
19. Germany	0.70	1,214	2.0	2.35	4,044	2.4	8.85	19,834	0.6
20. Other Countries .. ..	..	..	..	45.97	1,04,236	63.8	258.71	4,03,586	13.0
Total	31.71	53,905	100	68.70	1,63,000	100	1,762.99	31,13,452	100

Countries where exports are insignificant to total exports—Ethopia, Iran, Spain, Australia, Sweden, Denmark, Philipines, Indonesia, Sudan, West Indico, N. Rhodesia, France, Ghana, Thailand, Israel, Ceylon, Burma, Holland, Malta, Nyasoland, Naurisxius, Nigeria Belgium.

STATEMENT No. 30

Comparison of Fruits Products Exports to Total Production of Fruit Products

Item	1953						1954					
	Total production		Exports		Percentage exports to total production	Quantity to total export	Total production		Exports		Percentage exports to total production	Quantity to total exports
	Quantity tons	Value Rs. (000)	Quantity tons	Value Rs. (000)			Quantity tons	Value Rs. (000)	Quantity tons	Value Rs. (000)		
1. Pickles ..	1,787	1,058	253.15	483	45.7	13.5	1,726	1,089	310.89	449	41.2	18.6
2. Chutney ..	639*	1,233	769.16*	1,363	..	52.2	654	1,254	732.69*	1,280	..	53.1
3. Canned fruits ..	696	1,512	338.01	629	41.6	24.0	896.5	2,021	349.24	582	28.8	24.1
4. Canned vegetable	544	793	9.70	29	3.7	1.1	1,126.0	1,596	17.6	26	1.6	1.1
5. Others ..	10,550	11,263	62.25	110	1.0	4.2	7,138.5	10,200	31.90	75	0.7	3.1
	14,216	15,864	1,432.27	2,614	16.5	100.0	11,541	16,160	1,441.78	2,412	14.9	100.0

*The production of chutney is under estimated by manufacturers as the licence fee was levied on the basis of production value.

STATEMENT No. 31

Comparison of Fruit Products Exports to Total Production of Fruit Products

Item	1955						1956					
	Total production		Exports		Percentage exports to total production	Percentage Quantity to total	Total production		Exports		Percentage exports to total production	Percentage Quantity to total
	Quantity tons	Value Rs. (000)	Quantity tons	Value Rs. (000)			Quantity tons	Value Rs. (000)	Quantity tons	Value Rs. (000)		
1. Pickles ..	2,240.9	1,436	408.32	599	41.7	19.3	7,247	1,923	409.5	464	24.1	20.7
2. Chutney ..	842.6	1,456	764.39	1,357	93.2	43.7	824.1	1,531	733.9	1,289	84.1	57.5
3. Canned fruits ..	1,030	2,093	469.94	1,035	49.5	33.3	949.3	1,936	62.4	174	9.0	7.8
4. Canned vegetables.	1,059.3	1,500	33.44	38	2.5	1.2	1,923.9	2,749	29.4	78	2.8	3.5
5. Others ..	8,895.4	13,846	34.08	79	.6	2.5	12,201.7	17,495	42.8	236	1.3	10.5
Total ..	14,068.3	20,331	1,710.67	3,108	15.3	100	23,146	25,634	1,278	2,241	8.7	100

STATEMENT No. 32

Portwise and Itemwise Exports of Fruit and Vegetable Production in 1957

Name of the product	Total exports			Exports from Calcutta port				Export from Bombay port				Export from Madras port			
	Tons	Rs. (000)	Percent- age to total tons	Tons	Rs. (000)	Percent- age to total of item	Percent- age to total of port	Tons	Rs. (000)	Percent- age to total of item	Percent- age to total of port	Tons	Rs. (000)	Percent- age to total of item	Percent- age to total of port
Chutney ..	774.35	15,36	44.3	586.00	*11,46	75.7	81.4	177.60	3,67	22.9	17.5	10.75	23	1.4	40.3
Pickles ..	714.30	10,03	40.54	62.30	1,20	8.7	8.6	636.90	8,56	89.2	62.7	15.10	27	2.1	56.7
Canned fruits	173.93	3,58	9.8	11.95	25	6.9	1.7	161.98	3,33	93.1	15.9 ¹	..	..	..	..
Canned vege- tables.	31.71	54	1.5	20.41	31	64.4	2.8	11.30	23	35.6	1.1	..	..	..	..
Others ..	68.70	1,63	3.9	39.45	1,04	57.4	5.5	28.45	57	41.4	2.8	0.80	2	1.2	3.0
Total ..	1,762.99	31,14	100.0	720.11	14,26	40.8	100.0	1,016.23	16,36	57.7	100.0	26.65	52	1.5	100.0

CHAPTER 8

RESEARCH AND INVESTIGATIONAL WORK

Central Food Technological Research Institute, which was started almost 8 years ago, is one of the National Laboratories and devotes its entire attention to the work in the field of Food Science and Technology. The work of the Institute is divided into 11 Divisions :—(1) Biochemistry and Nutrition, (2) Dietetics, (3) Food Processing, (4) Fruit Technology, (5) Food Engineering, (6) Information and Statistics, (7) Microbiology and Sanitation, (8) Quality Control, (9) Storage and Preservation including Cold Storage, (10) Process Development, (11) Packaging and Containers. A new section for work on dehydration of foods is also contemplated.

The work so far carried out at the Institute in respect of fruit and vegetable preservation is given below in brief :—

Ginger Cocktail

1.2. In a warm country like India, it is necessary to provide refreshing, nutritious drinks. In this direction, the work has resulted in the development of Ginger Cocktail using certain fruit juices, indigenous herbs and ginger. The process has been given to a firm in Mysore and the product is already available on the market, under the name 'Jingerela'.

Fruit Juice Powder

1.3. A process has been developed to prepare juice powder for use in off season for preparing fruit juice beverages. This process has been recently sold to a firm in Bombay.

Vinegar

1.4. A small Vinegar generator was developed at a cost of Rs. 20/-. The process is very simple and has been used to a fair amount of advantage for manufacture of vinegar on cottage and small scale basis. Several persons have taken advantage of this process.

Improved method for preservation of raw mango slices in brine

1.5. India exports a large amount of raw mango slices for manufacture of chutneys, sauces and pickles. The quality of these slices has been very poor. Investigations were carried out in the packing centres and an improved method developed for the purpose. It is now possible to preserve mango slices for a long period after preparing them under hygienic conditions. Chemical preservative used for the purpose is 200 p.p.m. of potassium metabisulphite. This method has now been taken up by the mango slice manufacturers.

Fruit Flakes

1.6. Large quantities of nutritious fruits do not reach the consumer today on account of difficulties in transport, pre-packaging etc. Certain fruits and

vegetables are in surplus production during the season. A process has been developed at Mysore for manufacturing breakfast cereals from fruit pulp. Such products have been made from Mango and Tomato on a pilot plant scale using drum driers. The process is simple and has attracted a number of industrialists who have shown interest in exploiting it. The product has also been appreciated by the consumers.

Strained Baby Foods

1.7. This project was taken up because of the interest shown by a number of industrialists in developing strained Baby Foods from fruits and vegetables. The investigations have resulted in the preparation of different types of Baby Foods from indigehous fruits and vegetables. It has also been possible to prepare dried Baby Foods using drum driers. The latter can be manufactured economically and would be more suitable for our country. These products also offer fairly good export possibilities.

Cashew Apple Products

1.8. Cashew apple is at present an industrial waste in the country. According to the figures available, 2,70,000 tons of cashew apples were wasted in 1953. With the growing demand for cashewnuts it is estimated that by 1961, there will be cashew apple waste of 400,000 tons in the country. According to a simple process developed at the Institute, it has been possible to remove the astringency from cashew apple and convert it into various products such as candy, pickles and juices.

Fruit Toffee

1.9. The process for manufacture of fruit toffees from pulps of fruits like mango, jack fruit, etc., can be exploited to advantage by firms which are already in fruit and vegetable processing business. This may add a new line to the present business. The process is fairly simple and does not require much additional equipment.

Dehydration

1.10. At present, a Dehydration Expert from U.K. is working at the Institute on the organization of dehydration work as well as development of suitable equipment. Importance of the advantages of dehydrated food in emergency rations for Defence Service can hardly be over-estimated.

Equipment Design

1.11. Recently a well-equipped workshop and a pilot plant unit have been started at the Institute. The Institute is equipped not only for designing of pilot plants but also for making commercial designs to assist the industry.

Training of Personnel

1.12. The Institute has been running for last 6 years, a post-graduate diploma course for training technologists for the industry. It has become necessary now to make this course more comprehensive. The diploma of Associateship of the Institute is awarded to the student after two year's training. The diploma has been recognised by various Government organisations as equivalent to M. Sc. Degree.

Vacuum Tester for Canned Fruits

1.13. Recently an improved vacuum tester has been designed and fabricated at the Institute which can be directly operated on electrical mains for testing vacuum in food cans without puncturing them.

Garlic Powder

1.14. There is a good possibility of developing an export market for dehydrated garlic powder. Recent work at the Institute has resulted in the preparation of garlic powder of high quality which offers a very promising future. The powder also has a fair amount of antibiotic activity and may even find use in the pharmaceutical field.

1.15. Besides the work done at the Central Food Technological Research Institute, Mysore, there are several State laboratories particularly in U.P., Andhra, Assam, Mysore which have devoted much attention to research in fruit and vegetable preservation. University technological laboratories at Jadavpur and Bombay have also paid attention to this subject. However, much needs to be done in different regions of the country and as will be indicated under separate Chapter, the proposal for establishment of regional research laboratories would go a long way to meet the requirements of this country.

CHAPTER 9

SECOND FIVE YEAR PLAN

1.1. The need for development of fruit and vegetable preservation industry in the Second Five Year Plan was recognised by the Planning Commission. With a view to draw out a programme for the development of the industry in the Second Five Year Plan period, the Planning Commission set up a Panel with the Agricultural Marketing Adviser to the Government of India as the Chairman and comprising of representatives of various Ministries and industry. The Panel submitted its report to the Government in 1955. The summary and recommendations of the Panel may be seen in Appendix F.

1.2. The report of the Panel was considered by the Government and steps were taken to implement a number of suggestions made by the Panel. The target for the increased production by the industry during the Second Five Year Plan was however reduced by the Government from 100,000 tons as suggested by the Panel to 50,000 tons. The target figures of export of 11,000 tons by 1960-61 was however accepted by the Planning Commission.

1.3. On the basis of the recommendations of the Panel several schemes were prepared. The following schemes have been accepted for implementation during the Second Five Year Plan and a provision of Rs. 105 lakhs has been made for the same.

1. Scheme for subsidy on tin-plate used in the manufacture of open-top sanitary cans required by the Fruit and Vegetable Preservation Industry (Rs. 23 lakhs).
2. Loans for setting up large and small scale units for the development of fruit and vegetable preservation industry (Rs. 55 lakhs).
3. Establishment of regional research stations for fruit and vegetable preservation (Rs. 12 lakhs).
4. Research on packaging of fruit and vegetables (Rs. 1 lakh).
5. Staff for quality control and development of fruit and vegetable preservation industry (Rs. 14 lakhs).

