ECONOMICS OF EXPORT ORIENTED HORTICULTURAL CROPS
(A CONSOLIDATED REPORT OF AERC STUDIES)

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EXECUTIVE SUMMARY

The present study "Economics of Export Oriented Horticultural Crops", was undertaken by all the Agro-Economic Research Centres of the country with the guidelines of Directorate of Economics and Statistics, Ministry of Agriculture, Government of India during the year 1996. The Agro-Economic Research Centre, Shimla was the national co-ordinator of the study and asked to make the consolidated report of the different studies conducted by different Agro-Economic Research Centre of the country.

In India the share of export of agricultural commodities have declined from 31.70 per cent of the total export in 1970-71 to 17.61 per cent in 1992-93. This is in spite of predominance of agricultural sector which contributes about 40 per cent of the national income. The probable reason for the decline is that the elasticity of demand for traditional export commodities such as tea, coffee, jute and cotton fabrics is very low and limited by competitiveness in the world market.

The share of agricultural commodities in total export from India decline, the export of fresh fruits and vegetables have recorded a compound growth rate of about 24 and 25 per cent respectively in quantity and value during 1971-72 to 1991-92. The processed fruits and vegetables have also recorded a growth rate of 10 and 22 per cent in quantity and value of export during the same period. During 1984 the export of fruits and vegetables was estimated to be worth 2,00730 thousand US dollars and same increased upto 6,27,790 thousand US dollars in 1994.

India is gifted with variety of agro-climate conditions and is the second largest producer of fruits and vegetables accounting for about 8 and 13 per cent of the total world production respectively. Area under horticultural crop in India is nearly 12 million hectares, constituting nearly 7 per cent of GCA of the country. The estimated production of horticultural crops is about 100 million tonnes per annum, contributing over 18 per cent of total agricultural product of the country.

Generally the fruit and flower growers of the country do not get remunerative price for their produce due to several problems in pre and post-harvest management. To find out the proper solutions and strategies for better production and post harvest management

of export oriented horticultural crops, broadly the following objectives were undertaken by all the centres of the country except the agricultural economic research centre, university of Delhi, Delhi.

OBJECTIVES

1. To identify the major horticultural crops of the region in terms of growth and instability in area and production;
2. To estimate the economics of selected crop/crops;
3. To assess the impact of horticultural crops on income and employment;
4. To study the post-harvest management of selected crops/crops and producer's share in consumer rupee in domestic market and export price;
5. To study the production and marketing problems and prospects of horticultural crops in the state.

OBJECTIVES FOR CUT FLOWERS IN HARYANA

1.The Delhi Agricultural Economics Research Centre emphasised that in Haryana the commercial flower cultivation can be linked to an industrial production process and therefore has generally been practised by a handful of big or well off farmers on by a few resourceful entrepreneur only on a limited scale and that too only recently. Further most of the entrepreneurs, it was felt, did not want to share their experiences specially about cost of production and returns etc. Therefore, the objectives for this particular crop in Haryana, modified, keeping in view the specifically of the crops, the prevailing production environment and the data availability constraints. The specific objectives of the study were 1. To study the status of floriculture in Haryana in particular and the country in general;

2. To analyse the prevailing scenario of world trade in cut flowers and the status of India cut-flower exports in the world market;
3. To assess, on the basis of experience gained so far, the performance of export oriented cut-flowers industry;
4. To review and assess the adequacy of the prevailing policy and institutional environment for growth of export oriented floriculture in India;

5. To suggest measures needed for increasing the exports of cut-flowers from India more competitive.

METHODOLOGY

A common methodology was adopted by all the AER Centres with the consultation of Commissioner Horticulture, Ministry of Agriculture, Govt. of India, New Delhi. The fruit and flower crops identified as export oriented horticultural crops are as follows.

NAME OF THE EXPORT ORIENTED HORTICULTURAL CROP IDENTIFIED IN DIFFERENT STATES OF THE COUNTRY

State	A.E.RCentre which covered the state	Export Oriented Horticultural Crop	Selected District	Reference
1. Andhra Pradesh	Waltair Visakhapatnam	Mango, Grape & Onion	Krishna, Rangareddi, Anantpur, Rayalaseema	1996-97
2. Bihar	Bhagalpur	Litchi	Muzaffarpur	1996-97
3. Gujarat	Vallabh Vidyanagar Gujarat	Chiku	Valsad	1996-97
4. Haryana	Delhi	Cut-flowers	13 Units	1996-97
5. Himachal Pradesh	Shimla	Apple	Shimla,Kullu & Mandi	1996-97
6. Kerala	Chinnai	Chashew Kernels	Kesasgod	1997-98
7. Maharastra	Pune(Institute of Politic & Economics)	Grape & Onion	Nasik	1995-96
8. Sikkim	Visva-Bharati(Santiniketan)	Orchid	Sikkim	1995-96
9. Tripura	Johrat	Pine Apple	Tripura	1996-97
10. Uttar Pradesh	Allahabad	Mango, Potato	Saharanpur, Farrukabad	1995-96
11. West Bengal	Visva-Bharati (Santiniketan)	Orchid	Darjeeling	1995-96

Multi-stage random sampling techniques were use for the selection of district, Talnka, village and ultimate growers. In general, for each crop 50 growers of different size groups of holdings were selected for the detailed study by almost all the centres. According to the magnitude of production the different fruit orchards were classified as non bearing, increasing production, constant production and decreasing production stages. The terms and concepts used in all the studies were those which generally used in farm management studies.

Socio-Economic Profile of Sample Household in Different States

In Andhara Pradesh the size of family varies between 5.36 to 5.58 persons among graps, mango and onion growers. Per farm holding size was observed higher in onion growers 3.01 hectare followed by graps 2.82 and mango 2.66 hectare in the state. Proportion of irrigated area was observed highest among graps growers (100%) followed by mango (85%) and onion (59%). Proportion of area under horticulture crops reflects that 100 per cent of the holding size of graps growers was under horticulture crops whereas area it was about 79 per cent among mango growers and in the sample of onion growers proportion of area under horticulture was negligible. In case of Bihar size of family among lichi growers was 4.98 person and size of holding was 2.7 hectare out of which about 73% of the area was under irrigation. In this State proportion of area under horticulture crop was 40.53 per cent and per farm 4.20 animals owned. Gujarat is one of the states among all where family size is lowest i.e. 4.98 persons having holding size of 2.7 hectare where 100 per cent of the operated land is under irrigation. The proportion of area under irrigation is 95% and farmers have owned 4.96 animals per farm. Himachal Pradesh is one of the states where area under irrigation in the sample was nil and per farm holding size was lowest (1.20 hectare) as compared to other states. The size of family in the state was 6 person, proportion of horticulture was 95% and farmers have owned 4.3 animal per household. In this regard kerala have shown limited information where family size was 6.9 person along with 2.27 hectare of land holding size. In Maharashtra the size of family was 6.08 and 7.60 persons among onion and graps growers respectively. Size of holding was 2.75 and 3.52 hectare among onion and graps growers respectively. The percentage area under irrigation varies between 79 to 89 percent whereas proportion of area under horticulture

crops vary from39 to 49 per cent among onion and graps growers respectively. On an average the growers have owned 4.96 animals per farm. Sikkim is one of the states where per farm holding size is highest 5.85 hectare. The size of family was observed 6.2 and proportion of area under horticultural crops was about 24 per cent. Per farm live stock possessed in the state was 5.76 animals. In tripura the size of family was 6.4 persons and land holding size was 3.33 hectare out of which about 45 per cent of the operated area is under irrigation. In this regard comparatively Uttar Pradesh is one of the states where on an average family size was highest i.e 9.81 persons among mango and potato growers. Per farm holding size was observed 5.06 and 5.08 hectare among mango and potato growers respectively. On an average about 5 animals are reared by both the Potato and Mango growers. West Bengal have owned 5.55 hectare of land at out of which 44.41 percent was irrigated. The size of family was 6 person in the state.

ECONOMICS OF SELECTED EXPORT ORIENTED HORTICULTURAL CROPS

Various components of costs both operational and marketing and also returns with a view to assess the magnitude of income generation from various crops in different States have been mentioned. In this regard it is observed that in Andhra pradesh per hectare total cost of grapes was highest (Rs.111460) followed by onion (Rs.9625) and mango (Rs.8226). Further study reveals that in case of grapes per hectare net returns over total cost were highest (Rs.205829) followed by mango (Rs.1759) and onion (Rs.596).

In case of Gujarat where chiku is the selected crop shows that out of total costs of Rs.60036, maintenance cost accounts 87 per cent whereas remaining 13 per cent accounts for marketing costs. Out of gross returns of Rs.84162 per hectare net returns were Rs.24126. Similarly in Himachal Pradesh total cost of cultivation of apple was Rs.145006 out of which 36 per cent account for maintenance cost whereas 64 per cent of marketing cost. Higher marketing cost is due to the reason of hilly topography from where carriage of produce upto terminal markets remained higher. Study reveals that per hectare net returns over total costs from apple were Rs.82278. Comparatively per hectare total costs for cultivation of cashew carnels in Kerala was lowest (Rs.8040) among all the selected crops of different states. Out of gross returns of Rs.33325, per hectare net returns over total costs in Kerala was observed to be Rs.25285. Regarding

per acre costs and returns from grapes and onion in Maharastra it was observed that total costs of cultivation of grapes was highest (Rs.63223) as compared to onion (Rs.12949). Similarly net return over total cost of grapes were highest i.e. Rs.31759 whereas in case of onion per acre net returns over total costs were Rs.6286.

In Tripura where pine apple was the selected crop has shown total costs of Rs.14117 (per hectare)out of which 75 and 25 per cent of the costs account for maintenance and marketing costs respectively. Study reveals that out of total gross returns of Rs.32611 per hectare net returns were observed to be Rs.18494. In Uttar Pradesh mango and potato were the selected crops and total costs of cultivation of these crops stands Rs.39019 in case of mango and Rs.30997 of potato. Net returns from these crops vary from Rs.80471 for mango and Rs 66707 for potato. In Sikkim and West Bengal orchid was the selected crops. Study of both the states shows that total costs for cultivation of orchid was observed Rs.342 and Rs.318 (per pot) in Sikkim and West Bengal respectively. Out of this total cost maintenance cost accounts for 90 and 86 per cent in Sikkim and West Bengal respectively. Per pot net returns were Rs.208 in Sikkim and 203 in West Bengal.

Impact on Income and Employment

The magnitude of income and employment generation by an enterprise reflects its economic soundness and viability. State wise impact on income and employment of Export Oriented Horticultural crops shows that in Andhara Pradesh among three selected horticultural crops, the highest gross and net income can be observed in graps while, very low income is reported from mango crop during the reference year. Regarding income from onion it has been reported negative. Employment generation structure has shown higher generation of labour utilisation in selected crops as compared to field crops. In case of Bihar study reveals that the average mandays employed for lichi production in all types of orchard vary from 41 to 49 labour mandays per hectare annually. On an average about 46 labour employment in per hectare of litchi orchard annually. It is worth pointing out that only 15 per cent labourers are employed in lichi production whereas 85 per cent labourers are employed in marketing of litchi. Income generation through litchi cultivation explained that per hectare income

from litchi cultivation was comparatively higher when compared to other field crops in the state of Bihar.

Orchard crops in Gujarat are known for labour intensive and price remunerative characteristics. On the whole, per hectare human labour used for all operations of chiku crop was 399 days whereas on field crops there were 162 days. On an average, per hectare net form income of sample households from chiku crop was Rs.24126, while per hectare net farm income from field crops was Rs.18914. Across the farm sizes for chiku crop there was no relationship between net farm income and size of land holding groups. In Himachal Pradesh study indicates that per hectare returns from fruits crops are 29 times more than the other crops. Across the farm size, small farmers are realising more income from per unit of the land devoted under fruit crop. Analysis in the study reveals that small farms are availing 301 days (per hectare) as compared to were 212 days among marginal farms. On the whole fruit crops are generating more employment as compared to field crops. In kerala the average gross income (per hectare) works out to Rs.27259 (per year) on small farms and Rs.19995 among big farmers. The small farms secured the highest net income than the medium and big farm because of the relative advantage of family labour work and personal supervision. Any additional labour employed by the big farmers is comparatively costly and they have to depend only on hired labour for all agricultural operations.

In Maharastra a comparative economics of growing onion crop vis-a-vis other field crops revealed a much higher net returns from onion cultivation compared to the cultivation of other field crops like onion producers, grape orchardists were also found to grow various field crops on their farms and earning better returns as compared to other crops. Analysis of human labour utilization pattern reveals that in case of onion cultivation the extent of total absorption of human labour to be to the tune of 206 mandays per acre whereas, the said mandays were 200 in case of graps. In Sikkim the share of orchid to the overall net annual income is found to be 79.06 per cent and in terms of money it stands for Rs.44249 per farm. Labour employment in orchid per farm is calculated and it is found to be 314.41 hours per farm which is higher than cereal crops.

In Tripura the study reveals that the component of income of the sample farmers from Pine apple and other horticultural crops are 74.60 per cent. Pine apple alone accounts

for more than 71 per cent; field crops 2.54 per cent; and remaining 22.86 per cent accounts from non-agricultural sector. employment generated from different sources indicates that horticulture crops are the main source of employment as compared to field crops. Regarding the impact of mango crops on employment it is found tat in Uttar Pradesh the total employment days utilised per hectare have been estimated to 190 days of which the maximum i.e. 174 days have been estimated on account of hired labour. The overall average output per farm from mango orchards has been accounted to Rs.36308. Which is highest from decreasing production stage. The size group wise distribution of net income per hectare from potato has been estimated to Rs.86707. The net income has been estimated to be highest in case of medium farmers followed by marginal farmers. In West Bengal the share of orchid to the overall net annual income is found to be 57.40 per cent(Rs.45674). It is also found that horticultural crops more specifically the orchid are generating more wage employment than other field crops. Lastly it can be concluded that impact of selected export oriented horticultural crops on income and employment have shown better performance when compared to other crops. In other words these crops are known for their labour intensive and price remunerative characteristics.

Problems & Prospects

An attempt has been made to study the problems and prospects of different export oriented crops in different states of India. Infect, export oriented crops grown on different regions/states have varied type of problems due to variation in agro-climatic conditions in different crop grown in the state. Hence, problems and prospects have been discussed separately for each state.

ANDHARA PRADESH Being highly perishable commodities, fruits and vegetables do not have any regulated marketing in the state except in Hyderabad where a sort of regulated marketing structure exists. In other parts of the state the marketing of fruits and vegetables is largely in the hands of middlemen, namely contractors, wholesale merchants, and retailers.

In the absence of adequate cold storage facilities near the production centre and at the terminal sale point, the grower as well as the merchant is forced to dispose off the commodity at the quickest possible time as the produce gets spoiled in case of

prolonged storage. The total estimated wastage during market preparations of fruits and vegetables is to the extent of 25-30 per cent.

Most of the fruits and vegetables during their peak harvests enter the markets in large quantities creating a severe glut in the market. In such cases, the harvesting of the crop can neither be prolonged for a few days nor can the produce be stored for a longer duration during the peak season. The grower and the merchants do not play any role to control the glut during such periods of peak arrivals.

The available price information for fruits and vegetables is very meagre and is of very limited utility. It is, therefore, essential that accurate data on prices, stocks, arrivals, despatches, etc. of fruits and vegetables are periodically collected from important collection and distribution centres and this data should promptly be made available to producers and traders.

The fruit and vegetable growers are mostly in the unorganised sector and do not have a common platform to voice their problems and grievances and marketing their produce in a systematic and organised way. The state does not have any Fruit and Vegetable Growers' Societies, either at the primary level or at the secondary level, for participation in collection and distribution of commodities. Though there are 3-4 Growers' Co-operatives in the state, most of them are either defunct or not functioning effectively.

BIHAR In Bihar, the first attempt to export litchi was made by State Trading Corporation during the year 1975 when the corporation tried to export litchi to European countries, but could not yield much success due to lack of infrastructural facilities. Thereafter in the year, 1993 APEDA tried to export litchi through NAFED from Bihar, but the result was not much encouraging as the quality of the fruit was not of the international standard. In the year 1994, APEDA invited Australian consultants to provide export advice for export of litchi from Muzaffarpur.

The export performance analysis indicated that there is vast potential for export of litchi from the state provided proper infrastructural facilities is developed.

To educate the litchi growers for the maintenance of orchard with respect to manuring and irrigating the orchard periodically as prescribed.

Arrangement should be made for supply of necessary chemicals and spraying equipment’s as and when required.

New plantation with improved package of practices would be encouraged to replace the old uneconomic orchards.

For improvement in marketing and export of litchi in the state the following policy measures are suggested:-

The chain involved in export and marketing of litchi should be minimised.

The Government should assure farmers about purchase of all types of fruits. The low quality fruits should be sent for processing of squash, juice, etc.

The facilities like pre-cooling and sulphonation chamber, refrigerated van should also be extended to all exporters.

The camp office of APEDA should be in the field (area of orchard) with proper facility so that farmers may get advice of the exports as and when required and technical expert of APEDA should monitor the post-harvest arrangements at least a week before the export of litchi is commenced.

GUJARAT There are good prospects for export of horticultural commodities like mango, banana, onion, potatoes, fresh vegetables from Gujarat. The prospects of export of chiku have been quite limited mainly due to following reasons :

1. Chiku is a highly perishable fruit in nature.
2. The market of chiku is limited upto gulf countries.
3. The expenses of cooling, loading, unloading, transportation to port, insulated vans,

   custom charges and freight of ships reduced the profit margin in global trade.
4. The cooling treatment, custom clearances and other procedures are too complicated.
5. Generally, foreigners dislike the dark brown colour of chiku pulp.
6. There is an assured market of chiku in northern India.
7. Some times society experiences monopoly of traders.

Nearly 96 per cent of sample orchardists reported to have experienced extreme shortage of farm labour and higher prices of wages. As many as 88 per cent of

households had faced erratic and insufficient power supply. Further, they availed power supply during night time.

There was a shortage of farm yard manure. Nearly 80 per cent of farmers felt the need of having pucca farm roads. Due to clayee, black soil even the kutcha roads remained disrupted during peak seasons.

The village approach roads were in extremely poor condition which caused serious problems of transporting inputs and farm products.

The chiku markets are located at distance places like Delhi, and hence it had to be transported by trucks, which required packing of hard paper boxes of better quality.

The road transportation was costlier, and the product was damaged by jerks, moisture and heat during transhipment.

The transportation of horticulture products through railway could be less costly and more convenient. However, the wagons were not available in time.

The village Panchayats, co-operative societies and other local institutions should take care of regular maintenance of approach roads of villages.

Like some industrial goods, horticulture products too should be given priority of allotment of wagons and super fast services.

Scientific research for better packing should be evolved by National Horticulture Board. Plastic crates or folding boxes should be made available. Paper boxes which provide protection against moisture should be made.

Awareness of farmers regarding picking, grading, packing, marketing intelligence should be increased.

At present, the demand of chiku is mainly confined to northern India. If new markets are established in other parts of the country with better infrastructural facilities and sound marketing management, it would help to the better prices as well as to minimise the monopoly of traders.

HARYANA Floriculture export being a relatively new enterprise, an organised and efficient marketing intelligence network in this area is wanting and a need for this has often been felt. There is therefore a need to systematically collect and analyse data on such aspects as demand pattern, market arrivals, prevailing prices, price determining

factors such as changing consumer's tastes and preferences for different varieties/species of flowers etc. so that entrepreneurs can fetch a better price for their produce and a viable floriculture industry can be developed, (APEDA, NHB, Association of Producers).

Setting up of a green house (GH) is often the single largest item of capital investment for a floriculture unit. Most of the green houses installed in the existing units so far have been imported from foreign countries at exorbitant costs even though indigenous capabilities for building GHs does exist. Much however is not known about the comparative technical and qualitative features of the two types of green houses.

While a large number of developing countries exporting flowers to EU are not levied any import duties by EU. Indian cut-flower exported to EU attract an import duty of between 15 to 20 per cent. This puts the Indian Exporter at a disadvantage vis-a-vis his competitors. The government, through diplomatic channels, should take up this matter with EU so that Indian cut flower exports are treated at par with exports from other developing countries. Till the time this is accomplished, the government can consider reimbursing, either in full or in part, the duty levied by the **EU (APEDA)**.

The lack of availability of adequate and quality infrastructure for post harvesting care and transportation has been an important contributory factor in realising lower than the anticipated proportion of exports to production as also lower than expected export price realisation. Development of exclusive cold storage at airports, is absolutely necessary (APEDA).

There is a need to diversify our exports to a number of new markets rather than depending mainly on EU countries and U.S.A. for our exports. The successful exports of Indian roses to Japan is an example. A number of countries import flowers from EU to meet their flower requirements. Efforts should be made to systematically analyse the consumption requirement and behaviour of such markets with a view to making direct exports to these markets (APEDA).

