REPORT ON INFRASTRUCTURE FOR EXPORT OF AGRICULTURAL COMMODITIES AND PROCESSED FOOD

Government of India
Planning Commission
(Agriculture Division)
Yojana Bhavan New Delhi

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FOREWORD

Agriculture accounts for 31.2% of Net Domestic product. The share of agro exports in the country's total foreign exchange earnings is 19.4%. In absolute terms the foreign exchange earnings of agricultural export has significantly increased to Rs.6317 crores in 1990-91 as against Rs.284 crores in 1960-61 on traditional commodities like tea, coffee, spices, cashew and tobacco. Exports of non-traditional items also have potential and demand in the global market, these include fresh fruits, vegetables, cut flowers, live-stock products, fish and fish products, etc. Therefore, commercialization together with diversification of agriculture to increase surplus and employment opportunities in the agriculture should be given priority.

An Expert Group was set up by Planning Commission to identify infrastructure necessary for export of agricultural commodities and processed foods and identification of constraints and to recommend the infrastructural facilities for promoting the export of agro products for achieving the objective of higher export. The marketing infrastructure with the integrated development of appropriate grading, packing, quality control, cold storage, warehouses, transport arrangements including shipping and air cargo facilities, etc. are also to be reinforced.

This report covers important areas of agro exports and identifies bottlenecks in infrastructural facilities for promotion of exports. The report emphasises the need for creating favorable investment climate and necessary motivation for private investment in export.

The Ministry of Commerce, Ministry of Agriculture and other Central Government Departments and Agencies involved in the export of agro products should now draw an action plan making use of this information and prepare guidelines for the exporters and farmers desirous, of exportable commodities, as contained in its recommendation. I am confident that the report will significantly contribute to create climate for agro-exports from India.

(PRANAB MUKHERJEE)
Deputy Chairman,
Planning Commission

May 1992
New Delhi

ACKNOWLEDGEMENT

The Planning Commission set up an Expert Group on 6th Dec. 1991 (Terms of Ref. Annex.I) under the chairmanship of Dr. Jayant Patil, Member (Agriculture) to suggest measures for development of infrastructure facilities to accelerate the growth of export of agricultural commodities; horticulture, plantation crops, spices and processed foods. Dr. Jayant Patil's constant inspiration and guidance helped the Group to finalise its report which was presented to the Planning commission on 17th Feb., 1992. The Report has arranged recommendations in terms of commodities, investment requirements consistent with technologies, which could be translated into a practical action programme.

2. The Group has taken into account the constructive suggestions received from the Department of Agriculture and Cooperation, National Horticulture Board, ICAR, Ministry of Commerce, APEDA, Ministry of Surface Transport, Ministry of Food Processing Industries and Railway Board Special thanks are due to Sh. P.M. Abraham, Secretary, Ministry of Surface Transport who took interest and helped the Group in formulating recommendations relating to transportation arrangements and for promoting exports of agricultural commodities at the exit points. Thanks are due to all the members who devoted considerable time and effort in formulation of the recommendations. Shri Ashok Kumar, Jt. Secretary, Ministry of Commerce, Shri Gokul Patnaik, Chairman, APEDA, Dr. K.L. Chadha, DDG, (Horticulture) ICAR. Smt. Santha Sheela Nair, Jt. Secretary, (Horticulture) DAC and Shri C.K. Basu Jt. Secretary, Ministry of Food Processing Industries, need special mention.

3. Valuable suggestions were given by Growers' Associations, and the exporters who participated in deliberations of the Group. The financial institutions namely NABARD and NCDC have also shown interest in supporting the programmes at the take-off stage for promotional works with the private investors and entrepreneurs.

4. I wish to place on record appreciation for the full back up support to the Expert Group in its deliberations and final preparation of the report by Dr. D. Tripathy, Joint Adviser, Shri Brij Bhushan, Dy Adviser and Shri S.K Sharma, GM, APEDA.

Priya Prakash

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Principal Adviser (Agri.)

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Annexure-I

GOVERNMENT OF INDIA
PLANNING COMMISSION
(AGRICULTURE DIVISION)

No.Q-11031/3/91-Agri. New Delhi, the 6th December 91

Subject : Infrastructure for Export of Agricultural Commodities and processed Food : Constitution of the Group.

A group to study the need for strengthening the infrastructure for export of agricultural commodities and processed food and to provide export demand projections for each commodity and the respective supply projections under alternative resource use scenario is constituted as follows:

PLANNING COMMISSION

1. Dr. Jayant Patil, Member (Agriculture)	Chairman
2. Mrs. Priya Prakash, Principal Adviser (Agri)	Member

MINISTRY OF AGRICULTURE

1. Horticulture Commissioner	Member
2. Joint Secretary, (Credit & Coop)	Member
3. Managing Director, NCDC	Member
4. Deputy Director-General (Horticulture), ICAR	Member
5. National Horticulture Board, Additional Executive Director	

MINISTRY OF COMMERCE

1. Joint Secretary, Commerce (Agriculture Marketing)	Member
2. Chairman, APEDA	Member
3. Chairman, Spices Board	Member
4. Chairman, Coffee Board	Member
5. Chairman, Cashew Board	Member
6. Chairman, Tea Board	Member

MINISTRY OF FOOD PROCESSING

Representative* — Member

DEPARTMENT OF CIVIL AVIATION

Representative* — Member

MINISTRY OF RAILWAYS

Representative* — Member

DEPTT. OF RURAL DEVELOPMENT

Representative* — Member

DEPTT. OF BIO-TECHNOLOGY

Representative* — Member

* Representative of the Ministries should not be below the rank of Joint Secretary.

Terms of Reference

1. Identity exportable commodities under, Horticultural products and vegetable, Flowers, Tea and Cashew kernels, spices, Meat, fish, poultry, Sericulture and other processed products.

2. Identity potential states for location of a few important estates for each crop/ item.

3. Evaluate status of availability of seed/seedling, infrastructural facilities, technology, transport, storage and marketing and training for export related activities in terms of export routes.

4. Facilities for export at exit points.

5. Recommend a few models for viable export oriented projects and the organisational requirements to be provided during the Eighth Plan.

The Group shall submit its report within a period of sixty days from the date of its constitution.

MEMBERS WHO PARTICIPATED IN DELIBERATIONS

1. Dr. Jayant Patil, Member (Agri)
   Planning Commission, New Delhi.

2. Mrs. Priya Prakash, Pr. Adviser (Agri)
   Planning Commission, New Delhi.

3. Sh. P.M.Abraham, Secretary (Surface Transport)
   Ministry of Surface Transport, New Delhi.

4. Mrs. Santha Sheela Nair, Joint Secretary (Hort.)
   Deptt. of Agriculture & Cooperation, New Delhi.

5. Dr. K.L. Chadha, Dy. Director General (Hort.)
   ICAR, New Delhi.

6. Sh. O.P.Grover, Addl. Executive Director,
   National Horticulture Board, Gurgaon

7. Sh. Ashok Kumar, Joint Secretary
   Ministry of Commerce, New Delhi.

8. Sh. Gokul Patnaik, Chairman, APEDA
   New Delhi.

9. Sh. C.K.Basu, Joint Secretary,
   Ministry of Food Processing Industries, New Delhi.

10. Sh. Shanti Narain, Executive Director (P & C)
    Railway Board, New Delhi.

AGRO-EXPORT POLICY

India is endowed with diverse soils and varied agro-climatic conditions which are suitable for growing numerous agricultural crops, fruits and vegetables, flowers, spices, medicinal and aromatic plants and plantations like tea, coffee, coconut, cashew and cocoa. Though these crops have high export potential, insignificant quantities are exported from the country. The share of agricultural export to the country's total foreign exchange earnings which stood at 44.1% in 1960-61 has come down to 19.4% in 1990-91. At present, out exports suffer from over-dependence on a few products in a limited quantity. Besides, exports are destined to limited foreign markets. There. is a growing demand for certain agricultural commodities, horticultural products, processed foods and cut flowers in the international market. The major constraints and weaknesses affecting the growth of our agro-exports are briefly elaborated below :

Our analysis shows that while considerable development has taken place in agriculture, the appropriate linkages for marketing, quality control, storage and other facilities are lacking for building a proper base for exports. While Indian agriculture production-wise, is ready for a take-off, there are certain necessary infrastructure which need to be built up fast enough to establish a competitive presence in the global market. The first and foremost is the need to have a comprehensive agro-export policy and a suitable strategy to establish the necessary in-house facilities for the farmers in the areas of plenty in terms of production, quality and exportable surplus. There is need to improve the investment climate to encourage growers and their associations so that entrepreneurs have access to knowledge of modern technologies for cultivation and processing, consistency in supply and competitive cost of production. Most of these facilities also need assured pricing mechanism, continuous and uninterrupted power supply, training and full involvement of the farmers and growers so that they make a conscious effort to produce those commodities which will be Internationally acceptable as per norms and standards.

The Indian farmers entering export market should have knowledge and back-up support of the latest technologies. They have to be highly conscious of quality control to maintain their comparative advantages. Pricing policies have to be flexible and sensitive to the export-oriented market at least for some time for the specified commodities. In this regard, a concerted effort is to be made to establish appropriate linkages and a clear set of guidelines which should reach the target group from time to time.

The world economic environment is improving with the opening of trade frontiers in spite of the efforts of certain Nations to impose restrictions and tariff barriers. Therefore, a comprehensive agro-export policy should be such as to indicate suitable direction to the growers, manufacturers and exporters and it should aim at strengthening the competitive capabilities of Indian agricultural commodities, suitable quality control and a system of market function not only for the demand but also the type of commodities and the acceptable norms and standards for packaging, etc., for different groups of countries. Agricultural commodities from India are presently being exported to Middle East, South East Asia and Central Europe. With the opening of the East Europeon countries, the penetration in the new Republics and other hard currency markets could also be aimed at. A basic advantage that the policy makers must see in promoting export is that should facilitate development of essential infrastructure for value-addition and processing in the rural areas which will provide incentive to invest in this sector.

Greater attention will have to be focussed on establishing the identity of India's agro-products in the global markets and necessary market-oriented publicity, adoption of an Indian logo and some such measures would help in this process.

The main objectives and some of the important areas which should be accommodated, are listed below :

i) It is important to make the Indian farmers/ growers aware of the market value of their products both in domestic and foreign markets so that there is motivation to improve the productivity, quality and adopt latest technologies in the process.

ii) The perishable agricultural commodities are being cornered by the traders unity, different mechanism of advances and paying a very low or unremunerative price to the producers, because the grower has very little access to facilities for preservation and knowledge of appropriate storage advantage and in creating suitable packaging for better preservation. The basic infrastructure facilities are, therefore, to be created at the farm level. Training and organisation of small farmers as growers association, who would directly take the responsibility for marketing the goods could help the producers to get share in the value addition as a very small premium.

iii) A favourable climate for investment in infrastructure by the growers themselves needs to be encouraged for promoting infrastructure; storage and packaging of agro-produce through private investment.

iv) Scientific research and development should be re-oriented to make the institutions more people-oriented; they should attend to the specific problems of the producers by way of direct consultancy and participation in the programme.

v) Another direct linkage to technology could be by encouraging foreign collaboration with buy back arrangements to strengthen the export competitiveness of the agricultural producers.

As mentioned earlier, in order to ensure a credible Indian presence in the global market, continuity, regularity and maintaining suitable qualities are essential for processed as well as fresh horticulture and other agricultural commodities. The image of Indian goods is, therefore, to be improved by establishing appropriate packaging, labelling and pride in adhering to export oriented standards of trade in terms of purity, quality and timely delivery of goods as per the contract. The broad features of the export policy, thrust area and action plan have been discussed by an Expert Group, which are briefly summarised below:

BROAD FEATURES OF AGRO-EXPORT POLICY

1. Investment Climate

Export basket of agro-products has to be expanded by building a strong and sound supply base for meeting the domestic requirements as well as generating surpluses for export. This calls for creation of favorable investment climate in the country to motivate the growers to go in for higher production and productivity of exportable commodities. Support of Financial Institutions therefore, is necessary for encouraging the manufacturers as well as exporters to undertake agro-products and infrastructural projects. Equity participation by Govt. in the joint/ assisted sectors would be necessary.

2. Foreign Collaboration

Foreign collaboration should be allowed in the selected areas so that appropriate technologies are developed in the country.

3. Setting up of a Special Risk Fund

The NABARD has introduced a refinancing scheme for promoting development of horticulture, floriculture and processed foods. In order to develop

horticultural estates of agro-export oriented commodities, there is need for minimising the risk element involved in undertaking such activities. It is suggested that a special fund may be created for risk coverage, which is an effective instrument for motivating the growers to go in for higher investment and production. This fund should be created on the basis of financial assistance of Central Government, State Governments and NABARD in the ratio of 30:20:50, respectively.

4. Setting up of a Agri-Business Consortium

It is also suggested that agri-business consortium may be set up for different agro-export regions which should meet the financial requirements of export oriented products, covering all kind of infrastructural requirements and manufacture of agro products for export purposes.

5. Earmarking Quantum of Exports in Respect of Certain Commodities

In order to capture a reasonable share in global agro exports, some agricultural commodities and agro-products have to be identified for exports. Even in case of sensitive export items like onion, rice, wheat, tea and others, efforts should be made to enter international competition irrespective of domestic needs for the same. Import of such commodities which are in short supply due to some reasons should be allowed to avoid crisis in the domestic market. APEDA should draw an action plan for ensuring the export of selected items on a regular basis so as to esrablish India as trusted supplier in the global market.

6. Effective Coordination

It is felt that there should be a nodal agency for coordinating the various activities connected with agro exports. The nodal agency should be set up in the Ministry of Commerce comprising representatives from Ministry of Agriculture, ICAR, Ministry of Food Processing, Ministry of Surface Transport and Railway Board. Planning Commission will have a Standing Committee to monitor the progress and provide policy perspective.

CHAPTER-I

EXPORT OF AGRICULTURAL COMMODITIES - PRESENT STATUS AND PROJECTIONS FOR THE 8TH FIVE YEAR PLAN

1.1 India's share in world exports had been all along quite small. In the decade of 80s, the export has got phillip in value terms rising from US $8378 million in 1980 representing 0.4% of the world trade to US $9187 million in 1986 representing again 0.4% of the world trade .(1990-91 exports are estimated at US $18200 million). However, the country is losing ground in areas where it once commanded primacy, such as tea, spices, etc. India's share in tea exports, for example fell from 31.0% in 1970 to 20.7% in 1987 and from 20.47% to 10% in spices over the same period.

1.1.2 Agriculture as a whole, nevertheless, has been an important contributor to the country's exports. In 1990-91 for example, the total exports of the country was of the order of Rs.32553 crores of which agricultural exports accounted for Rs.6317 crores representing 11% share. Amongst agricultural sector, plantation crops such as tea, coffee, spices and cashew accounting for 31.7%, marine products for 15.2% Rice for 7.3% and agricultural and processed food products for 45.8%. Details of the exports of selected agricultural commodities during 1981-1982, 1986-1987 and 1991-1992 are given in Table 1.

Table 1. Export of Selceted Agro-products.

(Rs. Crores)

Commodity	1981-82		1986-87		1991-92*	
	Value	%share in total	Value	% Share in total	Value	%Share in total
APEDA Scheduled products	297.90	13.7	312.57	11.3	512.00	9.1
Spices	98.76	4.6	282.00	10.2	238.67	4.2
Tobacco	235.46	10.9	185.00	6.6	263.69	4.7
Oilseeds and extractions	117.85	5.4	190.00	6.8	798.09	14.2
Cashew	181.50	8.4	328.00	11.8	434.81	7.7
Raw Cotton	36.32	1.6	205.00	7.4	752.76	13.4

(Rs. Crores)

Commodity	1981-82		1986-87		1991-92*	
	Value	% share in total	Value	% Share in total	Value	% Share in total
Rice	367.78	17.0	197.00	7.1	475.89	8.5
Tea	395.20	18.2	549.65	19.8	972.36	17.3
Coffee	146.30	6.7	306.24	11.0	276.15	5.0
Marine Products	284.90	13.1	–	--	890.40	15.8
Others	–	–	211.29	7.6	–	–
Total	**2161.97**		**2766.75**		**5614.82**	

* Estimates

1.1.3 It is observed that Indian presence in the international market for agricultural and processed foods is rendered extremely vulnerable by the fact that our exports are dependent on a very narrow product base and are destined to limited markets. In fact, only 10 products account for 90% of our total agricultural exports. Moreover, most of these products have traditionally found an export outlet only in a few major markets mostly due to socio-cultural reasons. Some of the major products exported by India and the traditional markets are:

a) Fresh fruits and vegetables
- Mango : UAE, Saudi Arabia, Kuwait, UK
- Onion : Malaysia, Singapore, Bangladesh, Sri Lanka
- Assorted Vegetables : UAE, Kuwait, Bahrain

b) Processed fruits and vegetables
- Mango pulp/concentrate : USSR, UAE, S.Arabia, Kuwait, YAR
- Pineapple products : USSR
- Pickles and Chutneys : UAE, UK, USA
- Tropical fruit and vegetable products: USA,UAE,UK, Germany

c) Livestock products
- Buffalo meat : Malaysia, UAE, Oman
- Sheep and goat meat : UAE, Saudi Arabia, Oman
- Animal casings : Holland, Spain, Japan
- Poultry products : Maldives, Oman

1.2 Identification of Constrants

1.2.1 The following factors have been identified as main constraints in pushing up agro exports:

a) Volume insufficiency, leading to a conservative policy in fixing export ceilings, especially for sensitive agricultural items like non-basmati rice, wheat, sugar and molasses. There have been delays in determination of quantities and release of ceilings.

b) Cost of production is also high on account of low productivity, making us internationally non-competitive. Thus, guar gum seed prices are reportedly 42% cheaper in Pakistan.

c) Inadequate export of value added products e.g. value added cashew products form about 1% of total cashew exports while rice in consumer pack (Upto 5 kgs.) forms 15% of Basmati rice exports. The price increase in high volume products has been very low over the last decade.

d) Quality deficiencies, particularly lack of cleanliness, pesticide residues, improper packing and storage facilities are also constraints.

e) Lack of infrastructural facilities, due to air cargo facilities not keeping pace, inadequate shipping facilities and inefficient handling at ports. This is compounded by high air freight rates.

f) Procedural bottlenecks in various departments like AGMARK,EIA, Customs, etc. The procedure for issue of phytosanitary certificates by Plant Quarantine Agencies for example, is extremely cumbersome.

g) Modernisation of the food processing sector has been hampered by the high cost of imports of essential plant and machinery. High wastage also effects into export potential, along with low yield per hectare.

h) Technological deficiencies in certain areas e.g. research and extension in basmati rice is focussed on new varieties while it is the traditional varieties of Indian basmati which command a premium in the international market, need to be developed, through disease control research.

i) High incidence of local taxes/levies e.g. Sales Tax, Octroi, Mandi Tax, High Export Cess, etc.

3.1 Projections of Export of Agricultural Commodities during the VIII Plan Period

1.3.1 Not with standing the constraints mentioned earlier, Exports of agricultural and processed food products have shown a remarkable buoyancy during the past few months. This is due to the fact that a price competitiveness of Indian products has increased after the two recent adjustments in the value of Indian rupee against the major hard currencies of the world and the partial convertibility. Fiscal concessions announced in the last budget where relief in central excise has been given to most of the food processing industries and the announcement of a more liberal industrial policy is also likely to help the export efforts. Consequent to these policy initiatives and the recent trend in exports it is expected that there will be a substantial increase in the value of exports during 1992-93 and subsequent years of the VIII Plan. Break-up of export of major product groups during the last three years and the estimated exports for 1991-92 quantitywise and value wise, reveals that growth in rupee value of exports during 1991-92 is estimated to be 54% over the year 1990-91.

1.3.2 An average rate of growth assumed during the VIII Plan is 22.5%. Growth during 1993-94 and 1994-95 is taken at 22.5% and 23% respectively. Thereafter, it is assumed at 22% in 1995-96 and 22.5% in 1996-97. The compound rate of growth assumed over the VIII Plan period works out to 22.4% as against 9.3% during the VII plan period. This, however, is exclusive of the non-scheduled items. This is in the context of a compound rate of growth of 6.20% over the period 1981-82 to 1990-91 encompassing a stretch of 10 years.

1.3.3 On the basis of the above presumptions it is expected that by the turn of the plan period the exports of agricultural and processed food products other than rice will be to the extent of Rs. 7000 crores. Export of rice and other cereals is expected to touch Rs. 10,000 crores. This envisages an overall growth of about 125% over 1991-92. The export projections of major product groups during the VIII Plan period as compared with those during 1991-92 are shown in the Table 2 :

Table 2.Export Projections of Major Product Groups During VIII Plan Period

Quantity in 000 MTs
Value in Rs. Crores

	Estimated Exports 1991-92		Potential Exports 1996-97	
	Qnty	Val	Qnty	Val
Fresh fruits	45	59	187	365
Fresh Veg.	375	206	350	415
Spices	97	338	163	611
Floriculture	-	12	-	100
Tissue culture	-	-	-	15
Processed fruits and vegetables	45	107	130	345
Total	**562**	**722**	**1010**	**1851**

1.4 Identification of Potential Products and Thrust Markets1.1.5

1.4.1 A. Products Selection in Phase-I For Export Production :

1. Long grain white rice
2. Processed mushrooms
3. Tomato paste, whole peeled and diced tomatoes
4. Tropical fruit juices, pulps and concentrates
5. Cut flowers
6. Tissue culture plants
7. Fresh fruits
8. Buffalo meat
9. Guar gum
10. Alcoholic beverages
11. Plantation Crops such as Spices, Cashew, etc.

1.4.2 B. Other Products With Potential For Exports :

1. Exotic fruits - Lychee, chikoo, guava, custard apple
2. Freeze dried fruits and vegetables
3. Fresh sheep and goat meat
4. Poultry products.

5 Animal casings
6. Walnuts
7. Live plants, bulbs and seeds
8. Papads, pickles and other ethnic food preparations
9. Herbal and medicinal plants
10 Organically grown agricultural products

.3 Countries For Thrust Marketing

1. West Asia and Gulf
2. EEC
3. Russia and East European Countries
4. USA

1.4.4 Markets With Export Potential

1. Japan
2. Far East countries like Malaysia, Indonesia and Singapore
3. African countries

1.4.5 After having assessed of the existing agro export situation and its future prospects, the deficient areas need to be tackled if the export targets during the VIII Plan are to be achieved.

CHAPTER-II

EXPORTS OF HORTICULTURAL PRODUCE

2.1 India is endowed with rich and varied climatic conditions for horticulture production. It produces around 12% of world's vegetables and 8% of world's fruits. Presently, all horticultural crops put together cover about 12 million hectares, which is approximately 7% of the cropped area of the country. The estimated produce of these crops is about 100 million tonnes per annum, contributing over 18% to the gross agricultural output of the country.