Tin-plate Subsidy Scheme

1.3.1. The Tariff Commission while examining the case of protection to certain categories of fruit products made a recommendation that the fruit preservation industry would be considerably helped if the price of cans in India was reduced and brought in level with some of the important producing countries of the world. On the basis of this recommendations, the Panel suggested that a subsidy of Rs. 500 per ton of tin-plate would bring down the price of cans in level with the prices prevailing in foreign countries. The cost of containers according to the Tariff Commission Report of 1957 is between 20 to 33 per cent in the overall cost of finished products in this country and if the industry was helped in reducing the cost of containers, it would considerably assist its development.

In view of the fact that the cost of tin-plate, whether indigenous or imported is higher in India, Government of India agreed to give a subsidy to the extent of Rs. 500 per ton on tin-plate used in the manufacture of open top sanitary cans. This subsidy is however effective only if the cost of tin-plate to the fabricators of cans is higher than Rs. 1,200 per ton. The scheme has come into operation from 19th June 1958.

At present the scheme is operated through the only fabricators of open top sanitary cans viz., the Metal Box Company of India Ltd. All the manufacturers who are licensed under the Fruit Products Order, 1955 and who use open top sanitary cans are eligible for receiving subsidised cans. The manufacturers receive cans from the Metal Box Company of India Ltd. at a price reduced to the extent of Rs. 500 per ton of tin-plate. The Metal Box Company of India Ltd., have also on their own reduced the price of containers to the extent of Rs.10 per ton of tin-plate. The over-all position in respect of prices of different sizes of containers is indicated below:—

STATEMENT No. 33

Statement Showing the Approximate Prices of Different Cans without and after Deducting the Subsidy

Size	Price per 1000 cans		Difference per 1,000 cans.
	without subsidy	after-deducting subsidy.	
	Rs. nP.	Rs. nP.	Rs. nP.
A—2½	274.44	201.89	72.55
1-lb. butter	224.19	165.54	57.65
No. I Tall	194.31	149.76	44.55
1-lb. Jam	175.75	136.20	39.55

The above subsidies are given to the manufacturers in respect of their entire production and it is expected that in due course the prices of finished products will reflect the effect of the subsidy. Some of the leading manufacturers have already indicated their intention to bring about reduction in the export prices as well in the internal prices of some of the products.

Loans to the Fruit and Vegetable Preservation Industry

1.3.2. The scheme was sanctioned by the Government of India in the year 1956. Provisional allocations were made to individual States for establishment of small-scale units. A model scheme was circulated by the Directorate of Marketing and Inspection, Ministry of Food & Agriculture to the State Governments in connection with the establishment of small scale units (Appendix G).

The States of Punjab, West Bengal, Mysore, Bihar, Andhra Pradesh and Orissa were addressed in connection with the establishment of large scale units. There is large potential for the industry in these States in view of substantial

production of fruits and vegetables. The Directorate of Marketing and Inspection, Ministry of Food and Agriculture have also prepared a model scheme for large scale units and circulated it to the State Governments (Appendix H).

1.3.2.2. During the year 1957-58, the loan scheme did not make much progress and loans to the extent of only Rs. 9 lakhs were sanctioned. Ministry of Food and Agriculture and Ministry of Commerce and Industry recently examined the matter and considered that the loan scheme may be suitably modified and the possibility of operating it directly from the Centre may be explored.

1.3.2.3. The need for loans to the fruit and vegetable preservation industry is well recognised. A large number of applications have been received by the Government in the recent past from small, medium and large scale manufacturers for expansion of their existing units. Several States have also expressed desire to set up the industry in the public sector or on co-operative lines. West Bengal, Punjab and Assam States have been assisted by the Directorate of Marketing and Inspection, Ministry of Food and Agriculture in surveying various areas and in preparing schemes for large-scale units. Several schemes have also been prepared by various States for the establishment of small-scale units on co-operative basis as well as in the Community Development Blocks. Facilities for the grant of loans to the industry once available, would accelerate its development considerably.

Establishment of Regional Research Stations

1.3.3. Investigational work on fruit and vegetable preservation is carried on at present by the Central Food Technological Research Institute, Mysore and several other laboratories of the State Government as well as in certain Universities. One of the important considerations in the proposal for the establishment of regional research station was the necessity for bringing research closer to the Industry and to attend to specific work related to such varieties of fruits and vegetables which are only available in certain regions of the country. Regional Research laboratories are proposed to be set up by the Government along with horticultural research stations organised by the Indian Council of Agricultural Research.

1.3.3.2. A Committee under the Chairmanship of Dr. B.N. Uppal, Agricultural Commissioner to the Government of India went into the question of location of regional research laboratories and selected the following stations.—

(i) *Main stations*—Delhi, Saharanpur, Gauhati, Kodur, Poona and Simla (Mashobra).

(ii) *Sub-stations*—Kulu, Nagpur, Calcutta and Trichur.

1.3.3.3. The scheme for Regional stations has been entrusted by the Government of India to the Council of Scientific and Industrial Research and some of the stations are likely to be established during 1958-59. All the stations are expected to be established by 1960-61.

Scheme for Packaging of Fresh Fruits and Vegetables

1.3.4. A large amount of wastage occurs at present in the transit of fruits and vegetables. A study of the existing methods of packaging would help in ascertaining and reducing the extent of the wastage. A scheme has been sanctioned by the Government of India and is in operation since May, 1957. The report on this scheme is likely to be completed by the end of 1959.

1.4. Amongst the other important recommendation of the Panel for the development of the fruit and vegetable preservation industry, action has already been taken by the Government on the following:—

Rebate on Excise Duty on Sugar Used in Exported Fruit Products

1.4.1. Rebate on excise duty on sugar was announced in November, 1956 vide notification No. 18-CER 156 dated the 27th November, 1956. The manufacturers however did not take advantage of the scheme due to considerable amount of procedural difficulties. The scheme was therefore revised considerably and simplified vide Government of India Notification No. 85/57 dated 30th November, 1957. Enhanced rebate of excise duty due to the merger of sales tax with the excise duty was also announced vide Notification No. 62/58 dated 21-6-1958. The scheme is working satisfactorily and a large number of manufacturers in the export trade are taking advantage of the scheme.

1.4.1.2. The question of supplying sugar at world market price to the fruit and vegetable preservation industry for the products which are exported has been under the consideration of the Government. The industry has proposed that sugar products should also be included in the scheme for the export of sugar which has been announced recently by the Government.

1.4.2. Inclusion of fruit preservation industry in the Industries (Development & Regulation) Act, 1951. According to a recent amendment of the Act, Food Processing Industries have been brought under its purview and fruit and vegetable preservation have been included amongst the scheduled industries. So far eight manufacturers have been registered under the above Act.

1.4.3. Ministry of Commerce and Industry has constituted a Development Council for Food Processing Industries which was inaugurated by the Minister for Industries in July, 1958. The fruit and vegetable preservation industry has also been given representation on this Council. With a view to further assist the industry in developing the export, the following schemes have been put into operation.

Replenishment Quota for Tin-plate

1.4.3.2. Engineering Export Promotion Council has been authorised to allocate an additional quota of tin-plate on the basis of exports. This works out at the rate of 133 per cent of quantity of tin-plate exported.

Draw-back on Import Duty on Tin-plate

1.4.3.3. At present the open top sanitary cans used by the fruit and vegetable preservation industry is manufactured from imported tin-plate. On exported fruit products a draw-back of Rs. 60 per ton of tinplate has been permitted under the rules published vide Notification G.S.R. No. 11 dated the 28th February, 1958

Drawback on Bottled Products

1.4.3.4. A similar scheme for draw-back of duty paid on the raw material used in the manufacture of glass has been permitted on the products which are exported in glass containers.

Short-term Finance

1.4.3.5. The State Bank of India has recently extended liberalised terms of finance under their pilot scheme for assistance to the small scale industries including fruit and vegetable preservation industry. The scheme is likely to help considerably the small scale manufacturers for obtaining working capital.

1.5. From the above it will be observed that the fruit and vegetable preservation industry has been given considerable encouragement and assistance by the Government. Due to the present foreign exchange difficulties there has been a total ban on imports of fruit products. This has helped the indigenous industry. The requirements of the Army Purchase Organisation have also been substantially increasing. This has helped the canning industry to a large extent. From all points of view the remaining period of the Second Five Year Plan seems to be very well suited for increasing the production of the existing units and for the development of new capacity. The performance of the industry would however be judged by the maintenance of quality standards and by its competitive prices.

CHAPTER 10

SUGGESTIONS FOR FUTURE DEVELOPMENT OF THE INDUSTRY

1.1. The level of consumption of fruit and vegetable products in India is very low. It is only two ozs. per head per year. With the industrial development of the country as envisaged in the Second Five Year Plan, the consumption of protective foods—such as processed fruits and vegetables is likely to increase because of increase in per capita income. In view of this it would be desirable to increase the production of these products. In the Third Five Year Plan, we may safely fix an annual target of 100,000 tons to be achieved by the end of 1965-66. This would be twice the annual production aimed at by the end of Second Plan. The Committee is hopeful that it should not be difficult to achieve a production target of nearly 400,000 tons by the end of say fifth five year plan period.

1.2. During the current Plan, increase in production is expected to be achieved by encouraging private sector by such measures as subsidy on tin-plate, rebate on excise duty on sugar used in exported products. The Committee is of the view that in the Third Plan, the development of the industry should be encouraged on co-operative lines. In areas, such as Kulu Valley and Assam where there is abundance of fruits and where on account of transport facilities these are not utilized at present to the full extent, it would be particularly desirable to set up fruit processing factories in the public sector. The break-up of the envisaged additional production of 50,000 tons in the Third plan period in different sectors may be indicated as follows—

							Tons
Private Sector	..	..	..	..	..	..	30,000
Co-operative Sector	..	..	..	..	..	..	15,000
Public Sector	..	..	..	..	..	..	5,000
						Total	<hr/> 50,000 <hr/>

Export Trade

1.3. The Committee envisages that difficulties of foreign exchange may continue in the Third plan period, necessitating an intensification in our export trade. Export targets for fruit and vegetable preservation industry in the Third Plan may be fixed at 20,000 tons by 1965-66 out of the envisaged production of 100,000 tons. There is greater scope of developing export trade in canned pineapple, orange, guavas, papaya, mango and a few varieties of vegetables. The above target is recommended by the Committee keeping in view the essentiality for increasing the export earning and the general programme of assistance formulated by the Government of India for promoting export trade.

Programmes

Continuation of Schemes

1.4. It is suggested that the development schemes which were included in the Second Five-Year Plan may be continued and projected in the Third Five Year Plan. This recommendation is made by the Committee because some of the programmes of development proposed in the Second Five Year Plan have not yet been implemented fully.

Horticulture Development

1.5. The inter-dependance of horitculture and fruit and vegetable preservation has already been emphasised in the Second Five Year Plan. New areas of horticultural development should also serve as new grounds for future development of fruit and vegetable preservation industry particularly vegetable canning, fruit juices and concentrates, canning of pine-apple and deciduous fruits.

