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## PROBLEMS AND PROSPECTS OF FRUIT CULTIVATION IN HIMACHAL PRADESH

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### Abstract

*Himachal Pradesh is one of the mountainous states of the country. The prevailing agro-climatic conditions, topography and socio-economic variables have been responsible for a wide spatial spread of fruit cultivation in the state. This has resulted in an increase in area under fruits from a mere 1449.33 hectares in 1951 to almost 2 lakh hectares (1,91,517) in 2006. The production of different kinds of fruits in the state has also recorded a tremendous increase from 1200 tonnes to more than 6 lakh tonnes (6,95,517) during the same period. The emergence of fruit cultivation on commercial lines has given a big boost to the state's economy, besides bringing the socio-political and ecological transformation. These developments have been accompanied by a heapful of problems associated with transportation, labour, pesticides/fungicides, technical know-how, marketing, etc. It has been noted that more than half of the fruit growers suffer from problems of storage, transportation and marketing, while most of the rest are suffering from land related difficulties.*

*This paper attempts to highlight the problems alongwith the future prospects of fruit cultivation in the state. The paper has been divided into four sections. Section I deals with general introduction, data and methodology. Section II is devoted to the varied problems related to fruit cultivation. Whereas the prospects of fruit cultivation constitute section III. Section IV is devoted to conclusions and policy recommendations.*

### Introduction

The present scenario of fruit industry in Himachal Pradesh displays a picture of strengths, weaknesses, risks and opportunities in the light of changes that are taking place in the field of production, technology and marketing opportunities. Fruit cultivation during the past four and a half decades has positively affected the social and economic life of the people of the state. The coming up of orchards has led to more income as well as employment generation, thus leading to an improvement in the standard of living of the people especially the fruit cultivators. Fruit

cultivation has also been responsible for strengthening the economy of the state by bringing more income to the farmers and by accelerating the per capita state domestic product.

Numerous studies have been carried out by various scholars regarding the problems being faced by fruit cultivators of Himachal Pradesh as well as prospects of fruit industry in the state. The works of Azad, Swarup and Sikka (1988), Chand (1996), Chandel (1976), Swarup and Sikka (1987) and Negi (1982) are worth mentioning in this regard. Azad et.al. (1988), carried out a study on development of

horticulture in Himachal Pradesh. A review of the fruits grown in the state and their production, marketing and problems of growers have been presented in this study. Chand (1996) in his work tried to highlight that the value productivity of vegetables and fruits in Himachal Pradesh remained much higher as compared to the traditional crops hence a diversification from the traditional cropping pattern through high value crops was required in the western Himalayan regions. Chandel's (1976) work provided information on Horticulture in Himachal Pradesh in which the various problems faced by the horticulturists in the state and the prospects of horticulture have been highlighted. Negi (1982) brought forward a study on Horticultural Produce Marketing Technology and Marketing Management in which he tries to highlight the post-harvest handling of temperate fruits, marketing technology and marketing management systems. The objective was to provide a base for systematic understanding of the problem of fruit marketing, processing, marketing management and development of advanced facilities and technology for post harvest handling. Swarup and Sikka (1987), presented a study on production and marketing of apple in Himachal Pradesh. The study also discusses various problems being faced by apple growers and their dependence on forest resources. However, these studies were based on district level data hence lacked many details. The present study is based on primary data collected through a well structured questionnaire. Also it is the most up to date analysis and its study period spans over more than five decades or so i. e. from 1951 to 2006.

Fruit growing has now become an essential part of the economy of the state. The state no doubt has earned huge profits from fruit production but these have not been without a cost. There are number of problems which the

fruit growers have to face from time to time. The prospects of fruit industry in Himachal Pradesh are indeed very bright, provided the problems are overcome with the joint efforts of the growers and the state government.

### **Data and Methodology**

The data used in the paper are largely primary in nature and relates to the kinds of problems being faced by the fruit growers as well as the location of orchards with respect to motorable roads. Secondary data has also been taken from the Directorate of Horticulture, Shimla to study the effect of droughts on apple production. The data were collected through fieldwork by interviewing 200 fruit growers belonging to different parts of the state through a well structured questionnaire. A rigorous study of the role of various factors operating at the lowest scale i.e. at the level of an orchard has been done. The data have been presented in the form of maps and tables to facilitate the discussion.