Fruits : The total area under fruits at the end of the 6th Plan was estimated at 2.55 million hectares which increased to 3.21 million hectares by the end of the 7th Plan period. The total production during the period also increased from around 24 million tonnes to over 26 million tonnes, registering a growth rate of over 8%. As per FAO estimates, in 1990 India emerged as the second largest producer of fruits in the world after Brazil with a production estimate of 27.83 million tonnes which roughly accounts for 8% of the world production.

Approximately 30% produce valued at Rs.3000 to Rs 4000 crores is estimated to be wasted due to lack of adequate processing facilities and absence of adequate infrastructure for storage, rapid transportation, etc.

Vegetables : After China, India is the second largest producer of vegetables. Almost all types of vegetables are grown in the country. However, major vegetable crops are root and tuber crops like potato, onion, garlic and green vegetables like brinjal, peas, beans, okra, cabbage, cauliflower, gourds, cucurbits, spinach, carrot and radish. The cultivation of exotic vegetables like asparagus, brocolii, celery, etc. is also picking up mainly to cater to the demands of Metropolitan cities and exports. The total area under vegetables at the end of the 6th plan period was estimated to be 3.81 million hectares which increased to 5.5 million hectares during the 7th plan. The present production of vegetables in the country is estimated at 50.99 million tonnes. This excludes production of roots and tuber crops of which potato and onion account for the major share. The production of potato in 1990 was estimated at 15 million tonnes and that of onion at 3.3 million tonnes (FAO production estimates)

2.2 EXPORT Performance And Constraints

2.2.1 Inspite of the abundant and varied production base, India's performance in export of horticultural produce has not been encouraging. The annual exports of vegetables average around 3,20,000 tonnes of which onion alone accounts for approximately 2,80,000 tonnes. The exports of fruits average approximately 45,000 tonnes per annum; out of which fresh mangoes account for nearly 1/3rd i.e. 15,000 tonnes.

a) Mango export grew steadily upto 1982-83. Thereafter, it fluctuated between 10,000 and 15,000 tonnes per annum.

b) Export of other fresh fruits touched an all time high of about 34,000 M.T. in 1987-88 and thereafter declined.

c) Export of Onions which accounts for the major share of export of fresh vegetables from India have been fluctuating widely.

d) The export of processed fruits and vegetables has alsc been fluctuating.

e) The increase in unit value realisation has not kept pace with the domestic prices of the commodities.

f) In processed fruits and vegetables, the bulk of exports had been accounted for by a handful of countries. There is also disturbing feature of processed food products export performance that we have been depending heavily on exports to the USSR. Moreover, bottled and canned fruit products exported to USSR also require imports of raw material against hard currency while the export realisations were ir rupees.

g) Heavy dependance on few fruits like Alphonso Mango and Okra an Onion m vegetables, rendering export performance vulnerable t international trade scenario.

h) Exporters are dependant on a few markets like those of West Asi and U.K

2.2.2 The low performance of the country in export of horticultural produce i attributable to a variety of reasons. Lack of infrastructural facilities which result in heavy post harvest losses, coupled with low productivity and high prices of raw materials make our exports uncompetitive in the international

market. In the absence of adequate processing facilities the grower is not assured of the off take of his produce and is quite often left to the mercy of market forces. The constraints of air cargo space and high airfreight rates compared to other countries also act as impediments to exports. Other inhibiting factors are lack of adequate export promotion and market development efforts, existing laws, land ceiling regulations and high cost of inputs.

2.3 EXPORT POTENTIAL

2.3.1 There is good international demand for certain horticultural and processed food products. These products are; Grapes, Banana, Lychees, Chikoo, Floricultural Products, Processed Mushrooms and Tomato Products.

Fruits : In order to achieve export potential, it is suggested that a selective approach should be adopted and efforts may be concentrated to develop a few products for sale in few markets. Based on the existing and potential demand and our ability to meet their requirements over the next few years, following fruits have been identified as having good market potential:

1. Mango
2. Grapes
3. Banana
4. Lychee
5. Exotic fruits : 'Chikoo', 'Ber', Pomogranate, Custard Apple and other tropical fruits.

Presently, most of our fresh fruits are destined for West Asia with small quantities going to meet the requirements of ethnic population in UK. However, with development of refrigerated transportation systems it is quite possible to enter the more attractive EEC market. Singapore, Malaysia and Japan should also be explored.

Vegetables : Amongst vegetables the items identified as having good export potential are:

1. Onion
2. Potato
3. Green Vegetables:

(a) Traditional : Okra, Bitter Gourd, Green Chillies and other seasonal vegetables.

(b) Non-traditional : Asparagus, Celery, Bell Pepper, Sweet Corn and Baby Corn; Green and Lima Beans.

4. Origanically grown vegetables
5. Hybrid seeds

2.3.2 In vegetable exports, main focus needs to be concentrate on neighbouring countries such as Bangla Desh, Sri Lanka and Mauritius which have been the traditional outlets for our onion and potato exports. Green vegetables are also being sold in West Asian countires where the market could be further developed. Malaysia and Singapore also offer good potential. Non traditional vegetables have good scope for exports to European markets. Developed countires of Western Europe and South Asia also offer good scope for export of non-traditional vegetables in both fresh and preserved form.

2.4. Recommendations

2.4.1 In the long run, export of horticultural product can only be enhanced by increasing production and productivity. The slow growth in export of these products has been largely due to low export surpluses on account of rising demand in conjunction with sluggish production. The cost of production is also high largely on account of low productivity, which makes our exports less competitive. The Ministry of Agriculture and specialised agencies under it, such as the ICAR and the National Horticulture Board have separate programmes for research and extension activities which should result in increasing production and productivity. But these aspects are not being dealt with here. The export potential of each product should be utilized on the basis of the existing productivity levels or levels which can be achieved with better management and technological breakthrough.

2.4.2 To achieve the full potential as projected, Government intervention will be necessary in 5 major areas viz (a) creation of infrastructure for post-harvest handling and shipment (b) export promotion and market development (c) promotion of export oriented production units (d) effecting

suitable changes in the existing laws and land ceiling regulations and (c) fiscal measures to provide incentives to horticultural sector in order to attract private investment into the thrust areas.

2.4.3 a) The export basket has to be expanded. This can be done by promoting those fruits, vegetables and other products, which have a large base of production such as grapes, mangoes,banana, pomegranate and exotic fruits like lychees, ber, etc.

b) We also have to concentrate on those products where there is large international demand and production can be geared up to capture a reasonable share of the international market. These products are Mushrooms; Tomato Paste, Whole Peeled and Diced Tomatoes; Tropical Fruit Juices, Pulps and Concentrates; and ethnic food preparations.

c) There is a large international market for cut flowers and tissue culture products. It is necessary to gear up our production to meet international standards by adopting appropriate and cost effective technology as well as improving transport facilities both within the country and to international markets like Holland.

2.4.4 New markets should be added to our existing base of markets with products acceptable to these markets.

2.4.5 Efforts to develop exports by sea should be made at war footing. Development of infrastructure, and marketing and post-harvest management should be taken on priority.

2.4.6 Development of exports by sea will enable to overcome the twin problems of high air freight rates (e.g. air freight to Europe is Rs.50/ kg. as against Rs.11/kg. by sea by reefer containers) and air cargo space limitations.

2.4.7 Structural adjustments in policy frame work particularly with regard to land ceiling laws, ownership of agricultural land for captive production by processing units, entry of multi-nationals into agricultural field and establishment of 100% export oriented units with a provision to import capital equipments without payment of duty are required to be introduced.

2.4.8 Infrastructural Facilities

A. Improved Harvesting and Processing Facilities

a) **Fruits** : One of the drawbacks which hampers the quality of the fruits is the harvesting method. Very little care is given to harvest fruits in scientific way. There is a necessity of introducing mechanised harvesting systems to prevent the fruits from physical injuries. Mango Nippers, Secateures and other devices and equipments developed from time to time for improved harvesting should be provided to the farmers at concessional rates.

i) The improved harvesting methods should be popularised amongst farmers atleast among those who are raising crops for exports. They should be given thorough training on recommended package of practices. Existing scheme of NHB should be continued and specialised programme in consultation with APEDA should also be organised.

ii) Manual on recommended packages of practices should be developed and printed for exclusive distribution amongst extension organisations, leading exporters, leading farmers and their organisations.

iii) The harvested crop should be placed in plastic crates for transportation to the grading stations, etc. This will prevent the fruits from physical injuries and reduce the manual handling of the individual fruits.

B. Post Harvest Handling Facilities

i) **Sorting, Grading,Washing,Cleaning,Waxing etc.** : One of the requirements of the International market with regard to quality specifications is that the produce which is exported should be of uniform grades. Presently, there are no grading systems prevalent in the country. Only to some extent grading is done manually but this again is harmful to the quality of the fruit, as multiple handling of the fruits cause injury to the fruits thereby spoiling its quality. Moreover, the grades are very rough and not as per the requirement of the markets. To over-come such a situation in case of most of the fruits and vegetables, mechanised grading, sorting and washing/ waxing treatment facilities should be created.

ii) **Pre-cooling** : Within 2 hours of the harvesting,the temperature of the produce should be reduced to half and thereafter within 6 hours to 0-2^{0}C to prevent deterioration in quality. This also is necessary treatment for developing exports by sea. Such pre-cooling units can either be static or mobile i.e. mounted on LCV/Tractors which can be moved from orchard to orchard after harvesting.

iii) **Cold storage** : The pre-cooled produce is shifted to the cold storage where the required temperature is maintained. This is done to accumulate the produce in adequate quantities, sufficient for one container load before shipment to the exit ports.

It has been observed that cold stores with 50 M.T. capacity will be suitable for most of the products except in case of Bananas and Potatoes, where 1000 M.T. capacity cold stores are recommended.

C. **Vapour Heat Treatment** : There is a ban on the import of mangoes from India in Japan and USA. Recently, Sri Lanka had also banned import of various fruits from India due to prevalence of fruit fly pest in Indian fruits. All these countries accept fruits which are not chemically treated but are free from fruit flies. To achieve this the only process of Vapour Heat Treatment is available. Japan has monopoly in manufacturing vapour heat treatment equipments. In order to export various fruits and vegetables to these countries, it is necessary to set up vapour heat treatment facilities firstly on pilot scale, then on commercial scale during VIII Five Year Plan.

D. **Reefer Containers/ Trucks** : In order to maintain cool chain, the transportation of produce in controlled temperature conditions is necessary. Frozen fruits and vegetables, frozen meat and chicken are required to be transported at -10^0 to -15^{0}C and fruits, vegetables and flowers are required to be transported at 0-2^{0}C. Keeping in view the volumes which are likely to be generated, a lot of investment will be necessary for introducing such trucks.

2.4.9 Export Promotion and Market Development

i) **Auction Houses for Cut Flowers** : In the case of cut flowers which offer good potential for exports, domestic marketing facilities will have to be improved so that it can provide a sound base for exports. There is a need to set up packing , grading cum auction

houses at Metropolitan centres like Delhi, Bombay and Bangalore. APEDA should prepare a scheme for setting up at least three such auction houses at these places during the plan period.

ii) Indian exports enjoy traditional strengths in few major markets due to geographical location, socio-culture affinity, etc. These markets should be further nursed to increase India's share. In order to achieve this objective, promotional programmes will have to be organised for export of fresh fruits like grapes, citrus and mangoes in West Asian and ASEAN markets.

iii) Buyer-Seller Meets should be organised in these markets as well as by inviting key importers from these markets to India.

iv) New products for exports should be developed based on the domestic capabilities and large international demand. Banana, Pomegranate and Citrus are the cases in point. Special efforts to promote products with good potential need be launched. These products include exotic fruits/vegetables/cut flowers/live plants/ tomato paste/mushrooms and tropical fruit products.

v) Brand promotion and market promotion activities like despatch of samples, development of product literature trade names, etc. should be taken up to promote Indian products in the world market.

vi) Generic promotion, atleast of those products where India has already established a good base of production, should be undertaken, for example, Indian grapes can be very easily exported in large quantities as quality is acceptable and prices are competitive. Similarly, mushrooms, tomato paste, fresh banana and fresh vegetables can be promoted through generic promotion programmes during next five years.

vii) Delegation of Indian exporters is necessary to tie-up with the importers in foreign countries as well as to study the market requirements to gear up their own facilities in the country. These delegations should be taken to those developing countries which have good base of production and are exporting large quantities of horticultural produce. These countries are Kenya, Colombia, Chile, Phillipines, Thailand etc.

viii) Technical delegation from those countries which have imposed either ban on Indian fresh products or restrict the import from certain countries should be invited. These official tecchnical delegations may be taken around the country to show them the developments in the country and have discussions with technical experts to get the ban/restrictions lifted, for example, Sri Lanka has put restriction on import of certain fruits from India. USA and Japan have also put restrictions on import of fresh fruits and vegetables.

2.4.10 Structural Changes

There are some policy impediments in the development of export of horticulture produce as well as development of processed food sector. These impediments should be removed to promote export oriented production as well as improvement in the quality of horticultural produce. The following suggestions are made in this regard.

a) Existing land ceiling laws do not allow large scale plantation. In the existing international market, most of the countries have gone in for large scale plantation which enable them to produce the fruit of uniform quality with desired quality parameters. For example, pineapple plantation, mango plantation and banana plantation in Phillipines have been taken up on large scale. In order to encourage this type of production, Horticulture Estates may be allowed to be set up in larger area without restriction of land ceiling laws.

b) The processing industry all over the world has captive plantation to meet their raw material requirements in which the produce is grown suitable for processing. But in India the processing units are not allowed to own agricultural land. Due to this reason raw material of good quality is not available, which adversely affect the economy of processing and quality of the produce. These laws should be amended to allow the processing factories to own agricultural land for the captive production of raw material.

c) In most of the countries wherever dramatic improvement in the export of horticultural products has taken place, the major contribution is of the multi-nationals which brought new technologies for production, post harvest management and managerial and marketing skills alongwith their brand images. The entry of multi nationals in horticulture production should be allowed so that appropriate technologies are developed in the country.

d) Presently, 100% EOU benefits are not available to agricultural sector. This deprives the units of the import of technology, machinery and other inputs at concessional rate of duty. 100% export oriented Horticulture Estates may be allowed to be set up to encourage export of fresh fruits, vegetables and flowers.

2.4.11 INVESTMENTS

Based on the strategies outlined above, the investment required for some of the identified horticulture products is given in the following table.

TABLE-I

INVESTMENT REQUIRED FOR EXPORT OF HORTICULTURAL PRODUCE

Value Rs. lacs

	Nos.	Total Investment	Govt. Share	Commercial Investment by Public Sector	Private Investment
A. INFRASTRUCTURE					
1. Post harvest Mgmt. studies.	10	150	100	-	50
2. Extension & Trg.	6	150	150	-	-
3. Post harvest handling (sorting,grading, waxing etc)	38	1280	640	-	640
4. Pre-cooling	60	1275	637.50	-	637.50
5. Packaging :					
(a) R&D	-	75	50	-	25
(b) Improved packaging	-	4000	1000	-	3000

		Nos.	Total Investment	Govt. Share	Commercial Investment by Public Sector	Private Investment
6.	Intermediate cold stores	51	3300	1650	-	1650
7.	Rapid Transportation systems :					
	(a) Road	111	1110	222	-	888
	(b) Rail				Not estimated	
	(c) Air/sea				Not estimated	
8.	Commercial cold stores	8	4500	1125	3375 (by NCDC/ CWC/State WHC)	
9.	Vapour Heat Treatment	3	340	340		
10	Irradiation	4	800	800		
11	Infrastructure at airports.	-	1120	280	840 (by IAAI)	
12	Auction houses for flowers	-	450	450		
	Sub-Total		18550	7444.5	4215	6890.50
B.	EXPORT ORIENTED PRODUCTION					
1.	Equity Participation	18	31000	1550	-	29450
2.	Modernisation of existing units	-	2000	500	-	1500
	Sub-Total		33000	2050	-	30950

	Nos.	Total Investment	Govt. Share	Commercial Investment by Public Sector	Private Investment
C. **EXPORT PRODUCTION AND MARKET DEVELOPMENT**					
1. International market intelligence and data base.	-	250	250	-	-
2. Export promotion activities	-	2750	2500	-	250
Sub-total	-	3000	2750	-	250
GRAND TOTAL		**54550**	**12244.5**	**4215**	**38090.50**

CHAPTER-III

EXPORT POTENTIAL OF FRESH FRUITS

3.0 MANGO

3.1 India is the largest producer of mangoes in the world accounting for over 63% of total world production. The total world production is estimated at 15 million tonnes out of which 9.5 million tonnes is contributed by India. (Source: FAO Production Year Book 1990). Mexico, Pakistan and Brazil are the next major producers accounting for 5.2%,5.1% and 2.7% of the world production, respectively. Mango in India is grown practically all over the country. The major States are U.P(34.27%), A.P(19.09%), Bihar(13.44%), Orissa(8.22%, Karnataka(5.07%). (Source: NHB, Year 1987-88).

World Market for Mangoes

3.1.2 Of the total world production of 15 million tonnes, only 0.6% is traded internationally in the fresh form. North America is the largest market accounting for 50% of the world imports as may be seen from the table given below :

Table 1 :- Import growth of mango.

(MT)

IMPORTER	1977	1985	1989	GROWTH P.A.
EEC	3181	16830	22000	14.9%
N.America	12000	32500	45000	11.6%
Middle East	5000	18500	20000	12.3%
Total	22000	68500	90000	12.5%

SOURCE: SITCOM DATA

3.1.3 Exports from India : Although India accounts for a large share of world production of mangoes, its share in world's exports is not commensurate with that of export mangoes. Export shows an erratic trend in the recent years, as may be seen from Table 2.

Table 2 :- Export of Mangoes From India During 1985 - 86 to 1990 - 91.

(in M.T.)

	YEAR	VOLUME(MT)	VALUE (RS.LACS)
**	1985-86	16539	1931.7
**	1986-87	16258	1912.2
**	1987-88	20302	2333.7
**	1988-89	16839	2210.9
*	1989-90	11541	1612.8
*	1990-91	9211	1786.0

SOURCE: * APEDA
**DGCIS

Destination of Exports : The major market for Indian mangoes have been the Middle East and UK. Small quantities are exported to Canada, Singapore and Australia. However, the main consumers in these markets are ethnic Indians. Table below shows the region wise exports of mangoes by each variety of mangoes, for the last two years. The Indian mango has not been able to penetrate the markets like EEC and S.E.Asian countries where the ethnic Indian population is not significant. Further large markets like Japan and U.S.A. are not accessible due to the quarantine restrictions on Indian mangoes.

EEC

Table 3. Regionwise Exports Of Mangoes From India.

	M.EAST		E.E.C.		OTHERS		TOTAL	
YEAR	89-90	90-91	89-90	90-91	89-90	90-91	89-90	90-91
ALPHONSO	9727	744	33	134	178	55	9938	7859
TOTAPURI	969	7434	18	412	-	13	987	933
OTHER	587	418	-	-	5	1	592	419
TOTAL	11283	8596	51	546	183	69	11517	9211

SOURCE: APEDA

3.2 Main Issues/ Problems

3.2.1 Reasons for India's not being able to achieve the full potential in the exports of mangoes are:

a) There is over dependance on the Alphonso variety; production of which is limited;

b) Indian mango is one of the highest priced mango in the International market as Alphonso is an exclusive variety and evacuation is done mainly by air while air freight rates are rather high as compared to other countries;

c) India's major competitor in Middle East market is Pakistan. It has season similar to that of India and exporters have to pay much lower freight as compared to Indian exporters.

d) The infrastructre is lacking and proven technology for transportation of Indian mangoes by sea is not available.

e) Air cargo space is limited and fruits have to compete other competing products such as garments, leather goods, chemicals, etc. which pay higher air freight due to high value per unit.

3.3 India's Export Potential For Mangoes

a. There is a vast base of production of mangoes in the country with main concentration in U.P., Bihar, A.P., Karnataka, etc. Maharashtra having a clear advantage due to exclusive production of Alphonso variety, the share of which in the export is very high.

b. Indian season for mangoes starts in end of Feb./March and goes on till July. There is no competition for India in the beginning of the season.

c. Due to large production base and the availability of wide range of varieties as well as unique and superior varieties like Alphonso, Dussehri and Chausa, India can achieve higher quantum of exports. The export potential of mangoes is estimated at 44,000 M.T., the details of which are indicated in Table 4 :

Table 4. Export Potential Of Mangoes

(in M.T.)

	EUROPE		M.EAST		S.E.ASIA		U.S.A.		TOTAL		GRAND
	AIR	SEA	AIR	SEA	AIR	SEA	AIR	SEA	AIR	SEA	TOTAL
MARCH	500	1000	3000	3000	300	-	-	-	3800	4000	7800
APRIL	-	1250	3000	7000	500	-	500	-	4000	8250	12250
MAY	-	1000	2000	10000	500	-	500	-	3000	11000	14000
JUNE	-	1500	1250	1750	500	-	-	-	1750	3250	5000
JULY	-	1500	1250	1750	450	-	-	-	1700	3250	4950
TOTAL	500	6250	10500	23500	12250	-	1000	-	14250	29750	44000

3.3.1 Parameters Of Projections

a. Production base and domestic capabilities.
b. International market.
c. Seasonal import pattern and supply gaps in the major markets.
d. Price competitiveness of Indian produce.
e. Assumption that necessary infrastructure will be created and promotional efforts will be made.
f. Technology for transportation by sea will be commercially established in next couple of years.

3.4 Strategy To Realise The Export Potential

a) To be price competitive,mangoes will have to be sent by sea.

b) There is a need to aggresively promote the uniqueness of Indian mango as well as its superior taste by creating consumer awareness. New varieties like Chausa, Safeda, Badami and Dussehri have to be promoted to take the advantage of elongated season.

c) South East Asian markets should be tapped by aggresively promoting Indian mangoes such as Alphonso, Badami, Chausa, etc.

d) The quality of Indian produce has to be improved by management of post harvest handling, grading, washing and packing. The improvement in harvesting by introduction of mango nippers and providing training to the farmers atleast in those areas from where the major quantities of mangoes for export originate.

d) Strengthening of infrastructural facilities and Export Promotion and Market Development need to be taken up to realise the full export potential of mangoes. It is also suggested to develop growth centres for promoting the export of mangoes. Details of the proposed growth centres and investment required for infrastructure and market development are given below :

1. Major producing States : Maharashtra, Uttar Pradesh, Andhra Pradesh, Karnataka.

2. Growth Centres : Bombay Delhi Saharanpur Malihabad Investment in Rs lakhs

Infrastructural facilities required							
a.	Grading, sorting and packing houses	1	1	1	1	4	40.00
b.	VHT facilities	1	1	-	-	2	300.00
c.	Development of appropriate technology for transport of mangoes by Sea.						355.00
d.	Exptected export :	1991-92 : 20 crores					
		1992-93 : 25 crores					

3. Investment Requirement

(i) Major Producing States: Uttar Pradesh, Maharashtra, Andhra Pradesh, Karnataka.