Marketing Programme

1.6. One of the important handicap in developing the fruit and vegetable preservation industry has been the lack of adequate market for the products of the industry. This problem therefore, ought to be tackled more extensively during the Third Five-Year Plan period. Following steps are suggested by the Committee for inclusion in the programme of future development:—

- (1) School lunch programmes which may include substantial quantities of fruit juice and concentrates and other nutritive products.
- (2) Defence Science Organization should be requested to undertake the study of supplies of various types of processed foods to Defence forces in foreign countries. It is estimated that if new varieties of suitable foods could be introduced for the defence requirements, the demand will grow substantially.
- (3) More extensive purchases by the Government for institutional purposes like hospitals, hotels, nursing homes, railways etc.
- (4) Development of strained baby foods may be done on an extensive scale.

Standardisation

1.7. The Committee would emphasise that greater attention should be paid in future to the hygiene, sanitation, standardisation, packaging, marking of processed foodstuffs. It is essential to introduce schemes for standardisation of important items of processed foods so that not only the consumer gets the value for his money but the processing industry is also made to realize the importance of maintenance of specific standards.

Technical Training Programme and the Requirement of Technical Personnel

1.8. To popularize the science of preservation of fruits and vegetables on cottage industry basis, it is necessary to impart training to the growers themselves in such Community Development and National Extension Service Blocks where horticulture is a predominating industry. Schemes should be provided in the 3rd plan for training centres at suitable places where short term training courses may be organised. This step would enable thousands of growers being

trained during the course of the Third Five Year Plan period in fruit and vegetable preservation.

Expansion of Regional Research Stations

1.8.2. With the expansion of fruit and vegetable preservation industry, the research stations will have to assist a larger number of manufacturers in respect of guidance on technical matters. This would necessitate the strengthening of the staff at the research stations.

Mobile Units for Demonstration and Propaganda

1.8.3. The development of fruit and vegetable preservation industry is at present being looked after by six sub-offices of the Directorate of Marketing and Inspection of the Ministry of Food and Agriculture. Each sub-office is in charge of a zone. For doing extension work through the zonal offices, it is advisable to attach a mobile demonstration and publicity unit to each zone.

Foreign Training

1.8.4. With the expansion of fruit and vegetable preservation industry there will be need to adopt modern methods of processing, packing and marketing. It will, therefore, be desirable to send one or two senior officers to foreign countries every year to acquaint themselves with latest development and improvements in fruit processing technique.

Scheme for Training of Fruit Technologists

1.8.5. The Committee feels that a large number of technologists will be required for the development of the industry in various zones. Such technologists will have to be trained at an under-graduate level for which training facilities will have to be provided. Every year a number of technicians will be required to be trained some of who may be employed for the centres to be opened for training in fruits and vegetables preservation. The rest of the technicians may be absorbed by the industry.

The facilities of training at post-graduate level which is now being imparted at Central Food Technological Research Institute, Mysore, may also have to be increased to meet the additional requirements of technicians for development of the industry in coming years.

Movement of Perishable and Processed Products

1.9. Lack of sufficient and quick transport seems to be a handicap in developing food processing industries as well as for marketing of perishable commodities. For proper development of industry in future, more attention will have to be paid in connection with improving the efficiency in the movement by rail of perishables as well as processed foods. The introduction of refrigerated transport is also a long over due development.

The transport requirement of different regions will have to be assessed correctly and a phased programme of fully meeting the requirements by the end of the Third Five Year Plan period may be drawn.

Development of Refrigeration

1.10. An integrated development programme for refrigeration and refrigerated transport as a means to preserve perishables will have to be chalked out

Programmes

Continuation of Schemes

1.4. It is suggested that the development schemes which were included in the Second Five-Year Plan may be continued and projected in the Third Five Year Plan. This recommendation is made by the Committee because some of the programmes of development proposed in the Second Five Year Plan have not yet been implemented fully.

Horticulture Development

1.5. The inter-dependance of horitculture and fruit and vegetable preservation has already been emphasised in the Second Five Year Plan. New areas of horticultural development should also serve as new grounds for future development of fruit and vegetable preservation industry particularly vegetable canning, fruit juices and concentrates, canning of pine-apple and deciduous fruits.

Marketing Programme

1.6. One of the important handicap in developing the fruit and vegetable preservation industry has been the lack of adequate market for the products of the industry. This problem therefore, ought to be tackled more extensively during the Third Five-Year Plan period. Following steps are suggested by the Committee for inclusion in the programme of future development:—

- (1) School lunch programmes which may include substantial quantities of fruit juice and concentrates and other nutritive products.
- (2) Defence Science Organization should be requested to undertake the study of supplies of various types of processed foods to Defence forces in foreign countries. It is estimated that if new varieties of suitable foods could be introduced for the defence requirements, the demand will grow substantially.
- (3) More extensive purchases by the Government for institutional purposes like hospitals, hotels, nursing homes, railways etc.
- (4) Development of strained baby foods may be done on an extensive scale.

Standardisation

1.7. The Committee would emphasise that greater attention should be paid in future to the hygiene, sanitation, standardisation, packaging, marking of processed foodstuffs. It is, essential to introduce schemes for standardisation of important items of processed foods so that not only the consumer gets the value for his money but the processing industry is also made to realize the importance of maintenance of specific standards.

Technical Training Programme and the Requirement of Technical Personnel

1.8. To popularize the science of preservation of fruits and vegetables on cottage industry basis. it is necessary to impart training to the growers themselves in such Community Development and National Extension Service Blocks where horticulture is a predominating industry. Schemes should be provided in the 3rd plan for training centres at suitable places where short term training courses may be organised. This step would enable thousands of growers being

trained during the course of the Third Five Year Plan period in fruit and vegetable preservation.

Expansion of Regional Research Stations

1.8.2. With the expansion of fruit and vegetable preservation industry, the research stations will have to assist a larger number of manufacturers in respect of guidance on technical matters. This would necessitate the strengthening of the staff at the research stations.

Mobile Units for Demonstration and Propaganda

1.8.3. The development of fruit and vegetable preservation industry is at present being looked after by six sub-offices of the Directorate of Marketing and Inspection of the Ministry of Food and Agriculture. Each sub-office is in charge of a zone. For doing extension work through the zonal offices, it is advisable to attach a mobile demonstration and publicity unit to each zone.

Foreign Training

1.8.4. With the expansion of fruit and vegetable preservation industry there will be need to adopt modern methods of processing, packing and marketing. It will, therefore, be desirable to send one or two senior officers to foreign countries every year to acquaint themselves with latest development and improvements in fruit processing technique.

Scheme for Training of Fruit Technologists

1.8.5. The Committee feels that a large number of technologists will be required for the development of the industry in various zones. Such technologists will have to be trained at an under-graduate level for which training facilities will have to be provided. Every year a number of technicians will be required to be trained some of who may be employed for the centres to be opened for training in fruits and vegetables preservation. The rest of the technicians may be absorbed by the industry.

The facilities of training at post-graduate level which is now being imparted at Central Food Technological Research Institute, Mysore, may also have to be increased to meet the additional requirements of technicians for development of the industry in coming years.

Movement of Perishable and Processed Products

1.9. Lack of sufficient and quick transport seems to be a handicap in developing food processing industries as well as for marketing of perishable commodities. For proper development of industry in future, more attention will have to be paid in connection with improving the efficiency in the movement by rail of perishables as well as processed foods. The introduction of refrigerated transport is also a long over due development.

The transport requirement of different regions will have to be assessed correctly and a phased programme of fully meeting the requirements by the end of the Third Five Year Plan period may be drawn.

Development of Refrigeration

1.10. An integrated development programme for refrigeration and refrigerated transport as a means to preserve perishables will have to be chalked out

in the immediate future. We have not yet developed refrigeration extensively or utilized freezing techniques which have been developed in foreign countries for a very large group of items of foods. It would be desirable to include such a development in our programme during the Third Five-Year Plan period.

Development of Allied Industries

1.11. With the expansion of fruit and vegetable processing industries, it will be a natural corollary to develop allied group of industries like the manufacture of containers and closures, equipment and machinery fabrication, food colours, flavours and chemicals required by the processing industries.

1.11.2. The development of tin-plate industry will be geared up when the Rourkela steel plant comes into operation. It is expected that in matter of tin-plate, the country will be self-sufficient in not too distant a future.

1.11.3. Glass bottle industry in India has been making progress and a few automatic plants have now been installed, although the problem of bringing down the cost of bottle will have to be looked into more thoroughly.

1.11.4. Fabrication of equipment and machinery for food processing industries has not been well developed in the country as yet. More attention will have to be paid in future in respect of fabrication of equipment and machinery suited to our conditions of working. The manufacture of stainless steel in India will undoubtedly play an important part and it is hoped that when we manufacture our own stainless steel, fabrication of stainless steel equipment would be possible at economic prices.

1.11.5. Some progress has already been made in India in regard to the manufacture of essences and flavours of satisfactory quality. We may, however, have to depend on imports in regard to food colours. The manufacture of other chemicals like pectin, citric acid and preservatives should be included in the development of chemical industries in the Third Five Year Plan. Requirements of the above chemicals are likely to be substantial not only from the food processing industries but from other industries as well.

CHAPTER 11

SUMMARY AND RECOMMENDATIONS

1. Ministry of Commerce and Industry, Government of India constituted an *Ad hoc* Committee in January, 1958 to review the development of preserved fruit and vegetable industry (Page (i)).

2. The need for horticultural development in India is essential for the healthy growth of our population. Fruit and Vegetable Preservation Industry is linked up with the development of horticulture (Page 1).

3. India does not lack in adequate resources for developing this industry as only 0.12% of the production of fresh fruits and vegetables is estimated to be utilized by the industry as against nearly 15 to 20% of fresh fruits and vegetables which go to waste due to transport and other bottlenecks (Page 1).

4. There is immense scope for the development of industry in fruit growing regions which are at present suffering from transport and marketing difficulties (Page 1).

5. The total estimated production of fruit and vegetable products during the year 1956 was 30,000 tons valued at Rs. 334 lakhs and for 1957, 32,000 tons valued at Rs. 388 lakhs (Page 4).

6. Production of different varieties of fruit and vegetable products is carried out throughout the year (Page 8).

7. Bombay, Delhi, Punjab, West Bengal and Uttar Pradesh are important States for the industry. Beverages, pickles, canned fruits and vegetables and preserves are important items of production (Page 22).

8. The fruit product industry is controlled under the Fruit Products Order, 1955 issued under the Essential Commodities Act, 1955 (Page 30).

9. The number of licence holders who manufacture fruit and vegetable products has been on the increase and was 990 in 1958. Although the number of factories is quite large, units which have a production of over Rs. 1 lakh per year in value are only 51. The larger units contribute considerably to the total production and deal mainly in products like fruit beverages, chutney, canned fruits and vegetables (Page 31).

10. Most of the larger units in the country fulfil all the requirements of hygiene, sanitation and standardisation of quality laid down under the Fruit Products Order, 1955 (Page 32).