## **SECTION II**

### **Problems of Fruit Cultivation**

Fruit cultivation in Himachal Pradesh although has become an integral part of the economy over time yet it suffers from a number of problems that can be categorised as physical, social, infrastructural and institutional (Table 1).

**(A) Physical problems :** The physical problems of fruit farming in the state basically relate to the undulating terrain, soil erosion, scarcity of water resources, inadequate climatic conditions and unsuitable soils. These directly affect fruit cultivation in the state. It has been found that these have been most predominant problems, as more than half (55 per cent) of the selected growers reported to have been suffering from them (Table 1). These problems

**Table 1**  
**Himachal Pradesh: Types of Problems Being Faced by the Fruit Growers**

Fruits Belts	Physical	Social		Infrastructural		Institutional	Total Number of Growers
		Labour	Storage	Transportation	Marketing		
Apple Belt	45(45)	37(37)	30(30)	40(40)	40(40)	20(20)	100
Stone Fruits Belt	42(60)	30(43)	35(50)	20(29)	30(43)	10(14)	70
Sub-Tropical Fruits Belt	22(73)	5(17)	4(13)	2(6)	7(23)	10(33)	30
<b>Total</b>	<b>109(55)</b>	<b>72(36)</b>	<b>69(35)</b>	<b>62(31)</b>	<b>77(39)</b>	<b>40(29)</b>	<b>200</b>

Source: Field Survey, 2006.

Note: Figures in parentheses are per cent to total number of growers.

are more severe in the sub-tropical fruit belt of Kangra, Hamirpur and Una districts largely due to the presence of seasonal choes and related soil erosion. In these parts, more than 73 per cent of the fruit growers reported suffering due to physiographic constraints. The choes bring havoc and devastation during floods and large tracts of useful land are washed away. The high altitudinal apple growing areas of Shimla, Kinnaur and Lahul and Spiti districts suffer from the problem of inaccessibility due to rugged terrain.

The variation in the production of fruit crops over different years is also the result of natural calamities like, hail, drought, frost, snowfall, excessive rainfall, land slides etc. (The Tribune News Service, 2007). Hails damage the stone fruit and the damaged fruit fetches very poor price when marketed. There is no area absolutely free from hailstorms, however their intensity and frequency vary from area to area and season to season. About 60 per cent of the plum growers of the stone fruit belt often complained of a spree of hailing and many of them have cut down their plum trees due to this problem.

Heavy rainfall during the monsoon (July and August) hastens the maturity of fruit and a pre-harvest drop is more likely. More than

60 per cent of the growers of peach (stone fruit) in Sirmaur district complained of facing the problem of excessive rainfall during the peach season. This fruit gets spoiled, if wet and fungus occurs if packed even slightly moist as the fruit is very delicate hence perishable. The months of April, May and June usually experience little rainfall. Hence drought or semi-drought conditions are prevalent which cause water stress in trees resulting in less fruit setting and restricting fruit size.

In the year 1994-95, the apple belt experienced severe drought conditions and the production of apple decreased by 58 per cent (from 294734 tonnes in 1993-94 to 122783 tonnes in 1994-95). Areas around Shimla were worst affected followed by Kullu and Lahul. The Directorate of Horticulture attributed this loss entirely to the occurrence of droughts (Table-2). In the same period stone fruits have also experienced a decline in area particularly in Sirmaur and Solan districts. Due to similar reasons, the production of mango and citrus fruits (sub-tropical fruits) was also affected in Sirmaur and Bilaspur districts. The department recommended mulching to preserve moisture in the soil. The growers were told to use black alkathene film which conserves moisture quite effectively. Hay, pine needles and oak leaves

are also used as mulch.

**Table 2**  
**Himachal Pradesh: Effect of Drought on**  
**Apple Production: 1994-95**

District	Loss over previous year's production (Tons)
Shimla	97601
Kullu	64282

*Source: Directorate of Horticulture, Shimla*

Frosts are also harmful for the fruit crop leading to a severe loss of crop yield. Peach, plums, pears and cherries are more prone to frost damage than apples. Excessive snowfall or lack of snowfall is another problem for the fruit growers especially in the apple growing districts of Shimla, Kinnaur and Lahul and Spiti. These are the cold regions and here the source of irrigation is mostly the snowfall occurring during winters. But at times, excessive snow might occur or the snow season is delayed which has a negative impact on the fruit crop of that season. However, extremely cold conditions are not very appropriate for the fruit trees. The snowfall otherwise is very useful as it is a natural remedy for killing the pests hence saving the fruit trees.