(ii) Growth Centres: Bombay, Delhi, Sahranpur Malihabad, Vijayawada

A. Infrastructure	Mah.	Delhi	U.P.	A.P.	Karnataka	Investment in Rs. lacs. Total Invt.	Govt. Share
1. Post harvest Management Studies.						10.00	5.00
2. Extension and Training						20.00	20.00

		Mah.	Delhi	U.P.	A.P.	Karnataka	Total Invt.	Govt. Share
3.	Post harvest handling. (sorting,grading waxing etc.)	4	1	2	2	1=10	300.00	150.00
4.	Pre-cooling Units	4	1	2	2	1=10	150.00	75.00
5	Packaging							
	a)Improved Packaging.						400.00	100.00
6.	Intermediate' Cold stores	4	1	2	2	1=10	500.00	250.00
7.	Transport system	10	10	5	5	10=40	400.00	80.00
8.	VHT facilites	1	2	-	-	= 3	340.00	340.00
9.	Irriadation Plant						200.00	200.00

B. Major Markets : Europe, Middle East, South East Asia, U.S.A., Japan

C. **Market Promotion and Market Development**

	Name of the Activity	Markets to be covered		
1.	Promotion Programme	U.K.,UAE,Germany, France,Singapore, S Arabia	500.00	500.00
2.	Brand Promotion	All countries	120.00	50.00
3.	Exporters/Growers Delegation	UK, France,UAE, S.Arabia	30.00	15.00
4.	Product Specific Surveys.	France,US,Germany	25.00	25.00
5.	Incoming Delegation	Sri Lanka, Japan, West Europe	10 00	10.00
6.	International Intelligence		20.00	20.00
	Total		**3025.00**	**1845.00**

Total Investment	=	3025.00
Govt.'s Investment	=	1845.00
Private Investment	=	1180.00

3.5 GRAPES

3.5.1 The world production of grapes is estimated at 5.9 million tonnes out of which India accounts for 0.4 million tonnes. The major grape producing countries are Italy, Chile, S.Africa, Australia, etc. (Source: FAO Production Year Book 1990). Main producing States in India are Maharashtra (38.9%), Karnataka (31.02%), Andhra Pradesh(10.08%),Tamil Nadu(8.09%) Punjab(5.07%).
(Source: NHB.)

3.5.2 World market for grapes: The world trade in grapes stands at 14 lacs M.T. valued US $1450. Europe and North America are the large net importing countries while S.America particularly Chile is the major net exporter. Italy is the major exporter in Europe and other important countries are Chile,Greece and Turkey. South Africa and Australia. Import of grapes in the International markets is given in Table 5.

Table 5. World Trade Structure Of Grapes

('000 MT)

COUNTRIES	EXPORT	IMPORT	NET EXPORTS
N.America	200	446	(246)
S.America	338	3	335
Europe	684	828	(144)
Asia	91	145	(54)
Africa	51	2	49
Oceania	11	6	5
Russia		1	1

SOURCE: FAO

3.5.3 **Exports from India** : Among India's exports of fruits, grapes are next only to mangoes. There has been an increase in the last two years which can be seen from the table given below:

Table 6. India's Exports Of Fresh Grapes During 1988-89 to 1990-91

Value Rs.Lacs

YEAR	VOLUME	VALUE
1988-89	4738	640
1989-90	3729	608
1990-91	9213	1093

SOURCE: APEDA.

3.5.4 **Destination of Exports** : The destination of export of grapes from India is shown in the table given below. Uptill 1987-88 grapes were being sent only to the Middle East. Recently grapes are also being exported to United Kingdon, Denmark, Belgium and Singapore.

Table 7. Export Destination Of Grapes From India.

COUNTRIES	% SHARE
UAE	92
UNITED XINGDOM	6
SINGAPORE	1
OTHERS	1
	100

SOURCE: APEDA

3.5.5 **Main Issues/Problems**

3.5.6 The major problems in the exports of the grapes are:

a) The grapes have been exported mainly by air which render the export expensive.

b) The infrastructure for transportation by sea is not available, although the technology for transportation by sea is fairly established.

c) There has been over emphasis on the productivity amongst farmers which is at the cost of quality.

d) There is total lack of export promotion efforts.

e) Although the total production of grapes is about 4 lacs. M.T. yet production of Thompson Seedless and allied varieties, which are exportable, is limited to about 1 lac. M.T.

3.5.7 **India's Export Potential For Grapes**

a) The productivity of grapes in India is second highest in the world, next only to Holland.

b) The production of Thompson Seedless variety is concentrated in Maharashtra which is quite close to Bombay from where major quantities can be evacuated.

c) The markets open to India for exporting its grapes are Europe, Middle East and South East Asia.

d) Given large markets, superior product, competitive advantage in terms of seasons and logistics, it is estimated that India should be in a position to export over 40000M.T. per annum during next three years.

3.5.8 Exports projected for VIII Plan are indicated in Table-8. The basis for projection are as follows :

- Production base and domestic capabilities.
- Seasonal gaps in supply to the major markets.
- Price competitiveness and quality of Indian produce.
- Assumption that necessary infrastructure will be created and promotional efforts will be made.

Table 8. Projected Export Of Grapes From India And Mode Of Shipment During VIII Plan.

(in M.T.)

MARKET	EUROPE		M.EAST		S.E.ASIA		TOTAL		GRAND
	AIR	SEA	AIR	SEA	AIR	SEA	AIR	SEA	TOTAL
	MONTHS								
JAN	3400	1100	1600	2400	1950	-	6950	3500	10450
FEB.	200	4300	600	3400	200	1750	1000	9450	10450
MAR	200	4300	600	3400	200	1750	1000	9450	10450
APR	200	4300	600	3400	200	1750	1000	9450	10450
TOTAL	4000	14000	3400	12600	2500	5250	9950	31850	41800

3.6 **Strategy To Realise Export Potential**

a) Grapes should be sent by sea to make it economical. However, some supplies in January should be air freighted to catch the early season.

b) **Market Survey** : The surveys should be conducted for identification of market, trade and distribution channels and consumer preference.

3.6.1 **Proposed Investment**

Major Producing States: Mahrashtra, Andhra Pradesh, Karnataka, Punjab.

Growth Centres: Pune-Nasik and adjourning areas | Hyderabad | Bangalore

A. Infrastructure	Mah.	A.P.	Karnataka	Total	Total Invt. (in lacs)	Govt.Share
1. Precooling units(mobile Unit)	14	4	4	22	705.00	315.00
2. Improved Pkg.					500.00	125.00

		Mah.	A.P.	Karnataka	Total	Total Invt.	Govt.Share
3.	Intermediate Cold Stores	14	4	4	22	1100.00	550.00
4.	Transport System	5	5	5	15	150.00	30.00
5.	Cold storage Bombay JNPT/BPT of 1000 MT capacity at exit points					1000.00	250.00

B. Major Markets : Europe,Middle East, S.E.Asia

C. Export Promotion and Market Development

	Name of the Activity	Target Markets	Total Exp.	Govt. share
1.	Promotional Programmes	UK,France,Germany, Holland S.Arabia	300.00 lac	300.00
2.	Brand Promotion	All countries	120.00 lacs	50.00
3.	Exporters/growers Delegation	Europe,Middle East	10.00 lacs	10.00
4.	Incoming delegations	Europe	10.00 lacs	10.00
5.	Market Specific Product Survey	All countries	20.00 Lacs	20.00
	Total		**3915.00**	**1660.00**

Total Investment	=	**3915.00**
Govt. Investment	=	**1660.00**
Commercial Inv. by NCDC/CWC	=	**750.00**
Private Inv.	=	**1505.00**

3.3 BANANA

3.3.1 The world production of Banana is estimated at 45.8 million tonnes out of which 6.2 million tonnes is contributed by India which accounts for 13.5% of the world production. India ranks No.1 followed by Brazil which produces 5.5 milion tonnes, Phillipines(3.8 million tonnes),Indonesia (2.3 million tonnes) and China (1.9 million tonnes).

3.3.2 The major exporters of Banana are CostaRica(1.2 million tonnes), Honduras(.8 million tonnes), Phillipines(.8 million tonnes), Panama (.6 million tonnes). The major importers are USA(3 million tonnes), Germany(.9 million tonnes)U.K.(.4 million tommes), France(.4 million tonnes),Italy (.4 milion tonnes), Japan(.77 million tonnes),S.Arabia(.12 million tonnes).

3.3.3 In India, Maharashtra is the largest producing State(1.3 million tonnes) followed by Tamil Nadu(1 million tonnes), Gujarat (.5 million tonnes), Assam(.4 million tonnes), Andhra Pradesh(.27 million tonnes). However, small quantities are produced in many other States.

Exports from India : Presently, very small quantities of bananas are being exported from India, for example in 1990-91, 525 MT of banana valued at Rs. 28.4 lacs was exported. Exports from India are going to few countries:

Name of the Country	Qty(MT)	Value(Rs.Lacs)
UAE	356	21.5
S.Arabia	138	5.0
Bahrain	28	1.8

3.3.4 **Major Issues/Problems**

a) The varieties available in India are not suitable for export market, as the size of these varieties is small and grade is not uniform.

b) Pre-harvest and post-harvest practices being adopted by Indian farmers are not suitable as these result in deterioration of the quality.

Mechanical injury and disease etc. render the outer appearance of the fruit with blemishes, whereas the fruits from other countries are spotlessly clean.

c) Infrastructure for packaging, transportation storage, etc. is very poor. The transportation by sea is not possibble unless and until infrastructure is revamped.

3.3.5 Export Potential

a) Exports from India do not commensurate with the production base. There exists a very lucrative market in the Middle East and Far East Countries hut at the same time a formidable competition is also there from the Asian exporters like Phillipines, China, Malaysia etc. However, as a whole, Asia imports more than the exports and there is a gap to the extent of 1,30,000 MT which presumably is being met by imports from Africa and South America.

b) The quality of Indian fruits in terms of flavour and taste is very good and it is possible for India to capture at least a small share of the European market which imports more than 3 million tonnes of banana.

c) Keeping in view the changes taking place in the country in banana cultivation, such as tissue culture propogated plants, it is possible that we will have comparable quality produce available for exports..

d) Based on these factors it is expected that India can develop exports of banana to the extent of 50-60,000 MT in next five years. The Regionwise export potential is as follows:

West Asia	30,000 MT
Europe	15,000 MT
S.E.Asia	15,000 MT

3.3.6 Strategy

a) Introduction of tissue culture plantation in selected areas exclusively for exports. In these areas farmers should be trained on appropriate pre-harvest and post-harvest management of banana crop.

b) Development of infrastructure for transportation of bananas by sea to make it price competitive.

c) To take the help of the established multi nationals for introduction of technology and to take the benefit of their already established brand names and market access.

d) Establishment of infrastructure and extension of cultivation for development of banana export.

e) Exclusive areas for introducing cultivation for exports have to be selected. The banana suckers of accepted international varieties will have to be supplied. Besides encouraging scientific management of banana plantation.

Infrastructure : For international market, grading, sorting, cleaning and packaging of bananas will have to be introduced on scientific lines. The grading houses may be set up in identified production areas.

Cold storage : After cleaning and packing, banana should be put in cold storage at 13*C and 90% humidity. The fruit should be cooled from ambient temperature to 13*C within 12 hrs. It is suggested that such cold stores should be set up at the production centres as well as exit ports.

3.3.7 Investment Requirement

Major Producing States: Maharashtra, Andhra Pradesh, Tamil Nadu, Gujarat.

Growth Centres:	Maharashtra,	Gujarat,	T.Nadu	Total Invt. (in Rs.lacs)	Govt. Share
A. Infrastructure					
1. Post harvest management studies.				10.00	5.00
2. Extension & Training				100.00	100.00
3. Post harvest handling(sorting, grading,packing)	2	1	1=4	100.00	50.00

Growth Centres:	Maharashtra,	Gujarat,	T.Nadu	Total Invt. (in Rs.lacs)	Govt. Share
4. Packaging					
a)R&D				10.00	10.00
b)Improved Packaging				500.00	125.00
5. Cold storage	2	1	1=4	3200.00	800.00

B. **Major Markets** : Middle East, S.E.Asia, Europe.

C. **Export Promotion and Market Development**

Name of the Activity	Markets Target		
1. Promotion Programme	Middle East, S.E.Asia	100.00	100.00
2 Growers Delegation	Phillipines, Europe	30.00	30.00
3. Products specific Market Surveys	All countries	20.00	20.00
Total		**4070.00**	**1240.00**

Total Investment	= 4070.00
Govt. Share	= 1240.00
Commercial Investment by Public sector	= 2400.00
Private Invt.	= 425.00

1. Major Producing States : Maharashtra, Andhra Pradesh, Karnataka, Gujarat, Kerala.

2. Growth Centres : Jalgagon and sourrounding areas. Trivandrum Investment in Rs. lakhs

Growth Centres:	Maharashtra,	Gujarat,	T.Nadu	Total Invt. (in Rs.lacs)	Govt. Share
3. Infrastructural facilities required					
a. Post harvest treatment houses including Packing houses, Cold storage etc.	2	1	4	4000.00	
b. Post harvest management studies	(including in the grapes infrastructural notes)			20.00	
				4020.00	

3. Expected Exports : It is possible to export more than one lakh MT per annum

3.4 LYCHEE

3.4.1 The world production of lychees is very limited. India ranks second in the world in the production of lychees next only to China. The total production in the country is estimated at 120,000 MT. Bihar ranks No.1 followed by U.P., Punjab and Himachal.

3.4.2 **World Market for Lychees** : The major supplying countries are South Africa, China, Thailand, Madgaskar, Mauritius etc. The demand for lychees is increasing as Chinese cuisine is fastest growing cuisine in the world and lychees are the important part of this. Moreover, the taste and roma of lychees is very unique. The major markets in Europe are U.K.(300 MT), France(600 MT), Germany(450 MT), Netherlands (150 MT),Middle East and S.E.Asia are also importing lychees.

3.4.3 **Exports from India** : The exports are negligible, i.e. less than 1 MT per annum.

3.4.4 **Main Issues/Problems**

a) The lychees are highly perishable. Shelf-life of the lychees is five days which is the main reason for insignificant export.

b) The season of the lychees is limited only to 15-20 days.

c) The production areas are located remotely where infrastructure is non-existant.

3.4.5 **Potential for exports** : India can export upto 1000 MT of lychees as the season for Indian produce is May and June at which time, there is no other supplier of the lychees in the world and prices are quite high. The projected exports are as follows:

Europe	400 MT
Middle East	300 MT
S.E.Asia	300 MT

3.4.6 **Strategy**

a) Chemical spray treatment has to be done to extend the shelf life of Indian lychees. This chemical spray will have to be made available at farms.

b) Adequate flight connection and cargo space has to be made available for Patna to Delhi. During May-June, nearly 35 MT of lychees can be air freighted out of Patna, per day. So the possibility of chartering a flight from Patna to Delhi has to be looked at, for these 20 days.

c) Not only on the domestic sector but also on international flights, adequate aircargo space should be made available for lychees.

d) A small cool room would be needed at Patna airport in case of flight delays. Provision also will have to be made at Delhi airport to store lychees in the cool room during the transit period.

Proposed Investment

Major Producing States: Bihar, Uttar Pradesh, Punjab

Growth Centres:	Muzaffarpur/ Patna	Dehradun U.P.	Invt.in Rs.Lacs.	Govt. share
A. Infrastructure				
	Bihar	U.P.		
1. Post harvest Management Studies			15.00	10.00
2. Precooling Facilities	2	1 = 3	45.00	22.50
3. Improved Pkg.			200.00	50.00
4. Intermediate Cold Stores	1	1 = 2	100.00	50.00
5. Refreigerated Trucks	4	2 = 6	60.00	12.00

B. Export Promotion and Market Development

	Invt.in Rs.Lacs.	Govt. share
1. Promotional Programmes	40.00	40.00
Total	**455.00**	**179.50**

Total Investment = 455.00
Govt. share = 179.50
Private share = 275.50

3.5 EXOTIC FRUITS

3.5.1 Due to varied climatic conditions India can produce all types of fruits such as tropical,sub-tropical and temperate. Apart from the fruits, individually dealt separately many other fruits have good potential for exports. These fruits include citrus, chickoo, custard apple, ber, pomegranates, apples, etc.

3.5.2 The present export is of the order of 30,000 MTs valued at Rs.36 crores. These fruits are pomegranate, chickoo, water melon, citrus, apple, tamarind, etc.

3.5.3 **World Market** : The consumption of exotic fruits is increasing in the world. In advanced countries there is a craze for exotic fruits. In many countries, such as France there are special sections in super markets which display only exotic fruits. The recent success of Kiwi fruit, Avocados and Passion fruits are some of the examples which clearly demonstrate that it is possible to introduce exotic fruits successfully in the world market.

3.5.4 **Export Potential For Exotic Fruits** : Many fruits from India such as sapota, ber, custard apple and pomegranate will fall in the category of exotic fruits which can be exported. The following fruits have potential in this regard.

a) *Chickoo*: Sapota is a unique Indian fruit which has excellent taste and nutritional values. Production of sapota in Gujarat and Maharashtra is quite extensive. When this fruit was exposed in the international exhibition and to the visiting foreign delegations, it immensed great interest. Some of the processed food manufacturers have also exported chickoo pulp. It has been reported that yoghurt industry in the West has been able to market sapota flavoured yoghurt quite successfully. The fruit therefore, has good potential for exports to Middle East and Europe.

b) *Ber* : Ber is another fruit unique to India. The cultivation of ber has picked up recently. It is being produced in Maharashtra, Gujarat, Haryana and Rajasthan in large quantities. There is a scope of development of this fruit in the Middle East market.

c) *Pomegranate* : The cultivation of pomegranate is growing with Maharashtra emerging as major producing state. Ganesh variety of pomegranate is quite superior in quality. The pomegranate is available through out the year and as such can be developed as a exportable fruit.

d) *Custard Apple*: Custard Apple can also be developed for exports as the taste of the fruit is good.

e) Many other fruits like apple, pineapple, plums etc. which have ready acceptance in the international market can also be exported on a selective basis to the selected markets. Kinnows, a juicy and flavourous citrus fruit can be exported to S.E.Asian countries where there is a good scope for the same. Lemon is another fruit which can be developed for export.

3.5.5 All these fruits have potential of exports to the extent of 40-50,000 MTs

3.5.6 **Strategy**

a) Development of infrastructure like grading, packing houses, precooling units, cold storages and reefer transport is necessary to promote the export of these fruits.

b) Some of the fruits are required to be promoted through various trade shows etc. Special promotion programmes should also be organised.

c) Product literature giving the production seasons, nutritional values etc. should be developed and distributed among the trading community to disseminate product information.

3.5.7 **Requirement of Investment**

Growth Centres: Maharashtra,Gujarat,Punjab,Karnataka,others	Value Rs.lacs. Investment	Govt. Investment
A. Infrastructure		
1. Post harvest Management Studies	45.00	30.00

	Maharashtra	Gujarat	Punjab	Karnataka	others	Invest-ment	Govt. Invest ment
2. Post harvest Handling (grading,sorting, cleaning etc.)	2	1	2	1	3=9	315.00	157.50
3. Precooling Units	2	2	2	2	2=10	150.00	75.00
4. Packaging							
a)R&D						20.00	10.00
b)Improved Pkg.						1500.00	375.00
5. Intermediate Cold Stores	2	2	2	2	2=10	500.00	250.00
6. Refrigerated Transport	5	5	5	5	5=25	250.00	50.00
B. Export Promotion & Market Development							
1. Promotion Programmes						300.00	300.00
2. Product Specific Market Surveys						50.00	50.00
Total						2605.00	1147.50

Total Investment = 2605.00
Govt. Investment = 1147.50
Pvt.Ivestment = 1457.50

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CHAPTER-IV

EXPORT POTENTIAL OF VEGETABLES

4.1 ONION

4.1.1 The world production of onion is estimated at 27.9 million tonnes of which India accounts for 3.3 million tonnes. (Source: FAO Production Year Book 1990). The major producers of onions are China, USA, India, Jordan etc. India accounts for 12% of world production. The major growing States are Maharashtra and Gujarat which together account for 40% of the total production.

4.1.2 **World Market of Onion** : The total world trade is estimated at 2.1 million tonnes and the major importers are FRG (1989-3.34 lac tonnes) U.K. (1989-2.40 lac tonnes), USA (1989-1.63 lac tonnes), Malaysia (1989-1.39 lac tonnes), S.Arabia (1989-1.30 lac tonnes), UAE(1989-1.10 lac tonnes).

4.1.3 **Exports From India** : Export of onion from the country is around 10-12% of the total production. The trend in the export of onion during the last 5 years is shown in the table given below.

Table 1. Export Of Onion From India During 1986-87 to 1990-91

Qty. in MTs
Value in Lacs Rs.

Year	Qty.	Value	Per Unit Value Rs./MT
1986-87	234726	5275.26	2247
1987-88	130392	4061.23	3115
1988-89	235214	6881.49	2926
1989-90	360227	8454.61	2347
1990-91	289054	11590.62	4010

4.1.4 Destinati of Export : The major destinations of export from India are as follows:

Table 2. Export Of Onion From India (1989-90)

Name of the Country	Qty(MT)	Value(Rs.lacs)
Bangla Desh	66596	1740
U.A.E.	37578	758
Singapore	17342	70
Malaysia	19397	539
S.Arabia	14330	239

4.1.5 Main Issues/Problems

a) The level of production and prices prevailing within the country cause hinderances in promoting export on a large scale.

b) The packaging of onions is traditional and does not match the international standards.

c) The exports are directed mainly to West Asia and S.E.Asia. Exports to Europe are negligible, as we do not grow yellow varieties which have market in Europe.

4.1.6 Export Potential For Onions

a) There is a good scope of increasing our share in the markets of Malaysia, Singapore and Gulf countries, as taste and flavour of Indian varieties is liked in these markets. We should improve our packaging and introduce nylon packaging.

b) Some quantities of onions can be exported to Europe provided production of white and yellow onions is undertaken.

c) It is estimated that India can export onion to the extent of 4.50 lac tonnes if these measures are taken up.

4.1.7 The Export projections are based on the fact that productivity and production of onion will increase and domestic consumption and prices will not pose any major problem.

Requirement Of Investment

Investment in Rs.lacs.