11. The major raw materials required by the industry are fruits, vegetables, cans, bottles, fuel, barrels, chemicals like pectin, citric acid, acetic acid, preservatives, food colours, essences, flavours, salt, spices, edible oils, waters softening agents, detergents, packing and labelling materials (Page 35).

12. Due to lack of data regarding the suitability for processing of different varieties of fruits and vegetables, the industry has been mainly using known varieties which are more suitable for table purposes (Page 36).

13. The requirements of sugar for the industry is hardly 0.3% of the total production of sugar in the country (Page 36).

14. The total requirement of tin-plate containers is estimated at 2,000 tons per year out of which 1000 tons is of special type which is imported at present. It would be necessary to continue the use of imported tin-plate till the country starts the production at Rourkela of cold reduced hot dipped tin-plate manufactured from suitable quality of steel (Page 37).

15. The murrabba and pickle industry are using canisters made from ordinary type of tin-plate. The advisability of using such a material requires to be investigated by the Central Food Technological Research Institute, Mysore (Page 38).

16. It is estimated that 50% of the production of fruits and vegetables products is packed in bottles (Page 38).

17. The trend for glass packing is likely to improve but the major obstacles are—(a) the price of glass, (b) the quality of bottles particularly for packing products hermetically and processing in pressurised steam, (c) development of better closures and (d) higher cost of transport due to heavier gross weight (Page 39).

18. The industry has been facing difficulties in obtaining good quality bottles at reasonable prices particularly in the Southern region of the country (Page 39).

19. The manufacture of barrels from special woods needs to be investigated by the Forest Research Institute, Dehra Dun. There is scope for increase in the use of barrels for packing varieties of food products (Page 39).

20. The existing technological institutes have not been paying adequate attention to imparting training in the cooperating techniques and packing in barrels (Page 40).

21. Scope for the manufacture of pectin from apple and citrus waste should be explored (Page 41).

22. Production of citric and acetic acids in substantial quantities within the country would enable the industry to obtain the requirements indigenously at reasonable prices (Page 41).

23. The use of preservatives and food colours is regulated under the Fruit Products Order and the Prevention of Food Adulteration Rules (Page 42).

24. Excessive use of food colours is not desirable (Page 42).

25. The requirement of equipment and machinery by the unorganised sector of the industry is insignificant. In the organised sector considerable amount of manual labour is employed in India and mechanisation is avoided as far as possible (Page 44).

26. Fabrication of certain types of food machinery has been recently undertaken within the country. Some of the specialised equipment and machinery are still required to be imported (Page 44).

27. Fruit and Vegetable Preservation Industry enjoyed tariff protection for a period of about 10 years. In the last tariff enquiry held in the year 1957, Tariff Commission recommended de-protection of the industry and made certain recommendations for its future development (Page 46 to 47).

28. The export of fruit and vegetable products was to the extent of Rs. 31.13 lakhs in the year 1957. The main items exported were chutney, pickles, canned fruits, pulps and juices (Page 48).

29. There is possibility of promoting export trade of canned fruits, pulps and canned vegetables (Page 48).

30. In exploring the export markets, it is recommended that an official delegation having representatives of the industry may be sent to a few selected countries. The target for export of fruit products has been fixed at 11,000 tons by 1960-61 and the Committee feels that this could be fulfilled by a more vigorous drive in giving publicity to our products in foreign countries and by participation in exhibitions and international fairs (Page 49-50).

31. State Trading Corporation may usefully contribute to the promotion of export of fruit and vegetable products (Page).

32. The industry should voluntarily subject itself to compulsory quality check on exported fruit products (Page).

33. For evolving a development programme for fruit preservation industry during the Second Five Year Plan, a Panel was set up which submitted its report to Government in 1955 (Page 60).

34. The target for increased production by the industry during the Second Five Year Plan has been fixed at 50,000 tons by 1960-61 (Page 60).

35. On the recommendation of the Tariff Commission and the Panel, Government of India has agreed to the scheme for subsidy on tin-plate used in the manufacture of open top sanitary cans. The subsidy has reduced the cost of cans to industry by 22% on an average (Page 60).

36. With a view to develop the industry in various parts of India, a scheme for loans to the industry has been sanctioned and in the year 1957-58, loans to the extent of Rs. 9 lakhs were sanctioned. Loan facilities would accelerate the development of the industry considerably (Page 61).

37. De-centralisation of research on fruit and vegetable preservation industry has been recognised and it is proposed to establish ten regional research stations in various regions of India by 1960-61 (Page 63).

38. Some of the important recommendations of the Panel have been put into effect recently, amongst which are:—

(a) Rebate of excise duty on sugar used in exported fruit products.

(b) Inclusion of Fruit Preservation Industry in the Industries Development and Regulation Act.

(c) Formation of Development Council for food processing industry (Page 63).

39. Industry has been given facilities for replenishment of quota for tin-plate used in exported fruit products as well as for draw back of import duty

on tin-plate and glass bottles used in packing the products which are exported (Page 63).

40. The State Bank of India has recently extended liberalised terms of finance for fruit and vegetable preservation industry (Page 64).

41. A total ban has been imposed at present on the import of fruit and vegetable products (Page 64).

42. Research and investigational work carried out at the Central Food Technological Research Institute, Mysore and other institutions has, besides solving certain technical problems of the industry, helped the development of new products and improvement of existing processing technique (Page 57).

43. The estimated target of production in the Third Plan is visualised as 100,000 tons by 1965-66. It is estimated that the level of production may go up to 400,000 tons per year on the basis of long term development (Page 65).

44. The export target for fruit and vegetable production by 1965-66 is estimated as 20,000 tons (Page 65).

45. Implementation of several schemes which were included in the Second Five Year Plan for the benefit of the industry have been delayed. These schemes should be carried over and projected in the Third Five Year Plan (Page 66).

46. The Committee recommends that a co-ordinated programme of horticulture and fruit and vegetable preservation should be chalked out (Page 66).

47. Steps should be taken to help the industry in exploring and developing new markets for fruit and vegetable products (Page 66).

48. The Committee emphasises the need for quality control and recommends that compulsory standardisation should be adopted for exports (Page 66).

49. The need for technical training programmes at various levels as well as for foreign training of technicians has been recognised and adequate provision should be made for such training during the Third Five Year Plan (Page 66).

50. The Committee recognises the need for development of refrigeration expeditiously in the Third Five Year Plan (Page 67).

51. The development of fruit processing industries would necessitate the development of allied group of industries like tin containers, closures, fabrication of equipment and machinery, manufacture of food colours, flavours and chemicals etc. (Page 95).

APPENDIX A

SUMMARY AND RECOMMENDATIONS OF THE SUB-COMMITTEE OF THE CENTRAL FRUIT PRODUCTS ADVISORY COMMITTEE ON CHUTNEY INDUSTRY IN INDIA

(1) The Central Fruit Products Advisory Committee set up under the Fruit Products Order, 1955 constituted a sub-Committee to enquire into the Chutney Industry in India.

(2) The terms and reference of the Sub-Committee were to survey the present status of Chutney Industry in India and to study problems faced by the industry particularly in augmenting the export trade and to suggest plans for its development.

(3) The chutney covered under the report has been defined as a cooked fruit in syrup with slices, salt and vinegar.

(4) The average production for 5 years for chutney is estimated at 734 tons valued at Rs. 13.6 lakhs.

(5) The manufacture of mango chutney can be divided into two parts (i) the pickling of green mango slices and (ii) preparation of mango chutney.

(6) The manufacture of chutney is done according to the specifications of the Fruit Products Order, 1955.

(7) The major raw materials required for manufacture of chutney are green mangoes, sugar, salt, vinegar or acetic acid, barrels, bottles, labels, fuel, spices and other packing materials.

(8) The Sub-Committee feels that while pickling of green mangoes due attention is not given to the quality of the raw material as the manufacturers are inclined to an opinion that this does not reflect on the final product.

(9) The Sub-committee is of the opinion that in the interest of the chutney industry there is a need for re-organising the pickling industry and putting it on a footing which would not only give a product produced under hygienic and sanitary conditions and of standard quality but also would safeguard the interest of the primary processors. A small co-operative processing unit can be operated if the Government assistance was available partially in the form of grant and partially in form of loan.

(10) The Committee also favours the proposal of expanding the scope of the primary processing societies which can undertake manufacture of mango chutney.

(11) The Sub-committee recommends the immediate steps should be taken for establishment of fruit preservation unit at Malda in West Bengal.

(2) Detailed specifications of pickled mango should be worked out and prescribed under the Fruit Products Order.

(13) The sub-committee was given to understand that the revised procedure for rebate on excise duty of sugar used in chutney is likely to be announced shortly. This would give an impetus to the chutney industry.

(14) The chutney industry would do well in utilising the better quality salt in pickling.

(15) The chutney industry while making contract for purchase of bottles should give detailed specifications including alkalinity factor and get the various lots examined prior to final purchase.

(16) The Sub-committee is of the view that good quality corks at a reasonable price should be made available to the chutney industry.

(17) There seemed to be an orthodox approach to varieties of problems and considerations due to conventions and past practices seem to weight heavily in the matters of modernisation and even in expansion of activities. Both at Bombay and Calcutta the Director of Industries gave the Sub-committee to understand that the chutney industry had not approached for assistance in any form.

(18) In spite of availability of accommodation in the factories it was observed that an unorganised manner of handling affected the working of the units.

(19) In the factories the water line should be realigned so that the water can be made available to almost all the centres of processing departments.

(20) More stainless steel equipment should be introduced by chutney industry.

(21) The chutney industry would do well to employ steam cooking which would give better results and would avoid the smoke in the factory. This would also improve the quality of the finished products.

(22) The Sub-committee is of the view that most of the chutney manufacturers are in a position to install adequate equipment and machinery. Facilities now being given by the Government to small scale industries should be fully utilised by the industry.

(23) The performance of the chutney manufacturers in conforming to the quality standards prescribed under the Fruit Products Order has been creditable. A pilot scheme for continuous check sampling of all chutney manufactured at Bombay, Calcutta and Madras has yielded useful results.

(24) The Sub-committee recommends that arrangements should be made for analysis of fruit products samples at the port towns and a system of certification of quality standards according to the minimum requirements under the Fruit Products Order should be started as early as possible. Such measures would help considerably export promotion.

(25) Most of the manufacturers agreed with the view that if a procedure is worked out in consultation with the trade according to the grade specifications to be provided under the Agricultural Produce (Grading and Marking) Act, 1937 would be advantageous.

(26) The Sub-committee recommends that a Senior Research Officer should be entrusted a project on chutney at Central Food Technological Research

Institute, Mysore. There has not been much work done in preparation and processing of chutney.

(27) Nearly 82 to 83 per cent. of the production of chutney was exported.

(28) As there are many resources for developing the chutney industry in India the Sub-committee recommends that the intensive area scheme for village industries of the Khadi and Village Industry Board as well as some of the Community Development Block should include processing of green mango pickling.