HIMACHAL PRADESH In Kullu and Mandi districts, the shortage of suitable plant material as well as high cost of the same is reported by more than 50 per cent of growers. High price of fertilisers was also reported by 48,39, and 24 per cent of sample

growers respectively in Mandi, Kullu and Shimla districts. More than 30 per cent growers have also reported the scarcity of labour and high rate of wages during peak seasons of important operations of apple cultivation. The maximum numbers of sample orchardists have also shown their serious concern about sudden out break of apple diseases like scab and premature leaf fall etc. They are worried for timely solution from scientists for the eradication of these diseases.

Almost all the selected orchardists reported the problem of poor conditions of roads and most of the kuchha roads remain disrupted during peak harvesting season of apple crop. The high cost and untimely availability of transport facilities were also reported by sample growers.

The maladies of apple scab and recent appearance of pre-mature defoliation of leaves need sincere efforts on the part of horticultural scientists and state horticulture department to equip them selves for control of these diseases on war footing. Sincere efforts are also required to train and create awareness about the latest technical know-how of the production technologies to the farmers.

In addition to production technology the need for creation of awareness about post-harvest management of fruits among growers is quite essential. There is need to train growers about the preparation of fruits for market, market rules and regulations and information about existing market infrastructure available in the state. For reducing spoilage during the transportation of fruits, there is need for development of cool chain system of transport so that produce can be sent in good quality to distant markets.

KERALA

Cashew has a steady demand and the requirement of the industry is more than 8 lakh metric tonnes a year, whereas the availability from internal sources is less than half of it.

The existing old unproductive trees have to be replaced by new H.Y.V. crops and modern technology on fertilisation, pruning and grafting and high density planting of cashew trees should be adopted.

Positive financial assistance to the farmers and processing industrial units will increase the rural employment and the growth of the country.

Kerala has less waste lands when comparing with other southern states. Potentialities to double the cashew production and export earnings are in the reach of the southern states.

Unutilized waste lands under forest control should be distributed to the cashew growers. Cashew apple is highly nutritious and can be utilised for preparation of different fermented and non fermented products namely juice, syrup, jam, candy, pickle, vinegar and liquor varieties like wine, brandy etc..

MAHARASTRA While Maharashtra's grape production recorded impressive and significant growth owing mainly to perceptible rise in productivity and acreage under the crop, the state appeared to lose its share in the nation's total onion production due to losses in productivity. Although both onion and grape turned out to be profitable crops in this state, the element of profit involved in the cultivation of grape was certainly much higher compared to onion. In fact, annual profit from grape cultivation was found to be 3 to 4 times higher than that accruing from onion cultivation.

One of the important features of grape cultivation in the state of Maharashtra as observed in this study was the practice of pre-harvest contract adopted by majority of the orchardists. However, mention may be made here that this practice of pre-harvest contracting definitely reduced the actual profits accruing to orchardists and, also discouraged them from producing the crop on a large scale. Post-harvest operations such as cooling, grading, packing, transportation, warehousing etc. involve enormous efforts and investments which the Government alone cannot provide. It becomes, therefore, necessary for the farmers to come forward, join hands and collectively share the responsibility. In this respect, the government's endeavour should be limited to equipping the producer with the latest technology, tools equipments and facilities so that they are able to offset and minimise initial post-harvest losses and also slow down the chink of reactions that trigger spoilage.

Indian grapes and onions are arguably valued commodities in world trade. The imperative need of the hour is to cut down upon the post-harvest losses in order to meet their increasing demand in the international market. The country's international horticultural trade can definitely have a cutting edge over several of the current player

nations if our current efforts at giving a major fillip to horticultural production continue unabated with a unflapping zeal.

SIKKIM There are seven field level problems/constraints according to the perception of the farmers which play as a powerful barrier in production of horticultural crops in general and the orchid in particular. However, the degree of intensity of these constraints vary from farm to farm which is further clearly displayed in the analyses. In marginal farms non availability of skilled labour is the main constraint whereas in small farms, the main constraints is low prices of output. But there is almost close identity in perceiving the constraints in between medium and large farms as projected. It is found that low prices of output is the main constraints in these farms.

Orchid in particular and the horticultural crops in general being an export potential crops of the state, the prosperity of the growers as well as the overall economy of the state is closely interlined with the development of the production process and marketing methods of these commodities.

However, for adequate growth of this sector vis-a-vis expanding of export of these products attention may be made in developing appropriate organisation. In this juncture a change in the land ceiling act may be amended for allowing the corporate companies to invest more capital on development of large sized captive gardens. There is also an urgent need to adopt effective steps to fulfil the objectives of transfer of technology (TOT) in a proper manner. In this connection, for effective agricultural extension, a strong need is felt for a closer co-ordination and monitoring between the Agricultural Directorate and Horticultural Directorate of the state.

TRIPURA For perishable commodity like pineapple cold storage facility is necessary to maintain its quality in fresh form. Due to lack of such facility the farmer had to sell the product immediately after harvest at whatever price offered by the traders. The middlemen took full advantage of the situation and exploit the growers from their due share of the produce.

There is no regulated market for agricultural produce to cope with the demand for such facilities. The farmers do not have information on market demand and prevailing prices of pineapple in different markets. Most of the farmers do not have any contact with the

central market; as a result they accept whatever price the trader offers to them. So far as fruit crops are concerned media like Radio, Television and Newspaper coverage on market prices is very limited. The interior hill farmers do not have access to such media also and as such the middlemen's offered rate is the prevailing price in that area.

To promote export the following issues must be considered. Emphasis should be given on the development of varieties with higher production potential and export oriented quality and standard. There is need for investment in horticulture sector particularly in pineapple and other export oriented horticultural crops to cope with the demand for fruits in the export market. Improved processing industries are necessary to promote export. Cold storage facilities should be created at central market alongwith refrigerated carrier facilities from the farmers field.

UTTER PRADESH The problems of plant protection materials were reported to be acute on the farms of almost all the mango growers. Operational difficulties were also reported by the majority of farmers of all the bearing stages.

Shortage of skilled labourers on the farms of bearing stages for packing and grading was reported. Prices of packing materials were reported to be much higher. Shortage of gunny bags, wooden boxes and other materials was reported on almost all the farms. Transportation charges were reported to be very high by farmers of all the categories. There was no problem of storage.

Regarding measures of improved practices, the best source of extension media was exhibitions/fairs. The services of V.D.C. (Village Development Officers) were reported to be the best and common source to the maximum numbers of mango farmers. The other sources were horticulture officer. plant protection officer, agriculture inspector, agriculture extension officer, Block Development Officer, progressive farmers, friends and relatives.

The problems faced by potato growers were mainly the non availability of electricity and diesels, seeds and fertilizers, plant protection materials and approach roads.

There was shortage of skilled labourers and gunny bags for grading and packing. There was lack of vehicles at the desired time. Lack of metalled and all weather roads was also reported.

Regarding market intelligence's wrong and misleading information were made available to potato growers, various mal-practices were prevalent part payment and forced low payment were also reported.

Regarding suggestive measures processing units must be developed on or nearby the mango and potato farms to solve the problems of unemployment and disguised employment among growers.

Number of cold storage's should be increased to save the wastage of potato.

Problem of erratic electric and diesel supply must be finished.

Technical know-how and correct market intelligence should be provided to growers.

WEST BENGAL Orchid in particular and the horticultural crops in general being an export potential crops of the state, the prosperity of the growers as well as the overall economy of the state is closely interlinked. The result of the present study clearly demonstrates that there is a promising trend towards cultivation of these crops throughout the state because these crops are not only profitable in terms of higher output-input ratio but these crops also generate a higher wage employment for agricultural sector.

However, for adequate growth of this sector vis-a-vis expanding of export of these products attention may be made in developing appropriate organisation. In this juncture a change in the land ceiling act may be amended for allowing the corporate companies to invest more capital on development of large sized captive gardens. There is also an urgent need to adopt effective steps to fulfil the objectives of transfer of technology (TOT) in a proper manner. In this connection, for effective agricultural extension, a strong need is felt for a closer co-ordination and monitoring between the Agricultural Directorate and Horticultural directorate of the state.

CHAPTER - I

INTRODUCTION

The present study "Economics of Export Oriented Horticultural Crops", was undertaken by all the Agro-Economic Research Centres of the country with the guidelines of Directorate of Economics and Statistics, Ministry of Agriculture, Government of India during the year 1996. The Agro-Economic Research Centre, Shimla was the national co-ordinator of the study and asked to make the consolidated report of the different studies conducted by different Agro-Economic Research Centre of the country.

In India the share of export of agricultural commodities have declined from 31.70 per cent of the total export in 1970-71 to 17.61 per cent in 1992-93. This is inspite of predominance of agricultural sector which contributes about 40 per cent of the national income. The probable reason for the decline is that the elasticity of demand for traditional export commodities such as tea, coffee, jute and cotton fabrics is very low and limited by competitiveness in the world market. In order to compensate the fall in traditional agricultural export commodities, the fresh and processed fruit and vegetables have now been identified as an extreme focus area of India's agricultural export by the Ministry of Commerce (Anonymous 1994). This focus implies recognisation of export potential of horticultural products in changing agro-export markets scenario. The existing level of export of fruit and vegetables represent a very small fraction of the potential available in India.

Although the share of agricultural commodities in total export from India decline, the export of fresh fruits and vegetables have recorded a compound growth rate of about 24 and 25 per cent respectively in quantity and value during 1971-72 to 1991-92. The processed fruits and vegetables have also recorded a growth rate of 10 and 22 per cent in quantity and value of export during the same period. During 1984 the export of fruits and vegetables was estimated to be worth 2,00730 thousand US dollars and same increased upto 6,27,790 thousand US dollars in 1994 (FAO,1994).

India is gifted with variety of agro-climate conditions and is the second largest producer of fruits and vegetables accounting for about 8 and 13 per cent of the total world production respectively (Subrahmanayam, 1994). However, it could not fully exploit its advantage in the world trade as the share of fruits and vegetables is still meagre. The agro-climatic conditions in the different parts of the India provides ample opportunities for the regional specialisation of the various commodities (Singh, 1993). Accordingly some regions have comparative advantage and good potential in production of fruits and vegetables. For this purpose the exercise taken by different agro-economic research centre, fruits and flowers were identified as export oriented horticultural crops in the country (Table 1.1). In this context an attempt has been made in the present study to examine the export potential of horticultural crops in different parts of the country.

Area under horticultural crop in India is nearly 12 million hectares, constituting nearly 7 per cent of GCA of the country. The estimated production of horticultural crops is about 100 million tonnes per annum, contributing over 18 per cent of total agricultural product of the country.

The aggregate area under fruits and vegetables increased from 2249 thousand hectares (1.8 % of GCA) in 1950-51 to 5966 thousand hectare (3.5 % of GCA) in 1987-88, accounting an increase of 444.3 per cent.

Area under total fruits increased from 0.6 per cent of GCA in 1950-51 to 1.4 per cent of GCA or about three-fold in on the whole, the area under total vegetables increased from 1.2 per cent of GCA in 1950-51 to 2.1 per cent of GCA in 1987-88.

During 1987-88 the share of area under total fruits in total cropped area was maximum at 12.8 per cent in Tripura, 11.5 per cent in Kerala, 3.6 per cent in Jammu & Kashmir and 0.7 per cent in Gujarat.

The export of fruits and nuts increased from Rs. 393 crores in 1987-88 to Rs. 481 crores (22.4 %) in 1989-90 and to Rs.546 crores (38.9 %) in 1990-91.

Area under total fruits increased from 446 hundred hectares (0.4 % of GCA) in 1971-72 to 1065 hundred hectares (1.0 % of GCA) in 1992-93.

Generally the fruit and flower growers of the country do not get remunerative price for their produce due to several problems in pre and post-harvest management. To find out

the proper solutions and strategies for better production and post harvest management of export oriented horticultural crops, broadly the following objectives were undertaken by all the centres of the country except the agricultural economic research centre, university of Delhi, Delhi.

1.1. OBJECTIVES

1. To identify the major horticultural crops of the region in terms of growth and instability in area and production;
2. To estimate the economics of selected crop/crops;
3. To assess the impact of horticultural crops on income and employment;
4. To study the post-harvest management of selected crop/crops and producer's share in consumer rupee in domestic market and export price;
5. To study the production and marketing problems and prospects of horticultural crops in the state.

1.2. OBJECTIVES FOR CUT FLOWERS IN HARYANA

1.The Delhi Agricultural Economics Research Centre emphasised that in Haryana the commercial flower cultivation can be linked to an industrial production process and therefore has generally been practised by a handful of big or well off farmers on by a few resourceful entrepreneur only on a limited scale and that too only recently. Further most of the entrepreneurs, it was felt, did not want to share their experiences specially about cost of production and returns etc. Therefore, the objectives for this particular crop in Haryana, modified, keeping in view the specifically of the crops, the prevailing production environment and the data availability constraints. The specific objectives of the study were to study the status of floriculture in Haryana in particular and the country in general;

2. To analyse the prevailing scenario of world trade in cut flowers and the status of India cut-flower exports in the world market;
3. To assess, on the basis of experience gained so far, the performance of export oriented cut-flowers industry;

4. To review and assess the adequacy of the prevailing policy and institutional environment for growth of export oriented floriculture in India;

5. To suggest measures needed for increasing the exports of cut-flowers from India more competitive.

1.3. METHODOLOGY

A common methodology was adopted by all the AER Centres with the consultation of Commissioner Horticulture, Ministry of Agriculture, Govt. of India, New Delhi. The fruit and flower crops identified as export oriented horticultural crops are as follows (Table 1.1).

TABLE 1.1 : NAME OF THE EXPORT ORIENTED HORTICULTURAL CROPS IDENTIFIED IN DIFFERENT STATES OF THE COUNTRY

State	A.E.RCentre which covered the state	Export Oriented Horticultural Crop	Selected District	Reference
1. Andhra Pradesh	Waltair Visakhapatnam	Mango, Grape & Onion	Krishna, Rangareddi, Anantpur, Rayalaseema	1996-97
2. Bihar	Bhagalpur	Litchi	Muzaffarpur	1996-97
3. Gujarat	Vallabh Vidyanagar Gujarat	Chiku	Valsad	1996-97
4. Haryana	Delhi	Cut-flowers	13 Units	1996-97
5. Himachal Pradesh	Shimla	Apple	Shimla,Kullu & Mandi	1996-97
6. Kerala	Chinnai	Chashew Kernels	Kesasgod	1997-98
7. Maharastra	Pune(Institute of Politic & Economics)	Grape & Onion	Nasik	1995-96
8. Sikkim	Visva-Bharati(Santiniketan)	Orchid	Sikkim	1995-96
9. Tripura	Johrat	Pine Apple	Tripura	1996-97
10. Uttar Pradesh	Allahabad	Mango, Potato	Saharanpur, Farrukabad	1995-96
11. West Bengal	Visva-Bharati (Santiniketan)	Orchid	Darjeeling	1995-96

Multi-stage random sampling techniques were use for the selection of district, Talnka, village and ultimate growers. In general, for each crop 50 growers of different size groups of holdings were selected for the detailed study by almost all the centres.

According to the magnitude of production the different fruit orchards were classified in (Table 1.2).

TABLE 1.2: CLASSIFICATION OF ORCHARDS ACCORDING TO THE MAGNITUDE OF PRODUCTION

Production stages	Apple	Grape	Chiku	Litchi	Mango	Pine-apple	Cashew kernals
Non-bearing	1-8	1-2	1-8	1-5	1-5	Not identified in the report	Not identified in the report
Increasing production	8-17	3-10	9-25	5-15	5-10		
Constant production	17-30	11-14	25-40	15-30	10-40		
Decreasing production	Above 30 years	Above 15 years	41 year and above	Above 30 years	Above 40 years		

The terms and concepts used in all the studies were those which generally used in farm management studies.

CHAPTER - 2

SCENARIO OF EXPORT ORIENTED HORTICULTURAL CROPS IN INDIA

2.1 BACKGROUND

At the outset, it needs to be clarified that horticulture as a discipline of agricultural science encompasses study of large groups of fruits, vegetables, mashrooms, flowers plantation crops including cashew, spices, medicinal and aromatic plants. India is rich in diversity of these crops due to immense agro-climatic variations, enormous bio-diversity, fertile soil, large cultivable area and above all long history of crop husbandry. The rich cultural diversity of this country has further contributed to the planned exploitation of crops and trees, giving rise to a large variety of culinary recipes. The total area under these crops in 1994-95 was 14.5 million hectares with an annual production of 119.2 million tonnes. Fruit and vegetable together contributed 90.2 per cent of this production and 65.8 per cent of the total area. (Kaul, 1997). Table 2.1.

Table 2.1 Area and Production of Horticultural Crops in India.

(Area in lakh ha.Production in lakh tonnes)

Commodity	1984-85		1994-95	
	Area	Production	Area	Production
Fruits	25.40	237.60	35.71	388.35
Vegetables	58.00	608.80	59.70	686.82
Spices	16.78	12.70	24.01	24.66
Coconut	11.90	44.57	16.90	85.62
Cashew	5.02	2.11	6.35	4.18
Arecanut	1.87	1.92	2.35	2.72
Total	118.97	907.70	145.02	1192.35

Source: Production Year Book, 1997, NHB Gurgaon.

India has a vast potentials of export oriented horticultural crops but due to variation in agro-climatic conditions different fruits and vegetable are grown in different states. Therefore, study is concentrate only on certain crops and upon certain areas which has potentials for growth of concerned export oriented crops. So, the different crops in different states have been identified and studied separately.

Table: 2.2. Selection of Export Oriented Horticultural Crops in Different States.

Name of the State	Export Oriented Horticultural Crops Identified
Andhara Pradesh	Mango,Grapes and Onion
Bihar	Litchi
Gujarat	Chiku(sapota)
Haryana	Cut-Howers
Himachal Pradesh	Apple
Kerla	Chashew Kernels
Maharastra	Graps and Onion
Sikkim	Orchid
Tripura	Pine Apple
U.P.	Mango and Potato
West Bengal	Orchid

The detailed state wise scenario are as follows:

2.2 ANDHRA PRADESH

Andhra Pradesh ranks second in area and production of fruits and other horticultural crops in the country next only to Uttar Pradesh with 11.43 lakh hectares of which 5.98 lakh hectares constituting about 52.10% under fruits, 14.72% under vegetables

including onions, 2.00 under flowers and 31.18% under spices. Among fruits, mango occupied a predominant position with 23.00% of the total area under horticultural crops in the state, followed by cashew with 10.45%, coconut with 7.84% and citrus with 5.50%. In the case of production mango also accounted for the highest proportion of 35.97% of the total production of various horticultural crops followed by banana with 11.20% and citrus with 10.72%. among the vegetables, tomato occupied predominant position with 4.18% followed by onion with 2.09% and brinjals with 1.66% of the total area. In the case of production, onion shared the highest proportion of 6.83% followed by tomato with 5.42% and brinjal with 4.30% of the total production. Among the spices, chillies, turmeric and coriander are the important crops accounting for considerable proportion of the total area under horticultural crops during 1995-96 in the state.

A hundred per cent increase in the area under Mango from 1.3 lakh hectares during 1970-71 to 2.6 lakh hectares during 1995-96 has been recorded in the state. Similarly, production has also increased from 16.07 lakh m.tons during 1970-71 to 31.64 lakh m.tons during 1995-96. In the case of grapes also, a similar increase in the area from 1309 hectares to 2315 hectares and production from 7120 m.tons to 50,895 m.tons has been recorded during the same period in the state. Area under onion has also increased substantially from 13,396 hectares during 1970-71 to 24,034 hectares during 1995-96. However, a multifold increase in the production of onions from 1.10 lakh m.tons to 6.01 lakh m.tons is recorded during the same period in the state.

2.3 BIHAR

Bihar is one of the important litchi producing states of India. In Bihar, it is mainly cultivated in the districts of Muzaffarpur, Vaishali, Sitamarhi, East and West Champaran, Samastipur and Darbhang of North Bihar region. During the year 1994-95 litchi was grown in a area of about 21.68 thousand hectares with a total production nearly 2.66 lakh tonnes. Bihar, thus, produces nearly 73.38 per cent of total litchi production of the country and occupies nearly 40 per cent of the area under litchi plantation in India. However, inspite of increase in litchi production, the litchi exported to the important cities of India from the state was only 7,702 MT and outside the country was only 30 MT during the year 1994-95. It was, therefore, pertinent not only to enquire

into the growth rate of area, production and productivity of litchi in Bihar as well as Muzaffarpur district (which is the most important district of Bihar with respect to area and production) but also the export of litchi from the state.

Status of horticultural crops reveals that the mango contributes maximum area and production under total fruit crops grown in Bihar. The area and production of mango was 53.59 per cent and 53.08 per cent respectively. Banana attains second position in area and production. Litchi attains fourth position in the total fruit area and production. Inspite of alternate bearing in mango fruiting it covers 53.59 per cent of total fruit area in Bihar. It is only due to its wide range of soil and climatic adaptability, however, mango crop grown in less care and management and its market value is also very good.

The compound growth rates of area, production and productivity of litchi in Bihar for the period during 1980-81 to 1994-95 were estimated to be 2.8, 4.9 and 1.7 per cent respectively, which were positive and statistically significant. The growth rates of area, production and productivity during different sub-periods were also worked out and were observed to be positive and statistically significant.