	Major producing States: Maharashtra,Gujarat,Tamil Nadu				Total Invt.	Govt.'s Invt.
A.	Infrastructure					
1.	Post Harvest Management Studies				15.00	10.00
2.	Extension for cultivation of Yellow Varieties.				40.00	40.00
3.	Storage capacity Enhancement(lac.MTS).	1	0.50	0.50	300.00	75.00
4.	Packaging Development				25.00	15 .00
5.	Grading, Sorting Stations	3	2	2 = 7	245.00	122.50
6.	Irradiation Plant				200.00	200.00
B.	Major Markets: Malaysia, Singapore,Srilanka,UAE,Bangla Desh,Mauritius.					
C.	Export Promoiton and Market Development:					
1.	Promotion programmes				200.00	200.00
2.	Market survey				25.00	25.00
	Total				**1045.00**	**682.50**

Total Investment	=	1045.00
Govt.'s share	=	682.50
Commercial Invt. by Public Sector	=	225.00
Private Investment	=	137.50

4.2 GREEN VEGETABLES

4.2.1 India is one of the few countries where the climatic conditions permit growing of various vegetables through out the year. The total production in the country is estimated at 53 million tonnes. World trade in fresh vegetables is valued at $10730 million. The world trade structure is as follows:

Table 3. World Trade Structure Of Fresh Vegetables.

(Million US$)

	EXPORT	IMPORT	NET EXPORTS
EUROPE	6309	7500	(1191)
ASIA	2017	1427	590
AMERICA	1781	1481	300
AFRICA	408	279	129
OCEANIA	225	53	172

4.2.3 During last 10 years India has annually exported 20-30,000 tonnes of fresh vegetables valued at Rs 100-150 million. The export of vegetables during the last 2 years is indicated below :

Table 4. India's Export Of Vegetables.

YEAR	VOLUME MT	VALUE (RS.CRORES)
1989-90	22685	19.00
1990-91	18730	15.87

Table 5. Varieties Of Vegetables Being Exported And Their Share In Total Exports.

VEGETABLES	% SHARE
OKRA	60
BITTER GOURD	20
GREEN CHILLIES	10
MIXED VEGETABLES	10

4.2.4 Main Issues/Problems

a) The vegetables are being exported by air. But availability of air cargo space as well as high freight rates are the two major constraints in increasing the exports.

b) In developing economy like India, vegetables are the main item of food and as such domestic prices and demand are high.

c) Domestic production base is not geared to meet export demands.

d) Many high value vegetables which are in demand in Europe are not cultivated in India and even the germ plasm of these vegetables is not available domestically.

e) Infrastructure for high-tech. agriculture and post harvest management is not existant.

Export Potential Of Vegetables

4.2.5 Traditional Vegetables : Given the large and year round supply base and logistically favourable access to major importing markets, India can achieve exports of 34,000 MT; details there of are as follows:

PROJECTED EXPORT OF VEGETABLES

COUNTRIES	(MT)
EUROPE	6800
MIDDLE EAST	25000
S.E.ASIA	2200
	34000

4.2.6 **Potatoes** : Potato is one of the most important vegetable crops in India. The current production is estimated at 15million tonnes and exports are 3000-5000MT per annum. The present exports are hampered by the constraints such as non-availability of internationally acceptable varieties and the disease situation in the potato growing areas. Some of varieties like Kufri Jyoti cultivated in those areas where disease control is possible, have potential for exports. It is, therefore, possible to export to the tune of 50,000 MT per annum to the neighbouring countries like Nepal, Mauritius, Maldives, Malaysia etc. Chip grade varieties can be developed which will have very large export potential for Middle East Markets. Thus, a total potential for export of 1,00,000 MT by the terminal year of VIII Five Year Plan is achievable.

4.2.7 **High Value Vegetables** : International market is very good for some of the high value vegetables which are in great demand. The detailed production cost analysis indicates that due to low labour cost, abundance of sun light, technical manpower etc. India can produce many vegetables at the cost much lower than those of the advanced countries. The cost per tonne could be 50-80% of those of the advanced countries. The following vegetables need greater attention from export angle.

a) Green and Lima Beans; Fresh for domestic market and Gulf market processed and frozen for European market.

b) Sweet Corn: Fresh for domestic and Gulf market and processed for world market.

c) Asparagus: Fresh for domestic and Gulf Market and processed for world market.

d) Celery: Fresh for domestic and Gulf Markets.

e) Bell Pepper: Fresh for domestic and Gulf market.

4.2.8 India can export these vegetables to the extent of 7000 MT. Export targets are based on the assumption that germ plasm will be imported and cultivation will be taken up by organised sector. This will enable India to take advantage of the supply gap and its price competitiveness. The infrastructure for increasing the shelf-life have also to be created.

4.2.9 Strategy

I The export projections as given above can be achieved by exploiting the gaps in the supplies in European market and increasing the share in Gulf market.

II Export Oriented Horticultural Estates are to be developed to attract organised sector. These Estates may be given 100% EOUs status for the benefit of importation of germ plasm, technology, equipment and consumables without payment of custom duty. These benefits may be given under a bond whereby the units will be bound to export two times the value of imported material within three years of the commercial production.

III The infrastructure for grading/ sorting, packing and C.A.Storage need to be created for increasing shelf-life and unit value realisation.

IV The following infrastructural facilities and promotional measures are neccessary to achieve the targeted exports.

a) Grading/ Sorting and Packing Stations: Grading, packing and sorting are essential to achieve higher unit value realisation. It is suggested that these stations be located at the exit points such as Delhi, Bombay and Trivendrum.

b) Central Pre Cooling And Cold Storage Facilities : In order to enhance the shelf life of vegetables, pre-cooling should be done and vegetables should be stored at controlled temperature and humidity for ensuring and purity.

V **Promotion and Market Development** : In order to popularise Indian vegetables, generic promotions through press advertisement, product literature and promotion programme will have to be carried out.

Requirement Of Investment

Major producing States:	U.P., Bihar, Gujarat, Maharashtra, Andhra Pradesh.
Growth Centres:	Bombay, Delhi, Trivendrum, Hyderabad/ Madras

A. Infrastructure	Mah.	Delhi	Kerala	A.P.	Invt. in Rs.Lacs	Govt. Share
1. Post harvest Management Studies					30.00	20.00
2. Extension & Training					20.00	20.00
3. Post Harvest Handling (Grading,Sorting and Packing)	2	2	2	2=8	320.00	160.00
4. Pre-Cooling Units	2	2	2	1=7	105.00	52.50
5. Packaging						
a) R&D					10.00	10.00
b) Improved Pkg.					1000.00	250.00
6. Intermediate cold Stores	2	2	2	1=7	350.00	175.00
7. Transport System	2	2	2	1=7	70.00	14.00

B. Major Markets: Europe, Middle East

C. Market Promotior and Market Development

Name of the Activity	Markets Target		
1. Generic Promotion	U.K., UAE,S.Arabia, Kuwait, S.Arabia.	150.00	150.00
2. Buyer-Seller Meets	All countries	30.00	30.00
3. Product specific Market Surveys	All countries	20.00	20.00
Total		2495.00	1291.50

Total Investment	=	2495.00
Govt. Share	=	1291.50
Private Invt.	=	1203.50

CHAPTER-V

5.1. EXPORT POTENTIAL OF FLORICULTURAL PLANTS

5.1.1 There is an ample evidence to establish that the international market for floricultural products is growing at the rate of 15%. During 1986, the market size was around U.S. $2.5 billion, but by 1990 it went upto U.S. $5.2 billion and demand is not expected to come down, offering enormous opportunities to countries with diversity of climate and native species. In response to this clearly visible growth in the international demand for these products, a few countries have made major entries into the international market as established suppliers. These include Holland, Isreal, Mexico, Columbia, Thailand, Kenya and Malaysia.

5.1.2 The major trade in flowers takes place between North America and EEC, accounting for 2/3rd of the world trade. The major exporter is Netherland followed by Columbia, Isreal, Italy and Kenya. On the other hand the major importers are Germany followed by USA,France and UK. Japan is distinct market where higher value realisation for quality flowers can be obtained. Roses, carnation, anthuriums, chrysanthemum, gladiolus, orchids are the most popular flowers. Netherlands also is a major centre for re-export.

5.1.3 The demand for flowers is at peak in the winters which also is occasion for most festivals in the West and the local production at that time is negligible because of low temperature. As such the warmer countries have a chance to capitalise on the seasonal advantage. Major exporting and importing countries are as fallows :

MAJOR EXPORTERS AND THEIR SHARE OF WORLD EXPORTS

COUNTRIES	% SHARE
NETHERLANDS	65
COLUMBIA	12
ISREAL	6
ITALY	5

MAJOR IMPORTERS

COUNTRIES	% SHARE OF WORLD IMPORT
FRG	36
USA	22
FRANCE	7
UK	7

5.1.4 **Exports from India**

India's exports of cut flowers is valued at Rs.255 lacs mostly directed to Middle East. Presently, the cultivation of modern cut flowers is limited. However, some units with modern technology such as climatic controlled glass houses have come up which are expected to boost the cultivation of modern flowers. The break-up of the exports of the floriculture products are as under for the year 1990-91.

Dry Flowers	167 lacs
Bulbs	43 lacs
Floriculture Plants	206 lacs
Cut flowers	255 lacs

5.1.6 **Export Potential Of Floriculture** : As far back in 1976, the NCA had indicated a target of 500,000 ha. under flower crops, to be reached in India by 2000 AD. According to the rough estimate of the Expert Group on Floriculture in India (1989) the value of traditional and modern floriculture; retail out turn is about Rs.205 crores. This include roughly Rs.105 crores from traditional floricultural products. No definite data are available regarding the actual area under different categories of floricultural products, production, volume and market trends Appendix-I.

5.1.7 Based on current evidence, strong prospective markets for India exist even in Europe and, more importantly and closer by in Japan, where Ladies Slipper Orchid had been exported from Kalimpong successfully. Similar is the case of Orchids produced in Kerala which are being exported from Trivendrum. Parameters that favour development of export oriented floriculture development in India includ the availability of wide diversity in natural climate and abundant labour with proximity to consumer markets on one hand and the desire of importing countries to secure material from alternative sources in the contest of pricing, labour and energy cost, in traditional species on the other.

5.1.8 The Government of India had set up an 'Expert Group on the Floriculture Development in India' in 1989 whose recommendations are under active consideration. The Expert Group identified various flowers/plants/bulbs suitable for export production on long-term as well as short-term basis. The Intensive Floriculture Areas (IFAS) have been identified alongwith the specific groups of flowers to be promoted whose details are given in Appendix-II. In the immediate future, the following areas with abundant potential, adequate skilled labour and located close to major air exit points are recommended for development.

1) Area around Delhi	Rose,Carnation, Chrysanthemum, Gladiolus
2) Area around Bangalore	Rose, Carnation, Chrysanthemum, Gladiolus,Ornamental foliage Plants and Seeds;
3) Area around Trivendrum	Orchids, Anthurium and Foliage Plants;
4) Area around Pune/Nasik	Rose,Carnation,Gladiolus, Chrysanthemum.
5) N.E. Region, including Sikkim	Cymbidium orchids

5.1.9 **Cut Flowers** : There exists a large market for cut flowers. As already indicated, Europe which is one of the biggest markets does not grow flowers during winters and depends on the imports. The export during this period takes place from warmer countries such as Kenya, Thailand and Srilanka. India can take advantage of this supply gap situation by undertaking cultivation of suitable flowers. Many new units are coming up with climate controlled glass houses and are propogating international varieties after importing germ plasm. Exports of flowers can be increased to Rs.100 crores annually.

5.1.10 **Tissue Culture** : The world market for tissue culture plants is estimated at around 170 m plants. Holland, UK and USA are the major production centres for these plants. These countries are facing labour shortages and are looking at sub contracting their production to less developed economies. Assuming the present growth rate to continue, the world demand for tissue culture plants is expected to increase to about 630 m plants by 1995. Currently there are three tissue culture laboratories operating in India. Production capacities have been approved for another twelve units. The total capacity already approved is around 100 m plants per year although the current production is of

the order of 8 m numbers only. During the next couple of years the production is expected to increase substantially. Assuming that 5% of the total world demand is diverted to India which has the advantage of having a large pool of scientific manpower available, the export demand by 1995 will be approximately 31 m plants which in value terms is estimated at Rs.15.0 crores.

5.2 CONSTRAINTS

5.2.1 The following have been identified as the major constraints and limitation in the development of an export based floriculture industry in the country :

a) Non-availability of germ plasm of important flowers and plants which have an export market.

b) Lack of sufficient knowledge/ knowhow on hi-tech production practices including important methods of propagation such as mist and fog houses for micro propagation.

c) Lack of training and extension facilities for transfer of even existing knowhow.

d) Non-availability of suitable organisations in the private, cooperatives and public sector who can take up the capital intensive activities of production of planting material and assured marketing facilities.

e) Lack of adequate post harvest infrastructure covering the areas of refrigerated transport, storage and packing.

f) Ignorance of world trends in floriculutre trade, international practices including patent rights as also varietal choice and demand.

g) Cumbersome procedures for clearance of imported planting materials by customs and quarantine authorities.

h) High rates of customs and import duties inhibitting import of input materials including glass house components plant media, plant protection chemicals and fertilizers.

i) Lack of sufficient incentives for export oriented floriculture units.

j) Inadequate availability of cargo space and irrational air-freight structures in comparison with rates available in competing countries such as Srilanka, Thailand, Pakistan and Kenya .

5.3 Recommendations

5.3.1 In order to develop high-tech floriculture industry and to encourage the export of floricultural products, the following infrastructural facilities need to be created :

5.3 2 **Planting material** : The first and foremost important input is the planting material/seed of the preferred varieties in the international market. Thus, fast multiplication technology is the need of the hour. Establishment of tissue culture laboratories alongwith Glass/Green houses for producing the basic material and subsequently bearing the plants for cut flower purposes would be a desireable step. It has, however, to be ensured that the crops proposed to be multiplied through tissue culture have the proven technology and can be adopted on a commercial scale. The approach to achieve this could be;

i) Inputs for the floriculture industry should be freely available. Two factors are important in the import of inputs which include planting material/germ plasm:

   a) Smooth and efficient quarantine facilities with prescribed maximum time limit within which material should be disbursed to the party and consideration of Advanced Phyto Sanitary Certificate from the exporting concerned for clearance of material.

   b) Waiver of import duties on all inpus including planting material and equipments relating to floriculture export units.

ii) Establishment of integrated tissue culture laboratory and Glass/Green house with foreign collaborations having buy-back arrangements.

iii) Establishment of tissue culture laboratory with indigenous efforts. In this case, proven technology is to be given either by ICAR or Department of Bio-technology. Tissue culture units have to serve material to the Agro Industries Corporations/selected farmers engaged in production and marketing of floricultural products in and around project area. It will be followed by flower cultivation in green house by these organisations. Broad details of equipments/machinery required for the establishment of climate controlled green house is given in Appendix-III and that of tissue culture laboratory is given in Appendix-IV.

iv) Establishment of horticultural estates for the cultivation of floricultural crops could also be considered as an alternative to cooperatives.

v) The production aspects are mostly the concern of the Ministry of Agriculture and the State Departments of Agriculture/ Horticulture. The two main components would be :

a) Formulation of schemes with adequate incentive to encourage farmers to take up floriculture production;

b) Provision of extension and training to potential flower growers.

5.3.3 **Irrigation :** As irrigation is an integral part of cultivation, it will have to be provided through mist (in propagation chamber), drip system (on benches) with overhead auto-control in case of green house cultivation, and open furrow/flood system in case of open cultivation. Required components have been included in broad details in Appendix-III.

5.3.4 **Fertilizers and pesticides :** These shall be applied by mixing them with irrigation water for better uptake and utilization.

5.3.5 **Post-Harvest Handling of Flowers :** Generally, quality decreases during post-harvest handling. If fair prices are to be obtained, or flowers are to be exported, quality must be as good as, or better than, the best that is currently available. In order to achieve this, different parammeters are discussed below:-

a) **Cooling:** Cooling is probably the most important treatment to preserve quality, since it deteriorates most rapidly at high temperatures, at least twice as quickly for each 10^0C rise in temperature.

There are two common methods of cooling; with stems in water, or dry air; packaged flowers, using forced air cooling. Cooling with stems in water is adequate, but it is relatively slow and space-consuming. It can be made more efficient, if wheeled troughs are used. Forced-air cooling provides rapid cooling of large volumes of flowers. Usually, vented packages or cartons are placed in a cool room, and a fan draws cold air through the packages. The cold room must have the refrigeration capacity to handle the heat load and the air must be humidified (e.g. 98% RH) to prevent drying of flowers. An alternative method is conveyor cooling, where air is blown from pipes above the conveyor. The cartons are then closed and moved into the cool room. A cooling apparatus as discussed above can be imported for demonstration and local fabrication.

b) **Packaging:** Packaging can take many forms, from flower cups, to sleeves, boxes, bulk-bins, pallets and air containers. It is desirable that packaging is designed for the product, according to the mode of transport and market demand.

Physical protection can be provided by cups, sleeves, boxes or larger containers. Package strength depends on the material, dimensions and construction. Packages must also remain strong at high humidity, during transport or after water condensation. Flower heads are usually packed slightly away from the end of the package and some protective material is placed at the ends. Flower movement in the package can be reduced by fully-packing the carton, or by restraining devices placed across the stems at the Centre of the package (e.g. fiberboard or plastic strips). For efficient handling, packages should be of a convenient size for handling and moving on conveyors. These should be compatible with standard pallets for which facilities are almost non-existent in India. Packaging has a very important role to play both in the safe transport of material as also in the image and accepatability of our products in the world market. The Indian Institute of Packaging should intirely there R &D to actual to develop suitable packaging.

c) **Chemical treatments:** Some chemicals should be used routinely by growers, wholesalers, retailers and consumers, e.g. germicides to keep water clean and possibly acid to improve water uptake. Other chemicals have more specific uses, e.g., sugar pre-treatments to improve opening and silver thiosulphate to inhibit ethylene effects and delay aging, or flower drop. Each type of flower and often each handling and marketing procedure, requires different chemicals.

d) **Cold Storage:** Storage can be very useful commercially but it must be remembered that there will always be some loss of shelf life and quality. If storage is done well this loss of shelf life can be minimised. For a few days flowers can be stored with stems in water plus germicide. For longer than this flowers must be stored 'dry'. There is now good evidence that quite a few flowers can be successfully cold-stored by the 'dry' method for several weeks. The method requires that flowers are treated with fungicide against Botrytis either before or after harvest and allowed to dry. They are cooled to storage temperature, usually with stems in water or preservative (germicide, sugar) for several hours, often overnight. They are then wrapped tightly in paper and plastic to prevent water loss and stored at the lowest possible temperature that will not cause freezing

injury, usually 1^0C for most flowers. After storage the stems should be uncovered, recut and placeed in warm water or citric acid (0.25 g/L for 1 hr) to rehydrate, but the flower tops should remain covered for 24 hr to support them while they rehydrate. The loss of life after storage can be overcome to some extent by treatment with preservatives before or after storage e.g., with sugar plus germicides or STS. However, stored flowers should be sold as soon as possible after they are removed from storage and rehydrated. With this technique, for which we need exposures, carnation buds have been successfully stored for 3 months, Roses, Gladiolus, Gerbera for three weeks. There is every reason to believe that other flowers can also be successfully stored dry, once the detailed techniques for each flowers are worked out.

5.3.6 **Training On Production Technology :** Netherland is the largest producer of cut florwers in the world. The majority of the flower crops are produced under glass house and the average increase in the area under cultivation has been 14 per cent. The principal cut flowers are Rose, Chrysanthemum, Gerbera, Standard & spray Carnations etc. in addition to the cultivation of plants for cut foliage. Under open conditions only 29 per cent of the total area is under cut flower production that too of mainly shrubs. As this technology is relatively new to this country, should be exposed to the professionals.

5.3.7 **Consumer Preference:** The Substantial portion of household expenditure on floricultural items in Netherlands goes to cut flowers alone. The study of consumer preference and market behaviour will help the Indian growers to organise their efforts accordingly keeping in view the world demand.

5.3.8 **Trade Structure:** Generally, flowers are sold through the designated auctions or wholesale markets in Western European countries and others. These Centres have offices for export, road transport and airline companies, packaging, banking and research facilities which need to be studied to penetrate in the foreign markets. The overseas growers can now become member of the Dutch auction in their own rights.

5.3.9 **Unit Cost**

A detailed unit cost statement is given in Appendix-IV.

5.4 Central Sector Schemes

There was no central sector scheme so far for development of floriculture. Keeping in view the thrust area, the following schemes have been proposed for implementation during 8th Plan Period by Department of Agriclture and Cooperation and APEDA especially on as to give emphasis to the export of floriculture products.

i) **Commercial Cultivation of Floricultural Plants** : The scheme includes establishment of 10 centres during 8th Five Year Plan period for propagation of selected kinds of plants, their multiplication and distribution to selected farmers for large scale production. The programme also includes post-harvest handling, training and demonstration. The programme envisages motivation for production of quality produce for export purpose. An outlay of Rs.6.5 crores is required during I to VIII Five Year Plan.

ii) Priority should be accorded to the improvement in post-harvest handling and development of infrastructure and services for perishable horticultural produce including floriculture crores during 8th Plan Period.

5.4.1 **Transport** : i) Refrigerated transport would be required to transport the flowers from the production points to the airport. Such transportation systems would be almost entirely by road and the necessary knowhow is available with the private sector. Government's schemes may consider assisting the organisations concerned for the procurement of suitable refrigerated vehicles.

ii Storage Facilities Near Air Ports

The export oriented schemes contemplate short term storage and transport as they have to be located as close to major airports as possible. Storage would be required at the production point and at the airports. While storage at the production point may be undertaken by the larger parties themselves, common storage facilities for small producers would be the concern of the Directorate of Agriculture Marketing, Department of Rural Development and in the case of cooperatives, the National Cooperative Development Corporation (NCDC) would be concerned with funding such storage facilities. (Action : Deptt. of Rural Development and N.C.D.C.)

iii) Facilities at Exit Points

At the point of exit at the airports, while awaiting Cargo space, it is imperative to have adequate storage facilities for which the Civil Aviation authorities would have to make necessary provision. It would be required of them to reserve certain space for floricultural products and to assign priority to flowers over other items in the event of competing demand for space.

5.4.2 **Market Information :** Market information of international trends in floriculture market is not known and whatever information is available is not disseminated adequately. There has to be a combined effort to provide the necessary information APEDA, National Horticulture Board and Indian Institute of Foreign Trade should strengthen their International market intelligence network.