(29) For developing demand within the country the chutney industry should participate in more exhibitions produce leaflets and pamphlets as well as for developing new recipes to suit the indigenous tastes. There is also need for introducing more varieties of chutneys made of different fruits and vegetables. The prospective demand within the country is estimated to be 500 tons per year by 1960-61.

(29-A) The Sub-committee recommends a ban for next 5 years from 1958 on export of pickled mango which is a raw material for chutney industry.

(30) Although chutney exports are as much as 50 per cent. of the total exports of fruit products the export of chutney has been more or less satisfactory. This situation, the Sub-committee feels is due to the lack of incentive amongst the manufacturers.

(31) There is likelihood of serious competition in the chutney trade in the world market. Even to maintain the existing exports the chutney industry should concentrate more on quality on selling under their own brand and on intensive propaganda and publicity.

(32) The excise duty rebate on sugar used in exported chutney should be collected as a fund to start an export promotion organisation. The Government should make a contribution to this fund on the basis of what is being done for other export promotion councils.

(33) A proposal for forming an export promotion council for all fruit products may be studied and its feasibility examined by the Ministry of Food and Agriculture.

(34) The chutney manufacturers should collectively take up advertising of the Indian mango chutney in foreign markets. Attractive pamphlets and brochures depicting the qualities of chutney should be prepared.

(35) Some European countries are importing mango chutney through established importers in U.K. The expansion of our trade in this country is most likely if our trade representatives bring these parties in contact with our manufacturers.

(36) A reported ban on imports of fruit products from India in certain European countries should be investigated and attempt made to remove the same.

(37) Although in trade agreements with some countries export of fruit products has been included, no useful results have been achieved. Our trade representatives may be requested to explore possibilities for promotion of export of chutney as well as other fruit products.

APPENDIX B

SUMMARY AND RECOMMENDATIONS OF THE REPORT ON THE MURRABBA INDUSTRY IN INDIA IN THE YEAR 1956 PREPARED BY THE SUB-COMMITTEE OF THE CENTRAL FRUIT PRODUCTS ADVISORY COMMITTEE

Introduction—

(1) The Sub-Committee of the Central Fruit Products Advisory Committee was constituted to enquire into the Murrabba Industry in India.

History—

(2) The history of the Murrabba Industry is linked with the indigenous system of medicines particularly the Unani system of medicines.

Manufacture—

(3) The process of manufacture of Murrabbas has undergone changes from the original with a view to improve the appearance and taste of the product and to increase the production by quickening the process of manufacture. In achieving these objectives, the manufacturers have adopted heavier blanching, use of chemicals for bleaching, use of firming agents, removal of more soluble solids to remove astringency, use of dried sugar instead of syrup and a system of semi-finishing of the product for quickening the pace of manufacture.

(4) The Sub-Committee went into the question of the existing specifications under the Fruit Products Order for preserves and did not find it advisable to change the specifications.

Status—

(5) The production of Murrabbas in India is estimated at 81,900 maunds (about 3,000 tons) valued at Rs. 33 lakhs.

(6) The estimated requirements of fruits by the industry is 54,600 maunds and sugar 65,520 maunds valued at Rs. 5,46,000 and Rs. 20,31,000 respectively.

(7) The preserves industry can be said to be mainly in the hands of small propriety and partnership concerns.

(8) The processing areas of factories in most of the cases was inadequate compared to the amount of production.

(9) The manufacturers did not have adequate quantity of water supply required under the Fruit Products Order, 1955. It is recommended that the factories should arrange better facilities for storage of water and should arrange with the local authorities for larger supplies.

(10) The average number of working days in Murrabba factories in India are 248.

(11) The general conditions of the factories left much to be desired. This was found due to existing methods of handling, and processing particularly unsystematic flow of material from process to process, concentrated processing activities in a limited space around *Bhatias* and shortage of labour.

(12) In important centres of production the existing units are situated in thickly populated areas. The conditions of the factories cannot be improved. The Sub-Committee, therefore, recommends that all possible assistance should be given to the manufacturers for shifting of the units to the healthier surroundings. The Industry cannot be developed unless a concentrated move in this direction is made by all concerned.

Quality—

(13) The results of analysis of Murrabba samples have revealed that as many as 50% of the samples did not come up to the specifications prescribed under the Fruit Products Order. This confirms the unsatisfactory conditions of the factories and their working.

(14) If the industry has to be developed on the right line it was the considered opinion of the Sub-Committee that steps should be taken to introduce hermetic packing of all Murrabbas. Two members of the Sub-Committee however have given note of dissent in this connection. The majority of members of the Sub-Committee recommends that the entire Murrabba Industry should cease to pack Murrabba in any packing other than the hermetic packing by 1st April, 1958.

(15) The Sub-Committee was given to understand that a scheme to subsidize the scheme of open top cans is likely to be accepted by Government. It was thought that this would easily enable the Murrabba manufacturers to change to the new mode of packing.

(16) The Sub-Committee also recommends introduction of suitable glass containers for packing.

(17) The manufacturers should introduce check on quality by checking the quality of what they produce and what they sell.

Research—

(18) The Sub-Committee felt that results achieved in the laboratories should be put to field trial.

(19) It recommended that a regional laboratory should be established immediately at any existing laboratories at Delhi like the Indian Agricultural Research Institute or Sri Ram Institute, Delhi or the Laboratory of Fruit Utilization of Lucknow, U.P. In this connection the Sub-Committee received a promise from the manufacturers to offer some financial help.

(20) Some problems of the preservation industry are listed and it is recommended that immediate work on those lines should be taken up.

Finance—

(21) The Sub-Committee recommends that the Industry should employ a definite system of costing to ascertain the implications of various factors.

(22) The Sub-Committee observed that one of the reasons of slow progress made by this industry was due to the fact that there has been no ploughing back by the industry from the returns obtained by the manufacturers.

(23) Suggestions made in respect of better hygienic and sanitary conditions in production, equipment for handling and packing, adequate labour, employment of trained personnel, more supervision etc., are in the opinion of

the Sub-Committee within the means of most of the manufacturers and therefore should be put into effect.

(24) The industry would do well in making use of the financial assistance being offered by the various State Agencies.

(25) The industry can get more favourable terms for assistance if organised into co-operatives and at least pool certain common items of services from the co-operative enterprise. Attempt in this direction should specifically be made in Delhi keeping in view of the plan of establishment of "industrial estate" in the city.

(26) The Sub-Committee recommends that considering the stage of the industry and aid to the industry in so far as shifting of the units are concerned should be considered from the most sympathetic point of view and as much liberal assistance as possible should be given in this regard.

Demand—

(27) The demand for the products of the industry is confined to middle and lower class and in the rural areas.

(28) The industry is capable of utilising not only the horticultural wealth but also has a unique role of offering the utilization of forest wealth. The demand can increase if quality and packing improves.

(29) The future of the industry is closely linked with educating the consumer to ways of how the products could be introduced in daily diet.

(30) There is a considerable scope for expansion of markets in foreign countries for the products of this country. There is a considerable market for Murrabbas in West Pakistan. But due to the existing restrictions on import by the West Pakistan Government hardly any products are being exported. The Sub-Committee recommends strongly that in our trade agreement with Pakistan, specific mention may be made for promoting export of this commodity. This would further expand the markets in West Asian Countries.

APPENDIX C

LIST OF MACHINERY AND EQUIPMENT GENERALLY REQUIRED BY FRUIT AND VEGETABLE PRESERVERS

1. Abrasive peelers.
2. Automatic temperature and pressure recorders.
3. Basket for washing of fruits.
4. Baskets for carrying bottles and cans.
5. Blanchers.
6. Boiler.
7. Bottle washer.
8. Brushes for washing bottles.
9. Can Reforming unit.
10. Can washer.
11. Can seamer.
12. Capsuling machine.
13. Centrifuge.
14. Ciphon filler.
15. Coal bhatties, gas burners or kerosene stoves.
16. Conveyers.
17. Corking machine.
18. Crown corking machine.
19. Exhaust box.
20. Filling machine for bottles.
21. Forks for hot bottles and cans.
22. Fruit pricking machines.
23. Gravity filler tank and top.
24. Halving machine for oranges etc.
25. Hand slicer.
26. Hand trolleys.
27. Hydraulic Press.
28. Juice pumps.
29. Labelling and coding machine.
30. Label gumming.
31. Laboratory equipment.

32. Lye peeling equipment.
33. Mix master for orange, etc.
34. Pans, funnels etc., for hand filling.
35. Pasteuriser for juices.
36. Peeling and trimming knives.
37. Peeling knives (for stones) punches and corers.
38. Peel oil extracters.
39. PH metres.
40. Pineapple pulper, slicer and corer.
41. Pulpers.
42. Pulping sieves.
43. Retorts.
44. Rocking type water sterilizers.
45. R.O. sealing machine.
46. Screw press for lime, pineapple, etc.
47. Screw type juicer, hand operated.
48. Self-generating steam jacketted kettle.
49. Shredding machine for orange peel.
50. Slicing and cubing machines.
51. Small trolley for carrying and drying bottles.
52. Stainless steel steam jacketted kettles.
53. Stirring and mixing tanks.
54. Syrup tanks.
55. Tables with aluminium stainless steel tops and wooden benches.
56. Tanks and trays for washing.
57. Trays for arranging and carrying of fruits.
58. Tool box etc.
59. Trays, Troughs.
60. Vessels of various capacities for cooking stainless steel, aluminium or tinned.
61. Vinegar generator.
62. Water bath with baskets for peeling of some varieties of mangoes, tomatoes, etc.
63. Weighing balances.
64. Sprays for washing bottles.
65. Rubber glovers.

APPENDIX D

LIST OF MACHINERY FABRICATORS

1. Messrs. Armstrong Smith & Co.,
Fort, Bombay.
2. Messrs. A.P.V. Engineering & Co. Ltd.,
P.O. Box No. 2492,
41, Chowringhee Road,
Calcutta.
3. Messrs. A. P. V. Engineering & Co., Ltd.,
Appollo Street,
Bombay.
4. Messrs. Chowgula & Co. (Hind) Ltd.,
Chitranjan Avenue,
Calcutta.
5. Messrs. Crown Aluminium,
Bombay/Calcutta.
6. Messrs. Fedric Herbert,
Pasta Lane,
Colaba, Bombay.
7. Messrs. Gladwin & Co. Ltd.,
Hornby Road,
Bombay.
8. Messrs. Gardners Corporation,
Cannaught Place,
New Delhi.
9. Messrs. Cannon Dunkerley Engineers,
Fort, Bombay.
10. Messrs. Garlic & Co.,
Jacob Circle,
Bombay.
11. Messrs. Hind Tanks,
Round Temple,
Bombay.
12. Messrs. Larson and Toubro Ltd.,
J.K. Building,
Dougal Road,
Bombay.
13. Messrs. Larson & Toubro Ltd.,
9, Royal Exchange Place,
Calcutta.