The compound growth rates of area, production and productivity of litchi in the district of Muzaffarpur during the period 1980-81 to 1994-95 were observed to be 4.9, 6.6 and 1.7 per cent respectively, which were also positive and statistically significant. The growth rate of area production and productivity of litchi in the district of Muzaffarpur in different sub-periods were also positive and significant as it was for the State of Bihar. However, it was also observed that during 1990-91 to 1994-95 growth rate of area and production of Bihar (6.4% and 6.7%) was higher as compared to district of Muzaffarpur (4.5% and 6.4%). This indicated that the rate of growth of area and production of litchi in other litchi growing district of Bihar after nineties was faster as compared to district of Muzaffarpur, probably because litchi was already cultivated on large scale and opportunity for further expansion was comparatively less in Muzaffarpur than other litchi growing districts.

2.4 GUJARAT

In Gujarat with a total area of 446 hundred hectares under fruits in 1971-72, mango with 45.2 per cent of total area claimed a lion's share, which was followed by banana

with 28.5 per cent and ber with 6.5 per cent, sourlime with 6.1 per cent. The area under chiku accounted for as low as 2.7 per cent of total area under fruits in the State.

In 1981-82, total area under fruits increased to 699 hundred hectares and accounting for 56.7 per cent increase during 1971-72 to 1981-82. The share of area under mango to total area under fruits was 37.9 per cent and that of banana was 30.6 per cent and chiku 6.0 per cent during 1981-82. As compared to 1971-72, the area under chiku, sourlime and other fruits increased in 1981-82.

In 1992-93, total area under fruits increased to 1065 hundred hectares, which accounted an increase of 138.8 per cent over 1971-72. The share of area under mango to total area under fruits was 31.9 per cent and that of banana was 26.9 per cent and chiku 5.6 per cent during 1992-93. With compared to 1981-82 the area under ber and other fruits increased in 1992-93.

In 1994-95 total area under fruits increased to 1290 hundred hectares, constituting an increase of 189.2 per cent over 1971-72. The share of area under mango to total area under fruits was 30.2 per cent followed by banana with 23.6 per cent, chiku 6.2 per cent and others 22.5 per cent. 'Others' category included fruits like pomegranate, detepalm, papaya, custardapple, jamun etc.

It revealed from the fact that on the whole area under total fruits increased by 189.2 per cent during 1994-95 over 1971-72. The share of chiku in total fruit area of the State increased from 2.7 per cent in 1971-72 to 6.2 per cent in 1994-95.

Area under total vegetables increased from 397 hundred hectares (0.4 % GCA) in 1971-72 to 1042 hundred hectares (0.9 % of GCA) in 1992.93.

Area under chiku in the State increased from 60 hundred hectares, constituting 5.4 per cent of area under total fruits of the State in1992-93 to 80 hundred hectares, constituting 6.2 per cent of area under total fruits of the production of chiku crop increased from 720 hundred MT in 1992-93 to 975 hundred MT in 1994-95. The yield was 12 MT per hectare during the period.

The area under chiku in Gujrat is projected to increase from 10750 hectares in quinquennium 1992-97 to 14000 hectares in quinquennium 2002-2007.

2.5 HARYANA

Unlike some of the other states of India, where flower cultivation for domestic consumption has been practised for a number of years, floriculture is relatively new to Haryana. In response to growing demand of flowers and cut-flowers from both domestic consumers as well as for export purposes, commercial cultivation of flowers in the State has started gradually picking up. The Haryana State Department of Horticulture has identified the districts of Sonepat, Gurgaon, Karnal and Ambala, in particular, for introduction of commercial floriculture in the State. As part of the promotional efforts, the Department of Horticulture has been organising demonstrations, arranging training programmes, and making available quality planting material of exotic varieties from different sources. Gladioli, roses, marigold, tuberoses, carnation and chrysanthemum have in particular been selected for commercial propagation and adoption.

As a result of these efforts and the locational advantage of Haryana, due to its proximity to Delhi which offers Haryana a ready and huge market for its produce, the area under floriculture has increased from just 50 hectares in 1990-91 to more than 1800 hectares in 1995-96.

While various species of flowers are cultivated in Haryana, marigold alone accounts for the largest share of flower cultivation about 63 per cent of the total area under flowers in Haryana. In addition about 8 per cent of flower area is occupied by each of the flowers- Gladioli, Roses, Chrysanthemum, and Tuberose. Over the years, the area under all types of flowers has increased, though to varying extent. The area under marigold has more than doubled- from about 550 hectares in 1991-92 to 1140 hectares in 1995-96. During the last four years however the area under carnation has remained almost constant at 10 hectares. Primarily as a result of increased area under different flowers, their production has increased significantly. Thus during the period 1991-92 to 1995-96, the annual production of gladiolus increased from 20 lakh to 320 lakh, that of roses from 40 lakhs to 125 lakh cut flowers, and that of chrysanthemum from 200 tons to 1200 tons. During the same period the production of marigold however more than doubled - from 12500 tons in 1991-92 to 28000 tons in 1995-96.

2.6 HIMACHAL PRADESH

In India the plantation of apples started with the introduction of apples mostly of sour varieties by the Christian Missionaries and the British Officers in the middle of 19th Century. The credit of cultivation of commercial apples goes to Samuel Evans Stokes a resident of Philadelphia who brought the delicious group of cultivars from United States of America in the beginning of 20th Century.

Presently more than 30 per cent of apple produced in the world is in China followed by U.S.A. contributing 11 per cent in 1995. In India the total area under apples was 1,30,000 hectares during 1978 and was increased to 2,10,734 hectares in 1995. During the same period the total production increased from 7,42,000 tonnes to 11,83,142 tonnes. The share of India in the world apple production is estimated to be 2.53 per cent and ranks ninth position in the world.

The state wise figure reveals that Jammu & Kashmir, Himachal Pradesh and U.P. hills account for more than 97 per cent of total area under apples in India and out of this Himachal Pradesh share was 35.81 per cent during 1994-95. Out of the total area and production of various fruits grown in Himachal Pradesh apple alone accounts for about 40 per cent and 86 per cent share respectively of all fruits grown in the State.

After the attainment of full statehood, Himachal Pradesh has achieved a very impressive progress in the production of horticultural crops (specially fruit and vegetables) because of planned efforts made by state government for the development of these crops. The farmers of the state also realised and accepted these crops in their farming system in place of traditional (subsistence) crops. Realising the potential of fruit crops in some of the areas of the state the field crops have been completely substituted with fruit crops.

During last two decades the area under fruit crops has recorded a compound growth rate of 3.18 per cent per annum and during the same period the production was increased at a compound growth rate of 3.64 per cent per annum. Among all the fruit crops temperate fruits have shown highest growth (more than 8 per cent per annum) in area under these crops. Though the area under all fruits have increased significantly changed in favour of new crops. Out of total fruits produced in the state, apple alone accounts largest share (more than 85 per cent) registering a compound growth rate of 3.60 per cent per annum.

In Himachal Pradesh fresh vegetables specially off-season vegetables accounts significant share in the horticultural crops of the State. During the last two decades the area under vegetables excluding potato have increased at a compound growth rate of 6.05 per cent per annum and production at the rate of 11.84 per cent per annum. Like fruit crops the adoption level of vegetables in the farming system of some of the regions is quite significant. The important valleys like Saproon in Solan, Sainj in Shimla and Nagwain in Mandi and Bajaura in Kullu districts, the adoption level of vegetable cultivation (specially off-season) is on commercial scale. In a recent study conducted in Saproon valley of Solan district the average returns from vegetable cultivation is estimated to be Rs.87 thousand per annum per farm.

The share of Shimla and Kullu districts in total fruit area in the stage have declined from 29.9 and 16.6 per cent to 18.9 and 11.8 per cent respectively during the last two decades. However in foot hill regions of the state some sub-tropical fruits becoming popular. In these areas the change in share of fruit crops have been increased significantly, specially in Kangra district where the share of fruit crops have increased from 13 per cent in 1975-76 to 21 per cent in 1995-96. Similarly in other foot hill districts like Una, Hamirpur, Bilaspur, the share of fruit crops in the cropping pattern of the region is increasing.

The overall scenario of the horticulture crops in the state suggest that some new crops are becoming popular and grown on commercial scale by harnessing the potential of for growing of these crops in various agro-climatic regions of the state.

2.7 KERALA

Kerala is a land of backwaters, forty four rivers cut across the State with their innumerable tributaries and branches. The backwaters are attractive and economically valuable feature of the land. The State with its high population presents complex problems in the sphere of food, employment and housing. The State is 50 per cent short of food due to historical and climatic conditions as the State has adopted commercial agriculture more than food crops. Rice is the staple food of the people. Out of a gross cropped area of 30.21 lakh hectares in 1992-93, the share of food crops (cereals, millets, pulses and tapicaco) was only 23 percent. Kerala has a unique

cropping pattern, it accounts for 92 per cent of India's rubber, 70 percent of coconut, 60 per cent of tapiaco and almost 100 per cent of lemon gross oil. The state is a single largest producer of a number of other crops like banana and ginger besides tea and coffee in abundance. Coir and cashew are two of the largest traditional industries in the kerala state.

Cashew is one of the most important export oriented horticultural crops in kerala which is a native of Brazil was introduced to India in the sixteenth century by the early portuguese settlers. It was originally grown for the purpose of checking soil erosion owing to its quality of resistance to a wide range of vagaries of nature. Due to conditions peculiarly suitable for its growth there was rapid spread along the entire West Coast and South East Coast of india and over years it has established itself in this country as an important commercial crop.

2.8 MAHARASTRA

In terms of fruit and vegetable production Maharastra is considered to be the most important state of the country. During the last ten years period, there has been significant increase in the area and production of horticultural crops in the state. The area under horticultural crops in Maharastra grew from 3.76 lack hectare during 1981-82 to 6.40 lack hectare in 1991-92 registering a nearly two fold increase in the area. It is to be noted that this state leads the country in production of grapes, bananas, orange and onions. Grape is already established as an important commercial crops in Maharastra. Although the cultivation is mainly is concentrated in three districts of Nasik, Sangli and Solapur. Large number of farmers in the neighbouring districts like Pune, Ahmedanagar and Satara are switching over to grape cultivation. Infact, grape cultivation is chiefly confined to deacon platen in western Maharastra because of the congenial agro-climatic conditions prevailing in this region. About 600 hectares are added to grape acreage in Maharastra every year. Nasik district of Maharastra is the largest producer of grapes in to the country. It accounts for a production of about 1,80,000 tonnes of grape per annum. The yield of grapes in Nasik has risen from 12 tonnes per hectares a few years age to 22 tonnes per hectare. Even harvesting of grapes is done twice as against once in most of the countries.

Another important horticultural crop grown in Maharastra is onion. Most of the onion produced in India comes from this state. This state accounts for 20 per cent of the area and 25 per cent of the total output of onion in India. Nasik not only producing grapes, this district also accounts for the bulk of the onion production in the state. In fact, Nasik accounts for the largest share in the production of onion in India. Onion is also grown in Pimpalgaon, Manmad, Yeola, Saikheda, Chandwad and Satana all around Nasik.

2.9 SIKKIM

The cultivation of orchid in the state of Sikkim has been increasing at a rapid rate due to more or less better return and external demand of these plants. Therefore, the need for assured supply of quality orchid to capture and ensure the foreign market niche in a competitive global market environment, is being deeply felt. This requires commitment at production and product development stages. A synchronised production strategy at the micro-level and an export policy at the macro-level are the calls for the day.

In recent years different schemes and programmes have been implemented by the Government of Sikkim in consonance with the strategies formulated for the Eighth Plan Period. It entails development of the horticultural sector more vigorously with special emphasis on cash crops. The development of floriculture and off-seasons vegetables have also received over riding priority. However, some improvement has been found in the production of fruits and vegetables in this state during the last decades. The macro level analysis regarding the trend in production of horticultural crops in Sikkim shows that the production of total fruits has increased from 4,70 thousand tonnes in 1975-76 to 12.00 thousand tonnes in 1995-96. The production of total vegetables in the state was estimated to be 28.00 thousand tonnes and that of potato - the major vegetables - at 24.00 thousand tonnes in 1995-96. The production of large cardamom and ginger was around 3.60 to 29.00 thousand tonnes respectively during the same period. The percentage growth rates of area of orange/citrus fruits and other fruits during the period from 1975-76 to 1995-96 have increased by 471.43 per cent and 173.33 per cent respectively. The percentage growth rate of area and production of large cardamom during this period were 235.00 per cent and 156.52 per cent respectively. Another important horticultural commodity is ginger which occupies 8.98 per cent of the total

area under horticultural crops. The area and production of ginger in Sikkim have registered the rates of increase at 900 per cent and 1450 per cent during the same period.

2.10 TRIPURA

There has no systematic study on area and production of horticultural crops in the region. The North Eastern Council estimated that about 1.93 lakh hectares of land are occupied by various fruit crops of which 36 thousand hectares are under pineapple. The productivity of horticultural crops are not encouraging, yet, the estimated marketable surplus in the region is highest for pineapple (82 per cent) followed by mandarin orange(76 per cent) and banana (64 per cent). So far as allocations of area under pineapple is concerned Assam ranked first followed by Meghalaya, Manipur and Tripura. The compound growth rate of area and production during 1980-81 to 1991-92 has been worked out at 5.37 and 5.59 per cent respectively.

Considering the quantum of production and marketable surplus (88%) in the sample it is identified as an export oriented horticultural crop of Tripura. The official level information indicated that a considerable improvement of export of horticultural crops has been registered in 1996 over 1995. The quantum of export of pineapple to Bangladesh was 10 MT. in 1995 which has increased to 134.25 MT. in 1996 and so is the case with citrus and jak fruits. But the quantum of export to total marketable surplus has been considered as nominal. It is gathered that a considerable amount of pineapple, jackfruits, citrus etc. are exported to Bangladesh through some illegal means which has got no record at official level.

The sample farmers owned 207.61 hectares of land of which 127.73 ha. (61.52%) are under pineapple, 27.20 ha. (13.10%) under field crops. Sugarcane and Rubber plantation is the recent introduction in the area. In the sample the percentages of marginal, small, semi-medium, medium and large farmers are 16,24,36, 20 and 4 respectively.

2.11 UTTAR PRADESH

The major horticultural crops in Uttar Pradesh were categorised into fruits, vegetable and spices. During 1993-94 the total area covered by the fruit crops was 482.79 thousand hectares of which the maximum i.e., 258.43 thousand hectares covered by the mango crop only whereas guava and musk melon are the other major horticultural crops. The area covered by other fruit crops was recorded 52.21 thousand hectare. In case of Mango, district Saharanpur, Lucknow and Sultanpur are the major growing districts of Utter Pradesh.

In case of vegetables 602.37 thousand hectares of area was under these crops out of which 378.30 thousand hectares was under potato crop during 1993-94. Sweet potato and onion are the another vegetable crops grown in U.P. Among the regions of plain the area under mango was found to be highest in Western region followed by eastern and central region. The production of mango was also observed on an increasing order. Regarding area under potato it was in increasing order till the year of 1992-93 but thereafter the area under said crop started decreasing. During 1991-92 the area under potato was 368.94 thousand hectares which decreased to 360.61 during 1994-95. The production and productivity of potato seems to be increasing in very slow pace.

2.12 WEST BENGAL

The cultivation of orchid in the state of West Bengal has been increasing at a rapid rate due to more or less better return and external demand of these plants. Therefore, the need for assured supply of quality orchid to capture and ensure the foreign market niche in a competitive global market environment, is being deeply felt. This requires commitment at production and product development stages. A synchronized production strategy at the micro-level and export policy at the macro-level is the call for the day.

The macro level analysis regarding the trend in area and production of horticultural crops in West Bengal shows that in spite of the wide adaptability of the fruit crops like mango, pineapple and banana, these are mainly confined to three/four districts of the state. The compound growth rates of area during the period from 1990-91 to 1992-93 under mango, pine apple and banana show that these are increased by 1.89, 2.57 and 12.31 per cent respectively in the state, while the area under vegetables in different

seasons i.e. summer and rainy vegetables are increased by 17.29 and 113.08 per cent respectively in the state during the same period. However, the compound growth rate of area under winter vegetables is found to be -8.79 per cent during the same period. The production of these horticultural crops in the state also demonstrate an increasing trend during the period under review except mango and winter vegetables which are estimated to be negative.

CHAPTER -3

SOCIO-ECONOMIC PROFILE OF EXPORT ORIENTED HORTICULTURAL CROP GROWERS

Changes in Socio-Economic structure are very closely related to change in economic development. This is true both at the macro as well as at the micro level. This profile of producers have a profound influence on the decision making process and profitability of crop enterprise. An attempt has been made in this chapter to compare and contrast the resource endowments of different categories of farms in different states or different export oriented horticultural crops growing area. The information relating to family size and composition, education, land use pattern, cropping pattern, source of irrigation, farm implements and machinery and livestock resources at various farms in the different selected state have been analysed and discussed for various categories of orchardist/growers. The knowledge of the background of the sample producers is essential since the viability of any enterprise heavily depends on the favourable attitudinal changes towards adoption of superior technical inputs or technique of production which, in turn, depends on technical skills and resource position of growers.

The socio-economic resource profile of sample growers in different states are as follow:-

3.1 ANDHRA PRADESH

Out of the total population of the sample 268, males constitute 49.25 percent, while females account for the remaining 50.75 per cent in dictating a modest female predominance among the sample households. Among the size groups, while female predominance is observed in the marginal and medium sizegroup of farmers, males had an edge over female population among the small farmers. However equal number is maintained in the case of large farmers. The rate of literacy is as high as 79.48 percent, among the sample households and a majority of them are at secondary or higher education. Female literacy is also considerably high constituting about 47.89 percent of

the total literates. This is mainly due to the proximity of the sample villages to the urban centre of Hyderabad and most of the sample households belonged to the socially and economically advanced communities. Rate of literacy and educational status of the sample households.

The area operated by the sample households is completely owned by them and no leasing of land is reported in the sample villages. The per holding area operated by the sample households is 2.82 hectares and the net area sown is 2.81 hectares with 0.01 hectares as current fallow. The entire land owned and operated by the sample households is irrigated and is under orchards except a small extent under paddy. Since grape cultivation is highly capital and labour intensive, the sample farmers have concentrated only on this crop as 97.69 per cent of the total cropped area of 140.44 hectares is under grapes. Paddy is the only other crop grown on a small extent and its share in the total cropped area is only 2.31 per cent.

Since grape is a commercial crop and the land is well irrigated, value of land formed a major proportion of 65.59% of the total per household value of assets owned by the sample households. Residential buildings shared 20.46% of the total value of assets as most of the cultivators are living in semi urban areas, some of them in posh buildings. The value of farm implements and machinery like electric motors, oil engines, pumpsets, tractors, sprayers and dusters constituted about 9.85% of the total value of assets. While the value of cattlesheds, bullock carts and farm houses constituted 2.26% of the total value of assets, value of live stock accounted for only 0.88% as most of the farm operations are conducted by tractors and other modern equipment..

3.2 BIHAR

The socio-economic profile explains that all the villages of the study area are well connected by both road and railway which is a boon for the transportation of fruit and other commodities produced in the project area. The soil of the area is calcareous containing free calcium carbonate to the tune of 21 per cent to 40 per cent which is relatively beneficial for the production of litchi. The soil reaction is alkaline and the PH ranges between 8.3 to 8.7. The climate and soil of all the selected villages were identical. The area has humid subtropical climate with or summer, moderate rainfall and

cold winter. The demographic features of the sample orchardist revealed that out of 50 respondents 8.0 per cent belong to scheduled castes, 38.0 per cent backward castes and 54.0 per cent to general caste. The average size of family is 6.9 persons per household which ranged from 9.25 persons on marginal category to 5.75 persons on medium category of orchardists. The 99.50 per cent respondent were literate and they were mainly engaged in agriculture (54.0%). In all the three villages have assured Irrigational facilities mainly in the form of diesel pumpsets which was evident from the fact that the net irrigated area constituted nearly 73.96, 72.31 and 72.11 per cent of net sown area of the village Kothia, kaparpura and Kalwari respectively. The cropping pattern of the selected villages shows orchard dominated. About 50 per cent area in the cropping pattern of the selected villages were covered with orchard, moreover, litchi orchard covers about 35 per cent area in the total gross cropped area. The orchardist of the project area were well equipped with farm implements and they were rearing animals for dairy, poultry, draft, etc. purposes.

3.3 GUJARAT

Majority of households i.e. 58 per cent belonged to brahmin caste known as Anavils and 16 per cent to schedule tribe. 93.3 per cent of total population was literate. 38 per cent of head of the households had attained education upto graduate level, while 40 per cent had attained education upto secondary school. About 66 per cent of the total population was economically active.

Overall per hectare investment on all the assets was Rs. 47300, of which 58.6 per cent was for tractors, 11.4 per cent for tubewells, 8.7 per cent for wells and 4.0 per cent for threshers.