Conclusion

It is suggested that once a set of incentives are worked out both for promotion of production and export by the Ministries of Agriculture, Commerce, National Horticulture Board, and APEDA, it is necessary to have an Empowered committee where the Ministries concerned are represented for expeditious clearance of all export oriented floricul-tural projects. This Committee may be headed by the Secretary or Additional Secretary concerned in the Ministry of Commerce alongwith representatives of following members:

1. Advisor(Agriculture)	Planning Commission
2. Joint Secretary.(H)/Hort.Commr.	Ministry of Agriculture
3. Joint Secretary (PP)	Ministry of Agriculture
4. Financial Advisor	Deptt. of Civil Aviation
5. Plant Protection Advisor	Deptt. of Agri. & Coopn.
6. Joint Secretary	Deptt. of Civil Aviation
7. Agriculture Marketing Advisor	Deptt. of Rural Dev.
8. Joint Secretary	Ministry of Commerce
9. Chairman APEDA.	Ministry of Commerce
10. Executive Director	National Hort. Board.

5.4.3 Investments Required

Major Producing States : Mahrashtra, Karnataka, Kerala, Punjab, North-Eastern States.

Growth Centres :	Bombay	Delhi	Bangalore	Chandigarh & Ludhiana	Others	Invt. Rs lacs	Govt. Share
A. Infrastructure							
1. Post Harvest Management Studies						15.00	10.00
2. Precooling Units	1	1	2	2	2=8	120.00	60.00
3. Packaging							
a) R&D						10.00	5.00
b) Improved Pkg.						400.00	100.00
4. Refreigerated Trucks	4	2	4	4	4=18	180.00	36.00
5. Auction Houses	1	1		1	-=3	450.00	450.00
6. Equity Participation (5x15 Crs=75; 75x5%=3.75)						7500.00	375.00

B. **Major Markets** : Middle East, Far East Europe and Japan

C. **Market Promotion and Market Development**

	Name of the Activity	Markets to be covered	Invt.	Govt.
1.	Promotion Programmes	Holland,Germany,Japan	100.00	100.00
2.	Exporter/growers delegation	Holland,Kenya,Germany	30.00	30.00
3.	Incoming delegation	Japan,Germany, Holland	25.00	25.00
4.	Products specific surveys	Europe, Far East	15.00	15.00
	Total		8840.00	1200.00

Total Investment = 8840.00
Govt Share = 1200.00
Private Investment = 7640.00

Appendix-I

STATEWISE AREA UNDER FLOWER PRODUCTION

STATE	(Area in hectare)
Andhra Pradesh	3055
Assam	31
Delhi	85
Gujarat	405
Haryana	425
Himachal Pradesh	25
Jammu & Kashmir	40
Karnataka	7870
Maharashtra	2045
Manipur	36
Punjab	158
Rajasthan	2500
Tamil Nadu	8384
Uttar Pradesh	600
West Bengal	3150
	28809

Source : Based on survey of Universities, State Department of Agriculture and by APEDA, 1989.

Appendix-II

INTENSIVE FLORICULTURE AREAS WITH RESPECTIVE CROPS RECOMMENDED BY EXPERT GROUP ON FLORICULTURE DEVELOPMENT IN INDIA

1.	Area around Delhi	Rose, Gladiolus, Carnation Crysanthemum.
2&3.	Area around Pune/Nasik	Rose, Carnation, Gladiolus, Dehlia, Chrysanthemum.
4.	Area around Bangalore	Rose, Gladiolus, Carnation, Chrysanthemum and other Ornamental Foliage Plants.
5.	Area around Trivendrum	Orchids, Anthurium, Foliage Plants.

6.	Area around Kalimpong	Orchids, Amaryllis, Gladiolus, Lilium, Gerbera, Anthurium, Cacti and Foliage Plants.
7.	Area around Calcutta	Lotus, Tuberose, Jasmine, Chrysan- mum, Dehlia, other Ornamental/Foliage Plants.
8.	Area around Srinagar	Gladiolus, Lilium, Carnation, Rose, other Bulbous Plants, Seeds.
9.	Area around Solan	Gladiolus, other Bulbous Plants and Seeds.
10.	Area around Cooimbatore including Nilgiris	Jasmine, Tuberose, Chrysanthe-mum, Rose, Carnation, Orchids.

Appendix-III

BROAD DETAILS OF THE EQUIPMENT/MACHINNERY TO BE IMPORTED

1) CLIMATE CONTROLLED GREEN HOUSE

- Capacity 30,000 to 40,000 sq.ft. with four chambers;
- Basic construction steel, hot dipped, galvanised, moisture resistant;
- Mist. Propagation chamber;
- Cooling System - Pad & Fan system(Horizontal Low Section Draft fans) for growing plants.
- Special refrigeration unit for preserving cut flowers and pot plants.
- Non-corrosive aluminium benches for growing plants (fixed & movable)
- Irrigation system(overhead auto control)
- Electrical fittings and other ancillary equipment.

II) GREEN HOUSE INSTALLATIONS

- Drip Irrigation system on Benches
- Reversed osmosis system daily capacity 55-60 cu.m with pumps, equipment, connections and one piece moisture resistant basin.
- Thermo-hydrographs

- Plant Cutter
- Soil Block Press
- Shading system- Black out system for growing cut flowers
- Plant/pot plant Transport cart trays and horticulture trays
- Leaf shine for export plants
- Capillary mats for benches
- Heating system for propagation benches
- Soil sterlization equipment
- Small Transport truck with cooling unit
- Potting soil(Sterlized)
- Peat moss
- Electrical fittings and other equipment

Appendix-IV

TISSUE CULTURE LABORATORY - DETAILS

(For 10,00000 Plants per annum)

- Controlled Aseptic culture chamber
- Climatic Cell
- Kitchen, fitted with autoclave, oven, cooling culture, trollies with lights
- Laboratory equiped with necessary equipment.
- Laminal flow
- Power generator
- Electrical fittings and ancillary equipment.

UNIT COST

A The details of cost of a tissue culture unit are given here under :-

Size	1 ha. (economically viable)
Cost	Rs.3.45 crores
Ratio(Foreign & Local currency)	50 : 50 (including technology transfer)

1) After cultivating in media, hardening in glass/ poly house.

2) 100 per cent buy-back arrangement would be desirable.

B) Glass/Green House (components given in Appendix-III)

a) **Turn key approach** for initial 2-3 projects. It involves full responsibility of foreign collaborator for production and export (quality, quantity and continuity) etc.

1) Imported equipment including packaging/processing unit
2) Management control by foreigner(for initial period)
3) Within 10-13 km. radius of International Airport
4) 100 per cent export(with a possibility of 25 per cent for local use)

Size	4 ha. (commercially viable)
Cost	Rs.10 crores (@ Rs.1 crore/acre)

b) Indigenous approach afterwards where foreign collaborator will manufacture green houses in India for 1-2 acre units which should be economically viable for Indian viable conditions.

CHAPTER-VI

EXPORT OF LIVE STOCK PRODUCTS

6.1 **MEAT AND MEAT PRODUCTS :** Export of meat and meat products in the year 1991-92 is expected to be around Rs.190 crores. In dollar terms it would be about 75 million US dollars. To achieve 30% annual growth rate in dollar terms, targets could be as follows:-

Year	Value in US$ (Million)
1992-93	- 98
1993-94	- 127
1994-95	- 160
1995-96	- 196
1996-97	- 253

6.1.1 Most of meat product exports is of buffalo meat which has demand in the Middle East and South East Asia. Possibilities of export of buffalo meat to other countries also are there.

6.1.2 Export of poultry meat is also possible because of abundance of raw-material. Although the processing and production cost is much lower compared to international prices, export of poultry meat is not taking place at present because of high cost of feed. Export of meat of goat, sheep, etc. cannot be increased substantially because of internal demand. Following action points for export are suggested.

6.1.4 **Recommendations**

a) Major slaughter houses, specifically meant for buffalo have to be promoted. Buffalo meat slaughter houses for export have to be put up at 4 locations, namely Bombay, Delhi, UP and AP. In addition, 5 major integrated buffalo meat plants should be set up in AP, Punjab, West Bengal, Kerala and UP.

b) While Northern Indian belt is relatively disease free, Southern Zones, particularly southern Tamil Nadu has infestation of diseases like rinderpest and foot and mouth disease. Selective disease free zones need to be created in catchment areas of AP, TN, Bihar, UP, Haryana and Punjab.

c) 6 large chicken processing plants with export obligation are to be set during 8th Plan. More such plants could be set up in Andhra Pradesh, West Bengal, Haryana, MP, Bihar, specifically for export.

d) For chicken feed, maize may be made available at international price to large integrated plants. Alternatively, encouraging maize production in the selective belts by Agriculture Department could be necessary so that maize is available at international price.

e) For export, infrastructure like cold storage at Bombay, Cochin, Hyderabad and Calcutta are necessary alongwith cold storage at Delhi for export of goat and sheep carcasses.

f) Cold chain for carrying the carcasses is necessary which need to be promoted in the private sector with Central Government equity participation in Assisted Sector.

g) For promoting buffalo meat production which is likely to attract objection from different quarters, private entrepreneurs need to be encouraged. Central Government's equity participation to the extent of 15% may be essential.

h) Scheme of backward linkages for buffalo meat production to encourage the processors in undertaking creation of disease free zones and rearing of disease free animals, would be helpful.

i) Meat units should be considered export oriented if at least 75% of meat produced is exported. In case of poultry, 50% export obligation by the unit should be considered export oriented because the domestic demand of the poultry meat is substantial.

j) Meat and Poultry equipments are not produced in the country at present. Customs duty for import of meat equipments should be reduced to 25% from the current level of 55%.

k) While in the infrastructure like cold storage, investment could be made from Government, operation of these storages may be entrusted to the exporters' association/organisation, Central/ State/ Cooperatives capable of operating these efficiently, on lease/ at a low rent.

CHAPTER-VII

FISH & FISH PRODUCTS

7.1 Export of fish in the year 1991-92 is expected to be around Rs.1300 Crs. which in dollar terms would be about 500 million. Export of fish and fish products by 1996-97 is targetted to be over Rs.3000 crores, equivalent to 1100 million dollars. Most of the fish export is marine fish, and currently there is very limited export of the fish from inland. Of the exported variety, the shrimp accounts for over 85%. Further, exploitation of shrimp resources from marine sources are now getting limited. Therefore, for increasing export, shrimp acquaculture need to be promoted for which attractive incentives are necessary. The critical area for inland acquaculture is shrimp feed. While it will be necessary to set up 6-7 large shrimp feed mills, presently import of shrimp feed without duty would be essential

7.2 **Recommendations**

7.2.1 Further export of marine products has now to come from deep sea instead of coastal waters. For this purpose 200 resource specific vessels have to be introduced in the Indian EEZ over a period of 5 years. Of these 200, about 100 are likely to come by way of joint ventures and leasing and another 100 need to be acquired by the Indian Companies. The cost of these 100 vessels would be approximately Rs.700 crores for which the entrepreneurs/ capital market would provide 100 crores, the remaining 600 crores have to come from SCICI. SCICI, therefore, must be funded to provide the loan of 600 crores Concessional interest rate not exceeding 7% for acquisition of these vessels should continue. The Ministry of FPI has proposed a sum of Rs.20 crores for subsiding the interest for this purpose.

7.2.2 Processing facilities on shore and on the ship are essential for value addition so that even with lower catch the total export earnings meet the target. Processing facilities at suitable locations at Visakhapatnam, Cochin, Mangalore, Veraval/Porbandar, Goa, Paradeep, Calcutta and Madras need to be created. For such processing facilities, equity participation by the Government in Joint/Assisted Sector Projects would be necessary. Besides, import of equipments for processing should be duty free.

7.2.3 Large size of storages (over 10,000 MT capacity) at Visakhapatnam, Cochin, Bombay and Paradeep will be essential for holding the stock for better processing and export. While these storages could be set up in the Public Sector, operation of these storage facilities should be either by the exporters' association or such private/public/cooperative sector/entrepreneurs/organisations who are capable of running these storage efficiently. These storages could be given to these organisations on lease, or at lower rent.

7.2.4 Ocean freight for IQF and cooked IQF products should be lowered and the insurance premium for these products should also be at par with frozen.

7.2.5 The export packing credit for IQF products should be higher than that for block freezing factories.

7.2.6 The incidence of taxation on packing material should be lowered and the insurance premium for the deep sea fishing industry should also be lowered substantially.

7 3 OTHER PROCESSED FOODS

7.3 1 Customs duty and Excise duty for packing materials should be lowered. The OTS cans required for packing food materials have a cumulative impact of customs and excise duties to the extent of Rs.5.20 per can of A2 1/2 size in a total cost of can of Rs.9.10. The entire customs and excise duty should be removed to make these cans available at internations. price.

7.3.2 Excise duty on glass jars and aluminium cans and containers used in the food processing industries should be removed. The aluminium cans and containers are required for packing meat and fish products and are finding increasing application in other processed food items. The duty element on the cans and containers is Rs.5.00 in a can of cost Rs.11.04.

7.3.3 Customs duty on PET granules should be charged at the same rate as that for PVC granules.

7.3.4 Institutional credit on concession terms (at interest rates 5% less than commercial rates) should be made available to the fruit and vegetable processing industry.

7.3.5 Working capital requirement for this industry is extremely high. The norms for assessing the working capital requirement for the fruits and vegetable processing industry should be made liberal.

7.3.6 The laws for setting up and regulating cold storages should be streamlined. Development of cold storages is essential for exporting fresh fruits and vegetable products and flowers and meat and fish products.

7.3.7 Foreign collaboration for beer and alcohol and wines for export oriented units upto 51% equity should be easily allowed.

7.3.8 For export obligation, the decanlized duty free import of high gluton wheat, cocoa, milk powder, etc. may be allowed to existing units for export of cereal based weaning food, chocolates and confectioneries, cocoa/cereal based beverages, malted foods, etc.

CHAPTER-VIII

EXPORT OF PLANTATION COMMODITIES

8.1 In the first meeting of the Group on Export of Agricultural Commodities and Processed food held under the Chairmanship of Dr.Jayant Patil, Member, Planning Commission, it was decided that a Sub-Committee be constituted under the Chairmanship of Shri Ashok Kumar, Joint Secretary, Miniistry of Commerce for the export of cashew, spices and plantation commodities. The Committee was constituted by the Ministry of Commerce vide Office Memorandum No.6/14/91-EP(Agri.I) dated 19th December, 1991. The Sub-Committee met on 23rd December,1991 under his Chairmanship, and the observations and recommendations of sub-committee are as under :-

Contrainsts

8.1.1 India has enjoyed historical strength in the agricultural sector due to which it has been a traditional exporter of certain items while others have developed in comparatively recent times. On one hand, however, exports have generally grown over time in nearly all sub-sectors, India's share in the global trade has declined and the share of agricultural export in the total exports of India has come down. World trade in agricultural commodities is of the order of over $ 300 billion. India's share in the world trade in agricultural commodities is. however, less than 1%. The sector contributes around 30% to the GDP but its contribution to exports which at one time accounted for nearly 51% of all exports(1980-81) has now come down to 15%.

8.1.2 The decline of agricultural exports as percentage of India's total exports reflects partly a diversification in the Indian economy accounting foi a corresponding diversification in the export basket as well as rise in competitors abroad leading to displacement in the international market. The rise in domestic demand/ consumption with rise in population has also been a factor for decline in our agricultural exports.

8.1.3 The following factors have been identified as main constraints in pushing up agro exports:

a) Volume insufficiency, leading to a conservative policy in fixing export ceilings, especially for sensitive agricultural items like non-basmati rice, wheat, sugar and molasses. There have been delays in determination and release of ceilings.

b) Low productivity e.g. cardamom is 63 kg/ha as against 200 kg/ha in Guatemala. The slow growth in agricultural exports is largely a result of low export surpluses on account of rising domestic demand in conjunction with sluggish production..

c) Inadequate export of value added production e.g. value added cashew products form about 1% of total cashew export, while rice in consumer pack (upto 5 kgs) forms 15% of Basmati Rice exports. The price increase in high volume products has been very low over the last decade.

d) Quality deficiencies, particularly lack of cleanliness, pesticide residues, improper packing and storage facilities are also constraints.

e) Lack of infrastructural facilities, particularly air cargo facilities not keeping pace, inadequate shipping facilities and inefficient handling in ports.

f) Procedural bottlenecks in various departments like AGMARK, EIA,Customs etc. The procedure for issue of phytosanitary certificates by Plant Quarantine Agencies for example, is extremely cumbersome.

g) High incidence of local taxes/levies e.g. Sales Tax, Octroi, Mandi Tax, high export cess etc.

8.1.4 **Thrust :** To give the required thrust to agricultural exports, agro-based export oriented farms have to be promoted so that it is possible for these farms to adopt new high yielding technologies, achieve economies of scale, remove weakness in post harvest technologies and develop a reputation in the international market for disease free supplies. This calls both for offering incentives to small farmers to pool their operational holdings and operate through the cooperative sector as well as for allowing the entry of the corporate sector into these activities with suitable arrangements. Agro based export processing zones with the requisite infrastructure like warehousing, common facilities, quality control laboratories, as well as inspection facilities would also have to be set up with these export oriented farms. A corpus fund should be created for promoting joint/assisted sector projects with the corporate sector in these spheres, given the sansitivity of the issues involved. The benefits would be utilisation of the aggressive marketing strength enjoyed by the corporate sector, particularly in promoting high value added items and taking advantage of changing market trends like pesticide residue-

free agro products. Production of high value added items would also benefit the farmer who would get a higher value for his products. Backward integration should be encouraged by captive farms or contract farming. This has the benefit of reducing the role of extractive middle-man. Similarly, forward integration (producers cooperatives as in Milk and Oilseeds) should be encouraged alongwith tie up with foreign companies for marketing and processing.

8.1.5 The advantage of this approach is that it would create the image of India being a reliable source of supplies. In time of shortages, import could be resorted to temporarily. Even in the past, imports of sugar and rice have taken place alongwith exports.

8.1.6 Proper warehousing facilities need to be set up at the grower/trader/exporter level, especially at the production centres, and the warehousing protocol customised to the growers. This would reduce wastage.

8.1.7 Proper packing can be ensured by allowing packing machinery and material import at concessional duty, particularly for the food processing machinery.

8.1 8 Indian Brands and Logos have to be popularised. A focus has to be made on branded packs and value realisation. Incremental exports in value added form should be eligible for excise rebate on the domestic production.

8.1.9 52 Spices are mentioned in the schedule to the Spices Board Act. As the main constraints are production and productivity, "Technology Mission" approach should be adopted for cardamom and other spices having good export potential. Production of pepper has to be stepped up to 95,000 tonnes by the end of Eighth Plan period through replanting of about 400 lakh old unproductive vines, intensive management in at least 25,000 ha and new planting in 2,500 ha. Small cardamom production needs to be increased to 7000 tonnes by the end of the VIII Five Year Plan. Replantation in about 20,000 ha. and developing water resources in 6000ha. would be necessary. Sufficient funds should be made available for this purpose.

8.1.10 Cultivation of new spices like Vanilla, Paprika should be incouraged.

8.1.11 As a measure of import substitution, selected spices like cloves, nutmeg, cinnamon and cassia should be developed in Kerala, Tamil Nadu, Orissa and the North Eastern States.

8.1.12 Organic farming and low input sustainable agriculture has to be given priority, packages for which should be standardised by research institutions.

8.1.13 While fundamental research is carried out by ICAR and similar research agencies. The Spices Board in association with the State Agriculture Department and Agricultural Universities may undertake adaptive research on selected export oriented spices and function as nodal point for bringing the research institutions and the farmers closer to each other.

8.1.14 Setting up of processing and cleaning units with grading facilities in the growing regions.

8.1.15 The quality evaluation and upgradation laboratories in Cochin should be strengthened and regional laboratories set up in Bombay, Madras and Calcutta. Import of packing machinery and materials and cleaning/sorting machinery at concessional rates be allowed.

8.1.16 Spices Board and Indian Institute of Packaging to have a separate cell to address problems of packing spice products.

8.1.17 Spices Board should promote joint venture through equity participation to bring in modern technology for production of value added items.

8.1.18 A single window refund order system which is honoured by all the State Agencies and Central Government Departments needs to be introduced for exemption or refund of taxes.

8.1.29 There should be frequent air cargo services from Trivendrum during the cardamom season to Middle East. It is also necessary to provide break/ventilation container facilities in vessels for pepper, ginger, turmeric and seed spices from Cochin and Bombay and adequate direct sailing services from Cochin to USA, Russia and other pepper importing countries during January to May.

8.1.20 For establishment of private labs, there should be duty exemption for import of lab. equipment which presently is available to Science and Technology approved labs.

Export of spices in term of quantity and value during 1985-86 to 1991-92 (upto Sept. 1992) are given in Table 1.

Table 1. Export of Spices during 1985-86 to 1991-92.

Year	Qty.MT	Value(Rs.Crores)
1985-86	74501	282.52
1986-87	82827	281.99
1987-88	70279	298.08
1988-89	99946	274.80
1989-90	102170	275.76
1990-91	97291	238.66
1991-92(upto Sept.)	59784	154.76

8.1.21 As regards India's share in world trade in spices, as per the world import statistics supplied by the International Trade Centre (information is available upto 1986), India's share has shown fluctuating trend during the five year period, 1982-86, as may be seen from the data given below:-

Table 2. India's Share in World Export of Spices

Qty:MT

Year	World Import	India's Export	% Share
1982	396615	75117	18.94
1983	424048	85835	20.24
1984	442592	89155	20.14
1985	453517	74501	16.43
1986	466109	82827	17.77

8.1.22 Statistical projections indicate that India's share has not improved during subsequent period.

8 1.23 **CASHEW** : Cashew should be given plantation status with incentives like those for rubber plantation (exemption from land ceiling laws, treatment as 'Industry' etc.). This has not found favour. Consequently, during the 7th Plan period, State Governments did not accord priority to Cashew and hence about 40% of the Plan allocation which itself was about Rs.7 crores could be

released. As a result, imports of raw cashew shot up to 81,000 MTs worth Rs.132 crores in 1990-91.

8.1.24 Imports of cashew are under OGL subject to registration with the Cashew Corporation of India, Recent import margins stipulated by RBI have created problems for the trade. The advance licencing system has introduced an element of accountability in import of cashews because now the importer has to re-export this cashew. However, the very need for keeping cashew import on OGL has been questioned because the domestic production of Indian cashew is estimated at 2.9 lakhs M.T. which with the recovery of 25% is sufficient to cater both to the domestic and export market. However, these figures are challenged by the trade who state that domestic cashew production is only around 1.7 lakhs M.T. However, given the foreign exchange crunch, advance licence perhaps it would be appropriate to allow cashew import on OGL advanced licence only against open market foriegn exchange.