14. Messrs. Larson & Toubro Ltd.,
P.O. Box No. 295,
Madras-1.
15. Messrs. Machine Tools (India) Ltd.,
Stephens House,
Dalhousie Square,
Calcutta.
16. Messrs. U.K. Machine Tools (India) Ltd.
Botawala Building,
7-10, Elphinsteno Circle,
Bombay.
17. Messrs. Machine Tools (India) Ltd.,
Imperial Chambers,
Wilson Road,
Ballard Estate,
Bombay.
18. Messrs. Marshal & Sons,
Bombay/Calcutta.
19. Messrs. Mathur & Platt,
Bombay/Calcutta.
20. Messrs. Overseas Engineering Corporation,
Raja Santosh Road,
Calcutta.
21. Messrs. Oriental Mechanical Works,
Upper Dunken Road,
Bombay.
22. Messrs. Oriental Machinery Supplying Agency Ltd.
12, Mission Row, Extension,
Calcutta 1.
23. Messrs. Parry & Co.,
P.O. Box No. 12,
Madras.
24. Messrs. Raylon Metal Works,
Bombay Central,
Bombay.
25. Messrs. Utility Industrial Mart,
P. Box No. 5587,
Bombay 14.
26. Messrs. W. Work (India) Ltd.,
22, Brabourne Road,
Calcutta.
27. Messrs. Western India Engineering Works,
Hassan Chambers,
Parsi Bazar Street,
Fort, Bombay.

APPENDIX E

RESOLUTION OF THE GOVERNMENT OF INDIA, MINISTRY OF COMMERCE & INDUSTRY (DEPARTMENT OF HEAVY INDUSTRIES) ON THE TARIFF COMMISSION'S RECOMMENDATIONS.

New Delhi, the 6th August, 1957.

No. 13(3)-T.P./57—The Tariff Commission has submitted its Report on the continuance of protection to the preserved fruits industry on the basis of an inquiry undertaken by it under Sections 11(c) and 13 of the Tariff Commission Act, 1951. Its recommendations are as follows:—

(1) Protection to the industry need not be continued beyond the 31st December, 1957, and with effect from the 1st January, 1958, the revenue duties on the items affected may be fixed at rates considered necessary by Government on revenue considerations. If, however, import control is substantially relaxed in future and imports of foreign products constitute a threat to the industry, domestic producers may then apply for reconsideration of their case.

(2) The Commission has been informed of the Government's scheme for subsidising the supply of open top sanitary cans to the preserved fruits industry. Since the object of the subsidy on the price of tin-plate is to cheaper the cost of indigenous preserved fruits to consumers, the Commission trusts that Government would take suitable measures to ensure that the beneficiary undertakes to maintain and improve the quality of its products and reduce its prices to the extent of the subsidy.

(3) While negotiating trade agreements with foreign countries in future, preserved fruits should be included in the schedule of items for export from India as far as possible.

(4) Should imported sugar become at any time substantially cheaper, Government should encourage its import by the preserved fruits industry so that its competitive strength in overseas markets is not impaired. They should also finalise their scheme for rebate of import duty on sugar in respect of the preserved fruits industry.

(5) The Indian Standards Institution should lay down, as quickly as possible, in consultation with the glass industry, the preserved fruits industry and the Central Glass and Ceramic Research Institute, standard specifications for not only the composition of the glass but also the sizes and shapes of glass containers used in the preserved fruits industry. The Institution should also in collaboration with the interests concerned formulate standard specifications for pilfer-proof caps, closures and washers of glass containers as soon as possible.

(6) Arrangements should be made by the Director General of Commercial Intelligence and Statistics, Calcutta, to record separately the import and export of different categories of preserved fruits in greater detail, as provided in Division 05—Section O of the revised Indian Trade Classification. If, however, the bringing into force of the revised classification is likely to take time, at least the heads and sub-heads of classification in division 05 referred to above should be introduced in the Accounts relating to the Foreign Trade and Navigation of India.

(7) The State Governments concerned should take further and more comprehensive measures to encourage the grading of fruits and vegetables.

(8) The Railway Administrations should take early steps to provide shelves in wagons carrying fresh fruits, vegetables and other perishables and also strengthen their Inspectorate to prevent pilferage and ensure careful handling of perishables in transit.

(9) Since Railways have a very important part to play in any plan of horticultural development, they should try to remove all bottlenecks and difficulties in the way of quicker, cheaper and easier movement of fresh fruits to consuming centres.

(10) Early steps should be taken by the Ministry of Agriculture, in consultation with the Ministry of Health, to define more clearly the specification in the Fruit Products Order relating to equipment and machinery.

(11) There should be stringent enforcement of the Fruit Products Order and the Inspectorate should be adequately strengthened for this purpose.

(12) A few laboratories, on regional basis, should be established for carrying out analysis on samples of preserved fruits.

(13) The Agricultural Marketing Adviser should prepare a list of approved factories belonging to the first category comprising the units which are satisfactory in all respects and produce standard quality products, in close collaboration with the Ministry of Health, the Director of Army Purchase and the Canteen Stores Department and circulate it to all important consumers of canned and bottled fruit products, such as hoteliers, railway caterers, canteen stores department, Director of Army Purchase, etc.

(14) The Agricultural Marketing Adviser should impress on the factories in the approved list the desirability of accepting every year a few trainees from the Central Food Technological Research Institute, Mysore, the Department of Chemical Technology, Bombay, the Jadavpur University, Calcutta, and the Kerala Polytechnic, Calicut, as apprentices for practical training.

(15) Government's present policy of purchasing the entire requirements of Defence Services in respect of preserved fruits from the domestic industry should be continued.

(16) The preserved fruits industry should try to use sugar manufactured by the carbonation process in order to find out whether the blackening and foathering of containers can be avoided by its use.

(17) The Metal Box Company of India Ltd., should be requested once again to reduce the price of open top sanitary cans to the maximum extent possible.

(18) The Metal Box Company of India Ltd., should give as long a notice as possible to Government of any variation of its prices so that if the change proposed is *prima facie* unreasonable, Government may intervene in the matter.

2. Government accept recommendation (1) and will take suitable steps to implement it in due course.

3. Government have taken note of recommendations (2) to (4) and (8) to (12) and suitable steps will be taken to implement them as far as possible.

4. Government also accept recommendations (5), (13) to (15) and (17) and steps will be taken to implement them as far as possible.

5. Regarding recommendation (6), detailed statistics of imports and exports of different categories of preserved fruits and recommended by the Commission, are already being published by the Department of Commercial Intelligence and Statistics, Calcutta, in the "Monthly Statistics of the Foreign Trade of India" from January, 1957.

6. Recommendation (7) has been noted by Government and the State Governments concerned will be addressed suitably in the matter.

7. The attention of the preserved fruits industry and the Metal Box Company of India Ltd. is invited to recommendations (16), (17) and (18).

ORDER

ORDERED that the resolution be published in the Gazette of India and a copy of it be communicated to all concerned.

(Sd.)

Secretary to the Government of India

APPENDIX F

SUMMARY OF THE DEVELOPMENT PROGRAMME IN THE SECOND FIVE YEAR PLAN AS RECOMMENDED BY THE PANEL FOR THE FRUIT AND VEGETABLE PRESERVATION INDUSTRY

1. The need for horticultural development in India is felt for the healthy growth of our population. The fruit and vegetable preservation industry cannot be separated from the development of horticulture.

2. The fruit and vegetable preservation industry is an expansion of horticulture. Most of the advanced countries of the world have taken the fullest advantage of the development in fruit technology and have developed this industry on large scale.

3. India does not lack in adequate resources for developing this industry as only 0·12 per cent of the production of fresh fruits and vegetables is being utilised by the industry as against nearly 15 to 20 per cent of fresh fruits and vegetables which go to waste due to transport and other bottlenecks.

4. The scope of development of the industry in fruit growing regions which are suffering from difficulties of transport and marketing, is immense. In the first Five Year Plan only a scant reference was made for developing this industry. It is necessary to consider the problems of the industry in detail for developing it during the second Five Year Plan.

5. The total supply of fruit and vegetable products in India is estimated at 20,000 tons per year. This works out to a *percapita* consumption of only two ounces per year as against 135 lbs. per head per year in U.S.A. in 1954. During the second Five Year Plan it is proposed that the *per capita* consumption should be increased to at least half a pound. To achieve this target, the production should be increased to the tune of 1,00,000 tons per year.

6. The growth and development of the fruit and vegetable preservation industry in many foreign countries has been helped by the Government in various forms. Even in a country like Australia where the industry has developed on a large scale, at present it is receiving sugar at subsidized rates for internal as well as export trade.

7. Fruit and vegetable sugar and containers are important to the industry from the point of view of supply, quality and price, as they reflect considerably on the price of the finished product. Certain facilities and aids in respect of these are essential for the development of the industry.

(a) As regards fruits and vegetables it is suggested that:—

(i) The State Governments having predominantly agricultural pattern should encourage establishment of factories in areas of production by giving facilities to entrepreneurs in form of loans and cheap supply of power.

- (ii) The State Agricultural and Horticultural Departments should formulate standard contract forms and should put in contact the manufacturers with individual growers or growers' co-operatives. The State Governments should give special encouragement to growers by arranging suitable short and medium term loans.
- (iii) The manufacturers should be quality conscious as well as variety conscious in purchasing fruits and vegetables.
- (iv) Regulated markets for fresh fruits and vegetables should be started in all States. Grading of fruits and vegetables should be encouraged under the Agricultural Produce (Grading and Marking) Act.
- (v) A Fruit and Vegetable Development Board should be created for co-ordination development of horticulture.

(b) As regards sugar, it may be mentioned that in Australia the industry gets sugar at Rs. 17.1 per md. for the internal consumption and Rs. 12.1 per md. for export market as compared to the price of sugar at Rs. 35.3 per md. in India. It is suggested that the sugar to the industry should be subsidized by giving:—

- (i) a special rebate of Rs. 300 per ton on the price of sugar utilized by the industry for products marketed within the country.
- (ii) for export markets the sugar should be supplied to the industry at the lowest world market rate.

(c) As regards tins, its price in India is the highest in the world and to bring it to the level of other countries it is suggested that a rebate of Rs. 50 per ton of tin should be given to the industry. Even by affording this concession the price of tin to the industry would be still 30 per cent higher than the U. K. price of tin for domestic consumption.

It is expected that the rebate on cost of sugar and tin at the above rate would cost Rs. 248.95 lakhs for the entire Plan period.

8. The fruits and vegetables are being transported at different parcel rates. It is suggested that both these should be treated at par. Special transshipment staff should be provided for looking after better handling of fruits and vegetables in transit. A research should be planned to evolve suitable packaging for transport of perishables. A provision of Rs. 1 lakh should be made for this purpose. Semi-finished products of the industry should be placed at par with fresh fruits and vegetables. The cost of transport of finished products to the industry is excessive in spite of the fact that recently the categorization has been lowered from class 12 to class 8. It is recommended that the Railway Board should consider re-classification of various categories of fruits and vegetable products and place in class 4 or lower.

9. A need for designing and fabricating suitable equipment and machinery for preservation and processing of indigenous types of fruit and vegetable products has been felt.

10. The problem of finance for the industry—particularly working finance is very peculiar. It is suggested that a provision of Rs. 1.5 crores for granting loans for fixed capital should be made for the entire Plan period. The

loans for the fixed capital should be given with 40 per cent margin bearing interest at 4½ per cent after first two years. The loan would be free of interest for the first two years and is to be paid back in ten instalments, the first instalment to be paid from the sixth year.