On the whole, 74 per cent of sample households had owned cows, 38 per cent had buffaloes and 4 per cent had owned bullocks.

Overall 2.6 hectares per household was owned land and 0.1 hectare was leased-in land. The share of waste land was negligible. There was complete absence of mortgage transactions. Majority area of sample households was dominated by orchards of chikus and mangoes. Low acreage was spared for field crops. The area under chiku was positively related with size of land holding group.

The GCA of each sample household was under irrigation. Wells, tubewells and canals were the major sources of irrigation.

3.4 HARYANA

The commercial flower cultivation can be likened to an industrial production process and therefore has generally been practiced by a handful of big or well off farmers or by a few resourceful entrepreneurs.

Given the nature of the crop selected for study, its special cultivation requirements and characteristics, the fact that its cultivation has started only on a limited scale and that too only recently, the selected crop is not ammenable to detailed investigation in respect of some of the issues stipulated by the study coordinator for horticultural crops in general due to non-availability of required data on a number of parameters. Further our repeated attempts to interview the owners/promoters and/or their managers of these commercial floriculture units to ascertain information on some of the aspects relevant for the study were usually not met with much success. Most of the entrepreneurs, it was felt, did not want to share their experiences specially about cost of production and returns etc. for obvious reasons. Accordingly the objectives of the present study have been somewhat modified keeping in view the specificity of the crop under study, the prevailing production environment and the data availability constraints.

3.5 HIMACHAL PRADESH

Out of 126 sampled orchardists 50, 43 and 33 are from Shimla,Kullu and Mandi districts respectively. The second largest group of sample orchardists is of small category. Out of total sample orchardists more than 15 per cent belong to scheduled caste category. The average family size varies from 5.3 persons on marginal category to 7.8 persons on medium size of orchardists and the family size is almost the same in all the selected districts. Among different districts the number of labour force is almost same and average being 3.4 persons. The literacy percentage is reported more among male members on different categories of orchardists and almost same for male and female members in Mandi district. The literacy percentage of females is lower (41.3%) in

Shimla district as compared to the State average of 52 per cent (Census 1991). The occupational distribution reveals that more than 68 per cent male workers are engaged in agriculture while the percentage of female workers account for 80.3 per cent.

The land holding size of sample orchardists varies from 0.58 hectare on marginal farm to 5.28 hectares on large farm, the average being 1.28 hectares. Out of total land owned by sample orchardists about 6 per cent area is reported irrigated on average farm and this proportion is reported higher (13.27%) on medium farms. In Shimla and Mandi districts no area is reported irrigated. In Kullu district the proportion of irrigated land is more than 35 per cent. In Mandi district no field crop was grown by sample orchardists except inter-cropping in young orchards, while in Shimla district no field crop was grown by the sample orchardist. In Kullu district average under pure field crops is more than 32 per cent.

3.6 MAHARASHTRA

The average size of a family consisted of 6 persons in the case of onion producers and nearly 8 persons in the case of grape orchardists. The family size of large category was seen to be more compared to other categories, both in the case of onion producers and grape orchardists. A positive association was seen between land holding size and number of members in the family, that is, the number of members in the family increased from marginal to small, small to medium and medium to large category. This held true for both onion producers and grape orchardists. In order to ascertain the extent of education of the members of a family, an index of literacy was computed for various categories of onion producers and grape orchardist. The overall literacy index was seen to be slightly higher for onion producers compared to grape orchardists. In case of onion producers, the literacy index was seen to increase with the increase in size of land holding. On an average, 0.15 acre of land was seen to be acquired on lease by small category of onion producers. The intensity of cropping was ranged from 147 per cent in case of marginal category of onion producers to 126 per cent for large category with an average of 139 per cent for the average category of onion producers. The area under kharif crops in case of grape orchardists varied from 0.75 acre on marginal farms to 7.50 acres on large farms. In case of rabi crops, it varied from 0.75

acre on marginal farms to 3.73 acres on large farms. In case of sample onion producers, the crops other than onion that dominated the cropping pattern of these producers were seen to be hybrid jowar, bajra, groundnut and soyabean in kharif season and wheat and hybrid gram in rabi season. Grapes, sugarcane and Lucerne were seen to be grown as perennial crops by these sample onion producers.

In general, in case of perennial crops, 80 per cent of the total cropped area was seen to be under grape orchards, 16 per cent under sugarcane, 1 per cent under Lucerne and the remaining 3 per cent under pomegranate. Groundwater based irrigation is seen to have dominated over the surface water based irrigation in the study area. In general 90 per cent of the net irrigated area of sample onion producers was under well irrigation, about 5 per cent under canal irrigation and the remaining 5 per cent under other sources of irrigation. In onion producer, milch cows accounted for 32 per cent, milch buffaloes 25 per cent, bullocks 12 per cent, he-buffaloes 9 per cent and young stock 20 per cent. The sample grape orchardists possessed less number of animals compared to sample onion producers. On an average, the grape orchardists possessed around 4 animals in standard animal unit.

3.7 SIKKIM

Regarding the general features of the sample orchid growers, it is found that more than 26 per cent of the orchid growers are marginal farmers and 41.25 per cent are small farmers. The percentage of medium and large farmers in the sample are 15.00 per cent and 17.50 per cent respectively. In terms of number of pots of orchid, majority of the growers (36.25 per cent) fall into the category of growers who hold 101 - 200 pots. The potwise composition of other farms are 28.75 per cent in the category of farms having less than 100 pots, 20 per cent in the category having 201-300 pots and rest 15.00 per cent in the category having 301 & above pots.

As per the location feature of the sample farms, it is observed that more than 56 per cent farms are located within a distance upto 1 km from the permanent road and 28.75 per cent of the farms are located within a distance from 1.01-2 kms. The rest of the sample farms are located within a distance from 2.01-3kms.(8.75 per cent) and 3 kms. and above (6.25 per cent).

Out of the eighty growers, more than 21 per cent belongs to the scheduled caste and 10 per cent belongs to the scheduled tribe. It is also fact that the scheduled caste and scheduled tribe growers are mainly marginal and small farmers. The average size of family of the sample orchid growers varies from 5.4 in medium category to 6.5 in marginal category. The average family size in small and large categories of farms are 6.5 and 6.0 respectively. it is also found that proportion of male worker is more in medium category farms followed by large and small categories and it is lowest in marginal farms. Similarly, the average work force is found to be more in medium and large farms than that of marginal and small farms. The literacy percentage is also less in marginal and small categories of growers than that of large farms. The overall literacy percentage is found to be 55.88 per cent. The land holding size of the sample farms varies from 2.21 acres in marginal farms to 12.52 acres in large farms. The overall farm size is found to be 5.85 acres. Among the field crops grown by the orchid growers, maize accounts for the major share (39.23 per cent) and the share of maize in the cropping pattern is found to be highest in large farms (41.53 per cent). The cropping pattern of these farms other than maize is concentrated towards cultivation of other cereals like paddy and wheat and vegetables like cabbage, cauliflower, potato and cardamom. But the share of vegetables in the cropping pattern varies from farm to farm which may be due to difference in Irrigational facilities and altitude of land. However, there is no evidence that flowers are grown by the growers other than orchid by the sample farms.

3.8 TRIPURA

There are altogether 320 persons in the 50 sample households. The average size of family is 6.4. The proportion of male and female in the population is 52.50 and 47.50 respectively. Total number of persons in the broad age-group of 15 years to 65 years is 217. This 67.81% people constitute the working force of the sample households. Of course, some others from below 15 years of age and above 65 years also do participate in agricultural operations and other household works. The number of female per 1000 male is worked out to be 905. The rate of literacy for the sample population as a whole

is 75.63 per cent while the rate of literacy among the males is 81.55 per cent and for females it is 69.08 per cent. Regarding the land resources the total geographical area is 10,492 sq.km. out of which about 60 per cent are covered by hills and forest and only 40 per cent is considered as plains. The cropping pattern of the sample farmers is very simple. The farmers have two types of land viz. plain land and tilla land. The former is used for field crop while the latter for horticultural crops. The main livestock reared by the sample households are cows, pigs and poultry birds. The 50 sample households possess only 24 bullocks which are used as draught animal. Possession of small area under field crops (like paddy) in each household leads to disproportionate number of bullocks among the sample households.

3.9 UTTER PRADESH

Distribution of total family members on the farms of sample mango growers in Saharanpur district indicates that on an average the total number of family members per sample mango growers was 10 of which 3 were males, 3 females and remaining 4 were children. Whereas the total number of family members per farm in case of potato growers in Farrukhabad district was 9.62 on an average of which 3 were males, 2.46 were females and 4.16 children. Land utilization on the sample farms of mango growers in Saharanpur district indicates that the total operated area per farm was estimated to 5.06 hectare, on an overall average. Among the various categories of mango growers, the operated area was found to be highest i.e., 9.90 hectare per farm in the category of bearing stage having decreasing production against the lowest i.e., 1.96 hectare per farm in the category of non-bearing stage of mango. the area per farm was found increasing in various categories with the increase in the age of mango. On the other hand land utilization on the sample farms of potato growers in Farrukhabad district indicates that the total operated area per farm was estimated to 2.32 hect. on an overall average. While the net cultivated area per farm was 2.35 hectare of the total owned area of 2.38 hectare. Cropping pattern followed on the sample farms of mango growers in Saharanpur district indicates that on an overall the total area covered by perennial fruit crops was 3.85 hectares per farm. While the average per farm in the category of non bearing stage under perennial fruit crops was 1.14 hectare. Cropping pattern

followed on the sample farms of potato growers in Farrukhabad district indicates that on the overall average the gross cropped area per farm was estimated to 6.04 hectares. While the highest gross cropped area per farm was found on the farms of large potato growers against the lowest i.e. 1.47 hectares per farm in the category of marginal potato growers. Distribution of farm inventories on the sample farms of mango growers in Saharanpur district indicates that the value of total farm inventories on an average was estimated to Rs. 9,01,775 per farm. The distribution of farm inventories on the sample farms of potato growers in Farrukhabad district indicates that on an overall average the total value of farm inventories was accounted Rs.9,01,395 per farm.

3.10 WEST BENGAL

Regarding the general features of the sample orchid growers, it is found that the more than 32 per cent of the orchid growers are marginal farmers and 40 per cent are small farmers. The percentage of medium and large farmers in the sample are 13.75 per cent each. In terms of number of pots of orchid, majority of the growers (40 per cent) fall into the category of growers holding upto 100 pots. The potwise composition of other farms are 26.25 per cent in the category of 101-200 pots, 20 per cent in the category of 201-300 pots and rest 13.75 per cent in the category of 301 & above pots.

As per the locational features of the sample farms, it is observed that more than 46 per cent farms are located within a distance upto 1 km. from the permanent road and 30 per cent of the farms are located within a distance from 1.01-2kms. The rest of the sample farms are located within a distance from 2.01-3kms. (18.75 per cent) and 3 kms. and above (5.00 per cent).

Out of the eighty growers, more than 21 per cent belongs to the scheduled caste and 10 per cent belongs to the scheduled tribe. It is also fact that the scheduled caste and scheduled tribe growers are mainly marginal farmers. The average size of family of the sample orchid growers varies from 5.4 in large category to 6.4 in marginal category. The average family size in small and medium categories of farms are 6.2 and 5.3 respectively. It is also found that proportion of male worker is more in medium category farms followed by large and small categories and it is lowest in marginal farms.

Similarly, the average work force is found to be more in medium and large farms than that of marginal and small farms. The literacy percentage is also less in marginal and small categories of growers. The overall literacy percentage is found to be 43.87 per cent. The land holding size of the sample farms varies from 2.25 acres in marginal farms to 15.34 acres in large farms. The overall farm size is found to be 5.55 acres. Among the field crops grown by the orchid growers, paddy accounts for the major share (54.99 per cent) and the share of paddy in the cropping patterns found to be highest in medium farms (65.51 per cent). The cropping pattern of these farms other than paddy is concentrated towards cultivation of vegetables. But the share of vegetables in the cropping pattern varies from farm to farm which may be due to difference in irrigation facilities and altitude of land. However, there is no evidence that flowers are grown by the growers other than orchid by the sample farms.

CHAPTER - 4

ECONOMICS OF SELECTED EXPORT ORIENTED HORTICULTURAL CROPS

In this chapter an attempt has been made to estimate various components of cost, both operational and marketing, and also returns with a view to assess the magnitude of income generation from various crops in various state of various size of farm. It has been widely argued that in the typical rural setting, maximisation of net return is the ultimate goal of the producer which largely depends on the cost structure to be followed by such enterprising household. However, maximisation of profit requires a balance between the increase in the production and various components of costs. In fact, it is the structure of cost and returns that is most crucial not only for the producers but also for the consumers and policy makers since these two key elements provide an effective linkage between the producers and consumers for rational fixation of price of the produce. It is, therefore, essential to evaluate various components of costs involved in various crops in various state. The state wise and export oriented commodity wise details are as follows.

4.1 ANDHARA PRADESH

The per hectare average maintenance cost of Thompson seedless grapes is Rs. 1,27,795 of which a major proportion is spent on the application of FYM and compost (23.01%), Pesticides (21.15%) and Fertilizer (13.63%). Together, these three items account for nearly 57.79% of the total costs incurred by the sample households. The other important costs incurred are on the maintenance of basins (6.96%), interculture (8.87%), watch and ward (5.88%) and apportioned initial establishment costs of non-bearing orchard (10.00%).

The average per hectare gross and net returns from the Thompson seedless grape reported by the sample households are Rs.3,03,458 and Rs.1,75,563 respectively. However, they varied among different size groups of sample farmers. While the highest gross (Rs.320574) and net (Rs.1,97,956) income are reported by the small farmers

followed by gross (Rs.2,95,370) and net (Rs.1,80,958) incomes are reported by the marginal farmers and the lowest gross (Rs.2,92,367) and net (Rs.1,60,754) incomes are reported by the large farmers. This is mainly due to high cost of production incurred by the large farmers and low returns from the crop compared to the small farmers who incurred less costs and secured good harvest.

As already mentioned non-bearing sample have been growing Anab-e-Shahi variety of grapes is not available in the sample villages and information on the initial costs have been collected from the bearing sample households and approtioned among various stages of plantation proportionately. No attempt is made to analyse the costs on non-bearing plantation. Maintenance costs of various stages of bearing and the returns have been analysed in detail for Anab-e-Shahi grapes.

The per hectare average maintenance costs incurred by the sample households of Anab-e-Shahi grapes have come to be around Rs.1,11,460 of which FYM and compost, fertilizer, initial constituted nearly 60.00 per cent while interculture, initial costs and other maintenance operations accounted for the remaining expenditure. The proportions are more or less the same among all the size groups.

While the marginal farmers have spent the lowest amount of Rs.86.163 on the maintenance of orchards, small farmers have incurred the highest expenditure of Rs.1,17,779 to maintain the orchard.

The highest net income of 2,27,016 is reported by the medium farmers, while the lowest of Rs.1,76,511 is reported by the small farmers, the average net income being Rs.2,05,829 among the total sample households.

Per hectare average maintenance cost of mango is reported to be Rs.8226 of which a high proportion of 28.19 per cent of expenditure is on pesticides followed by fertilizers (19.18%), land preparation (14.70%). Together, these four major items accounted for more than 75.00 per cent of the total maintenance costs incurred by the sample farmers. While the highest per hectare cost of Rs.8940 is reported by the medium farmers, the large farmers reported the lowest cost of Rs.7938.

The average per hectare net income from mango orchards is reported to be Rs.1759 during the reference year due to heavy crop failure. While a highest per hectare net income of Rs.2720 is reported by the medium farmers, a lowest net income of Rs. 1197

is reported by the small farmers. The large and marginal farmers have reported the net incomes ranging in between these two categories.

However, as already seen, considerable variations in the costs and returns have been observed at different stages of fruit bearing plantations.

The per hectare average cost of cultivation of onions is reported to be Rs.9624.75 and the highest per hectare cost of Rs.11,205.54 is reported by the large farmers while the lowest cost of cultivation of Rs.7833.42 is reported by the marginal farmers. As onion is a seasonal field crop, bullock labour constituted the major input accounting for nearly 23.58 per cent of the total costs, followed by fertilizer (21.27%) seed (18.89%) hired human labour (15.06%) and pesticides (12.75%). The other inputs which shared the remaining costs are FYM (4.76%), tractor charges (2.87%) and irrigation charges (0.87%). Though onion is raised as an irrigated crop during kharif season, because of the presence of monsoon rains which covered most part of the kharif season, the cost incurred on irrigation is reported to be very low.

Among the various size groups of farmers, while the large farmers have spent a higher proportion on hired human labour (25.54%), the marginal, small and medium farmers have spent a higher proportion of their expenditure on bullock labour i.e., 31.32%, 27.34% and 20.08% respectively. Only large farmers have reported using tractor for agricultural operation like ploughing, harvesting and transporting while other farmers have depended on bullock labour. While a gradual increasing trend is observed in the costs on hired human labour as the size of the holding increased, a reverse trend is discernible in the use of bullock labour, fertilizer and pesticides.

Heavy crop damage is reported by the sample households during the reference year because of unseasonal heavy rains at the time of harvesting of onion crop. The entire Kurnool district is reported to have been under the grip of heavy unseasonal rains during the harvesting period leaving the crop fully sub-merged in water causing severe damage. Except the marginal farmers whose lands are situated on elevation, all the other farmers have reported negative incomes from onion crop during the reference year.

The average net income is reported to be Rs.596.37 from onion crop and while a net income of Rs.821.15 is reported by the marginal farmers, the highest negative income

of Rs.1240.57 is reported by the large farmers. The medium and small farmers have also reported a negative income of Rs.964.44 and Rs.380.23 respectively from the crop. The agencies involved in assembling and distribution of mangoes and grapes are the growers, pre-harvest contractors, commission agents, wholesale buyers, processing industry, retail traders and consumers.

About 3370 tonnes of grapes, both Anab-e-Shahi and Thompson seedless, have been sold by the sample cultivators in the Rangareddi District to the Commission Agents at farm realising an amount of Rs.390 lakhs during the reference year. Of the total quantity marketed only 7.59 per cent is Anab-e-Shahi variety while the rest of the quantity is Thompson seedless variety of grapes. The average per Kg. price realised by the sample cultivators is Rs.11.59 and it worked at to Rs.10.15 for Anab-e-Shahi and a slightly higher price of Rs.11.71 for Thompson seedless grapes.

In the case of vegetables like onions, the grower himself directly sells the produce to the commission agents either at village point or in the nearest main markets. The commission agents also act as wholesale merchants and often undertake the distribution of produce to distant markets. The commission agents supply the produce to the retail traders who inturn market the produce to the consumers. Sometimes the retail traders also participate in open bidding in the Kurnool assembling centre. The small growers also sell the produce directly to the hawkers, push cart traders etc. in the nearest towns. It is estimated that about 50-60 per cent of the total production of onions is collected and distributed through commission agents, the balance is directly sold to hawkers and small retail traders by the cultivators.

About 194 tonnes of onions have been sold by the sample cultivators to the commission agents in the Kurnool district, of which about 61.16 per cent of the quantity is sold at village point and 38.84 per cent at the market point realising an amount of 3.86 lakhs. The per quintal average price realised by the farmers is around Rs.199 and while it worked out to Rs.198 at village point, it increased to Rs.200 at market point.

4.2 BIHAR

The average size of litchi orchard was 1.2 hectare with about 170-200 trees per hectare. The cost of establishment of litchi orchard till its first bearing stage was estimated at

Rs.22,276/-. Annual maintenance cost per hectare was estimated at Rs.12,184/-. The results of economic analysis indicate high benefit cost ratio (1.4:1) as well as high internal rate of return 21 per cent and small pay back period again shows less risk in investment in litchi cultivation.

Seasonally in production and consumption of litchi was observed to be its very peculiar character. Its peaking marketing period ranged from first week of May to mid June in year litchi growers leased their standing crop to pre-harvest contractors or village traders for one or more year generally just before flowering and in turn received ready money. Moreover, they lacked expertise essential for litchi marketing and also they wanted to save time, money and labour. Regarding mode of sale, written document were executed between pre-harvest contractors and growers depicting all the terms and conditions including mode of payment before witness. In some cases the written documents were furnished before the Registrar bearing detailed terms and conditions. Pre-harvest contractors and village traders negotiated privately with growers regarding price of the orchard considering number of tree, setting of fruits, maintenance of orchard, age of plant and percentage of bearing fruit etc. In general 25 per cent of total price was paid at the time of making contract and rest 75 per cent was finally paid at the time of harvest.

Marketing system of litchi was observed to be purely a traditional private system comprising litchi merchant viz., pre-harvest contractor, village trader, commission agent and retailer. The pre-harvest contractor was observed to be most important intermediary who performed most of the marketing services like watch and ward of orchards, harvesting of fruit, packing of harvested fruit into boxes, grading and transportation of the consignment right from the orchard to distributing Centre. Litchi was packed into wooden boxes for transportation of distant markets and bamboo baskets were used for packaging of litchi meant for local sale.