8.1.25 USA and Canada are the major markets for cashew. India once enjoyed a monopoly in supplying cashew but is recently facing stiff competition from Brazil where US firms have invested huge sum with buy-back provision. Indian nuts are, however, still popular because of their good quality. We have to reduce dependence on US market through exploring new markets like Japan. Marketing/ buy-back tie ups with large chain stores overseas also need to be promoted.

8.1.26 The possibility of building a buffer stock on the pattern of the almond growers in the US should be explored to bring about price stability in the international market

8.1.27 India has yet not been able to make a dent in the value added cashew export which need to be promoted. Funds should be available for joint ventures as well as brand promotion for this activity.

8.1.28 It is estimated that presently 2.7 lakh ha. is under cashew. A project should be undertaken to raise cashew production to 5 lakh M.T. p.a. both through replanting and introduction of better varieties. Besides, fresh plantation should also be undertaken in wastelands through the Wasteland Development Board.

8.1.29 The inspection fee for value added cashew kernels is very high and should be reduced.

8.1.30 Cashew exporters are not getting drawback raimbursement because the drawback element is less than 2% of the import value. This should be reimbursed to them.

8.1.31 The procedure for import of tin plate is very cumbersome. This should be simplified.

8.1.32 Is is estimated that production of 4.2 lakh tonnes of cashew kernels per annum, at the end of 8th plan period would be required. For achieving this, availability of adequate planting material as also supply of high yielding varieties has been suggested. The parent material is to be provided by Horticulture Division of the Ministry of Agriculture. Emphassis also has to be laid to raise tissue culture plants on experimental basis. For setting up of plant nurseries, some States have agreed to provide capital, training inputs and technical assistance.

8.1.33 In view of the above, steps are to be taken to achieve the following objectives:

i) The rate of growth of domestic production of raw cashewnuts is low. Hence, it is necessary to step up the production of cashewnuts as worked out by working Group set up by the Planning Commission say 5% per annum. A central funded project for raising the productioon of cashew to 5 lakh MT per annum should be undertaken. Which would however have a cumulative impact only in the next Five Year Plan.

ii) It is necessary to ensure that ratio of value of exports of cashew kernels to imports is not less than 10.

iii) The total world consumption of imported cashew is levelling off. India's share of this market is now about 58%. It is necessary to set an objective of market share of 60%

iv) To achieve a stable presence in the international market setting up a reserve pool of cashew kernels on the pattern of almond growers of USA may be considered.

v) Promote value added forms of cashewnuts exports (like roasted/salted kernels in consumer packs) through brand promotion and logo promotion schemes and end exports of bye products like cashew-feni.

8.1.34 **TEA** : The following points need to be considered in regard to tea industry.

i) On account of rapidly increasing domestic consumption, the export of tea has remained more or less at constant level of 200 million Kg. every year for the past one decede or so.

ii) The high cost of production of Indian tea as compared to Kenya and Sri Lanka reveals that we suffer from cost disadvantage in the international market. Interestingly, we have now been reduced to a supplier of quality tea only.

iii) A sizeable proportion of the tea plantation has become overaged and non-optimal in the matter of production over the years.

iv) A perspective plan for increasing production of tea to one billion Kg by the year 2000 A.D. has been framed in the Department. This would necessarily mean making available larger areas for new plantation than have been hitherto available. This will also mean increesing the rate of replantation and strengthening rejuvenation, infilling and improving cultural practices, etc.

v) Large areas technically classified as 'Forest' are available where no trees are standing but which cannot be converted to tea gardens on account of the Forest Conservation Act. Suitable amendments to the Forest Conservation Act are being recommended in consultation with the Ministry of Environment & Forests. This needs policy support.

vi) The plantation sector is subjected to Agricultural Income Tax. In respect of Tea, 40% of the income is subjected to Central Income Tax and the balance 60% attracts Agricultural Income Tax. The plantation industry has been strongly pleading that due to the higher level of taxation to which they are subjected vis-a-vis other manufacturing industries they are unable to geneerate adequate surpluses for investment and ploughback. A comparative position of the net incidence of income tax, both Central State, at the highest slab is as given below :-

Table 3. Income Tax on Tea and Manufacturing Section

State	Tea	Manufacturing Industry
Tamil Nadu	45.02%	43.2%
Karnataka	45 02%	43.2%
Kerala	45.02%	43.2%
Assam	53.66%	43.2%
West Bengal	49.82%	43.2%

(rates indicated are after taking into account deduction of 20% under Section 33 AB and also surcharge at the rate of 8%)

vii) Investments in the plantation sector also suffer from the disadvantage of having long gestation which acts as a further disincentive for making the much needed investments. The healthy growth and development of the industry requires regular replantation, extension of plantating and other productivity enhancement measures. These are necessary for meeting our growing demand for the plantation crops as well as to sustain our exports. It is, therefore, essential that fiscal policies are so designed as to provide required incentives for the industry to make investments that are necessary.

viii) Adequate outlays would be necessary to put into operation new schemes like the Nilgiri Small Growers Scheme, Infilling Scheme, Special Area Plantation Scheme for U.P. and Himachal Pradesh, Tea Packaging importation of Machinery, etc. Absence of additional outlay would mean a setback to the programmes envisaged as part of the perspective plan to boost the production to one billion kg by the year 2000 A.D.

8 1.35 **RUBBER AND COFFEE** : Rubber has no export angle as it is not exported. Some salient points concerning Coffee exports are summarised as follows:-

i) With the collapse of the international coffee quotas in 1989, the international prices have crashed and have been ruling at a very low levels since then. This has resulted in a very low per unit return to coffee growers in the country.

ii) Combined with a low per unit return in exports, there is a heavy burden of taxation imposed on coffee in the various States. For example, Karnataka has imposed purchase tax of 13 5%, and in Kerala the incidence is 7 9%. The matter has been taken up repeatedly with the State Governments for the waiver of this tax but State Governments have not agreed to this suggestion, so far

iii) Internationally, we belong to what is known as 'other mild group' headed by Mexico and have a fairly good name in so far as quality is concerned. However, with the introduction of some new schemes we can improve. quality of coffee exported further and thereby enhance the unit value realisation.

iv) Due to the cyclical nature of the crop, the production swings violently from year to year. This comes in the way of our being regarded as a reliable and steady supplier of coffee in the international market. With view to minimising these variations some useful schemes like water augmentation scheme were formulated as part of 5th Plan. However, the discussion in the 6th Plan showed that no money might be available for the new schemes which were meant to enhance the reliability of Indian exports.

Spices Scenario

Number of identified spices & Condiments : Around 75 Nos.

World Spice Imports

	1990	Projected 2000
Quantity	4,50,000 M.T.	6,30,000 M.T.
Value	$ 1300 Million	$ 2054 Million

India's Share

	1990	Projected	
		1996	2000
Quantity	- 97,000 M.T.	1,63,000 M.T.	1,90,000 MT
Value	- $ 130 m.	$ 235 m.	$ 500 m.

Categorisation of Spices into

a) Existing strengths
b) to be developed
c) import substitution

Scenario in 2000 AD

a) Existing Strength

Qty. in M.T.
Unit Value in US.$/kg.
Value in Million $

		World imports		India's target		% Share	
	Qty.	U.Value	Value	Qty.	Value	Qty.	Value
Pepper	185000	2.16	399.60	64750	139.86	35	35
Cardamom(Small)	18000	10.47	188.46	5400	56.54	30	30
Cardamon(Large)	3000	2.65	7 95	2100	5.57	70	70
Ginger	24000	1.66	39.84	9600	15.94	40	40
Turmeric	30000	1.08	32.40	24000	25.92	80	80
Chillies Seed &	39000	1.53	59.67	23400	35.80	60	60
other Spices Curry	80000	1.06	85 45	41700	43.99	52	52
Powder	12000	2.99	35.88	6000	17.94	50	50
Spice Oil &							
Oleoresins	4000	30.00	191.40	2400	96.00	60	60
Total	395000		1040.65	179350	437.56		

b) Spices to be developed

		World imports		India's target		% Share	
	Qty.	U.Value	Value	Qty.	Value	Qty.	Value
Saffron	20	1150.00	103.50	27	31.05	30	30
Paprika	81000	1.50	121.50	8100	12.15	10	10
Vanilla	5000	51.27	256.35	500	25.64	10	10
Herbal Spices	56650	2.61	147.60	1650	5.21	2.9	3.5
Total	142740		628.95	10277	74.05	7	11.8
Grand Total(a+b)	537740		1669.60	189627	511.61	35	31

c) **Spices presently imported**

	World imports			India's target
	Qty.	U.Value	Value	
Cloves	19000	2.94	55.86	Self sufficiency by 2000 AD
Nutmeg & Mace	21000	2.65	55.65	i.e. saving foreign exchange
Cinnamon & Cassia	52000	5.24	272.48	worth 15 million US Dollars
Total	**92000**		**383.99**	

Production and share of Export of Different Spices In India

Item	Year	Production ('000 MT)	Export ('000 MT)	Export % of Production
Pepper	1989-90	65.00	34.48	53
Small Cardamom	1989-90	3.10	0.18	5.8
Large Cardamom	1989-90	3.26	0.79	24.2
Chillies	1989-90	783.30	11.98	1.5
Ginger	1989-90	152.89	9.04	5.9
Turmeric	1989-90	390.00	16.86	4.3
Corriander	1989-90	143.10	2.66	1.9
Garlic	1989-90	327.00	2.24	0.7
Cumin	1989-90	46.87	4.03	8.6
Fennel	1989-90	12.15	2.28	18.8
Fenugreek	1989-90	38.81	6.24	16.1
Celery	1990-91	3.60	2.60	72.2
Saffron	1987-88	0.009	0.003	33.3
Rape Seed	1988-89	4400.00	NIL	

I. Pepper

Situation Analysis - Export - 1990

Country*	Qty.(MT)	% Share	Area under cultivation (in ha.)
India	34429	24.98	1,55,780
Indonesia	47675	34.59	
Malaysia	29210	21.20	
Brazil	26500	19.23	
Total	137814	100.00	

* Exports from other non-traditional countries like Vietnam, Srilanka etc. is estimated between 10,000 to 15,000 M.T.

Major Production Problems

* Low productivity (Productivity gap 240 kg./ha. in India 2925 kg./ha. in Malaysia)
  Due to
  - Senile gardens
  - Poor unkeep of gardens due to intercropping
  - Non-availability of planting material of high yielding/disease tolerant varieties
  - Incidence of quick wilt disease
* Fluctuating Unit Price
* Increased cost of production
* New quality requirements

Action Points

* Production and supply of planting material suitable for each area.
* Making available suitable living standards, for the climbing vines.
* Motivating growers to rejuvenate senile garden through replanting.
* Disease management and prevention through the accepted package of practices.

* Motivating growers especially who are doing intercropping to adopt package of practices recommended for each area.
* Promote cultivation of varieties which yield higher percentage of oleoresin (eg. Kottanadan).
* Educate the growers on quality improvement in pre- and post-harvest operations.
* Improve infrastructure for storage.
* Ensure sufficient return to the grower to produce quality produce
* Stabilize prices through market intervention.
* Encourage Co-operatives for processing and marketing of the produce.
* Orient research on cost reducing factors.

Varieties Developed

S. No.	Variety	Paren -tage	Crop Duration	Yield kg./ha.	Name of the Centre
1.	Panniyur-1(1971) Uthirankottah x Cheria Kaniyakkadan	Hybrid	Late	1200	Panniyur (KAU)
2.	Panniyur-2(1989)	OP of Balankotta (Natural Cross)	Medium	2828	-do-
3.	Panniyur-3(1989)	Hybrid Uthirankottah x Cheriakaniyakkadan		2169	-do-
4.	Panniyur-4(1989)	Selection-Kuthiravally Type II	Late	1419	-do-
5.	Subhakara(1990)	Selection Karimunda	Late	2352	Calicut (NRCS)
6.	Sreekara(to be released)	-do-	Late	2677	-do-

Thrust Area : Zone-I - Idukki, Wynadu, Trivendrum, Kozhikode, Cannanore Districts of Kerala.

Zone-II - Coorg, Hassan, Shimoga, Dakshina Kannada districts of Karnataka & Nilgiris and Anamalai districts of Tamil Nadu.

Suggested Export Oriented Projects and Organisational Set Up

* Stengthening organisation Kurumulaku Samrakshana Samithics/ Co-operatives, Voluntary agencies in the most potential areas and assist them to take up programmes like production of planting material, replanting, disease control and quality improvement.

** Training of technical staff of Spices Board to take up development activities, by seeking assistance from Central and State Departments.

*** As a long term programme, develop joint ventures for new products.

II. Small Cardamom- Export

Year	Country	Qty.(MT)	% Share
1990	Guatemala	9200	91.50
	India(1990-91)	379	3.77
	Others	476	4.73
	Total	**10055**	**100.00**

Major Production Problems

* Low Productivity (Productivity gap 68 kg./ha. - India 200 kg./ha. - Guatemala) Due to:
- Senile gardens
- Prevelance of "Kette" disease in certain pockets
- Recurring drought conditions
- Continuing deforestation in certain areas

* Fluctuating unit price

* Increasing cost of production

Action Points

* Continuation of Spices Board's Programmes of Production of planting material using high yielding, location specific cultivars, replanting & irrigation
* 'Kette' control as a regular programme for the growers
* Educating the growers for the upkeep of plantations
* Research on cost reducing factors
* Research on new end uses
* Some understanding with Guatemala for :
  - (i) increasing productivity
  - (ii) higher percentage of bold capsules
  - (iii) resistance to disease

Varieties developed

S.No.	Variety(Year)	Parentage	Yield kg./ha.	Name of the Centre
1.	Mudigere-1(P1) (1984)	Clonal Selection - Malabar type	250-300	Mudigere(UAS-B)
2.	PV1	Selection	150	Pampadumpara
3.	Cl-37 Malabar type	Clonal Selection	410	Appangala(NRCS)
4.	MCC 61 Malabar type	Clonal Selection (ICRI)	375	Myladumpara (ICRI)
5.	MCC 49	Selection - Malabar	325	-do-

Thrust Area : Zone I - Idukki, Palghat districts in Kerala.
Zone II-Western Ghat of Kerala, Karnataka & Tamilnadu

Export Oriented Projects And Organisational Set Up

* Concentrate production improvement programmes in the most potential areas in the growing tract.
* Strengthening market research department of the Spices Board to have capability for concurrent planning of market strategies.
* Common pricing policy.

III. Ginger

Situation Analysis - Export

Year	Country	Qty.(MT)	% Share
1988	India	6368	35.38
	China	6000	33.38
	Jamaica	177	0.98
	St Vinvent	1060	5.89
	Fiji	2419	13.44
Total*		**18000**	**100.00**

* Including other countries

Major Production Problems

* Low Productivity (Productivity gap Avg 2.2 MT in farmers' field, 4.00 MT in Research Centres)
* High fibre content in majority of cultivars
* Prevelance of soft rot disease
* Fluctuating price
* Increasing cost of production

Action Points

* Multiplication of low fibre ginger for seed purpose
* Extending the cultivation oof low fibre ginger in most suitable area.
* Research on control of soft rot
* Research on prolonged storage of dried ginger
* Product development.

Varieties Developed

Sl. No.	Variety(Year)	Paren -tage	Crop Duration (Days)	Yield kg/ha.	Name of the Centre
1.	Suprabha(1988)	Clonal Selection (PGS35)	229 (medium)	3.40	Pottangi (OUAT)
2.	Suruchi(1989)	Clonal Selection (PGS19)	218 (medium)	2.72	-do-
3.	Surabhi	Clonal Selection	225 (medium)	4.00	-do-

Thrust Area : Wynad, Idukki, Ernakulam, Kottayam and Quilon Districts Kerala. North Eastern India if low fibre ginger can be produced.

Export Oreinted Projects

* Organising farmers group and motivating them to take up ginger cultivation.
* Strengthening research on soft rot control storage and pest problem.
* Stabilize price through market intervention
* Develop new products/new uses.

IV. Turmeric

Situation Analysis-Export

Year	Country	Qty. (MT)	% Share
1990-91	India	12764	63.82
	Others (mainly China)	7236	36.18
	TOTAL	**20000**	**100.00**

Main Problems

* Low productivity (productivity gap National Avg. 2M.T./ha. - Maximum-7.3M.T.)
* Variation of curcumin content for a single variety depends on location
* Lack of irrigation
* Poor post harvest/ processing
* Price fluctuation
* Inadequate holding capacity of growers
* Increasing cost of production

Action Points

* Multiplication of turmeric varieties with high curcumin content
* Develop infrastructure for irrigation
* Sufficient credit facilities for growers
* Price stabilization for arresting shifting of crop

Varieties Developed

Sl. No.	Variety (Year)	Paren -tage	Crop Duration (Days)	Yield MT/ha	Name of the Centre
1.	C0-1)(1982)	Mutant	285	5.85	Coimbatore(TNAU)
2.	Krishna(1983)	Clonal Selection	255	4.00	Kasba Digray (MAU)
3	BSR-1(1984)	Mutant Selection	285	6.00	Bhavani sagar
4.	Sugandham(1984)	Clonal Selection	210	15.00	Jagdan(GAU)
5.	Suvarna(1986)	Selection	210	4.60	Calicut(NRCS)
6.	Roma(1988)	Clonal Selection	253	6.43	Pottangi(OUAT)

Sl. No.	Variety (Year)	Paren -tage	Crop Duration (Days)	Yield MT/ha	Name of the Centre
7.	Suguna(1988)	Clonal Selection	190	7.20	Calicut(NRCS)
8.	Suroma(1989)	Clonal Selection	210	5.19	Pottangi (OUAT)
9.	Sudarshana(1989)	Selection	190	7.29	Calicut(NRCS)
10.	Sonia(1989)	Selection	230	5.00	Dholi(RAU)

Thrust Area : Ernakulam, Kottayam, Pathanamthitta. Alleppey districts of Kerala; Salem and Coimbatore districts of Tamil Nadu; Nizamabad, Karim. Nagar and Guntur districts in Andhra Pradesh and Sangli in Maharashtra.

Export Oriented Projects

* Extending the cultivation of varieties which have more demand (like high cucumin content) and which is suitable to each locality.
* Undertake seed multiplication programme
* Encouraging growers for taking up turmeric cultivation.
* Educating growers on post harvest/ processing.
* Research on product development/product diversification.
* Development of irrigation infrastructure.

V. Capsicum & Chillies

Situation analysis - Export

Year	Country	Qty.(MT)	% Share
1989	India	11988	16.01
	Spain	13062	17.45
	South Korea	5419	7.24
	Pakistan	7827	10.45
	Thailand	1069	1.43
	China	29421	39.30
	Others	6084	8.13
	Total	**74870**	**100.00**

Major Problems

* Low productivity (yield gap-500 kg./ha.)
* Nondaptability of certain varieties
* Non-availability of non pungent high colour chilli varieties.
* Price fluctuation leading to shift in crop
* Poor post harvest operation
* Poor stock holding capacity of farmers
* Lack of irrigation facilities.

Action Points

* Import of paprika and its cultivation
* Extension of cultivation of Byadagi chillies
* Development of infrastructure for irrigation
* Credit facilities for farmers to hold stock in the event of price fall
* Educating growers for better post harvest operations including storage.

Varieties Developed

Sl.	Varieties	Avg.Yield MT/ha.	Institute
1.	LCA-235	1.683	Lam Institute,A.P.
2.	LCA-206	1.80	-do-
3.	Muslawadi	1.50	Rahuri
4.	Jawahar-218	1.63	Jabalpur
5.	B.R.Red	1.64	BRC Bombay
6.	Selection-1	1.65	Hassarghatta (I.I.H.R.)
7.	CA-586	1.40	Coimbatore
8.	CA-615	1.87	Kovilpatti,T.N.
9.	KCS-1	1.50	Kalianpur
10.	K2	1.64	Kovilpatti
11.	G4	1.61	Lam

Thrust Areas : Dharwad district, Karnataka, Ramnad district, Tamilanadu, Guntur district, Andhra Pradesh and Ahmedabad district, Gujarat.

Suggested Export Oriented Projects

* Extending cultivation of export oriented varieties.
* Extending cultivation of non pungent high colour chillies for colour extraction.
* Infrasstructural assistance for irrigation and post-harvest handling.
* Organising chilli growers to take up continued cultivation and improvement of the crop.

Seed Spices (Coriander, Fennel, Fenugreek, Cumin, Celery)

Coriander

Major Problems

* Low Productivity.
* Non-availability of seed material of high yielding varieties.
* Prevelance of wilt disease
* Price fluctuation.

Action Points

* Making available sufficient quantities of seeds of high yielding varieties.
* Educating growers to adopt improved agronomical practices
* Research on wilt diseases and to evolve improved varieties
* Improvement in post harvest operations, preferably through setting up of big cleaning and packing plants.

Varieties Developed

Coriander - National Average - 470 kg./ha.

Sl. NO.	Varieties Developed	Crop Duration (Days)	Yield kg/ha.	Centre
1.	Gujarat-1(1974)	112	1100	Jagudan (GAU)
2.	CO -1 (1981)	110	500	Coimbatore (TNAU)
3.	CO -2 (1982)	100	700	-do-
4.	Gujarat-2(1985)	115	1500	Jagudan (GAU)

Sl. N0.	Varieties Developed	Crop Duration (Days)	Yield kg/ha.	Centre
5.	R Cr-41 (1988)	140	1200	Jobner (RAU)
6.	Rajendra Swathi (1988)	100	1400	Dholi (RAU)
7.	Swathi (1989)	90	885	Guntur(APAU)
8.	Sadhana (1989)	105	1025	-do-
9	CO -3 (1991)	90	640	Coimbatore (TNAU)
10.	CS - 287	78	510	-do-
11	Lam. Sel (S-2)	110	1300	Guntur (APAU)
12	UD - 20	110	1175	Jobner (RAU)

Fennel (National Average - 1160 kg./ha.)

Sl. N0.	Varieties Developed	Crop Duration (Days)	Yield kg/ha.	Centre
1.	PF35(1973)	216	1650	Jagudan(GAU)
2	Gujarat Fennel-1 (1985)	230	1695	-do-
3	CO-1 (1985)	220	567	Coimbatore(TNAU)
4.	S.7-9	NA	1200	Jagudan(GAU)

Fenugreek (National Average - 1000 kg./ha.)

Sl. N0.	Varieties Developed	Crop Duration (Days)	Yield kg/ha.	Centre
1.	CO - 1(1982)	90	685	Coimbatore(TNAU)
2.	Rajendra Kranti (1988)	120	1400	Dholi (RAU)
3.	RM t-1 (1989)	145	1500	Jobner(RAU)
4.	Lam Sel-1	68	740	Guntur(APAU)

Cumin (National Average -520 kg./ha.)