In this industry large amount of working finance is looked up during the short period of processing. Considering this aspect of the industry a provision for each year of the Plan ranging from Rs. 50 lakhs to Rs. 1 crore should be made to grant loans for working capital. These loans may be given with 40 per cent margin having an interest of 4½ per cent and the loan to be returned within two years.

11. The demand of the products within the country should be considerably expanded. With this object in view, the State Governments should start large number of peripatetic demonstration units for training in fruit and vegetable preservation. The Central Government should start 10 mobile units for this purpose at a cost of Rs. 12 lakhs. There is a need to provide facilities for processing of fruits and vegetables in villages. A sum of Rs. 10 lakhs should be provided. Ways and means should be found to increase the demand of the Defence Forces. The Government institutions like hospitals, railways should be asked to purchase preserved fruits. Provisions to feed primary school children with protective foods by means of preserved fruits and vegetables should be studied. For increasing domestic consumption educational films on processing of fruits and vegetables should be displayed. Propaganda should be intensified. A provision of Rs. 10 lakhs should be made for this purpose. The prices of the various preserved products should be brought down to the maximum extent possible by the manufacturers.

12. The import policy should be viewed in relation to the specific products which can be manufactured in India and imports of such items should be substantially reduced or banned.

13. The existing Tariff protection to the industry should be extended up to the end of the second Five-Year Plan period. The Tariff Commission should be requested to examine the case of the industry for protection to canned vegetables and tomato products. The recommendations of the Tariff Commission should be viewed by the Government more favourably and implemented at the earliest.

14. There is immense scope for developing the export market for products of the industry. It is envisaged that during the course of the Plan, exports should be increased by ten times. For this purpose an official trade delegation should be sent abroad to explore markets for various products. A provision of Rs. 1 lakh should be made for this purpose.

15. The existing legislative control through Fruit Products Order should be continued and put on a permanent footing. The Fruit Products Order administration should remain at the Centre for co-ordinated development of the industry. The Fruit and vegetable Products should be excluded from the purview of the Preservation of Food Adulteration Act, 1954 as the provisions under the Fruit Products Order cover the provisions under the said Act.

16. The industry should be included under the Schedule to the Industries Development Act, 1951 and a Development Council should be set up for the industry. If this is not possible a Development Committee on the lines of other commodity committees should be set up for this industry.

17. The institutions attending to the research should pay more attention to the applied research. There is a need for greater contact between the industry and the research. For attending to the problems of the various regions, it is suggested that five regional research stations should be started. The estimated expenditure on this account is to the tune of Rs. 12 lakhs.

18. The training in fruit and vegetable preservation should be made available at under-graduate level and also at secondary education level. For the purpose of giving extensive training in fruit and vegetable preservation 400 centres should be established at the cost of Rs. 46.5 lakhs.

19. To achieve the targets set out in the Plan, small scale or co-operative units and large-scale units should be started. The existing units should be helped to increase their production by two and a half times which will enable greater utilization of the existing installed capacity.

20. The probable expenditure of the various suggestions and recommendations made in the development programme is divided under two heads :—

(1) Grants and (2) Loans.

(1) *Grants*—These grants are to be provided by the Central Government for various schemes. The total estimated grants required amount to Rs. 365.47 lakhs comprising of Rs. 335.47 lakhs as recurring and Rs. 30 lakhs as non-recurring. The recurring grant is mainly required for granting rebates on sugar and tin estimated at Rs. 248.95 lakhs, expenditure on training estimated at Rs. 46.5 lakhs and administration of Fruit Products Order and propaganda amounting to Rs. 24.02 lakhs. The non-recurring expenditure is mainly required for training and research.

(2) *Loans*—Loans have been divided under two heads—(1) fixed capital, and (2) working capital. A sum of Rs. 1.5 crores is provided for granting loans on the fixed capital. For granting loans as working capital in the first year of the plan, Rs. 50 lakhs have been provided while in the second year Rs. 75 lakhs have been provided. During the last three years of the plan, each year a sum of Rs. 1 crore has been provided. At the end of the Plan, a maximum of Rs. 2 crores would be required for granting loans for the working capital.

APPENDIX G
**MODEL SCHEME FOR ESTABLISHMENT OF SMALL SCALE FRUIT
 PRESERVATION FACTORY**

Object—

To help the primary producers of fruit and vegetables in finding alternative avenues for utilisation of their produce by means of preservation and also to meet effectively the local demands of fruit products by localization of preservation of such products.

Scope—

In almost all states in India there are regions which are particularly adaptable to the production of certain varieties of fruits and vegetables and have specialised in such items of production. Often, during the seasons the producers of these regions are unable to get good returns on account of temporary inaccessibility of regions or over production and reduced prices. To avoid gluts in the seasons of production as well as to utilise part of the large quantities of arrivals in some of the terminal markets, small scale units of fruit preservation would be effective. A number of units which are projected in different states would depend upon the selection of centres suitable from the above point of view. It is, however, tentatively suggested that following number of units may be started in different states in India during the course of Second Five Year Plan.

Punjab	..	..	..	..	..	..	15
Himachal Pradesh	..	..	..	..	..	..	10
Delhi	..	..	..	..	..	..	5
Uttar Pradesh	..	..	..	..	..	..	15
Bihar	..	..	..	..	..	..	15
West Bengal	..	..	..	..	..	..	15
Assam and Manipur	..	..	..	..	..	..	12
Tripura	..	..	..	..	..	..	4
Orissa	..	..	..	..	..	..	7
Madhya Pradesh	..	..	..	..	..	..	20
Rajasthan	..	..	..	..	..	..	5
Bombay	..	..	..	..	..	..	25
Andhra	..	..	..	..	..	..	15
Madras	..	..	..	..	..	..	10
Mysore	..	..	..	..	..	..	15
Travancore-Cochin	..	..	..	..	..	..	12
Total							..	200

Items of Production—

Varieties of fruit products can be handled on small scale basis. Amongst the promising lines would be the following groups:—

- (a) Pickels, chutneys, sauces and vinegar.
- (b) Preserves and crystalised fruits.
- (c) Jams, jellies and marmalades.
- (d) Fruit beverages, squash, crush, cordials, syrups and barrelled juices.
- (e) Sun dried or dehydrated fruits.
- (f) Canned fruits and canned or bottled juices and pulps.

All the above items could be manufactured without the aid of steam power requirements if any would be not exceeding 2 to 3 H. P.

The various areas selected for the purpose of establishment of factories can select items which would be suitable from the point of view of raw material availability, prices and markets.

Production—

Production of individual small scale units has been estimated at 25 tons per year. The target is to produce by 1960-61, 5,000 tons per year fruit products from 200 small scale units. During the year 1957-58, the target of production is 2,000 tons while during the next 3 years it will be 3,000, 4,000 and 5,000 respectively. To meet the above targets, it may be necessary to expedite programme of establishment of new units and sanction as many units as possible during the year 1957-58. The production of individual unit should as a target start within six months of granting of the loan. During the course of first year, it should attain 1/4th of the proposed target i.e., about 8 to 10 tons of production per year.

Land and Buildings—

The requirements of land and building will depend upon whether a new building to be constructed or a hired area at suitable sites. The minimum space requirement for the production would be 500 Sq. ft. Building should be pakka with permanent flooring and good drainage. The ceiling should be of permanent nature and should have adequate ventilation. Doors and windows should be screened to prevent the entry of insects. There should also be adequate space of storage of finished products. Adequate arrangement should be made for supply of potable water and the supply should be at least 250 gallons per day preferably with an arrangement of overhead tank.

It is likely that the construction of building and adequate provisions for water, drainage, etc. would cost Rs. 7,000 to 10,000.

Equipment and Machinery—

For the production of the various items listed above the processes involved in the manufacture of most of the items can be divided under the following broad groups—

- (a) Preparation of fruits.
- (b) Juicing and pulping.

- (c) Washing of bottles and cans.
- (d) Filling of liquids.
- (e) Boiling and cooling.
- (f) Closing and sealing.

From the above groups, the following equipments are suggested. In the actual scheme, the required list of equipment can be separately prepared.

Preparation—

	Rs.
(a) <i>Washing of fruits</i>	500
(i) Baskets for washing of fruits.	
(ii) Trays for arranging and carrying of fruits.	
(iii) Tanks or vessels for soaking fruits.	
(b) <i>Peeling—</i>	
(i) Tables with aluminium or stainless steel tops and wooden benches.	
(ii) Peeling and trimming knives.	
(iii) Water-bath with baskets for peeling of some varieties of mangoes, tomatoes, etc.	
(c) <i>Cutting slicing, etc.—</i>	
(i) Hand-slicer	235
(ii) Potting knives (for stones), punches and corers ..	300
(iii) Halving machine for oranges, etc.	500
(d) <i>Juicing and pulping—</i>	
(i) Rosing machine for orange, lime, etc.	3,000
(ii) Screw-type juicer, hand-operated	75
(iii) Mix-master for orange, etc., if required	300
(iv) Pulper for mangoes, tomatoes and pineapples, if required	1,600
(v) Screw press for lime, pineapple, etc.	200
(vi) Centrifuge juicer, if required	300
(e) <i>Washing of bottles and cans—</i>	
(i) Brushes for washing bottles	100
(ii) Bottles cleaning equipment with revolving brushes if required	250
(iii) Tanks and trays for washing	250
(iv) Sprays for washing bottles	150
(v) Small trolley for carrying and drying bottles ..	150
(f) <i>Filling of Liquids—</i>	
(i) Ciphon filler	350
(ii) Gravity filler (tank and tap)	500
(iii) Stirring and mixing tanks	200
(iv) Pans, funnels, etc. for handfilling	100

<i>(g) Boiling and cooling—</i>	Rs.
(i) Vessels of various capacities for cooking; stainless steel aluminium or tinned copper	750
(ii) Coal bhathies, gas burners or kerosene stoves .. ..	..
(iii) Self-generating steam-jacketed kettle, if required	1,500
(iv) Small boiler, if required	1,600
(v) Water-baths with lids or covers for exhausting and sterilising (iron)	300
(vi) Works for hot bottles and cans	15
(vii) Baskets for carrying bottles and cans	50
(viii) Cooling tanks	25 to 50
<i>(h) Closing and sealing—</i>	
(i) Crown corker	300
(ii) Corker	55
(iii) Seaming machines for cans	100
(iv) Capsuling machine	400
(v) Wazing and screw capping with hands	325
(vi) Label gumming (if required)	200

The requirements of individual units will vary according to the programme of production. It is estimated that the cost of equipment selected from the above list may be in the neighbourhood of Rs. 5,000 to Rs. 7,000. More equipment can be added as and when required.