No systematic grading was observed to be practised at either pre-harvest contractor or commission agent level except sorting of fruits according to varieties. However, at retailer level fruits were graded into two or three lots mainly depending on size, degree of damage and a differential prices were charged for different lots.

It was observed that litchi produced in the study area was marketed to distant and local markets through three important channels. The identified channels were as follows :-

1. Producer-pre-harvest Contractor-Commission agent (Muzaffarpur)-Wholesaler (Distant market like Delhi)-Retailer-Consumer (Distant market like Delhi).
2. Producer-Village Trader-Wholesaler-Commission age (Muzaffarpur)-Wholesaler (Distant market)-Retailer Consumer (Distant market).
3. Producer-Retailer-Consumer (Muzaffarpur market).

The analysis of price spread in the Muzaffarpur market reveals that pre-harvest contractor's share in consumer's rupee was 62.72 per cent. The purchase price of wholesaler was rupee 687.06 per Qt. The wholesaler paid Rs.137.06 as marketing charges. The highest marketing charges per quintal (Rs.56.49) was recorded for packing of litchi followed by spoilage (Rs.35.33), transportation (Rs.33.22), palledari (Rs.6.67) and octroi (Rs.3.57) per quintal. The miscellaneous expenditure (Rs.1.78) was the lowest on telephones and telegrams, etc.

The retailer's sale price was Rs.1,095.50 per quintal. The charges borne by retailer was Rs.62.28. The total amount that the paid for one quintal of litchi was 945.46. Thus, he earned a net profit of Rs.150.04 per quintal. The total cost of marketing incurred by the contractor/wholesaler worked out to 12.51 per cent of the consumer's rupee which was 68.75 per cent of the total marketing cost. The marketing cost paid by the retailer was 5.68 per cent of the consumer's rupee. The total marketing cost was estimated as 18.20 per cent of the consumer rupee. The producer's share in consumer's rupee was very less due to the fact that producers sell directly their orchards to the pre-harvest contractor/wholesaler. Therefore, more profit is earned by the middlemen. The producer's share in consumer's rupee may increase if the producer can sell their produce (Litchi)bringing it into the market by themselves.

The price spread in distant market (Delhi) explains that the marketing costs incurred by the commission agent was the least being only 1.36 per cent of the consumer's price. The expenditure incurred by commission agent was minimal due to the fact that the pre-harvest contractor bears all the expenditures except market fee, postal and telegraph charges and other petty charges. The marketing cost borne by retailers were also high about Rs.21.7 per box (6.84%) which includes in labour charges, transport, dalali,

spoilage and other miscellaneous charges. The total price per box worked out to be Rs.193.32 out of consumer's price of Rs.317.32.

It is also evident from the study that the absolute share of producers in consumer's rupee in Delhi market was Rs.124 per box which was 39.10 per cent of the total consumers price paid. The total marketing costs incurred by pre-harvest contractor, commission agents and retailers in distant market (Delhi) were Rs.77.40, Rs.4.30 and Rs.21.70 per box in total price of Rs. 317.32 per box paid by the consumer. The marketing margin of pre-harvest contractor, commission agents and retailers were Rs.21.47, Rs.15.88 and Rs.52.89 per box. the total marketing cost and margin for all the intermediaries worked out to Rs.193.32.

The study of producers' share in export earning explains that the producers have not been generally involved in export of litchi from the project area. therefore, the selling price is their margin. The exporters' share in export earning is about 11 per cent. However, producers get 5.71 per cent in export earning. So it is worth pointing out that producers are not much benefited by the litchi export directly because the prices they get for their produce are more or less the prices prevail in the local market. Moreover, the export of litchi generates new income and employment opportunity for the whole regions and earns foreign exchange. Therefore, the export of litchi is beneficial for the Indian economy in general and economy of Bihar in particular.

4.3 GUJARAT

On the whole for orchards of chiku bearing age group, the per hectare total cost was Rs. 60036 of which production cost was Rs. 52033 (86.7 %) and marketing cost was Rs. 8003 (13.3 %).

The per hectare total cost was maximum at Rs. 65545 with orchards of 26-40 years of age and minimum at Rs. 57665 with orchards of 9-25 years of age.

The production cost was maximum at Rs. 56653 with orchards of 26-40 years age and minimum at Rs. 50090 with orchards of 9-25 years of age.

The marketing cost was maximum at Rs. 8892 with orchards of 26-40 years minimum at Rs. 7575 with orchards of 9-25 year of age.

Overall per hectare gross value of chiku production was Rs. 84162. It was maximum at Rs. 93974 with orchards of 26-40 years of age and minimum at Rs. 79247 with orchards of 9-25 years of age.

On the whole, per hectare net income from chiku cultivation was Rs. 24126. It was maximum at Rs. 28429 with orchards of 26-40 years and minimum at Rs. 21582 with orchards of 9-25 years of age.

With regard to non-bearing orchards, the per hectare net income from intercropping was Rs. 26311, the per hectare expenditure was Rs. 24731, which left a net income of Rs. 1580 per hectare.

Overall per hectare cost of non-bearing orchards was Rs. 24731. Cost of plants, plant supports, rented value of land, irrigation and human labour were the major inputs, constituting over 60 per cent of total expenditure.

Overall per hectare net income from intercropping was Rs. 26311, which had resulted Rs. 1580 as per hectare net income. It was maximum to Rs. 1954 with large farm households and minimum to Rs. 925 with marginal farm households.

On the whole, per hectare total cost of orchards of 9-25 years age of all the sample households was Rs. 57665, of which production cost was 86.9 per cent and marketing cost was 13.1 per cent. Out of total production cost labour (31.7 %) , imputed value of owned land (31 %) were the major components of inputs .

The overall per hectare gross return of chiku crop was Rs. 79247. The overall per hectare net income was Rs. 21582. It was maximum at Rs. 23335 with large farm households and minimum at Rs. 14759 with marginal farm households.

Overall, per hectare total cost of the orchards of 26-40 years of age was Rs. 65545 of which production cost was 86.4 per cent and marketing cost was 13.6 per cent. The per hectare total cost ranged from Rs. 68102 with small farm households to Rs. 60981 with large farm households. Labour, imputed valued of owned land and fertilisers were the major components of production cost. On the whole per hectare gross return of the orchards was Rs. 93974. Overall per hectare net income was Rs. 28429. It was maximum at Rs. 29957 with small farm households and minimum at Rs. 26898 with large farm households.

On the whole, per hectare total cost of orchards of 41 years of age and above was Rs. 58732. The production cost was 86.6 per cent and marketing cost was 13.4 per cent of total cost. Overall per hectare gross return of the orchards was Rs. 82862. Overall per hectare net income was Rs. 24130. It ranged from Rs. 34427 with medium farm households to Rs. 15889 with marginal farm households.

Per hectare total cost of the orchards of bearing age groups of all households was Rs. 60036. The production cost was 86.7 per cent and marketing cost was 13.3 per cent of total cost. Labour (32.2 %) , imputed value of owned land (31.5 %), farm yard manure and organic manure together (9.8 %) and fertilisers (8.2 %) were the major components of production cost. Overall per hectare gross return was Rs. 84162. It was maximum at Rs. 881143 with small farm households. On the whole, per hectare net income was Rs. 24126. It was at Rs. 26787 with small farm households and at Rs. 22020 with large farm households.

The producer's share in consumer's rupee is estimated on the quantity of chikus sold in Delhi market on March 18, 1998 through Gadat Khedut Vividh Karyakari Sahakari Mandal Ltd.', Gadat, Gujarat.

The quantity of chikus were packed in hard paper boxes of 10 kgs. each and were transported through road transport by trucks. The trucks started from Gadat at 12 noon and reached in Delhi market early in the morning at 4 o'clock, after travelling the journey of nearly 40 hours.

The consumer's price of average quality and size of chikus was estimated to be Rs.130 per box of 10 kgs. The retailer's price was estimated at Rs.110 per box of 10 kgs. The wholesaler's price was Rs.84, while the net price received by an orchardist was Rs.52 per 10 kgs. Thus, the producer's share in consumer's rupee was reported to be 40 per cent.

4.4 HARYANA

Floriculture units in the North need to invest substantially in temperature control in the green house. As such, other factors remaining the same, the cost of installing a green house and related equipment is likely to be much higher in North India than that in the other regions. The data presented in suggest that as against an investment of Rs. 658

lakh required for a green house and related equipment in the Northern region, the cost of a green house and related equipment in Southern region is Rs. 335 lakhs. The cost of green house and other equipment as percent of the total project cost, on an average, works out to more than 48 per cent.

The cost of production of a cut flower producing unit would depend on a host of factors. Based on an average of ten floriculture units, the average annual cost of production of a floriculture unit has been estimated to be Rs. 207.54 lakhs at 1995-96 prices. Of this, depreciation and interest cost account for 30 per cent, raw material for 14 percent, wages for another 8 per cent while administrative expenses account for about 20 per cent of the total cost. The remaining costs are accounted for by such items as overheads, freight, royalty etc.

4.5 HIMACHAL PRADESH

The per hectare annual maintenance cost of non-bearing orchard is observed to be almost same i.e. more than rupees 14 thousands in Kullu and Mandi districts while the same is more (Rs.18,174) in Shimla district. The major reasons for high cost of maintenance of non-bearing orchards in Shimla district is non performing of inter-cropping and high cost of labour employed. In Kullu district the cost on labour is much higher (Rs.3707/ha.) than in Mandi district (Rs.1730/ha.)and consequently cost of maintenance is also higher in Kullu consequently cost of maintenance is also higher in Kullu district. The returns from inter-cropping are estimated to be Rs. 2753 per hectare in Kullu district. However, after deducting the returns from inter-crops, the annual cost of maintenance of non-bearing orchard in Kullu comes to be the same as in the case of district Mandi where the net returns from inter-crops are meagre (Rs.199/ha.).

The per hectare annual maintenance cost of increasing production stage (8-17 years) of orchard is observed to be high(Rs.53611) in Shimla district and low (Rs.41,727) in Kullu district. Since the productivity of apples is reported to be high in Shimla district as compared to Kullu and Mandi districts, the per hectare cost on marketing is also observed more (Rs.81,718) in Shimla district. The per hectare total cost of production and marketing is estimated to be Rs.1,35,329, Rs.1,13,534 and Rs.1,06,051 in Shimla, Mandi and Kullu districts respectively. The share of marketing cost is estimated to be

more than 60 per cent in Shimla and Kullu districts and about 58 per cent in Mandi district. Because of low level of productivity, the net returns from increasing production stage of orchard in Mandi district is observed to be the lowest (Rs.38,807/ha.). The per hectare net returns in Shimla district are observed to be the highest (Rs.54,3211).

The per hectare annual maintenance cost of constant production stage of orchard is estimated to be more (Rs.59,283) in Shimla than in Kullu district (Rs.43,090). Because of better productivity levels achieved in Shimla and Mandi districts the marketing cost incurred is observed more (above 103 thousands) than in Kullu district (Rs.69,459/ha.) With regard to cost of production and marketing, the Mandi district is leading in net returns (Rs.87,791/ha.)from constant production stage of apple orchards. Though the returns in Shimla district are more (Rs.88,372/ha.) but the input-output ratio is lower than in Mandi. The reasons for this trend is due to early attainment of full bearing in Mandi district. In Kullu district the net returns from above stage of orchards are estimated to be Rs.70,203 per hectare.

The per hectare annual maintenance cost of decreasing production stage (above 30 years) of orchard is estimated to be Rs.43,860, Rs.50,210 and Rs.59,580 in Kullu, Mandi and Shimla district respectively. Because of high elevation and relatively better climatic conditions the productivity achieved in Shimla district is far better than Kullu and Mandi districts, and consequently the net returns are observed to be more than 157 per cent of Mandi district. In Kullu district the net returns from above category of orchards are observed to be 40 per cent less than Shimla district which are Rs.1,30,100 per hectare.

On the whole the foregoing analysis suggests that the annual maintenance cost of non-bearing and bearing orchards is observed to be more in Shimla district and low in Kullu district. Similarly per hectare marketing cost is also observed more in Shimla district and low in Kullu district. Similar trend is also observed in net returns from apple cultivation in the State. However, the input-output ratio shows that per rupee returns from all age of orchards are more in Kullu district than in Mandi and Shimla districts.

Upto nineties the phenomenon of selling the standing crop to pre-harvest Contractors was common in fruit growing areas of Himachal Pradesh. Now 5 and 7 per cent of the sample orchardists in Mandi and Kullu areas sell their crop to pre-harvest contractors.

While in Shimla district producers themselves or through Co-operative Marketing Societies undertake the marketing of their produce, at the state level the ratio is 12 per cent only. The pre-harvest contractors undertake the entire marketing functions such as picking of fruits, grading, packing, arrangement of transportation and selling of produce etc.

In apple, important components of marketing cost are labour used in picking, assembling, grading, packing and packing material, transport and market charges and taxes etc. In the present study Delhi Azadpur market has been taken as the representative market to work out the producer's share in consumer's rupee. During 195-96 the arrival of apples from Himachal pradesh in Delhi Azadpur market was to the tune of 209735 tonnes which accounted for 30.90 per cent of total arrival of apples in Azadpur market. The above quantity of apples is 80.77 per cent of total apple sold outside the state during 1995-96. Out of the total marketing cost involved in apple crop, the preparation of fruits accounts for 45 per cent, transportation for 32 per cent and share of market charges and taxes is estimated to be 23 per cent.

The poor quality and culled type of apples are also sold in gunny bags. This practice has been observed in Shimla district only. Generally apple packed in gunny bags are sold locally and to the traders visiting the producing area.

The analysis of marketing cost of apples suggests that per box (about 18 kgs) cost is estimated to be Rs.78.4 at the State level and the same is observed more (83.7) in Shimla district. The per kg. cost of marketing of apples is estimated to be more than Rs.4.1 in all the selected districts and across the farm sizes.

At the State level the producers share in consumer rupee is estimated to be 47.7 per cent and the same is observed more (48.0 per cent) in Kullu district. Across the farm size, medium farmers are realising larger share (47.0 per cent) than other categories of farmers. The per box (about 18 kgs.) consumer price of average quality and size of apples is reported to be Rs.241 during 1996 marketing season (Azadpur Market, Delhi).

4.6 KERALA

Cashew is a perennial crop with a wide span of 40 years life period. The cost of cultivation and the income are calculated keeping into account the whole life of the tree.

The main items of cost are manure, fertilisers, plant protection measures, wages, land revenues, repairs to implements and interest on loan etc. On an average Rs.8040/- per hectare has been spent towards cost of cultivation during the reference period. In this nearly 50 per cent of the expenditure accounts to wages and harvesting. Among the groups the small farmers have incurred comparatively less cost than the medium and big farmers.

The average yield per hectare comes to 952 kg. The small farmers have obtained the highest yield of 987 kgs., followed by the medium farmers 905 kgs. and big farmers 902 kgs.

The average gross income per hectare accounts to Rs.33,325/- and the net income works out to Rs.25,285/-. The net income is calculated at the excess of gross income over the cost of cultivation. The small farmers raised their income more than the medium and big farmers because of their relative advantage of family labour and personal participation and involvement in farming activities.

Private millers are the sole purchasers of raw nuts. All the farmers disposed of their produce to the millers at the village itself. The farmers have not incurred any transport cost to market their produce so the selling price remained constant and no price variations prevailed in the villages.

The average cost of cultivation for all the 40 years for a hectare is estimated to Rs.2,90,516. Which includes gestation period, pre-full and full development periods and accounts per hectare an average cost of Rs.7,263/- per year. The average amount spent for the gestation period per hectare works out to Rs.5,181/- per year and Rs.4,286 for pre-full development period. The medium and big farmers have incurred higher cost because of the payment of wages for hired labourers.

4.7 MAHARASTRA

A comparative analysis of cost structure revealed the total cost of onion production to be much higher in rabi season compared to that during kharif season. This held true for all the categories of onion producers. The per acre total cost of onion production during kharif season was estimated at Rs. 12,667 for marginal category, Rs. 11,850 for small category, Rs. 12,532 for medium category and Rs. 11,313 for the large category. As for

rabi season, the estimated per acre total cost of onion production turned out to be Rs. 13,674 for marginal category, Rs. 12,551 for small category, Rs. 12,827 for medium category and Rs. 13,352 for the large category. In general, the per acre total cost of onion production for an average category of farmer in the kharif season was estimated at Rs. 11,678 and the same figure during rabi season stood at Rs. 12,949. During the kharif season, the production cost as proportion of total cost varied from 80 per cent in the case of medium category to 85 per cent for the small category. In rabi season too, no significant difference in production cost as proportion of total cost was observed for various categories of onion producers with this proportion varying from 79 per cent for large category to 85 per cent for the medium category. The per acre production cost was seen to decline with the increase in size of land holding of the sample producers, though the difference in per acre cost of production for the small and the medium categories was not very high. Both the seasons had preponderance of this trend. As for the per acre marketing cost, it was highest for the medium category in kharif season and for large category in rabi season; lowest per acre marketing costs were recorded by the small category producers in both the seasons.

The labour cost as proportion of the total cost was observed to decline steadily with the rise in land holding size of onion producers, though the decline in this proportion being not very sharp. As against this pattern, the material input cost as proportion of the total cost was found to increase with increase in the land holding size of the producers in the kharif season; the increase being from 14 per cent in the case of marginal category to nearly 18 per cent in the case of large category. In the rabi season, the material input cost as proportion of the total cost turned out to be the highest for medium category (23 per cent), followed by large and small category (about 20 per cent) and then by marginal category (about 18 per cent) in that order. Most of the material input cost owed it to investments made on the purchase of fertilisers. While the large category of onion producers invested nearly two and a half times more on the fertiliser input in the kharif season compared to the marginal category, this investment in the rabi season was observed to be 75 per cent higher for the medium category of onion producers as compared to those belonging to the marginal category.

In general, it was observed that the average category of onion producer spent nearly 70 per cent of the gross operational cost of onion production on cultivation related activities such as ploughing (6 per cent), sowing (10 per cent), manuring (8 per cent), fertilising (16 per cent), interculture operations (8 per cent), mulching (1 per cent), irrigation and maintenance (10 per cent), plant protection measures (3 per cent) and harvesting operations (8 per cent), various marketing functions accounted for the rest of the 30 per cent investment of the gross operational cost of onion production and this included expenditure on family as well as hired labourers engaged in various marketing related operations.

During the kharif season, the per acre gross return from onion cultivation was estimated at Rs. 16,829 for marginal category, Rs. 17,332 for small category, Rs. 17,613 for medium category and Rs. 16,272 for the large category. During the same season, the per acre net return was estimated at Rs. 4,162 for marginal category, Rs. ,842 for small category, Rs.5,081 for medium category and Rs.4,959 for the large category of onion producer. the higher per acre net return witnessed in the case of small category during the kharif season was mainly due to lower per acre total cost of production for this category compared to other categories of producers. The gross per acre returns in the rabi season for various categories of onion producer was estimated at Rs.18,574 for the marginal category, Rs. 18,589 for small category, Rs. 18,562 for medium category and Rs. 20,442 for the large category. and, the net per acre return in the same season was estimated at Rs. 4,901 for the marginal category, Rs. 6,038 for small category, Rs. 5,735 for medium category and Rs. 7,090 for the large category. Thus, one acre onion farm yielded much higher net returns for the small category of producers during the kharif season and, for the large category of producers in the rabi season. In general, for an average category of onion producer, the per acre net return was estimated at Rs. 5,098 in the kharif season and at Rs. 6,282 in the rabi season. Thus, the average category of producer was seen to obtain 23 per cent higher net return from one acre onion farm during the rabi season as compared to kharif season. In this sequel, the input-output ratio was seen to be higher in rabi season (1:1.49) compared to kharif season (1:1.44).

The total per household production of onion for an average category of producer during the kharif season was estimated at 584.19 quintals, of which 85.36 per cent or 502.92 quintals was sold as marketed surplus. Although the percentage sale of production remained constant for various categories of producers, a steady decline in home consumption as proportion of production could be observed with the increase in land holding size of onion producers. Nonetheless, in absolute terms, the quantity used for home consumption was seen to be much higher for large category compared to marginal and other categories of onion producers. During the rabi season, the per household production of onion for an average category of producer was estimated at 631.58 quintals, of which nearly 85 per cent, that is, 538.13 quintals was sold in the market as surplus.

In the case of all-bearing age grape orchards, the per acre annual gross maintenance cost was estimated at Rs. 53,828 for marginal category, Rs. 59,431 for small category, Rs. 66,473 for medium category and Rs. 63,795 for large category of orchardists. This indicated that the medium category of orchardists spent 23 per cent more than those in the marginal category on the maintenance of every acre of grape orchard. Upon splitting this gross maintenance cost of production into various component costs, it was noticed that among various categories of orchardists, about 67 per cent of the gross maintenance cost was spent on various production related operations and the remaining 33 per cent owed it to investments are various marketing functions. Among various components of production cost, the prorated establishment cost alone accounted for about 34-35 per cent of the gross maintenance cost of production. The share of material input cost in gross maintenance cost of production was seen to be of the order of about 10-11 per cent. This held true for all the categories of orchardists. Similarly, the share of labour cost in gross maintenance cost for all categories of orchardists was found to be about 6 per cent. As regards the marketing cost, packing material alone accounted for 10 per cent of the gross maintenance cost. Nearly 5-6 per cent of the gross cost of grape production was found to have been spent towards labour cost hired to facilitate various marketing functions. An increase in expenditure on various items of costs, both production and marketing, was seen with the increase in land holding size of orchardists.