Sl. N0.	Varieties Developed	Crop Duration (Days)	Yield kg/ha.	Centre
1.	MC - 43(1970)	115	580	Jagudan(GAU)
2.	Gujarat Cumin I (1983)	105	735	-do-
3.	RZ-19 (1988)	125	590	Jobner(RAU)

Thrust Areas

Coriander : Udaipur & jodhpur districts in Rajasthan and parts of Tamil Nadu and Andhra Pradesh.

Cumin : Udaipur & Jodhpur districts in Rajasthan and Mehsana district in Gujarat.

Fennel : Kaira and Mehsana districts of Gujarat & Jaipur and Udaipur districts in Rajasthan.

Fenugreek : Mehsana and Banaskantha districts of Gujarat & jaipur and Sikkar districts of Rajasthan.

Suggested Export Oreinted Projects

* Production and supply of seeds of high yielding varieties.
* Educating and assisting growers to adopt improved agronomical practices.
* Establisshing common facilities for cleaning,grading and packing.
* Price stabilisation through market intervention by NAFED etc.
* Research on new product development and new uses(eg. pharmaceutical, bio pesticid applications etc)
* Support systems from State Govts. of Gujarat and Rajasthan.

Saffron

Situation Export Analysis

On an average India is exporting 3 M.T. of saffron. The world export market is for 35 M.T. to 40 M.T. mainly coming from Spain. India is producing arou- nd 8. M.T. per annum.

Major Production Problem

* Low Productivity
* Non-availability of seed material for extension of cultivation
* Political disturbance in Jammu & Kashmir

Action Points

* Making available sufficient quantities of seed material.
* Introduction of the crop in land locked areas in U.P., Arunachal Pradeesh & Sikkim.
* High yielding varieties to be developed

Suggested Export Oriented Projects

* Production and supply of seed material to extend the cultivation.
* Application of biotechnology for invitro production stigma/planting material.
* Market promotion activities to popularise Indian affron abroad.

Introduction of New Spices Vanilla, Paprika, Oregano, Parsely, Rosemary, Sage, Basil, Terragon, Anise etc. can be introduced, as there is good demand for these products both in domestic as well as export market.

Suggested Projects

* Import of planting material
* Identification of suitable locations and its cultivation
* Educating/motivating growers to take up cultivation
* Establishment of infrastructure for cultivation, pre/ post-harvest operations including export
* Research on product development and new uses.

Import Substitution

Import of the order of Rs. 30 crores per annum can be avoided if crops like Clove, Nutmeg,Cinnamon and Cassia are cultivated extensively within the country.

Thrust Areas

Trivandrum, Pathanamthitta, Ernakulam, Calicut and Idukki disttricts of Kerala and Kanyakumari and Nilgiri districts in Tamil Nadu and parts of Orissa, North Eastern States, Andaman & Nicobar Islands.

Suggested Projects

* Production and supply of planting material
* Development of infrastructure for irrigation
* Market Support

Organic Farming

Organically produced spices and spice products are getting increasing attention in markets abroad. Low input sustainable agriculltture and organic farming can be popularised within the country in spice crops, so that the increasing demand for such products cna be met from India.

Export Oriented Farms

Spice Oils and Oleoresin industry in the country is facing non-availability of raw material for manufacturing their products. Their requirement of specific varieties of spices such as turmeric with high curcumin content, pepper with high oleoresin yield chillies with low pungency and high colour etc. cannot be met due to scarcity of these items. The establishment of joint ventures in the manufacturing sector in the country will again make the situation worse. In order to avoid the raw material scarcity, it is required to have export-oriented farms. The produce of these farms/ group of farms will be exported and will not be diverted to domestic market. This will to a certain extent offer consistent supply and reliablity for our exports.

Infrastructure Requirement

* Shipping Serrvices	-	Frequency of Shipping services from Cochin and Tuticorin may be increased
* Freight Charges	-	Uniformily in freight charges.
* Bleak Bulk Vessel	-	Making available from Cochin during pepper season and from Bombay to European ports.
* Ventillated Container	-	Making available more ventillated containers.

* Warehouses/Storage facilities	-	Establish sufficient warehousing/ storage capcity at all ports.
* Steamer Services	-	Steamer services may be established between Tuticorin and Sri Lanka.
* Air Cargo facilities	-	Establish air cargo facilities from Cochin, Trivandrum, Calicut & Bangalore.
* Rail Wagons	-	Making available adequate rail wagons from Gujarat to Bombay, during harvesting season of seed spices.
* Cleaning & Procassing	-	Establish cleaning and processing unit in Gujarat for seed spices.
* Packing machines and material	-	Allow import of packing machinery and material, at reduced customs tariff.

FOCUS OF PRODUCTION PROGRAMMERS

Summary Statement

Sl	Name of Crop	Market Need	Increased level of productivity	Thrust Areas		Research Priotities
				Existing	Future	
1	Pepper	Tellichery extra bold Malabar Garbled	1100kg/ha.	Idukki) Wynadu/ Cananore	N.E.States A.P. Orissa A&N	Control of Quick Wilt diseae Disease tolerent high yielding varietis
2.	Small Cardamom	Alleppy Green Extra bold	250kgs/ha	Idukke Palakkadu	Karnataka	New varieties with high yield Disease resistance for katte and azhukal disease. Tissue culture

Sl.	Name of Crop	Market Need	Increased level of productivity	Thrust Areas		Research Priorities
				Existing	Future	
3.	Large cardamom	Properly cured	400kgs/ha	Sikkim West Bengal	N.E.State	New varieties with disease resistance Tissue Culture
4.	Ginger	Cochin Ginger with less fibre and good colour	2.5MT/ha	Wynad Idukki Ernakulam Kottayam	Himachal Pradesh W:Bengal Orissa Karnataka Maharashtra	New Varieties with low fibre for N.E.States Disease resistance to soft rot. Tissue culture
5.	Turmeric	Turmeric with curcumin content Rajapuri	4.5MT/ha	Ernakulam Kottayam	Orissa NE States Pathanam -thitta Alleppy Sangli Selem Coimbatore Nizamabad Karimnagar	New varieties with high curcumin Adabtability of high curcumin varieties in Tamilnadu and A.P. Disease resistance. Tissue culture
6.	Chillies	High Colour low pungent chillies Sannam-4	1.50MT/ha	Dharward Ramnadu Guntur Ahmedabad	N.E.States U.P. J & K	New Varieties Adaptability of low pungent high colour chillies in different states Disease/ pest resistance
7.	Seed Spices Coriander Cumin, Funner & Fenugreek	High oil content Good colour	.75MT/ha 1.5MT/ha.	Udaipur Jodhpur Rajasthan Sikkar Mehsana Kheda	U.P. Bihar Banaskantha	New varieties Disease resistance to wilt

Sl	Name of Crop	Market Need	Increased level of productivity	Thrust Areas		Research Priotities
				Existing	Future	
8.	New spices to be introduced. Vanilla Paprika & herbal spices	Long beans with high vanillin content high colour	500Kg Vaniila beans per ha 1MT/ha paprika	Ernakulam Calicut S. Kanara	N.E.States U.P. Sikkim Himachal Pradesh	Development of cultural practiccs Disease resistance Tissue culture
9	Tree Spices (Clove Nutmu &, Cinnamon)	No specifi cation as it caters to domestic market	250kgs Cloves per ha. 800kg Nutmug per ha. 500Kgs Cinamon per ha	Ernakulam Trivandrum Cananore Nagarcoil	N.E. States A.& N. Karnataka Maharashtra	Development of cultural practices Disease resistance Tissue culture

CHAPTER-IX

TRANSPORT
(AIR CARGO/ SHIPPING/ RAILWAY FACILITIES)

9.1 Rapid Road Transport System

9.1.1 In order to maintain cool chain, the transportation of horticultural produce in controlled temperature conditions is necessary. Frozen fruits and vegetables are required to be transported at -10 to -15^0 C and fresh chilled fruits , vegetables and flowers are required to be transported at 0 -2^{0}C.

Keeping in view the volumes which are likely to be generated, lot of investment will be necessary for introducing reefer containers/trucks.

Due to the seasonal nature of the products and low export volumes at present, the return on such investments is likely to be very low and, therefore, unattractive. In order to induce exporters and private entrepreneurs to invest in rapid refrigerated transportation systems, a scheme of capital subsidy would be needed at least for the first few years.

9.1.2 Mango should be transported in the reefer containers till the port of shipment. The temperature in these containers/trucks should be maintained constantly at 13^{0}C.

Grapes should be transported in reefer containers/trucks at 0-2*C.

9.1.3 If flowers are to be transported, either within the country or for export, the important to be kept in view are: flowers need to be cooled, dehydrated, treated with preservatives, and for long distance transport, with fungicide; these need to be well packaged to protect and insulate the flowers; transported quickly and if possible at low temperatures e.g., 2^0 to 5^{0}C. After transport they need to be recut, rehydrated and cooled and finally, transported horizontally. However, some flowers bend upwards if held horizontally.

9.2 Railways

9.2.1 **Specialised Wagons :** Certain vegetables like onion and potatoes and fruits like banana are required to be transported in specialised wagons which allow airation. Such wagons have to developed.

9.2.2 **Wagons for reefer containers :** For movement of reefer containers, from ICD's special wagons may be designed. For the purpose of transportation of refer containers, gensets will also be required and plug in facilities at major dock yards may be provided.

9.2.3 Movement of refrigerated wagons with fast moving trains particularly on Delhi Bombay , Patna- Delhi , Patna-Bombay and Bangalore-Trivandrum routes may be considered so that fruits could be transported at faster speed for export.

9.3 ICDs (Internal Container Depots)

9.3.1 It is necessary to set up ICDs and provide container facilities at a number of inland stations, where fruits, vegetables and flowers are produced in bulk.

9.3.2 ICDs at Delhi should have facilities to handle reefer containers and other facilities like plug in points.

9.4 Air Transport

9.4.1 Various airlines including Air India are charging rates higher than IATA. It is suggested that the airlines may be advised to charge IATA rates for fresh fruits, vegetables and flowers.

9.4.2 It is also be necessary to revamp internal air transport facilities for the movement of fruits, vegetables and flowers from the production centres to the existing airports. Air transport facilities should be provided by Indian Airlines for perishable cargo from Patna - Delhi and Patna - Bombay (Lychee) , Bangalore - Bombay (fruits, flowers and plants), Guwahati - Delhi and Guwahati - Bombay (Flowers) , Chandigarh - Delhi (Flowers).

9.4.3 Concessional air freight rates may be provided and additional cargo carrying capacity on these routes be created.

9.4.4 **At Airports :** In a recently conducted study on infrastructure and services at International airports, it has been observed that the facilities available presently are inadequate and require to be strengthened.

9.4.5 **Air Shipment :** Almost all floricultural products would necessarily have to be air-lifted to their international destinations. At the present, there is inadequate and erratic availability of Cargo space with the Indian and foreign carriers. With recent changes in air freights and the adoption of IATA rates, there has been further hike of about 30% in the cost of air shipments. This has adversly affected export of all horticulture products including flowers. It is ascertained that the neighboring countries have been able to do much better than us as they are offering economical air freight rates for the perishable articles such as flowers which are exported. There is serious need to consider reduction in IATA air freight rates in the case of flowers if we have to enter the international market. Besides the freight rates, the Civil Aviation Authorities Airlines should also give priority to floriculture consignments while alloting cargo space.

9.5 **Sea Ports :**

9.5.1 Pending loading in the ships, the produce has to be stored at sea ports. If the transportation is done through the containers then only plugging facilaities are required, alternatively cold storage by JNPT/BPT should be set up.

CHAPTER-X

SUMMARY OF MAIN RECOMMENDATIONS

10.1 BACKGROUND

10.1.1 The Planning Commission set up a Group under the Chairmanship of Dr.Jayant Patil, Member(Agri) to study the need for strengthening the infrastructural facilities to boost exports of agricultural commodities and processed food. The Group held discussions with the concerned nodal Ministries, export promotion authorities namely, APEDA, MPEDA and Commodity Boards, leading exporters/ exporters' Association and growers. The Group split into four sub-groups namely (i) Horticulture and Floriculture (ii) Plantations including spices (iii) Processed Foods including Live Stock and Fish Products and (iv) Transport infrastructure, to make an indepth study of infrastructure requirements for boosting exports. The main recommendations of the Group are highlighted below:

10.2 INFRASTRUCTURAL REQUIREMENTS FOR HORTICULTURAL PRODUCE

a) Scope

There is a good scope for export of horticultural products. Export of fresh fruits and vegetables can be increased to more than Rs.1000 crores per annum by the terminal year of the VIII Plan from the present level of Rs.175 crores.

b) Main Issues/Problems

(i) Lack of infrastructural facilities such as grading and packing stations, cold chain, controlled atmosphere storage, reefer transport, etc.
(ii) Constraints of air cargo space.
(iii) High air freight rates compared to other countries.
(iv) Inadequate processing facilities
(v) Export Promotion and Market Development
(vi) Existing laws on land holdings.

10.3 RECOMMENDATIONS

Infrastructure

10.3.1 Infrastructural facilities are required to be set up so as to facilitate transportation by sea to over-come the problems of shelf life. The transportation by sea will also over-come the twin constraints of air cargo availability and high freight rates. The infrastructural requirements are proposed as follows:

Infrastructural	Nos.	Total Investment	Govt. Share	Commercial Investment	Private Investment	Nodel Agency
A. INFRASTRUCTURE						
1. Post harvest Mgmt. studies	10	150	100	-	50	APEDA, IIP, IIHR NHB
2. Extension & Training	6	150	150	-		DAC, NHB
3. Post harvest handling(sorting garding, waxing etc.)	30	1280	640	-	640	APEDA, NHB
4. Pre-cooloing	60	1275	637. 50	-	637.50	APEDA
5. Packaging :						
(a) R &D	-	75	50	-	25	APEDA
(b) Imroved packaging	-	4000	1000	-	3000	NHB, IIP
6. Intermediate cold stores	51	3300	1650	-	1650	APEDA NHB, NCDC, MOFPI

Infrastructural	Nos.	Total Investment	Govt. Share	Commercial Investment	Private Investment	Nodel Agency
7. Radid Transportation systems:						
(a) Road	111	1110	222		888	APEDA
(b) Rail	8	Not estimated				
(c) Air/Sea		Not estimated				
8. Commercial cold stores	8	4500	1125	3375 (by NCDC/CWC/ State WHC)	-	NCDC CWC State WHC
9. Vapour heat Treatment	3	340	340	-	-	APEDA
10. Irradiation	4	800	800	-	-	NAFED
11. Infrastructure at airports	-	1120	280	840 (by IAAI)	-	IAAI
12. Auction Houses for flowers	-	450	450		-	APEDA N H B
Sub Total		18550	7444.5	4215	6890.50	
B. EXPORT ORIENTED PRODUCTION						
1. Equity Participation	18	31000	1550	-	29450	APEDA, NHB
2. Modernisation of exiting units	-	2000	500	-	1500	APEDA MOFPI
Sub Total		33000	2050	-	30950	

Infrastructural	Nos.	Total Investment	Govt. Share	Commercial Investment	Private Investment	Nodel Agency
C. EXPORT PROMOTION AND MARKET DEVELOPMENT						
1. International market intelligence and data base	-	250	250	-	-	APEDA NHB
2. Export promotion activities		2750	2500	-	250	APEDA
Sub-Total	-	3000	2750	-	250	
Grand Total		54550	12244.5	4215	38090.5	

D. SPICES

		Total Investment	
1.	Infracture for spices	1500	DAC
2.	Export oriented production	7581	SPICES
3.	Export development of spices	2625	BOARD
	Total	11706	

10.4. Export Oriented Production

10.41. To overcome problem of quality and price competitiveness, there is a necessity for updating and introduction of new technologies. Similarly, in certain fields where there are good opportunities, such as mushrooms, tomatoes and floriculture, investment should be encouraged. To attract private enterprise, APEDA should participate in the equity of the projects in identified areas . An investment of Rs.40 crores is envisaged under the scheme.

10.5 Export Promotion and Market Development

10.5.1 The promotion of potential products is required to be carried out in the international market. Similarly, new products have to be launched in the market. This will be accomplished through various export promotion programmes such as buyer seller meets, store promotions, advertisements, participation in trade fairs etc. Provision of Rs.18 crores has been made in APEDA's VIII Five Year Plan proposals.

10.6 Existing Laws On Land Holdings

10.6.1 The existing land ceiling laws do not permit large scale plantation for the purposes of exports. Similarly, the processing industries cannot own agricultural land for captive growing of raw material for manufacture of processed products'. In order to encourage introduction of high-tech agriculture, the laws are required to be amended.

D.Projected Export Targets for 1996-97; Terminal Year of 8th Plan

Q-000 tonnes
V-Rs Crores'

Export Target	1996-97	
	Q	V
(i) Fresh Fruits & Veg	1150	800
(ii) Processed fruits & Vegetables	112	300
(iii) Other processed foods	140	380
Total	**1402**	**1480**

10.7 FLORICULTURE

10.7.1 World trade in floriculture market is estimated at US $ 5.24 billion per annum and it is expanding about 15% per year.

A. Scope

Strong prospective markets for Indian flowers do exist in Europe and South East Asia/ Japan. The factors which favour development of floriculture export from the country include availability of wide diversity in natural climate, abundant and comparatively cheap labour on one hand and desire of importing countries to secure material from alternative sources in the context of high labour and energy cost in traditional sources.

B. Main Issues/Problems

1. Lack of germ plasm of international varieties.
2. High incidence of import duty on equipments such as green houses and other imported inputs etc.
3. Non-existance of export infrastructure
4. High air freight rates.

C. Recommendations

1. Establishment of integrated tissue culture labs and glass/ green houses with foreign collaboration should be encouraged.
2. Horticulture Estates may be established for cultivation of floriculture crops.
3. Infrastructure for post harvest handling of flowers may be set up.

D. Nodal Ministries/ Departments should take up the action points detailed below :

i)	Smooth and efficient quarantine facilities and acceptance of Phyto-sanitary certificate from exporting concerns for clearance of material.	Adviser(PP), Deptt. of Agri. & Co-operation.

ii)	Waiver of Import duties on machinery and equipment relating to floriculture export	Ministry of Commerce
iii)	Adeuqte incentives to encourage farmers to take up floriculture production.	Deptt. of A & C
iv)	Training to potential flower growers	Deptt. of A & C
v)	Storage facilities at major airports.	Civil Aviation
	a. Storage at production point by enterprenures themselves	
	b. Common storage facilities for small Growers and Cooperatives	Deptt. of RD/NCDC
vi)	Packaging Development of suitable packaging	Indian Institute of Packaging
vii)	Rationalisation of air freight rates	Deptt. of Civil Aviation

10.8 Livestock Products

A. Scope

Most of meat product exports are buffalo meat which has good demand in Middle East and South East Asia. There are possibilities of export of buffalo meat to other countries also. Export of poultry meat is also possible.

B. Main issues/problems

a. Lack of modern slaughter houses.

b. High cost of feed for promoting export of poultry products.

C. Recommendations

i) Modernisation of Slaughter Houses

4 major slaughter houses especially for buffalo meat export have to be set up Bombay, Delhi, UP and AP.

ii) Integrated Buffalo Meat Plants

5 more major integrated buffalo meat plants should be set up at AP, Punjab, West Bengal, Kerala and UP. Private enterpreneurs may be encouraged. Central Government's equity participation to the extent of 15% may be considered essential. Meat units exporting 75% of products should be considered as 100% export oriented units.

iii) Disease Free Zone

Selective disease free zones need to be created in catchment areas of Andhra Pradesh, Tamil Nadu, Uttar Pradesh, Bihar, Haryana & Punjab.

iv) Chicken Processing Plants

50% export obligation should be considered export oriented for poultry fee.

v) Augmentation of Maize production for Poultry feed

Maize for chicken feed may be made at international prices to large integrated plants. Department of Agriculture and Cooperation should encourage maize production in selective belts.

vi) Cold Storage for Export of Goat and Sheep Carcasses

Cold storage facilities at Bombay, Cochin, Hyderabad, Calcutta and Delhi are necessary for export of goat and sheep carcasses. Investment could be made by Government Operation / management may be given to exporters association/ cooperatives.

vii) **Cold Chain for Carcasses**

Cold chain for carrying the carcasses is necessary which need to be promoted in the private sector with Central Government participating in equity (as assisted sector).

10.9 Export of Fish and Fish Products

A. Scope

Exports of fish and fish products is targetted to go up to over Rs.3000 Crores by 1996-97 as against Rs.1300 Crores in 1991-92.

B. Main Issues/Problems

i) Limited export of fish from inland.
ii) Shrimp accounts for over 85%, further exploitation from marine sources are getting limited.
iii) Major export of marine products will be from deep sea instead of coastal waters.

C. Recommendations

i) **Specific Vessels for the Indian EEZ.**

Introduction of 200 resource specific vessels in Indian EEZ	By joint venture and leasing 100 By Indian companies - 100 Cost of 100 vessels - Rs.700 crores.
Mode of investment	
A. Enterpreneur/Capital Market	Rs.100 crores
B. ICICI Loans	Rs.600 "
C. Interest rate	Not more than 7%
D. Interest subsidy by M/o FPI	Rs.20 crores

ii) **Processing Facilities On Shore & On Ship**

Processing facilities at suitable locations at Vishakapatnam, Cochin, Mangalore, Veraval/Porbander, Goa, Paradeep, Calcutta and Madras need to be put up. Equity participation by the Government in joint/assisted sector would be necessary. Besides, import of equipments for processing should be duty free.

iii) Large Size Storage Facilities

Large size storages (over 10,000 T capacity) at Visakapatnam, Cochin, Bombay and Paradeep will be essential for holding the stock for better quality and processing. These storages could be set up in the Public Sector. Operation of these storage facilities should be done by either the exporters' association or private/ public/ cooperative sector/ enterpreneurs/ organisations.

iv) Freight Rates

Ocean freight for IQF and cooked IQF products be reduced and the insurance premium for these products should be at par with frozen products.

v) Custom & Excise Duty

1. Customs duty and Excise duty for packing materials should be reduced.
2. The entire customs and excise duty on OTS cans for export should be removed to make these cans available at international prices.
3. Excise duty on glass jars and aluminium cans and containers used in the food processing industries should also be removed.

10.9 Spices

A. Scope

India's share has shown fluctuating trends during the five year period 1982-1986 and has come down to 17.89% in 1986 as against 20.2% in 1987.

B. Major issues/problems

i) Increased domestic consumption of spices
ii) Availability of better and remunerative price in the country
iii) Low productivity level in India leading to higher cost of production.
iv) Stiff price competition from other countries.
v) Inadequate investment in spices cultivation
vi) Lack of orientation in export production programmes
vii) Procedural bottlenecks in various Departments like AGMARK, EIA, Customs etc.
viii) Inefficient handling at ports.