Raw Material—

Raw material requirement for 25 tons production is estimated as under—

	Rs.
35 tons fruits and vegetables	10,000
10 tons sugar	10,000
Bottles or cans	7,000
Packing cases	2,500
Chemicals	100
Labels	500
Miscellaneous	500
Total	30,600

Staff—

Manager-cum-chemist, grade Rs. 300	3,600
1 Salesman—grade Rs. 200	2,400
1 Accountant-cum-correspondence Clerk, grade Rs. 175	1,900
1 Chowkidar, grade Rs. 50	600
1 Peon, grade Rs. 35	420
2 Permanent Labours, grade Rs. 50	1,200

 10,120

Fuel, electricity and other charges	500
Local advertisement and miscellaneous expenses	500

 OR SAY Rs. 11,000

 11,120

Direct labour charges	1,000
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 12,120

 OR SAY Rs. 12,000

Sales—

The sales proceeds for 25 tons would be in the "neighbourhood of Rs. 50,000 @ Rs. 2,000 per ton. It is likely that some of the units may have production less than Rs. 50,000 per year. In this case the corresponding cost of production would also be less.

Summarising the above expenditure and sales, the following would be the broad outline of the scheme—

Capital Cost—

	Rs.	Rs.
Buildings	10,000	
Equipment	7,500	
Total	17,500	

Profit & Loss Statement—

Interest on Rs. 35,000 @ 4½%	1,575	
Raw material	30,600	
Staff and other charges	12,000	
Sales proceeds		50,000
Profit	5,825	
	50,000	50,000

It is likely that the production can be increased further with the same amount of equipment and staff facilities.

For encouraging entrepreneurs to start small scale units to an extent of Rs. 10,000 may be made available.

APPENDIX H

MODEL SCHEME FOR THE ESTABLISHMENT OF LARGE SCALE FRUIT AND VEGETABLE PRESERVATION FACTORY

Object—

(The precise object of the scheme shall be stated giving some details of the background of the regions, area under fruits and vegetables production, and the existing mode of marketing).

To develop the horticultural regions in India by providing alternative avenues for utilisation of horticultural produce with a view to assist the primary producers in getting some returns as well as direct employment.

Scope—

The area suitable for establishment of large scale units which would benefit the primary producers are likely to be those which are facing problems of transport. The suggested areas for this purpose are Kullu Valley, North of West Bengal or Bihar, Coorg in Mysore, Himachal Pradesh, Tripura, Western Orissa and some parts of Andhra.

Items of Production—

The items of production would vary according to the basic raw material i.e., fruits and vegetables. It is possible that in some areas a group of items could be easily manufactured because of availability of varieties of fruits and vegetables during one season or in different seasons. The following broad categories of items are given in a form of groups:—

- (a) Fruit beverages, squash, crush, cordials, syrups, etc.
- (b) Jams, jellies, marmalades, preserves, tomato ketchup, chutneys, sauces, pickles and vinegar.
- (c) Canned fruits, juices and pulps, canned vegetables can also be included in this group with more addition of equipment.
- (d) Fruit juice, concentrates or any other specialised items.
- (e) Dehydrated fruits or vegetables.

It is likely that a particular unit may specialise in production of any of the above group of items. All these are allied items and adequate provisions may be made for further expansion of the project so as to include production of most of the items as that would help in economic working of the units. The target fixed for production of large scale units by 1960-61 is 5,000 tons per year. The year to year targets are as under:—

1956-57	..	..	..	..	..	..	1,000
1957-58	..	..	..	..	..	..	2,000
1958-59	..	..	..	..	..	..	3,000
1959-60	..	..	..	..	..	..	4,000
1960-61	..	..	..	..	..	..	5,000

The production of individual factories has been estimated at 1,000 tons per year by 1960-61. While planning the individual unit, the production capacities should be fixed in such a way that in a normal working, the plant would be capable of producing 1,000 tons of fruit products in a year. Keeping in view further expansion, the installed capacities may be kept at the level of 2,000 tons per year. In the initial states, the production would be perhaps only 200 tons or so. The planning of the units would be in such a manner that certain items which could be easily handled taking into consideration the availability of fruits and vegetables in the markets, are produced in sufficient quantity. For achieving targets set out above, it is considered that the scheme should be executed as quickly as possible and from the date of grant of loan to the parties within 9 months, the factory should be in shape for producing 1/5th or 200 tons of the target rate requirements. It may be necessary to start work on number of units from the beginning so that each unit will contribute towards increase in production.

Land and Buildings—

The expenditure on this account would vary according to the location of units. It is suggested that a plot of four to six acres should be selected for the purpose of starting a large scale unit.

The specifications for the buildings would differ according to the requirements of the items of production. It is likely that the entire amount required for the buildings may not be necessary during the first year. It may, however, be necessary to provide at least Rs. 75,000 during the first year and rest in the next year.

	Rs.
Land would cost approximately	6,000 to 10,000
Factory building 100' × 40' at Rs. 12 per sq. ft. ..	48,000
Godown for containers and finished goods 100' × 20' @Rs. 10	20,000
Office rooms with working laboratories	10,000
Watchmen's quarters, etc.	3,000
Shades and other machinery construction	5,000
Water arrangements with over-head tanks if required ..	15,000
Land	6,000
Development of land and drainage	3,000
Total for land and buildings ..	1,10,000

Machinery and Equipment—

List of machinery and equipment would be generally on the lines indicated below. It may be that for certain lines specialized equipment may have to be obtained. The additional items may be as under:—

	Rs.
1. (a) Boiler 20 H.P. 100 lbs. pressure	20,000
(b) Boiler 5 H.P.	5,000
2. Can reforming units with two seamers complete with motors.	8,000
3. Seamer 20 cans a minute	10,000
4 Exhaust box 2 chain type	15,000
5. Retorts 1000 can capacity with measuring instrument ..	10,000
6. Rocking type of cooker and cooker for fruit	5,000
7. Blanchers	3,000
8. Stainless steel Steam jacketed kettles (4) 50 gallons each	12,000
9. Pulpers (2) or other juice extractor	9,000
10. Hydraulic Press	3,000
11. Alsonion Pulpers (2)	4,000
12. Lye peeling equipment	1,500
13. Slicer, cubers, etc.	2,500
14. Syrup tanks with pumps and pipes	4,000
15. Filling machine for bottles	2,000
16. Can washer	1,500
17. Bottle washer	2,000
18. Corking machine	1,000
19. Capsuling machine	1,000
20. Crown corking machine	1,000
21. Crown corking machine with food bolt	10,000
22. Spreading machine for orange peel	3,000
23. Weighing Balance	2,000
24. Labelling and coding machine	3,000
25. Chain pully with trally	2,000
26. Hand trollies (4)	1,000
27. Tables and Benches	5,000
28. Trays, troughs, etc.	5,000
29. Laboratory equipment	10,000
30. Tools Box, etc.	500
31. Miscellaneous	8,000
32. Installation charges	20,000
	1,90,000

	Rs.
1. Juice concentration unit with dearator, flasher, evaporator and filler.	1,00,000
2. Fully automatic pineapple canning equipment	60,000
3. Fully automatic pea or tomato equipment	50,000
4. Vaccum seamers (1)	25,000
5. Continuous cooker and cooler	50,000
6. Electricity generator for supply of power	20,000
7. One Station Wagon or Truck	20,000
8. Workshop equipment	25,000
9. Saw Mill etc.	20,000

The expenditure mentioned above is not included in the estimates but may be provided wherever necessary.

Above estimates of equipment and machinery amounting to Rs. 1,90,000 can be spread over a period of 2 or 3 years. In the first year, the capital-outlay on the equipment and machinery would be to the tune of Rs. 75,000 and the rest can be spread over two more years.

Water & Electricity Requirements—

These are most essential. Minimum requirements would be 25 H.P. of electricity and 5,000 gallons of water daily.

Raw Material Requirements—

The following raw material will be mainly required:—

Fruits, vegetables, sugar, cans, bottles, cases, chemicals, labels, caps, closers, etc.

For 1,000 tons of finished production, the following requirements are broadly estimated:—

	Rs.
1,500 tons of fruits and vegetables at Rs. 300 per ton	4,50,000
300 tons of sugar at Rs. 900 per ton	2,70,000
9 lakh cans at Rs. 300 per 1,000 (to pack 750 tons)	2,70,000
2,000 Gross of bottles at Rs. 50 per gross (to pack 250 tons)	90,000
Packing cases (45,000) at Rs. 2 per case	90,000
Chemicals, salt, etc.	4,000
Labels	20,000
Miscellaneous: Barrels, etc.	6,000
Total	12,00,000

<i>Staff—</i>	Rs.
1 Chief Chemist and Production Manager, Grade Rs. 1,000	12,000
2 Assistant Production Manager, Grade Rs. 250 ..	6,000
1 Sales Manager, Grade Rs. 750	9,000
2 Supervisors, Grade Rs. 100	2,400
1 Foreman Mechanical, Grade Rs. 150	1,800
1 Store Keeper, Grade Rs. 100	1,200
1 Boiler Man, Grade Rs. 100	1,200
1 Carpenter, Grade Rs. 75	900
2 Watchmen, Grade Rs. 50	1,200
1 Accountant Grade Rs. 250	3,000
2 Clerks, Grade Rs. 100	2,400
Other Office Staff & Peons	3,000
Unforeseen charges	270
20 Skilled workers, Grade Rs. 50	12,000
Labour charges	75,000
Contingencies, Fuel, Oil, Electricity, Water charges ..	15,000
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Total ..	12,00,000
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Total of Raw Material requirements ..	<hr/>

Sale and Other Expenditures—

	Rs.
Commission on sale of 20 Lakhs on the basis of listed prices at 7½%.	1,50,000
Advertisement charges	50,000
Transport charges on F.O.R. prices	80,000
Breakage and spoilage etc.	40,000
Other miscellaneous losses	5,000
	<hr/>
	325,000
	<hr/>

Interest and other charges (interest would depend upon the amount of loan drawn by the firm).

Capital outlay, Land & Buildings	3,00,000
Working capital	13,50,000

The total capital requirement for the initial stages of production would not be more than Rs. 4 lakhs. The total outlay when in full operation would be Rs. 3 to 5 lakhs for fixed capital and Rs. 8 to 10 lakhs for working capital.

The interest on Rs. 13 lakhs @ 4½ would be 58,500 per year on Rs. 4 lakhs.

The depreciation on buildings will be Rs. 2,500 and on machinery Rs. 20,000.

Sales—

The sales proceeds for 1,000 tons for finished products would be in the neighbourhood of Rs. 20 lakhs. It is likely that the sales may not be to the extent of Rs. 20 lakhs in the beginning but comparatively there will be also decrease in expenditure ratio over several items mentioned above. There is also likelihood of savings in staff and other charges during the initial stages when full complement of staff may not be employed.

The profit and loss account would show the following picture:—

	Rs.
(1) Interest and depreciation	78,500
(2) Staff and labour charges, Raw material charges and expenditure on sales, etc.	16,75,000
Sales proceeds	20,00,000
Profit	2,46,500

It will be seen from the above that an outlay on large scale unit may vary from Rs. 10 to 15 lakhs. The loan amount for working of the scheme may be calculated on 50% margin i.e., between Rs. 5 to 7½ lakhs depending upon the actual details of the proposal required from the private or State authorities.