The per acre gross annual return for various categories of grape orchardists was estimated at Rs. 76,934 for marginal category, Rs. 92,755 for small category, Rs.96,442 for medium category and Rs.95,968 for the large category. On the other hand, the per acre net annual income from grape orchard was estimated at Rs. 23,107 for marginal category, Rs. 33,324 for small category, Rs. 29,969 for medium category and Rs. 32,173 for the large category of grape producer. Thus, while the small category grape orchardist was observed to garner maximum returns in the form of net annual income accruing from per acre of grape farm, the return for the marginal orchardist was the lowest. In fact, per acre earnings of small category of grape orchardist were found to be 44 per cent more than the marginal orchardist.

The per acre annual gross maintenance cost of grape orchardists increased sharply during the phase the production rose before levelling off to a constant stage and, thereafter, it declined. the per acre gross and net annual returns for the average category of orchardists also found to follow a trend similar to that of per acre gross maintenance cost, that is, an increase in gross and net annual returns was observed from the increasing to constant production stage which declined rather sharply during the declining production stage. The prorated establishment cost of the orchardist increased in every successive stage of production even though the per acre production cost showed declines from the constant to declining production stage after showing an increase in the same from increasing to constant production stage. The share of labour cost and material input cost in gross maintenance cost of production declined from increasing to constant and constant to decreasing production stage, though in absolute terms the expenditure on labour employment and on various material inputs had increased from increasing to constant production stage. A similar trend was noticed in the case of expenditure of the orchardist on packing material. The share of packing material cost in gross maintenance cost of production declined with every successive stage of production despite the fact that in absolute terms the expenditure of the orchardist rose sharply on packing material from increasing to constant production stage, though, thereafter, a steep decline in the same was also seen. In general, during each stage of production, the expenditure on various items of cost, both production and

marketing, increased with the increase in land holding size of the orchardists, that is, big orchardists invested more on various items of cost compared to small orchardists.

The average per orchardist production of grapes was estimated at 270.47 quintals, of which on-farm spoilage (post-harvest loss) accounted for 11.77 per cent, 1.03 per cent was used up in home consumption, 2.12 per cent was bartered away as gratis to labourers working on the farms as payment in kind and remaining 85.08 per cent was sold in the market. As the land holding size of orchardists increased, it was interesting to note that the share of spoilage in the total production registered declines. Similarly, the payment made in kind to labourers and the share of home consumption as proportion of total production also declined with the rise in land holding size of the orchardists.

The practice of getting into pre-harvest contract for their orchards was seen to be very common among orchardists in the study area. But of 50 sample grape orchardists, as many as 21 had given their orchards on contract. At least five reason were cited by the sample orchardists for giving their orchards on contract. The most prominent among these reasons were: avoiding labour problem during marketing operations, avoiding problems associated with marketing and avoiding risks and uncertainties associated with harvesting, pricing and other marketing functions. Contractors were found to lay down their own terms and conditions before contracting orchardists. In general, the contract of the orchard was taken on the basis of quality of the orchard, and the variety of grapes grown in the orchard was considered as the main criterion in finalising the value of the contract.

The per box (4 kgs.) total marketing cost was estimated to be the highest when the produce was sold through forwarding agents in the wholesale market compared to produce sold through other marketing channels. Interestingly, orchardists secured least per box marketing cost when they sold the product directly to wholesalers. In the case of grapes marketed cost was estimated at Rs.12.05 for the marginal category, Rs.10.76 for small category, Rs.12.79 medium category and Rs.12.58 for the large category with an overall average of Rs. 12.35 for the average category of orchardist. Of the total cost of marketing, nearly 40 per cent was accounted for by the preparation of fruits alone. All categories of orchardists spent about 6 per cent of their total marketing cost on local

transportation. The share of various marketing charges put together in the total marketing cost also did not vary much among various categories of orchardists and this share hovered around 55 per cent.

All the sample onion producers were also found to employ forwarding agents for trading their produce in the wholesale market. In kharif season, the per quintal cost of marketing of onion varied from Rs.19.92 in the case of small category to Rs.29.49 in the case of medium category. As for marginal and large category of producers, no significant difference in total cost of marketing of onion was seen and, in these two cases, the estimated total cost of marketing revolved around Rs.25 per quintal. Transportation, commission and such other marketing charges accounted for bulk of the total marketing cost. In general, various marketing charges accounted for 73 per cent of the total cost of marketing in the kharif season. In rabi season too, the expenditure on preparation of vegetable accounted for 27 per cent of the total cost of marketing and the remaining 78 per cent owed it to various marketing charges.

The producer's share in consumer rupee was found to be very high for all the categories of grape orchardists. This share was seen to vary from 55.71 per cent for the marginal category to 60.46 per cent for the medium category. The average category of orchardists had an overall average of 59.49 per cent share in the consumer rupee. Although all categories of grape orchardists had a fairly high share in the consumer rupee, such was not the case in the case of onion producers. In general, for the average category of onion producers, the producers' share in consumer rupee was estimated at 44 per cent in the case of rabi season and it stood at 47 per cent during kharif season.

4.8 SIKKIM

On the ground of examining the economics of production and input use pattern of orchid and other field crops, the concept of gross income, net income over different cost structure of these crops are applied. In this connection, the variable cost plus fixed cost (V+F) cost B, cost C alongwith net income over this cost i.e. in NIVF, NIB and NIC are worked out. In addition to these the output-input ratio over these costs are also worked out. It is found that cost C of orchid per pot varies between Rs.343.74 in small farms to

Rs.345.18 in medium farms. The overall cost C of orchid is estimated to be Rs.341.71 per pot. The overall gross return over cost C from orchid is estimated to be Rs.208.29 per pot and the overall output-input ratio over cost C is found to be 1.61. the overall cost C and output input ratio over cost C of paddy, maize and wheat are Rs.6107.14, Rs.6997.14 and Rs.1852.17 per acre, and 1.19, 1.23 and 1.27 respectively. In case of vegetables like potato, cabbage, cauliflower and cardamom, the overall output-input ratio is found to be 1.23, 1.63, 1.40 and 1.28 respectively.

In terms of marketing of orchid and other field crops, it is found that the orchid growers are habituated in selling most of the agricultural produce within the village itself except potato. It is reported that in case of potato 100 per cent of the produce is sold in same village. It is also reported that 100 per cent of the produced cabbage, cauliflower and cardamom is sold in small town because most of the wholesale distributors are located at towns. In case of orchid, it is entirely sold to the nearby nurseries to whom they are attached. Taking all vegetables together, the channel wise distribution of growers show that the channel - II(b) comprising of Producers - Commission agents - Aratdars - Processors - Retailers - Consumers is the best channel according to the farmers' preference. But according to the price spread over different channels, the channel - II (c) comprising of producers - Aratdars - Processors - Consumers has proved to be efficient in comparison to the other channels.

4.9 TRIPURA

Precise record of cost of cultivation involved in pineapple cultivation are not available for the state. The field investigation showed that cost involved in initial plantation are on labour for jungle clearing, digging of holes for planting and the cost of planting material. Per hectare initial costs are worked out at Rs.7,702/- only. So far as total costs of production is pineapple cultivation is concerned 73.76 per cent of costs involved in labour and remaining 26.24 per cent on planting materials.

Pineapple is a highly perishable commodity and it requires immediate sale after harvest. It involves a number of marketing functions like assembling, standardisation or grading, packaging, transportation, storing and dispersion. In the process of marketing, a number of market functionaries like village traders/commission agents, wholesalers,

retailers, co-operative agencies etc. are involved who traded in different marketing channels.

The marketing channels varied from place to place and crop to crop. The identified marketing channels for pineapple in the study area are :

1. Grower - Commission Agent/Village level trader - Wholesaler - Retailer - Consumer.
2. Grower - Wholesaler - Retailer - Consumer.
3. Grower - Retailer - Consumer.

The truth of the situation is that about 99 per cent of pineapple produced are marketed of which a major part (74.64%) is marketed through the traders and the rest are procured by NERAMAC (25.36%).

The analysis of price spread revealed that there is a wide gap between the price received by the producer and the price paid by the consumer. In Channel - I the share of growers is just 41.97 per cent, in channel - 2 growers net share has been found at 40.50 per cent and in Channel - 3 it is 46.16 per cent. The analysis of price spread revealed that wholesalers margin is higher (17.22%) in channel - 2 than channel - 1 (8.65%).

The commission agents margin in channel - 1 is worked out at 16.05 per cent. The retailers net margin is highest in channel -3 (28.20%) followed by channel - 2 (13.92%) and in channel - 1 (12.34%).

4.10 UTTAR PRADESH

Regarding economics of mango production, the initial cost of plantation, particularly material inputs was comparatively higher than the cost of labourers. Among the material inputs the cost of seedlings/saplings was higher than all other material inputs. Among the maintenance costs the maximum costs have been invested on preparation and maintenance of basin, interculture and gap filling.

The output from various crops including mango crop, it has been found that the output from mango has been much higher than all other crops. The utilization of production of food crops as well as the value of production utilised was comparatively on the mango farms of decreasing production stage. While in case of mangoes the maximum amount

of production has been found to be marketed on the farms of all the categories. The value of output per plant has been found decreasing with the age of plants.

The total mango production was found to be marketed by the contractors only. The income per farm from the other sources was found increasing with the increase in the stages of mango production. Thus, old mango orchards were found to be more profitable.

Regarding marketing of mango the utilization of hired labourers was higher on the farms of mango growers. Picking and assembling were the marketing operations on which the maximum utilization of human labour was done. The utilization of labour was found increasing with the age of mango plants.

The analysis on marketing costs involved in case of mangoes shows that the mangoes of constant production bearing stage have been found to be costlier than the mangoes of the other two bearing stage. Among the marketing costs involved the other costs have been found to be the highest and in that the freight charges have been found to be the highest i.e. Rs.63.60 per quintal while the average total marketing cost per quintal has been estimated to Rs.124.28.

The price spread of mango shows that the margin of contractor including price paid to owner has been accounted to Rs.1094 per quintal. While the price paid by the consumers to the retailer has been accounted to Rs.1500 per quintal. Thus, the contractors share including the share of the owner of the orchards in the consumers rupee has been estimated to 86.67 per cent.

As regards the economics of potato production it has been found that the expenses have been higher on marginal and large farms in comparison of small and medium farms of potato growers on an average. Potato has been found to be comparatively more profitable than other crops grown on the farms of potato growers. The net income has been estimated to be the highest in case of medium farmers followed by marginal farmers.

The output from crops of different seasons indicates that other crops (fodder etc.) paddy, and urd have been found to be more productive on the farms of potato growers. On an overall rabi seasons crops have significantly given the maximum output and that too because of potato crops. Sunflower alongwith Zaid vegetables have been found to

be the important and emerging Zaid crops in this area. Along with the potato cultivation, business as well as other sources have been found to be prominent sources of income in the area under study.

The analysis on marketing of potato indicates that on an overall average 254.66 quintals of potato per farm has been found to be sold through all the channels. Two marketing channels were commonly adopted in the selected district for the sale of potato. The total marketing cost on an overall average has been estimated to Rs.25.61 per quintal and it was decreasing with the increase in the size of farms. Among the various marketing costs, the cost of bags and grading charges have been found to be the main marketing costs.

The price spread of potato at the levels of various market functionaries indicates that the producers margin including cost of cultivation has been estimated to Rs.189.25 per quintal. The price paid by retailers to wholesalers have been reported to Rs.280.00 per quintal. The price paid by consumers to the retailers have been reported to Rs.300.00 per quintal. Thus, the producers share in consumers rupee has been estimated to 86.87 per cent on an average.

4.11 WEST-BENGAL

On the ground of examining the economics of production and input use pattern of orchid and other field crops, the concept of gross income, net income over different cost structure of these crops are computed. In this connection, the variable cost plus fixed cost (V+F) cost B, cost C alongwith net income over this cost i.e. NIVF, NIB and NIC are worked out. In addition to these the output-input ratio over these costs are also worked out. It is found that cost C of orchid per pot varies between Rs.329.32 in medium farms to Rs.327.27 in marginal farms. The overall cost C of orchid is estimated to be Rs.317.66 per pot. The overall gross return over cost C from orchid estimated to be Rs.203.39 per pot and the overall output-input ratio over cost C is found to be 1.64. The overall cost C of paddy is found to be Rs.6970.76 and the overall output-input ratio is 1.26. In case of vegetables like potato, brinjal, lady's finger, cabbage, cauliflower and tomato, the overall output-input ratio is found to be 1.23, 2.21, 1.52, 1.63, 1.40 and 1.57 respectively.

In terms of marketing of orchid and other field crops, it is found that the orchid growers are habituated in selling most of the agricultural produce within the village itself except potato. It is reported that 100 per cent of the produced potato is sold in small towns because most of the wholesale distributors are located at small towns. In case of orchid, it is entirely sold to the near by nurseries to whom they attached. Taking all vegetables together, the channel wise distribution of growers show that the channel comprising of Producers - Wholesalers - Consumers is the best channel according to the farmers' preference. But according to the price spread over different channels, the channel comprising of producers - Faria - aratdars - Retailers - Consumers has proved to be efficient in comparison to the other channels.

CHAPTER - 5

IMPACT ON INCOME AND EMPLOYMENT OF SELECTED EXPORT ORIENTED HORTICULTURAL CROPS

The magnitude of income and employment generation by an enterprise reflects its economic soundness and viability. Income is the ultimate indicator through which impact of any development programme can be assessed. In India, horticultural development has contributed in no small measure towards substantial increase in production and there cannot be two opinions about it. This is substantiated by the fact that increase in productivity of various horticultural crops through various development programmes initiated in this country has brought in its wake financial viability in raising these high value crops for various enterprising producers. However, at this juncture, the relevant question that could strike one is whether various horticultural development programmes in the different parts of the country have been successfully exercise in their influence on various commodity producers in respect of increase in income and employment generation. If yes, to what extend. Another crucial aspect that merits debate and discussion is the determination of magnitude of profit involved in raising these horticultural crops vis-a-vis other field crops, besides evaluation into the pattern of human labour absorption in various operations in the cultivation of these high valued crops. This chapter, therefore, places an onerous task on analyzing these crucial aspects of the selected export oriented horticultural crops grown in the different states are as follows.

5.1 ANDHARA PRADESH

Among the three selected horticultural crops, the highest gross and net income are reported by the grape sample cultivators during the reference year compared to the sample households of the other two crops.

Though the cost of maintenance is very high for both the varieties of grapes, the gross income from the crop is also very high leaving handsome profits to the cultivators. Among the different stages of plantation, the gross and net incomes are very high at the

stable bearing stage of plantation because of the highest production at that stage of plantation while the lowest incomes are reported at the bearing decreasing stage because of low crop production in both the varieties of grapes.

While very low net incomes are reported from the mango crop during the reference year, negative incomes have been reported by the onion cultivators. Among the various stages of mango plantation, while the highest per hectare net income is reported at the stable bearing stage, lowest net income is reported at bearing increasing stage. While heavy pest attack is reported to be the main reason for low yields from mango crop, unseasonable rains have spoiled the entire onion crop during the harvesting season.

Of the total per household income of Rs.4,77,139, net income from grape crop accounts for 96.08 per cent while income from other sources like wage labour, dairying and other salaried services contributed the remaining 3.92 per cent of the total household income. In the case of mango cultivators, out of the average per household total income of Rs.14,931, the net income from mango crop accounted for only 22.75 per cent while the in come from agriculture (34.68%) and other sources 942.57%) have contributed relatively a higher proportion of income to the sample households.

Of the total household income of Rs.35,983 of the onion sample households, income from agriculture accounted for 80.48% while other sources like agricultural and non-agricultural wage labour have contributed the remaining 29.99%.

As already explained, heavy crop failure due to unseasonal cyclonic rains during the harvesting time of onion crop has placed the sample cultivators at negative incomes they could not recover the paid out costs incurred on the crop during the reference year.

It is found that the quantum of labour employment in horticultural crops is higher than the cereal like paddy. The labour hours in horticultural crops vary 558.35 hours per acre in lady's finger to 1280.57 hours per acre in tomato. However, there is a substantial differences in employing hired and family labour between different size classes. The labour employment in brinjal, potato, cabbage and cauliflower is found to be 1014.93 hours, 914.88 hours, 852.81 hours and 852.54 hours per acre respectively. In case of paddy, it is found that 589.98 hours is needed per acre to cultivate this crop which is

substantially lower than the other horticultural crops except lady's finger. Labour employment in orchid per pot is calculated. However, there is another need for labour hours to perform the functions like grading, assembling, packaging etc. specially for horticultural crops which are an essential part in marketing. Thus, in terms of labour employment in all size classes, it is found that horticultural crops are generating more employment than the cereal crops like paddy.

5.2 BIHAR

The study reveals that the average labour mandays employed for litchi production in all types of orchard vary from 41 to 49 labour mandays per hectare annually. There has been not any mark difference in per hectare labour employment in marginal, small, medium and large size of orchards. On an average about 46 labour mandays employed per hectare of litchi orchard annually in the study area. However, total labour employed in per hectare litchi marketing and production has been on an average 300 mandays annually. It varies from 289 mandays in marginal orchard to 307 mandays in large orchard. It is worth pointing out that only 15 per cent labourers are employed in litchi production. Moreover, 85 per cent labourers are employed in marketing of litchi.

The study of projection of additional employment generation through litchi cultivation explains that litchi area under Bihar will increase upto 44.43 thousand hectares by the end of 2010 A.D. providing the rate of growth in area during 1981-95 is maintained. Double increase in orchard area would approximately generate additional employment of 88.86 lakh human labour mandays by the end of 2010. It is worthmentioning that the increase in human labour mandays will be mainly in service sector like transportation, packing, storage and retailing, etc. Hence, it may be said that the litchi production will generate employment not only in production process for unskilled labourers but more for the skilled and professionals in the field of marketing. The production of litchi would indirectly generate employment in the core sector of the economy like transport, industry of processing of litchi squash, juice, jam, etc. and persons engaged in production of packing materials.

Income generation through litchi cultivation explains that per hectare income from litchi cultivation was comparatively higher than the cultivation of other field crops in the state

of Bihar. At state level the value of total litchi produce was worked out at Rs. 186 crores per annum but all the litchi produced did not find remunerative market. If marketing and processing of litchi is improved the generation of income through litchi cultivation is bound to increase at least two-fold in the state of Bihar.

5.3 GUJARAT

Orchard crops are known for their labour intensive and price remunerative characteristics. The employment generated by chiku crop on sample farms was quite significant as compared to field crops.

On the whole, per hectare human labour used for all operations of chiku crop was 399 days. Human labour used for picking operation was as high as 39.2 per cent of total days, which was followed by watching with 24.5 per cent, irrigation with 12.0 per cent and weeding, stocking with 8.8 per cent of total labour days.

The human labour used per hectare on field crops was as low as 162 days. Irrigation, harvesting, threshing and weeding operations accounted for over 80 per cent of total labour days of field crops.

Barring large farm households, per hectare human labour days for chiku crop was positively related with size of land holding groups. The per hectare human labour days for chiku crop was maximum at 521 days with marginal farm households and minimum at 457 days with medium farm households.

The horticultural crops generated better farm income as compared to field crops due to their price remunerative nature. Chiku crop has been an important horticultural crop, known for its sound and steady production, remunerative prices and consequently for better net farm income.

On an average, per hectare net farm income of sample households from chiku crop was Rs. 24126, while the per hectare net farm income from field crops was Rs.18914.

Across the farm sizes for chiku crop there was no relationship between net farm income and size of land holding groups. The per hectare net farm income was maximum at Rs.26787 with small farm households and minimum at Rs.20220 with marginal farm households.

This shows skill and sound organisational capacities of small farm households to earn maximum per hectare net farm income of Rs.26787 compared to households of other size groups with limited resource endowments. Thus, chiku crop has been more labour intensive and price remunerative horticultural crop as compared to field crops.

5.4 HARYANA

The study is based on secondary data hence, no impact on income and employment have been assessed.

5.5 HIMACHAL PRADESH

The Shimla district is leading in realizing high amount of annual net income from cultivation of fruit crops on all sizes of farms. The per farm annual net returns from fruit crops varies from Rs.23,346 on marginal farm to Rs.2,76,335 on large farm and average being Rs.61,311. The net income from crops other than fruit crops is observed more in Kullu district than in Mandi district.

The per hectare analysis reveals the many fold returns from fruit crops as compared to other crops in all the selected districts as well as on different categories of farms. The per hectare net returns from fruit crops across the farm size are observed low in Mandi district as compared to Shimla district. The weighted average of net returns per hectare from fruit crops of all the districts varies from Rs.45,400 on marginal farms to Rs.71,422 on small farms and average being Rs.55,153. While from other crops the per hectare returns varies from Rs.1,594 on marginal farms to Rs.2,347 on medium farms and average for all is Rs.1,923.