Major Spices **Problems & Strategies**

A. Pepper Nodal agency-DAC/ICAR

Low productivity and poor upkeep of gardens due to intercropping and non-availability of planting material of high yielding/disease tolerant varieties.

Strategies

* Production and supply of planting material suitable for each area.
* Promoting cultivation of varieties which yield higher percentage of oleoresin.
* Educate the growers on quality improvement, in pre and post-harvest operations.

Thrust area for development

Zone- I - Idukki, Wynad, Trivendrum, Kozhikode, Cananore districts of Kerala.

Zone-II - Coorg, Hassan, Shimoga, Dakshina Kannada districts of Karnataka and Nilgiris and Anamalai districts of Tamil Nadu.

Projects/Infrastructural Support

* Strengthening organisation; Kurumulaku Samrakshana Samithies/Co-operatives, voluntary agencies in most potential areas and assisting them to take up programmes on production of planting material, replanting, disease control, quality improvement.
* As a long term measure, develop joint ventures for products.

B. Small Cardamom Nodal Agency-Spices Board

Low productivity due to senile gardens, prevalance of 'Katte' disease in certain pockets and recurring drought conditions

Strategies

* Production of planting material using high yielding, location specific cultivars, replanting and irrigation
* Research on cost reducing factors
* Research on new end uses

* Extensive use of Biotechnology to increase : (i) Productivity (ii) Higher percentage of bold capsules (iii) Resistance to disease

Thrust Areas for Development

Zone I - Iddukki, Palghat districts in Kerala

Zone II - Western Ghat of Kerala, Karnataka and Tamil Nadu

Projects/Infrastructure Support

Concentrate production improvement programmes in the potential areas/ concentrated growing tract.

C. Ginger - Constraints

* Low productivity
* High fibre content in majority of cultivars
* Prevelance of soft rot disease.

Strategies

* Multiplication of low fibre ginger for seed purpose.
* Extending the cultivation of low fibre ginger in the most suitable area
* Research on storage of dried ginger for prolonged period

Thrust Areas for Development

Wynad, Idukki, Ernakulam, Kottayam and Quilon districts of Kerala. North Eastern India if low fibre ginger can be produced.

Projects/Infrastructural Support

* Organising farmers' group and motivate them to take up gigner cultivation.
* Strengthening research on soft rot control, storage and pest problem.

D. Turmeric - Constraints

* Low productivity
* Lack of irrigation
* Poor post harvest processing.

Strategies

* Multiplication of turmeric varieties with high curcumin content for manufacturing industry
* Develop infrastructure for irrigation
* Suffecient credit facilities for growers

Thrust Areas for Development

Ernakulam, Kottayam, Pathanamthitta, Alleppey districts of Kerala, Salem and Coimbatore districts of Tamil Nadu, Nizamabad, Karim Nagar and Guntur districts of Andhra Pradesh and Sangli in Maharashtra.

Projects/Infrastructural Support

* Extending cultivation of varieties suitable to each locality which have more demand is
* Intensification of seed multiplication programme
* Research on product development/product diversification
* Development of infrastructure for irrigation

E.Capsicum/Chillies - Constraints Nodal Agency-DAC/ICAR

* Low productivity.
* Adaptability problem of certain varities.
* Non availability of non pungent high colour chilli varities.
* Poor post harvest operation.

Strategies

* Import of Paprika and extending its cultivation
* Extension of cultivation of Byadagi chillies
* Development of infrstructure for irrigation
* Credit facilities for farmers to hold stock in the event of a price fall

Thrust Areas for Development

Dharward district, Karnataka, Ramnad district, Tamil Nadu, Guntur district of Andhra Pradesh and Ahmedabad district of Gujarat.

Projects/Infrastructural Support

* Extending cultivation of non pungent high colour chillies for colour extraction
* Infrastructural support for irrigation and post-harvest handling.

F. Seed Spices - Constraints
(Coriander, Cumin, Fennel, Fenugreek and Celery)

* Low productivity.
* Non-availability of seed material of yielding varities.
* Prevalance of wilt disease.

Strategies

* Production and supply of seeds of high yielding varieties
* Establising common facilities for cleaning, grading and packging
* Research on new product development and new uses

G. Saffron - Constraints

* Low productivity
* Non-availability of seed material for extension of cultivation

Strategies

* Production and supply of seed material sufficient enough to extend the cultivation
* Application of biotechnology for invitro production; stigma/ planting material
* Enhance market promotion activities to popularise Indian Saffron abroad

VI. Import Substitution

Import to the order of Rs. 30.00 Crores per annum can be avoided if crops like Clove, Nutmeg, Cinnamon and Cassia are cultivated extensively within the country.

a. Thrust Areas for Development

Trivandrum, Pathanamthittta, Ernakulam, Calicut and Idukki districts of Kerala, Kanyakumari and Nilgiri districts in Tamil Nadu and parts of Orissa, North Eastern States, Andaman and Nicobar Islands.

b. Import Substitution

* Import of planting material
* Establishment of infrastructure for cultivation, pre and post-harvest.
* Production and supply of planting material
* Development of infrastructure for irrigation.

VII. Infrastructural Requirements :

Shippmg Services	-	Frequency of Shipping services from Cochin and Tuticorin may be increased.
Ventillated Containers	-	Making available such containers, during Pepper season from Cochin & Bombay to European ports.
Warehouses/Storage storage facilities in all ports	-	Establish sufficient warehouses & Cold Storages
Steamer services	-	Steamer services may be introduced between Tuticorin and Sri Lanka
Air Cargo Facilities	-	Establish air cargo facilities from Cochin, Trivandrum, Calicut and Bangalore to major destinations of export
Rail Wagons	-	Making available rail wagons from Gujarat to Bombay during harvesting season of seed spices
Packing machines and	-	Allow import of packing machinery material at reduced customs tariff

10.10 Other Recommendations

i) Strengthening of Railway Services

* The Railway Board should make study to develop and design cheaper and cost efficienct wagons for transportation of perishable agricultural commodities.
* Refrigerated wagons may also be provided with fast moving trains for purpose of exports.

ii) Strengthening of Shipping Services

In view of the fact that the capacity and the services of Indian ships is not sufficient, it is necessary to enhance the capacity and improve the frequency. In the beginning capacity will be under utilised but Ministry of Surface Transport has to provide financial support for 2-3 years.

iii) Creation of Export Oriented Model Areas

Creation of Export Oriented Model areas may be undertaken at identified locations where basic infrastructural facilities may be provided.

iv) Other Recommendations

* The potential exportable items may be promoted in the international market by the Export Promotion Organisation such as APEDA, MPEDA, Tea Board, Coffee Board, Spices Board etc.
* Ministry of Commerce in collaboration with Ministry of External Affairs and Ministry of Finance should promote exports of Agro Products through biliteral agreements.
* A National Workshop may be held in April, '92 to discuss in detail the steps required to be undertaken for implementing the recommendations for increasing exports.
* A Standing Committee should be set up in the Planning Commission to monitor and review the progress of schemes/projects to be implemented for creation of infrastructure. The Standing Committee will comprise of the representatives from Ministries of Commerce, Agriculture, Food Processing, Surface Transport, Finance, Commodity Boards, Leading exporters and their organisations, progressive growers and their associations.

There is a need for providing training to the growers about the international scenario as well as up-dating their skill and knowledge for high-tech agriculture. ICAR and Agricultural Universities should provide such a training. The financial institutions like IFCI, IDBI, ICICI should increase necessary financial assistance, on preferential rate of interest to the Private Organisations for setting up infrastructural facilities.

Annexure-II

HORTICULTURAL CROPS

Varieties Having Export Potential

FRUITS	Variety
Mango	Alphonso Dashehari Ratna Totapari
Grape	Thompson Seedless Tas-e-Ganesh
Pomegranate	Ganesh
Ber	Umran Gola
Aonla	Krishna Kanchan

VEGETABLES

	Variety
Onion	Pusa Madhvi Pusa Red Arka Niketan
Chilies	Andhra Jyoti Pusa Jwala
Tomato	Punjab Chhuhara Pusa Gaurav Pusa Early Dwarf Arka Vikas Arka Saurabh

Cauliflower	Pusa Deepali
	Pusa Early Synthetic
	Pusa Hybrid-2
	Pusa Snowball-1
	Pusa Snowball-2
	Pusa Snowball K_1
Cabbage	Pusa Mukta
	Pusa Synthetic
Peas	Arkel
	Jawahar Matar-I
Muskmelon	Hybrid M-3
	Punjab Hybrid
Watermelon	Arka Jyoti
	Arka Manik
	Sugarbaby
Okra	P-7
	Parbhani Kranti
Potato	Kufri Chandramukhi
	Kufri Jyoti

ORNAMENTAL CROPS

Rose	Arjun
	Raktgandha
Gladulious	Mayur
	Suchitra
	Poonam
	Sapna
	Pusa Suhagin
Orchids	IIHR Hybrid-1
	IIHR Hybrid-2
	IIHR Hybrid-38
	IIHR Hybrid-164
Crysenthemum	Sonal
	Shyamal

PLANTATION CROPS-VARIETIES FOR EXPORT

- Black pepper	- Panniyur-1
	- Panniyur-2
	- Panniyur-3
	- Panniyur-4
	- Sreekara
	- Subhakara
	- Aimpiriyan
	- Ottaplakkal
- Cardamom	- Mudigere-1
	- MCC 61 (ICRI-1)
	- MCC 49 (ICRI-2)
	- Cl 37
	- PV 1
- Ginger	- Suprabha
	- Suruchi
	- Suravi
- Turmeric	- Co-1
	- Krishna
	- BSR-1
	- Suvarna
	- Roma
	- Suroma
	- Suguna
	- Sudharsana
- Coriander	- Gujrat Coriander-1
	- Gujrat Coriander-2
	- CO 1
	- CO 2
	- CO 3
	- Rajendra Swathi
	- RCr-1
	- Sadhana

	- Swati (CS-6) - Lam CS-2 - UD-20
- Cumin	- S 404 - MC 43 - Gujarat Cumin-1 - Rajasthan Zeera-19 - G A U Cumin-2
- Fennel	- PF 35 - CO 1 - Gujarat Fennel - S-7-9
- Fenugreek	- CO 1 - Rajendrakanti - Lam sel-1 - Prabha - (RM t-1)
- Cashew	- BPP-1, BPP-4 - BPP-5, BPP-6 (BAPATLA-APAU) - V1, V3, - V4 - V6 (VENGURLA- KKV) - VR-1, VR-2 -(Vridhachalam-TNAU) - ULL-1, ULL-2 ULLAL-UAS

Annexure-III

QUESTIONNAIRE ON STRENGTHENING OF INFRASTRUCTURE FOR AGRICULTURAL COMMODITIES AND PROCESSED FOOD

1. Name & Address of the Exporter/Grower

2. Description of Export activities

3. Please indicate your exports and involvement in exports during the last 3 years :

Quantity	Value	Destination

4. Do you get any institutional support? If so, please give brief details.

5. Do you get technical support from Export Promotion Authorities?

6. What is your packaging requirement? Does your packaging meet the International standards? In case it is not, what are the reasons?

7. Any facilities/ special treatment required for longer shelf life of the product?

8. Certification requirement for ensuring quality of the products exported from India.

9. Any special facilities required with regard to location for export purposes?

10. Please give your comments on the issues indicated in the list.

ISSUES FOR DISCUSSION

1. Infrastructural facilities at Airports/Seaports.

2 Requirement of Domestic Air Services for highly perishable commodities; Fruits Vegetables & Flowers and Processed Foods.

3. Requirement of Air Cargo for exporting to neighboring countries.

4. Problems relating to exit points, cold storage, warehousing, quarantine and inspection facilities at airports/seaports.

5. Transit facilities for storage of fruits, waiting for loading into ships and material handling at airports/seaports.

II. Railway Services

1. Any problems/need for strengthening of railway services from production point to collection centres/final destination.

III. Infrastructure facilities at production and processing levels

A. Fishery

(i) Greater attention for diversification of exports of fishery products. At present we are only exporting Shrimp and Squids.

(ii) I Q.F products have better price in the global market. Instead of exporting frozen products, we should export I.Q.F.

(iii) Exporters can explore possibilities of entering into a package deal with potential fish product importers for supply of deep sea vessels on buy back arrangements of tuna fish from India.

(iv) Need for strengthening infrastructure from production level to processing.

B. Exports of Livestock and Poultry

(i) At slaughter stage, exporters should strictly adhere to the standards of ante-mortem and post-mortem examinations

(ii) Specia ention needs to be focussed on quality animal products for export purpo

(iii) Exploring and augmenting the exports of sausages.

C. Exports of Agricultural Commodities

(i) Diversification of agricultural commodities in the form of value added products exclusively for export.

(ii) There is a good scope for export of cut flowers/ornamental plants.

(iii) Exploring the possibilities of new markets particularly in the Middle East for use of Indian Spice oils and oleo-resins by food industry

IV. Quality Control/Packaging

(i) To make our agricultural commodities and processed food more competitive in the global market, international standards/grades for quality control must be adhered to right from the stages of production, processing, storage and packaging.

V. Promotion of good will in the international market for Indian commodities

(i) Terms and conditions of the importers need to be complied with, without any lapse.

VI. Any other suggestion for boosting exports.

Annexure-IV

LIST OF PARTICIPANTS

1. Dr. Jayant Patil — Chairman
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   Yojna Bhavan
   New Delhi.

2. Shri P.M. Abraham
   Secretary (Surface Transport)
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   M/o F.P.I.,
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7 Sh. Ashok Kumar
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25 Shri P.S. Nair
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26. Shri M.K. Ganesan
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27. Com. H. Thalibuddin
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30. Shri S.K. Singh
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31. Shri K.G. Anand
NECC
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32. Sh. Datta Kanchan
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33. Shri Ashok Shinde,
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Distt. Ahmad Nagar
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34. Mr. Juneja
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New Delhi

35. Mr. A.V. Thomas
Spice Oils & Olco resins
Cochin

Annexure-V

NATIONAL SYMPOSIUM ON EXPORT OF FRUITS, VEGETABLES AND FLORICULTURE PRODUCTS

Two days National Symposium of Export of Fruits, Vegetables and Floriculture Products was organised by National Horticulture Board on April 7th and 8th April, 1992. More than 300 delegates representing Importers/Exporters, agricultural scientists, various Departments/ Organisations of the Central/ State Govts. deliberated in the Symposium. The summary of the strategies suggested for development of export of Fruits. Vegetables and Floricultural Products is given below.

The following fruits, vegetables and flowers are having good export potential:

A. Fruits : Mango, Grapes, Banana, Lychee. Exotic Fruits viz. Chickoo, Ber, Pomegranate. Custard Apple and other fruits.

B.Vegetables : Onion, Potato, Green Vegetables :

a) Traditional : Okra, Bitter Gourd, Chilli and other seasonal vegetables.

b) Non-traditional : Asparagus, Celery, Bell Pepper, Sweet Corn and Baby Corn; Green and Lima Beans and organically grown vegetables, hybrid Seeds

C.Flowers : Rose, Carnation, Orchids, Gladiolus, Chrysanthemum, Ornamental Plants and Foliage, Bulbs and Seeds, Tissue Culture material.

D.Processed food : Tropical Fruit Juices, Pulps and Concentrates, Mushrooms, Tomato Products

1. Production and Research Development

a) Trade Policy Reforms being brought up by the Govt. should be supported by the reforms in production of agricultural products. Land Ceiling laws should be relaxed for undertaking Export Oriented Production.

b) It was felt that there is a necessity for specialised training of people at supervisory level in Horticulture and Floriculture sector. ICAR should explore the possibilities of introducing specialist Course at under graduate level in horticulture and floriculture sector. The courses be designed with practical orientation.

c) Production of lychees should be increased and more area should be brought under cultivation.

d) There is a necessity of developing onion varieties with higher TSS to meet the requirements of manufacturers for dehydrated onion products.

e) There is a necessity of undertaking systematic post-harvest management research. Package of practices for harvesting/storage/handling for each item should be developed.

f) Entrepreneurs should be encouraged to take up production of giberallic acid and grape guard paper indigenously as their demand has increased significantly.

2. Quality Control

a) It was recommended that steps for getting accredition under ISO 9000 may be initiated and APEDA should organise a Seminars/ Workshop/ Training Programmes for preparing exporters for adopting quality system under ISO 9000. They should also be provided assistance through suitable consultants for adopting this system in specific manufacturing units which are manufacturing for export to EEC countries.

b) Public health laboratories should be properly equipped and sampling and analysis of pesticide residue level should be carried out on the regular basis.

c) Pesticide residue levels should be standardised for fruits and vegetables.

d) Those exporters who have sufficient expertise and facilities may be allowed to do self-certification.

3. Policy Regime

a) For the purpose of issue of phytosanitary certificates, Director Horticulture of the States where this post exists should also be notified as competent authority, in addition to the Director Agriculture and Plant Pathologist.

b) The nomination of each State be considered as and when the information is received from a particular State rather than waiting for the reply from all the States.

c) The notification regarding nomination of the officers should not be part of the rules but as a supplementary notification to the rules so that Govt., may add or delete the competing authorities on the basis of the circumstances at a particular time.

4. Infrastructure

a) There is an urgent need to upgrade the infrastructural facilities at the Airports. Short-term and long-term plans in this regard may be prepared and steps may be taken to implement these plans expeditionsly.

b) Infrastructure like Grading, Sorting, Packaging, Pre-cooling cold storages is expensive for individual exporters. The Govt. should provide assistance for setting up such infrastructure by the growers/exporters.

c) Financial assistance under APEDA's schemes for providing specialised transport units to the industry @Rs.1.5 lacs. for unit is inadequate and this should be increased to Rs. 2.5 lacs per unit.

d) Air freight subsidy for promoting export of fresh fruits, vegetables and flowers should be provided for the initial few years which may be discontinued once the products are established in the international market.

e) Infrastructural facilities for promoting exports of mangoes should be set up at Malihabad and Saharanpur.

5. Market Development and Export Promotion

a) Promotional costs for export promotion are very prohibitive, therefore, organisations like APEDA should undertake promotion programmes in potential markets on behalf of the exporting community. The exporters can also be associated in such programmes.

b) Kiwi model for launching/ promotion of potential fruits like mangoes and bananas may be studied and appropriate policies may be formulated and implemented.

c) Production and marketing of dry flowers should be supported by the Govt.

d) Market information from importing countries should be collected and disseminated to the exporters. growers and their organisations on regular basis.

6. CREDIT

ECGC highlighted the programme for credit guarantee schemes of the Corporation. During the discussions, issues relating to treating agriculture at par with other industries, delay in sanction of loans, coordination between various institutions and creating necessary credit infrastructure were highlighted.

i) An integrated approach for promotion of export-oriented projects is necessary under which timely and adequate finances should flow for production, marketing, storage, processing and other activities and credit for marketing may be extended on priority.

ii) There is need to educate the beneficaries i.e. growers/ producers and exporters about the various financing schemes and procedures prescribed by all the financial institutions and commercial banks as also other credit disbursing agencies. It was suggested that All-India Financial Institutions like NABARD, EXIM BANK, ICICI & other Commercial Banks/ Institutions may develop coordinated approach and publish necessary literature about procedure for sanction of funds.

iii) Technical expertise at the level of financial institutions and banks may be strengthened so that timely appraisal of the project is undertaken and loans sanctioned expeditiously.

iv) Procedures in the Financial Institutions concerned may be simplified and a time limit may be fixed to clear viable projects.

v) The Scheme of ICICI for extending financial and technical assistance for post-harvest facilities may be extended to other states also.

vi) The Ministry of Agriculture may take initiative to ensure that projects received from States having component of improved technologies like tissue culture, green houses etc. are extended timely support by these financial institutions

7. Other Recommendations

While there is a need to develop requisites infrastructure for promoting xport of perishable products, the requirement of disseminating information

about existing pre/ post-harvest, grading/packing and transportation facilities can also not be ignored. The informauon regarding market requirements and latest available technologies need to be chanalised through concentrated efforts by various organisations related with export of perishables.

* For exports of perishables by air, facilities for cold storage at the air-terminals need to be augmented. NHB APEDA, Ministry of Food Processing Industries and IAAI are setting up pre-cooling chambers for fruits, vegetables and cut flowers at Bombay and New Delhi during 1992-93. Facilities are also planned to be set up at Trivandrum during 1993-94. It is also proposed to establish such facilities at all the airports. For this, resources of concerned agencies have to be pooled together.

* For better appreciation of needs, for creation of infrastructure/ facilities, it would be essential to get authentic/ reliable input regarding quantum and regional flow of different items for exports so that proper appraisal can be done before the resources are committed.

* A system for advance information about availability of storage space at Cargo terminals as well as flights is required to be established for reducing the transit time/ losses of perishables at terminals.

* Multiple handling (loading/unloading) of packages needs to be avoided, for which appropriate logistics should be developed. The cargo should move directly to the ports/airports from farm level.

* Containerization of perishables and moving them by road/rail with suitable cooling arrangements would help to avoid multiple handling and maintain product quality. The aspect of moving perishables in reefer need tobe probed further. Concerted efforts are required at different levels to find ways and means of improving infrastructure for handling reefer containers at inland locations and carrying these by rail/road, with suitably designed power packs.

* At present the proportion of perishables moving in containers by sea is very limited and confined to hinterland areas of sea ports. Considering the tremendous cost saving and the fact that transporting perishables in reefers can extend the shelf-life of most of the products, strategies need to be evolved for increasing proportions of transformation by sea.

* To fully exploit the potential for handling reefer containers at ports like J.L. Nehru Port and Bombay Port, the users and ports need to evolve ways ans means to increase utilisation of the facilities already created.

* Pre-cooling technologies which have proved successful in case of grapes should be used for other fruits & vegetables also. Bombay Port Truct in this respect has specific proposals to provide cold storage and warehousing facilities during the 8th Plan period and is also willing to provide land and other infrastructure to enable interested private parties to set up specialised storage facilities.

* Infrastructural facilities have to be geared for adaption of modern post harvest technologies for which it is necessary to set up regional packing houses with all facilities in the growing areas of commodities like mango, banana, grape and orange.

* Quality of paper/ board and fabrication process of cartons has to be improved to reduce the cost of packaging of fresh produce for export market.

* Training in proper handling of produce and packing house operations need to be imparted. It is desirable to organise specialised courses on post harvest handling, for which lead can be taken by ICAR.

* For increasing shelf life of fruits & vegetables to enable their transportation by sea, modified atmosphere packaging technique should be tried.

* Export packaging has to meet the customers requirements. It should provide excellent sales appeal and display nutritive value, helping in identification of products and adequate protection against transport hazards. Standardization of package dimension would help exporters it terms of volume uses/freight advantage, beside suiting to the international/ modern system of handling. Packaging should also take into account the legislation prevailing in the importing countries.