The present study clearly indicates that per hectare net returns from fruit crops are 29 times more than the other crops. Across the farm size, small farmers (having land holding between 1-2 hectares) are realizing more income from per unit of the land devoted under fruit crops. On the small farms the per hectare net income is observed more (Rs.98,520) in Shimla district and less (Rs.11,060) in Mandi district. In Shimla district the share of fruit crops in total income from crop enterprises is hundred per cent while in Kullu the same is around 96 per cent.

The per hectare incremental income from raising fruit crops are Rs.32,411 in Kullu district and average being Rs. 34,957. The change in incremental income is observed quite significant over 1980-89 when the same was Rs. 6,957 in Shimla, Rs. 5,528 in Kullu and Rs. 9,136 in Mandi districts. Thus, it can be concluded that fruit crops give much higher income from the same land as compared to other crops.

In all the production stages the returns from per rupee investment in apple industry in Kullu district are observed better than other two districts under study. The returns from per rupee investment from all the bearing age groups are estimated to be Rs.1.50, Rs.1.58 and Rs.1.66 in Mandi, Shimla and Kullu districts respectively. For the State as a whole the return rate is Rs. 1.57.

The per hectare analysis reveals that small farmers are availing more (301 days) employment as compared to marginal farmers (212 days). The share of hired human labour in production of fruits is observed to be more)94.6%) in Mandi district as compared to 55 per cent in Kullu district and average for all the districts is 75 per cent. On the whole the fruit crops are generating more employment than other crops and all this suggests the high potential of farm employment in cultivation of horticultural crops in the state.

5.6 KERALA

On an average per hectare 797 kgs. raw nuts are produced per year. In this the small farmers accounted for 807 kgs. and the big farmers have produced a lowest of 739 kgs. The average gross income for the 40 years of age of plant per hectare works out to Rs.10,90,285 or Rs.27,259 per year and the net income is estimated to Rs.7,99,6\769 or Rs.19,995 per year. The small farmers secured the highest net income than the medium and big farmers because of the relative advantage of family labour work and personal supervision. Any additional labour employed by the big farmers are comparatively costly and they have to depend only on hired labours for all agricultural operations.

All the sample households have raised improved varieties of cashew; many have applied the recommended dosage of fertiliser and irrigation methods; adopted the plant protection measures; marketed their produce in the village itself to the millers; fair

knowledge about the price prevailing in the international market and aware of the price variation in different markets.

5.7 MAHARASTRA

A comparative economics of growing onion crop vis-a-vis other field crops revealed a much higher net income from onion cultivation compared to the cultivation of other field crops. On an average, the per acre net incremental income accruing from growing onion crop was estimated at Rs. 3043 over that of groundnut and at Rs.4777 over that of soyabean crop. This showed that onion growers improved their net earnings by 64 per cent when they confined themselves to producing onions only instead of groundnut and this improvement was to the tune of 159 per cent vis-a-vis soyabeen crop. In general, the per acre incremental income in growing onion crop over that of bajra, jowar, wheat and gram was estimated at Rs.6821, Rs. 6105, Rs. 6282 and Rs.7561, respectively. Like onion producers, grape orchardists were also found to grow various field crops on their farms. The most profitable field crops grown on the sample farms of grape orchardists were tomato and groundnut. The profit margin in tomato cultivation surpassed even what accrued from onion cultivation. In general, per acre net incremental income in grape cultivation was found to be to the tune of Rs.43,037 over that of tomato cultivation and Rs.47883 over that of groundnut cultivation. It could be worth mentioning that though the cultivation of same of the field crops was not found to be a lucrative proposition, these crops were still grown on the sample farms mainly because of the farmer's need to meet his family consumption requirements.

An analysis of human labour Utilization pattern in various cultivation and marketing operations of onion crop revealed the extent of total absorption of human labour to be to the tune of 98 man days per acre during the kharif season and during rabi season, it was 108 man days per acre. As the land holding size increased, a steady decline in the per acre human labour absorption could also be observed, especially in the kharif season. Splitting of labour Utilization component of onion crop cultivation into men and women revealed that female labour absorption was much higher than the male labour during various operations such as sowing, manuring, fertilising, interculture, mulching harvesting and grading. On the other hand, maintenance of grape orchards was more

labour intensive so much so that per acre human labour absorption for grape orchards was equivalent to 200 man days. Also, in grape cultivation, male labour absorption was much higher compare to female labour absorption and this held true for majority of the operations. It was only in the case of manuring and picking/plucking operation that female labour exceeded male labour on grape orchards.

5.8 SIKKIM

Regarding the impact of horticultural crops on income, it is found that the growers in the study area have realised more or less steady annual net income from cultivation of horticultural crops than the cereal crops like paddy, maize or wheat. As for example, the cultivation of paddy, maize and wheat generates a net annual income of Rs.1154.86, Rs.1578.86 and Rs.506.83 per acre, whereas cultivation of potato, cabbage, cauliflower and cardamom generates net annual income of Rs.5106.14, Rs.6601.82, Rs.4179.86, and Rs.2706.99 per acre respectively. It is also found that cultivation of orchid is one of the main sources of income of the sample farms in the study area. The share of orchid to the overall net annual income is found to be 79.06 per cent and in terms of money it stands for Rs.44249.13 per farm. In regards to overall incremental income generated from horticultural crops, it is found that Rs.3748.80 per acre is being generated through cultivation of horticultural crops. it is also found that horticultural crops are generating more wage employment than the other field crops in the study area.

It is found that the quantum of labour employment in horticultural crops is higher than the cereal like paddy. The labour hours in horticultural crops vary from 652.54 hours per acre in cardamam to 914.68 hours per acre in potato. However, there is a substantial differences in employing hired and family labour between different size classes. The labour employment in cabbage and cauliflower is found to be 852.81 hours and 852.54 hours per acre respectively. In case of paddy, it is found that 314.41 hours is needed per acre to cultivate this crop which is substantially lower than other horticultural crops. The labour employment in maize and wheat is found to be 589.98 hours and 408.07 hours per acre respectively. Labour employment in orchid per farm is calculated and it is found to be 314.41 hours per farm. However, there is a need for

labour hours to perform some other functions like grading, assembling, packaging etc. specially for horticultural crops which are an essential part in marketing. Thus, in terms of labour employment in all size classes, it is found that horticultural crops are generating more employment than the cereal crops like paddy, maize and wheat.

5.9 TRIPURA

It has been identified that pineapple and other temperate and tropical fruits have contributed considerably to the state exchequer. The field study revealed that the component of income of the sample farmers from pineapple and other horticultural crops are 74.60 per cent. Pineapple alone accounts for more than 71 per cent: field crops contributed only 2.54 per cent. The non-agricultural sources like services and professions etc. contributed 22.86 per cent.

The findings revealed that the average annual net return from horticultural crops together varied from Rs.17,870 for the marginal farms to Rs.1,64,273/- for the large farms. The per hectare net return found to have varied from Rs. 15,210/- for the large farms to Rs.31,910/- for the marginal farms with an overall average of Rs.20,334/- for the whole sample. The annual per household net return from pineapple fluctuated from Rs.17,13-/- for the marginal farms to Rs.1,57,195/- for the large farms with an overall average of Rs. 44,092/- . Per farm net income for small farms is worked out at Rs.28,314/- Rs.40,307/- for semi-medium farms and Rs.68,786/- for the medium farms.

5.10 UTTAR PRADESH

The category wise employment days utilized in various operations on the sample mango farms in Saharanpur district of U.P. indicates that the total employment days utilized per hectare have been estimated to 190 mandays of which the maximum i.e., 174 days have been estimated on account of hired labour and remaining 16 days on family labour which clearly shows that utilization of family labour was negligible on the farms of mango growers. The category wise analysis indicates that the highest i.e., 286 days were utilized per hectare in the category of decreasing production of bearing stage against the lowest i.e., 36 days in the category of non bearing stage. The overall average output per farm from mango orchards has been accounted to Rs.36308. The

value of output received from mangoes per farm has been found to be the highest Rs.55570 in the decreasing production stage of bearing orchards against the lowest i.e., Rs.23995 in the increasing production stage. The size group wise distribution of net income from potato in Farrukhabad district of U.P. indicates that the average net income per hectare from potato has been estimated to Rs.86,707. The net income has been estimated to be highest in case of medium farmers followed by marginal farmers.

5.11 WEST-BENGAL

Regarding the impact of horticultural crops on income, it is found that the growers in the study area have realised more or less steady annual net income from cultivation of horticultural crops than the cereal crops like paddy. As for example, the cultivation of paddy generates a net annual income of Rs.1824.24 per acre, whereas cultivation of potato, brinjal, cabbage and cauliflower generates net annual income of Rs.5106.14, Rs.16759.36, Rs.6601.87 and Rs.4179.86 per acre respectively. It is also found that cultivation of orchid is one of the main source of income of the sample farms in the study area. The share of orchid to the overall net annual income is found to be 57.40 per cent and monetarily which stands for Rs.45673.87 per farm. In regards to overall incremental income generated from horticultural crops, it is found that Rs.2820.54 per acre is being generated through cultivation of horticultural crops. It is also found that horticultural crops more specifically the orchids are generating more wage employment than the other field crops in the study area.

CHAPTER -6

PROBLEMS AND PROSPECTS OF SELECTED EXPORT ORIENTED HORTICULTURAL CROPS

As result of several trade liberalization measures and free market environment, a marked change in the trade of horticultural commodities in the form of discernible strategies for their development and new techniques of trade encompassing horticultural exports have emerged. In order to propel Indian economy to a higher rate of growth, the Ministry of Commerce has rightly placed more emphasis on increasing India's agricultural exports through increased fruits and vegetable exports in general and floricultural exports is particular (Anonymous, 1994). However, the crucial question of the hour that may merit attention and fuller discussion is the future prospect of India in horticultural exports. Although India has shown dynamic growth in her exports for most the agricultural commodities in the post liberalization period, to increase the pace of export growth further in the future could be a tough task since domestic requirement of most of the agricultural commodities are also growing very fast due to rise in human population and increase in income levels. As regards agricultural commodities, it is worth mentioning that there are two important aspects which would largely determine India's potentiality to export in the future. These crucial aspects could be traced in the domestic requirement of the various agricultural commodities, particularly horticultural ones, and their expected production levels in the future. In case India generates sufficient production surpluses of specific commodities after meeting the domestic demand, the residual could be made available for exports provided international prices remain favourable.

In this chapter an attempt has been made to study the problems and prospects of export oriented crops in different states of India. Infect, export oriented crops grown on different regions/states have varied type of problems due to variation in agro-climatic conditions in different crop grown in the state. Hence, problems and prospects have been discussed separately for each state.

6.1 ANDHARA PRADESH

Fruits and vegetables being highly perishable in nature many problems and constraints have been encountered in their marketing. Some of these problems and constraints are as follows:

Fruits and vegetables are mostly seasonal in nature and available during specific months in a year. The area and production of these perishable commodities are also restricted to specific areas wherever the solid, temperature and other climatic conditions are favourable to them. These perishable commodities arrive for marketing in large quantities during harvest periods creating severe glut in the markets during same year. In other periods, the market arrivals of such commodities are less and far below the internal demand for consumption.

Being highly perishable commodities, fruits and vegetables do not have any regulated marketing in the state except in Hyderabad where a sort of regulated marketing structure exists. In other parts of the state the marketing of fruits and vegetables is largely in the hands of middlemen, namely contractors, wholesale merchants, and retailers. Therefore, the net returns to the grower are low while the profit margin at the tail-end of marketing is high for the middlemen. The inclusion of costs related to transportation, losses due to storage, packing etc. by the middlemen are commonly taken on the higher side pushing up the price of the commodity by the time it reaches the consumer.

The grower has either absolutely no role or a very limited role in collection and distribution of fruits in particular and to some extent, vegetables. The grower is generally satisfied with the early receipts from the crop contractors and does not have any patience or courage to participate in the collection and distribution of these commodities because of highly unpredictable and seasonal price fluctuations.

In the absence of adequate cold storage facilities near the production centre and at the terminal sale point, the grower as well as the merchant is forced to dispose off the commodity at the quickest possible time as the produce gets spoiled in case of prolonged storage.

No standard grading of fruits is being practised so far by any agency except in the case of citrus varieties where the grower is forced to sell out the crop once the crop reaches

suitable size and maturity. In the absence of grading, the grower gets lower benefit from the harvest.

Mishandling, inadequate knowledge, lack of awareness for conserving the valuable fruits and vegetables at the right time result in huge wastage at various stages of harvesting, picking, packaging, storage and transpiration. The total estimated wastage during market preparations of fruits and vegetables is to the extent of 25-30 per cent.

Absence of low-cost processing facilities for utilization of the fruit crops and partly damaged fruits in rural area, the loss at early stage is roughly estimated at 5-10 per cent which could be reduced if adequate processing facilities are made available within the reach of the growers**.**

Most of the fruits and vegetables during their peak harvests enter the markets in large quantities creating a severe glut in the market. In such cases, the harvesting of the crop can neither be prolonged for a few days nor can the produce be stored for a longer duration during the peak season. The grower and the merchants do not play any role to control the glut during such periods of peak arrivals.

Market intelligence reports from different market centres for different fruits and vegetables are presently not made in the country. the available price information for fruits and vegetables is very meagre and is of very limited utility. It is, therefore, essential that accurate data on prices, stocks, arrivals, despatches, etc. of fruits and vegetables are periodically collected from important collection and distribution centres and this data should promptly be made available to producers and traders.

The fruit and vegetable growers are mostly in the unorganised sector and do not have a common platform to voice their problems and grievances and marketing their produce in a systematic and organised way. The state does not have any Fruit and Vegetable Growers' Societies, either at the primary level or at the secondary level, for participation in collection and distribution of commodities. Though there are 3-4 Growers' Co-operatives in the state, most of them are either defunct or not functioning effectively.

6.2 BIHAR

In Bihar, the first attempt to export litchi was made by State Trading Corporation during the year 1975 when the corporation tried to export litchi to European countries, but

could not yield much success due to lack of infrastructural facilities. Thereafter in the year, 1993 APEDA tried to export litchi through NAFED from Bihar, but the result was not much encouraging as the quality of the fruit was not of the international standard. In the year 1994, APEDA invited Australian consultants to provide export advice for export of litchi from Muzaffarpur. On their recommendation litchi was treated with not benomyl diptreatment before its export, but the same had to be abandoned as the fruits were found **"MAGOT"** infested. However, in the year 1995, nearly 30 MT of litchi fruit was exported from Muzaffarpur with the help of NAFED to UK, France, Netherland, Mauritious, Singapore and some of the Gulf countries successfully to earn good reputation and appreciation of the quality, colour presentation and packing of the fruit by the foreign buyers. The successful export was possible due to timely spray of phosphomidon arranged by the Bihar State Export Corporation in Collaboration with National Horticulture Board and Plant Protection Department, Bihar. However, this small quantity of litchi could only be exported as against the target of 150 MT of export.

The export performance analysis indicated that there is vast potential for export of litchi from the state provided proper infrastructural facilities be developed.

On the basis of the study following policy measures are recommended for improving the production and system of marketing of litchi in the state:

1. As there is immense scope for improving the production and productivity level of this fruit in the state the following measures are suggested:-

a. production and distribution of quality planting material through scientifically managed nurseries.

b. To educate the litchi growers for the maintenance of orchard with respect to manuring and irrigating the orchard periodically as prescribed.

c. For the scientific guidance, the proper facilities should be provided before the flowering of litchi for proper supervision and timely advice.

d. Arrangement should be made for supply of necessary chemicals and spraying equipment's as and when required.

e. New plantation with improved package of practices would be encouraged to replace the old uneconomic orchards.

f. arrangements for financial help to the litchi growers at lower rate of interest.

2. For improvement in marketing and export of litchi in the state the following policy measures are suggested:-

a. The farmers should be encouraged to produce export quality of litchi to get higher price in the world markets.

b. The chain involved in export and marketing of litchi should be minimised.

c. The Government should assure farmers about purchase of all types of fruits. The low quality fruits should be sent for processing of squash, juice, etc.

d. The facilities like pre-cooling and sulphonation chamber, refrigerated van should also be extended to all exporters.

e. The air transport facility should be available in the state capital (patna) to minimise the time taken in export of litchi so that quality of litchi could be maintained.

f. The camp office of APEDA should be in the field (area of orchard) with proper facility so that farmers may get advice of the exports as and when required.

g. The technical expert of APEDA should monitor the post-harvest arrangements at least a week before the export of litchi is commenced.

h. The co-operative institution should be involved in the export of litchi, so that farmers get maximum share in the export of litchi.

6.3 GUJARAT

There are good prospects for export of horticultural commodities like mango, banana, onion, potatoes, fresh vegetables from Gujarat. The prospects of export of chiku have been quite limited mainly due to following reasons :

1. Chiku is a highly perishable fruit in nature.
2. The market of chiku is limited upto gulf countries.
3. The expenses of cooling, loading, unloading, transportation to port, insulated vans, customc harges and freight of ships reduced the profit margin in global trade.
4. The cooling treatment, custom clearances and other procedures are too complicated.
5. Generally, foreigners dislike the dark brown colour of chiku pulp.
6. There is an assured market of chiku in northern India.
7. Some times society experiences monopoly of traders.

8. The Amalsad Vibhag Multipurpose Co-operative Society of Valsad Dist., had exported chiku in recent past, but they have stopped it due to low profit, labour intensive work, quality control, lengthy and complicated export processes. Moreover, it was difficult to manage it away from a distance of over 200 kms. from society to Mumbai port.

Nearly 96 per cent of sample orchardists reported to have experienced extreme shortage of farm labour and higher prices of wages. As many as 88 per cent of households had faced erratic and insufficient power supply. Further, they availed power supply during night time.

The shortage of farm yard manure was caused due to dominance of area under orchard crops, which caused shortage of fodder for animals. Hence, there was a shortage of farm yard manure. Nearly 80 per cent of farmers felt the need of having pucca farm roads. Due to clayee, black soil even the kutcha roads remained disrupted during peak seasons.

The village approach roads were in extremely poor condition which caused serious problems of transporting inputs and farm products. Smaller orchards were uneconomic to create owned well or tubewell facility. Hence, farmers had to rely on hired irrigation. Further, it was difficult to watch the scattered orchards during picking period. Due to shortage of labour, picking and grading was done by unskilled labour, which caused problems of improper grading, wastage and lower price.

The chiku markets are located at distance places like Delhi, and hence it had to be transported by trucks, which required packing of hard paper boxes of better quality.

Generally, the product was transported mainly at Delhi market by road in trucks. The road transportation was costlier, and the product was damaged by jerks, moisture and heat during transhipment.

The transportation of horticulture products through railway could be less costly and more convenient. However, the wagons were not available in time. Following are the measures to overcome problems related with crops.

1. Erratic power supply should be regularised with sufficient voltage and that too during day time.
2. Farms should be linked with pucca roads. The village Panchayats, co-operative

societies and other local institutions should take initiative and provide some financial aid for construction of pucca road of the farms.

3. The village Panchayats, co-operative societies and other local institutions should take care of regular maintenance of approach roads of villages.
4. Like some industrial goods, horticulture products too should be given priority of allotment of wagons and super fast services.
5. The orchardists should either form co-operative transport societies or the present society should undertake transporting of the product in their own trucks.
6. The co-operative societies should provide timely transport services on farm itself, which will minimise the labour problem and wastage of the product. It will also minimise the problem of glutting of produce in society's yard.
7. Scientific research for better packing should be evolved by National Horticulture Board. Plastic crates or folding boxes should be made available. Research on hard paper boxes which provide protection against moisture should be made.
8. Horticulture Department should encourage farmers to raise demonstration plots.
9. Awareness of farmers regarding picking, grading, packing, marketing intelligence should be increased.
10. Short-term courses of training should be organised by Horticulture Department, co-operative societies, district and taluka panchayats and other voluntary institutions.
11. Soil conservation practices should be adopted by the State Government to check fertility deterioration.
12. At present, the demand of chiku is mainly confined to northern India. If new markets are established in other parts of the country with better infrastructural facilities and sound marketing management, it would help to the better prices as well as to minimise the monopoly of traders.

6.4 HARYANA

The global demand for and trade in cut-flowers is increasing at a very fast pace. The area under and production of floriculture products in the developed countries, which are the major consumers of these products, has at best either remained stagnant or

declined somewhat. Due perhaps to high cost of labour and infrastructure the prominent developed countries in this trade are concentrating more on technology development rather than on production of flowers.

India has fixed an ambitious export target of floriculture products at Rs.2000 million for the year 2000. Given the pace at which demand for floriculture is rising in the importing countries, achieving this export target does not seem to be an unattainable task. Achieving this challenging target however require developing a high degree of professionalism and improving the capability to compete in the international markets through development of technology and expertise to grow quality flowers at competitive costs. Learning from the experiences gained so far, we would need to think afresh at all stages of project formulation and implementation. A more focused attention on some of the following issues could possibly help in moving towards the goal of realising the targeted export potential and in making Indian floriculture industry a more viable proposition.

Banks and other financial institutions providing finance for floriculture units, during pre-sanctioning appraisal of the projects, have been using certain norms for certain crucial parameters, which as we have reviewed, were much above the actual/realised level. A number of flower exporting units actually suffered losses while some others did not start their operations. The banks have had problems in recovering the money advanced. As a result banks are now apprehensive about advancing such huge sums of money to this sector. If the banks do not come forward to meet the financing needs of the industry, the growth of the industry will be hampered.

The banks therefore need to suitably modify the data base used in their appraisal criterion so as to ensure that unbankable projects are not financed. Given the typical nature of production and marketing process of flowers, any single estimated value for these parameters for projects located in different parts of the country for appraisal purposes is likely to be unrealistic. To take into such likely variations in the values of these parameters it would perhaps be appropriate to start with as realistic numerical values of these parameters as is possible on the basis of available data and then carry out a sensitivity analysis with parametric variations in the values of these parameters - singly as well jointly in various combinations. This will enable determination of a likely

range of values over which the project is likely to be viable. Such a procedure will also take care of possible differences in values of these parameters due to differences in location of floriculture units in different parts of the country and will ensure that the unbankable projects are not advanced loans (Indian Banks Association).

The site or location of a floriculture unit is an important contributory factor in determining the cost of a project and its success. While units located in regions/places having a developed infrastructure need to invest more on climate control, those units located at places which have more favourable climate do not have such developed infrastructure and therefore need greater investment in infrastructure development.

There is therefore a need to carefully evaluate the comparative economics, both from private (entrepreneur's) perspective as well as society's perspective, of locating export oriented floriculture units in different regions. Such an evaluation should also take in to account the comparative economics of developing such units either clustered in a specific geographical region or dispersed in different regions. In the latter case the optimum size of the industry in different regions would also need to be estimated (Directorate of Horticulture, Govt. of India).

Floriculture export being a relatively new enterprise, an organised and efficient marketing intelligence network in this area is wanting and a need for this has often been felt. There is therefore a need to systematically collect and analyse data on such aspects as demand pattern, market arrivals, prevailing prices, price determining factors such as changing consumer's tastes and preferences for different varieties/species of flowers etc. so that entrepreneurs can fetch a better price for their produce and a viable floriculture industry can be developed, (APEDA, NHB, Association of Producers).

Setting up of a green house (GH) is often the single largest item of capital investment for a floriculture unit. Most of the green houses installed in the existing units so far have been imported from foreign countries at exorbitant costs even though indigenous capabilities for building GHs does exist. Much however is not not known about the comparative technical and qualitative features of the two types of green houses. Besides technical assessment, there is a need to evaluate the comparative economics of investing in an imported or an Indian made GH through a careful comparison of the capital and operating cost of the two types of GHs over their life spans. Such an

evaluation of comparative economics, must take in to account the differences, if any, in quality and therefore in the price realised of the product produced under the two types of GHs. Such an analysis will enable Indian manufacturers of GHs to carry out the necessary modifications in design/quality of material used in fabrication of GHs. (Floriculture industry and/or government can possibly provide funding for such R & D efforts in this direction).

While a large number of developing countries exporting flowers to EU are not levied any import duties by EU. Indian cut-flower exported to EU attract an import duty of between 15 to 20 per cent. This puts the Indian Exporter at a disadvantage vis-a-vis his competitors. The government, through diplomatic channels, should take up this matter with EU so that Indian cut flower exports are treated at par with exports from other developing countries. Till the time this is accomplished, the government can consider reimbursing, either in full or in part, the duty levied by the EU (APEDA).

The lack of availability of adequate and quality infrastructure for post harvesting care and transportation has been an important contributory factor in realising lower than the anticipated proportion of exports to production as also lower than expected export price realisation. Development of exclusive cold storage at airports, is absolutely necessary (APEDA).

The sudden spurt in export oriented floriculture units in the country in a span of four to five years has created demand for trained manpower to organise and manage cultivation of flowers under protected conditions and undertake their marketing in foreign markets. The training curriculum imparted in our agricultural universities/institutions is however not geared to meet the requirements of this growing industry. There is therefore a need to suitably incorporate in the course curriculum of such institutions, certain courses to meet the specific needs of this industry. Till the time such changes occur, short term training programmes/refresher courses can be organised for existing agricultural graduates to fill the gap (ICAR).

There is a need to diversify our exports to a number of new markets rather than depending mainly on EU countries and U.S.A. for our exports. The successful exports of Indian roses to Japan is an example. A number of countries import flowers from EU to meet their flower requirements. Efforts should be made to systematically analyse the

consumption requirement and behaviour of such markets with a view to making direct exports to these markets (APEDA).

Investing in a high cost export oriented enterprise producing a perishable commodity with a very short self life, as in the case of cut-flowers, runs a number of risks most of which may be beyond the control of the entrepreneur. To minimise the risks associated with such an enterprise, on account of marketing exclusively in a foreign market, there is a need to concurrently and systematically develop domestic market as well so that the exporter is assured of a market on which to fall back upon for non-exportable grades of flowers or the excess flower production which somehow can not be profitably exported. This besides meeting the demands of domestic consumers for quality flowers will also enable the producer to cut down on his unit cost of production (APEDA, NHB).

Some of the smaller countries like Thailand, Kenya, Ecuador etc. have a much larger share of international trade in cut-flowers than India. Apart from the fact that these countries have been in this trade for a long time and have established a sort of reputation for themselves and developed contacts in the trade, we need to understand the production and export policy scenarios of such countries and analyse their cost structure. We also need to understand the level of their technology development and nature of technical collaboration they have entered in to with technology supplier so as to understand how they respond to market demand for different varieties and quality of flowers (APEDA could possibly sponsor some such study).

6.5 HIMACHAL PRADESH

In Kullu and Mandi districts, the shortage of suitable plant material as well as high cost of the same is reported by more than 50 per cent of growers. High price of fertilisers was also reported by 48,39, and 24 per cent of sample growers respectively in Mandi, Kullu and Shimla districts. More than 30 per cent growers have also reported the scarcity of labour and high rate of wages during peak seasons of important operations of apple cultivation. The maximum numbers of sample orchardists have also shown their serious concern about sudden out break of apple diseases like scab and premature leaf fall etc. They are worried for timely solution from scientists for the eradication of these diseases.

Almost all the selected orchardists reported the problem of poor conditions of roads and most of the kuchha roads remain disrupted during peak harvesting season of apple crop. This ultimately hampers the movement of produce to marketing centres and reduction in quality of produce which results in low prices. The high cost of alternate packing material i.e.c.f.b. cartons is also reported by maximum number of orchardists in all the districts. It is interesting to note here that apple packed in cfb cartons are sold at high prices because more quantity of apples is packed in carton as compared to wooden box. This aspects need through investigation to assess the popularity and viability of carton packing in Himachal Pradesh. The high cost and untimely availability of transport facilities were also reported by sample growers.

The maladies of apple scab and recent appearance of pre-mature defoliation of leaves need sincere efforts on the part of horticultural scientists and state horticulture department to equip them selves for control of these diseases on war footing. Sincere efforts are also required to train and create awareness about the latest technical know-how of the production technologies to the farmers.

In addition to production technology the need for creation of awareness about post-harvest management of fruits among growers is quite essential. There is need to train growers about the preparation of fruits for market, market rules and regulations and information about existing market infrastructure available in the state. For reducing spoilage during the transportation of fruits, there is need for development of cool chain system of transport so that produce can be sent in good quality to distant markets.

6.6 KERALA

Cashew has a steady demand and the requirement of the industry is more than 8 lakh metric tonnes a year, whereas the availability from internal sources is less than half of it. The waste and dry lands in Tamil Nadu, Andhra Pradesh, Karnataka, Orissa and Maharastra should be brought under cashew cultivation.

2. The existing old unproductive trees have to be replaced by new H.Y.V. crops and modern technology on fertilisation, pruning and grafting and high density planting of cashew trees should be adopted.

3. The present Cashew Development Board has to stretch its infrastructure development activities simultaneously to Tamil Nadu. Andhra Pradesh, Karnataka, Orissa and Maharastra.

4. Positive financial assistance to the farmers and processing industrial units will increase the rural employment and the growth of the country.

5. Kerala has less waste lands when comparing with other southern states. Potentialities to double the cashew production and export earnings are in the reach of the southern states.

6. The Government of India should grant plantation status to cashew. Sales tax and land ceiling should be removed.

7. Unutilized waste lands under forest control should be distributed to the cashew growers. The Eco-friendly tree will serve as a forest tree as well as an export earning crops.

8. Government of Kerala should return the cashew factories retained by them after expiry of the lease period, as this would provide more employment to cashew processing unit.

9. Cashew Development Board should devise new norms to have direct linkage of wages to productivity. Cashew apple is highly nutritious and can be utilised for preparation of different fermented and non fermented products namely juice, syrup, jam, candy, pickle, vinegar and liquor varieties like wine, brandy etc..

6.7 MAHARASTRA

Two differing scenarios were noticed in terms of export trade of India in grapes and onions over the past decade and a half. While on one hand grape exports from India increased by leaps and bounds during the period between 1979 and 1993, onion exports from India grew very slowly during this period, in fact, during some phases of this overall period the export of this high value crop from India was seen to decline, both in quantity and value terms. Overall, onion export trade of the country could still show some encouraging trend and it was found that in quantity terms, the union exports from India had expanded by 163 per cent between the 1979-1993 period and this expansion in value terms was of the order of 215 per cent. Most of the export expansion for onion

was noticed between the early - and the mid-eighties and, thereafter, it had considerably slowed down. In contrast to slow growth of onion export from India, grape exports were found to register sharp increases, particularly after the mid-eighties so much so that during the period between 1985 and 1993 the grape exports from India rose by 525 per cent in quantity terms and 370 per cent in value terms. During 1993-94, UAE, Bangladesh and Malaysia were the major importers of Indian onion, who along with Sri Lanka, Singapore and Saudi Arabia together accounted for 95 per cent of the India's export of onions, both in quantity and value terms. During the same period, the major importers of Indian grape were UAE,UK, Saudi Arabia and Bangladesh.

Maharashtra tops the country in the production growth of many of the horticultural crops, particularly various fruits like grapes, oranges and chewnuts. Notwithstanding such impressive credentials for Maharashtra in horticulture crop production, the share of this state in the nation's total production of banana and onion has often been marked with declining trends which could be construed as depressing because these two commodities have long been at the forefront of India's horticultural exports. Two differing scenarios were perceptible in Maharashtra's trend of grape and onion production. While Maharashtra's grape production recorded impressive and significant growth owing mainly to perceptible rise in productivity and acreage under the crop, the state appeared to lose its share in the nation's total onion production due to losses in productivity. The decline in productivity inspite of reasonable growth in acreage under the crop meant slow growth for the state in onion production. It might appear that the onus of technological efforts have been more favourably inclined and concentrated behind the cultivation of grape rather than onion in the state of Maharashtra. Although both onion and grape turned out to be profitable crops in this state, the element of profit involved in the cultivation of grape was certainly much higher compared to onion. In fact, annual profit from grape cultivation was found to be 3 to 4 times higher than that accruing from onion cultivation. No wonder therefore that more of the farmers were switching over to better profitable grape cultivation. One of the reasons for slow acreage growth under onion compared to grape can be traced in this changing cropping pattern in favour of grape.

One of the important features of grape cultivation in the state of Maharashtra as observed in this study was the practice of pre-harvest contract adopted by majority of the orchardists. Pre-harvest contracting not only facilitated risk-free welcome finance for the orchardists, it also spared them of the botheration of looking after the crop through to the harvest and marketing. However, mention may be made here that this practice of pre-harvest contracting definitely reduced the actual profits accruing to orchardists and, also discouraged them from producing the crop on a large scale. In the ultimate analysis, this may not only affect the economic position of the farmer but also the cultivation of this high value crop. As a matter of fact, a higher production performance can be achieved only by providing a complete package of necessary post-harvest infrastructural facilities. Not much has been achieved in this direction and there is practically a vacuum in this regard. Post-harvest operations such as cooling, grading, packing, transportation, warehousing etc. involve enormous efforts and investments which the Government alone cannot provide. It becomes, therefore, necessary for the farmers to come forward, join hands and collectively share the responsibility. In this respect, the government's endeavour should be limited to equipping the producer with the latest technology, tools equipments and facilities so that they are able to offset and minimise initial post-harvest losses and also slow down the chink of reactions that trigger spoilage.

As regards employment generation through horticultural crops, both onions and grapes were seen to generate sufficient employment opportunities for both female and male workers. However, male workers had better employment opportunities on rape orchards while females were the preferred lot in onion cultivation.

Indian grapes and onions are arguably valued commodities in world trade. The imperative need of the hour is to cut down upon the past-harvest losses in order to meet their increasing demand in the international market. Marketing systems encompassing grapes and onions also need improvement in their efficiency so that the producer has a better stake in the consumer rupee involving these two commodities.

In this changing liberalised economic era, India should give boost to its horticultural production and international trade in horticultural commodities through a concerted drive towards providing proper technological back up, improvements in productivity, efficient

marketing, attractive price support and appropriate extension services. The country's international horticultural trade can definitely have a cutting edge over several of the current player nations if our current efforts at giving a major fillip to horticultural production continue unabated with a unflapping zeal.

6.8 SIKKIM

The nature and extent of problems/constraints in producing the horticultural crops as perceived by the sample farmers have been thoroughly assessed. There are seven field level problems/constraints according to the perception of the farmers which play as a powerful barrier in production of horticultural crops in general and the orchid in particular. However, the degree of intensity of these constraints vary from farm to farm which is further clearly displayed in the analyses. In marginal farms non availability of skilled labour is the main constraint whereas in small farms, the main constraints is low prices of output. But there is almost close identity in perceiving the constraints in between medium and large farms as projected. It is found that low prices of output is the main constraints in these farms.

In marginal farms, the degree of intensity of constraints according to their importance may be spelt out as lack of working capital, low prices of output, lack of information about improved technologies, non-availability of skilled labour, non-availability of transport and non-availability of proper marketing facilities.

Orchid in particular and the horticultural crops in general being an export potential crops of the state, the prosperity of the growers as well as the overall economy of the state is closely interlined with the development of the production process and marketing methods of these commodities. The result of the present study clearly demonstrates that there is a promising trend towards cultivation of these crops throughout the state as these crops are not only profitable in terms of higher output-input ratio but also generate a higher wage employment for agricultural sector.

However, for adequate growth of this sector vis-a-vis expanding of export of these products attention may be made in developing appropriate organisation. In this juncture a change in the land ceiling act may be amended for allowing the corporate companies to invest more capital on development of large sized captive gardens. There is also an

urgent need to adopt effective steps to fulfil the objectives of transfer of technology (TOT) in a proper manner. In this connection, for effective agricultural extension, a strong need is felt for a closer co-ordination and monitoring between the Agricultural Directorate and Horticultural Directorate of the state. Agricultural extension workers can play more effective role in extension and development activities, as well as in transferring the latest technologies at the door step of the growers.

6.9 TRIPURA

Most of the pineapple growing areas in the hills are connected by bridle path or kutcha fair weather road. Such roads are not useable for motor transport for carrying of harvest. In the hill areas of the N.E. only one village out of 20 is connected by motorable roads. Obviously such road transport cannot serve the need of the pineapple growers and the farmers are forced to sell his produce in the village to the middlemen at throw away price.

For perishable commodity like pineapple cold storage facility is necessary to maintain its quality in fresh form. Due to lack of such facility the farmer had to sell the product immediately after harvest at whatever price offered by the traders. The middlemen took full advantage of the situation and exploit the growers from their due share of the produce.

There is no regulated market for agricultural produce to cope with the demand for such facilities. The number of unregulated market is substantially large which cheated the farmers by adopting various fraudulent practices. to improve the efficiency of agricultural marketing and to save the farmers from exploitation and malpractice's of middlemen emphasis has been laid on the development of farmers co-operative marketing sociality. Through such societies only the farmers may take the advantage of collective bargaining to obtain a fair price for the produce.

The farmers do not have information on market demand and prevailing prices of pineapple in different markets. Most of the farmers do not have any contact with the central market; as a result they accept whatever price the trader offers to them. So far as fruit crops are concerned media like Radio, Television and Newspaper coverage on

market prices is very limited. The interior hill farmers do not have access to such media also and as such the middlemen's offered rate is the prevailing price in that area.

To promote export the following issues must be considered. Emphasis should be given on the development of varieties with higher production potential and export oriented quality and standard. Horticultural research efforts is needed to improve the quality of fruits through adoption of bio-technology. There is need for investment in horticulture sector particularly in pineapple and other export oriented horticultural crops to cope with the demand for fruits in the export market. Improved processing industries are necessary to promote export. Systematic market surveys should be conducted on demand of fruit and fruit products in different countries and some private exporters of horticultural products may be encouraged with incentives to promote export. Cold storage facilities should be created at central market alongwith refrigerated carrier facilities from the farmers field.

For export of fresh fruits to the neighbouring countries pre-packaging treatment and use of improved packaging materials should be encouraged, so that, fruit quality is not deteriorated. Air freight subsidy should be given to encourage export of horticultural crops and space for air-carge should be increased for promotion of export of fruits and fruit products from N.E. India. Opening of liberalise boarder trade with bangladesh is necessary as there is considerable demand for Indian fruits like pineapple, jack fruits, citrus and wood apple. Establishment of industry to manufacture yarn from pineapple leaves may be one of the viable proposition which has export potential.

6.10 UTTER PRADESH

The problems of plant protection materials were reported to be acute on the farms of almost all the farmers. Operational difficulties were also reported by the majority of farmers of all the bearing stages.

Shortage of skilled labourers on the farms of bearing stages for packing and grading was reported. Prices of packing materials were reported to be much higher. Shortage of gunny bags, wooden boxes and other materials was reported on almost all the farms. Transportation charges were reported to be very high by farmers of all the categories. There was no problem of storage.

Regarding wrong pricing policies it was reported that prices were low and were not announced timely and were not paid timely. Lack of technical know how was there on the farms of all categories.

Regarding measures of improved practices, the best source of extension media was exhibitions/fairs. The services of V.D.C. (Village Development Officers) were reported to be the best and common source to the maximum numbers of mango farmers. The other sources were horticulture officer. plant protection officer, agriculture inspector, agriculture extension officer, Block Development Officer, progressive farmers, friends and relatives.

The problems faced by potato growers were mainly the non availability of electricity and diesels, seeds and fertilizers, plant protection materials and approach roads.

There was shortage of skilled labourers and gunny bags for grading and packing. There was lack of vehicles at the desired time. Lack of metalled and all weather roads was also reported.

Regarding market intelligence's wrong and misleading information were made available to potato growers, various mal-practices were prevalent part payment and forced low payment were also reported lack of technical know how was also reported. Suggestions of above mentioned problems are as follows:

1. Processing units must be developed on or nearby the mango and potato farms to solve the problems of unemployment and disguised employment among growers.
2. Encouragement's by the government should be facilitated to farmers for covering more and more area under mango and potato as there are most profitable crops.
3. Cropping pattern should be changed in such a way so that mango and potato growers can allot more area under these crops.
4. Mango growers must be free from the clutches of contractors who grabe their margin and profit.
5. Marketing infrastructures for mango must be ameliorated.
6. Number of cold storage's should be increased to save the wastage of potato.
7. Harvest prices of both mango as well as potato should be increased to encourage growers and there must be correct pricing policies.
8. Problem of erratic electric and diesel supply must be finished.

9. Along with transportation grading and packing materials must be supplied at cheaper rates.
10. Technical know-how and correct market intelligence should be provided to growers.

6.11 WEST BENGAL

The nature and extent of problems/constraints in producing the horticultural crops as perceived by the sample farms have been thoroughly assessed in this section. There are seven field level problems/constraints according to the perception of the farmers which play as a powerful barrier in production of horticultural crops in general and the orchid in particular. However, the degree of intensity of these constraints vary from farm to farm.

Orchid in particular and the horticultural crops in general being an export potential crops of the state, the prosperity of the growers as well as the overall economy of the state is closely interlinked. The result of the present study clearly demonstrates that there is a promising trend towards cultivation of these crops throughout the state because these crops are not only profitable in terms of higher output-input ratio but these crops also generate a higher wage employment for agricultural sector.

However, for adequate growth of this sector vis-a-vis expanding of export of these products attention may be made in developing appropriate organisation. In this juncture a change in the land ceiling act may be amended for allowing the corporate companies to invest more capital on development of large sized captive gardens. There is also an urgent need to adopt effective steps to fulfil the objectives of transfer of technology (TOT) in a proper manner. In this connection, for effective agricultural extension, a strong need is felt for a closer co-ordination and monitoring between the Agricultural Directorate and Horticultural directorate of the state. Agricultural University can play more effective role in extension and development activities, as well as in transferring the latest technologies at the door step of the growers.

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