The wind blowing at a very high velocity also causes extensive damage to the flowers, buds and fruits which ever is in the stage of progress. Often winds lead to fallen fruits, tattered leaves, broken branches and at times uprooted trees.

Though the government cannot prevent these natural calamities yet it has certainly supported the growers whenever such an adversity has taken place. Schemes are there for insuring the crops against such risks.

**(B) Social problems :** Social problems include the problems related to an individual cultivator and the society as a whole. In the context of fruit

cultivation, these would refer to the problems of fragmented land holdings owned by the fruit growers and labour force recruited in the farm for carrying out various farm operations. The survey results reveal that about 36 per cent of the growers are suffering from such social problems in the state.

According to 1990-91 agricultural census, the holdings of less than one hectare accounted for 63.8 per cent of the total holdings whereas the area covered by these holdings formed only 21.3 per cent of the total area under cultivation. It shows that a large majority of the fruit farmers are small. The average size of a holding was 1.21 hectares in 1990-91. The holdings are not only small but fragmented. These small and fragmented land holdings are major constraints in the development of fruit cultivation in Himachal Pradesh. The management of these scattered pieces of land is a very difficult task. It reduces the scope for mechanisation of fruit cultivation for timely execution of various farm operations and saving on labour costs. The main problematic time is the fruit season when the farmer has to recruit extra labour force for the vigilance of fragmented orchards and also for carrying the produce to the road head from various scattered orchards. Irrigation of these scattered pieces of land is also a major problem for the owners.

Labour also plays a very crucial part in orcharding and it's non-availability leads to severe crisis for the growers. The basic problem is the shortage of skilled labour especially during the peak season of orchard operations such as pruning, replantation, plucking and packing the fruit, carrying packing material to the packing sheds and packed boxes, baskets and bags of fruits to the road heads.

It has been noted that the local growers particularly, those who reside at the orchard sites use family labour in performing many of the above mentioned operations and therefore

face limited labour problem. But the growers who are outsiders, have to arrange local labour on daily wages for working in their orchards who charge their own rates. During the peak season, labourers also come from Bihar, Uttar Pradesh, Uttarakhand and Nepal. They are provided with shelter and food by the grower, in addition to the daily wage in cash. As reported by the growers, the wage rate ranges between Rs 70 to 100 per day during the fruit season. About 37 per cent of the growers belonging to the apple belt and 43 per cent to the stone fruits region were suffering from severe labour problems (Table 1). The orchardists of western parts involved in the cultivation of sub-tropical fruits were mostly satisfied with the availability of labour but a few had complaints regarding the higher wage they had to pay to these people.

**(C) Infrastructural problems :** The cultivation of fruits in Himachal Pradesh is also suffering from a host of infrastructural problems such as storage of fruits, packing material, transportation and marketing which are essential once the fruit is plucked from the trees.

The shelf life of fruits can be considerably extended from a few days to several months if stored properly at low temperature with high humidity. The cold storing of fruits avoids glut in the market and regulates the supply of perishable fruits over a longer span of time, making it profitable for the producers and beneficial for the consumers.

In Himachal Pradesh, it has been noted that the growers have not been provided with sufficient storage facilities and there is literally no facility for storing fruits at orchard sites in the state even for a few days. The only available spaces are the ill-ventilated cow-sheds or temporary sheds made of plastic sheets as a result the quality of produce is adversely affected.

Almost all the sampled fruit growers complained the lack of proper storage facilities while 35 per cent reported the severe shortage of this facility. The Himachal Pradesh Horticultural Produce Marketing and Processing Corporation Ltd. has established packing houses at places like Gumma, Rohru, Tatapani, Jarol-Tikker, Oddi, Pekong Peo, Bhunter, Rajgarh, Chail, Patali, Kullu, etc, but these are providing relief to growers of surrounding areas only.

The survey revealed that the storage problems were most severe (30 and 50 per cent) in areas where there was a high production of apple and stone fruits. In low-lying regions, where sub-tropical fruits are being grown about 13 per cent of growers reported the problem of storage (Table 1). There is a non-availability of refrigerated vans in general and railways in particular. However, the government is trying to help the growers by taking up projects for establishing cold stores as well as store houses in the state.

Fruits such as peach, pear, mango, citrus, apple etc. need good packaging after harvest to ensure least damage during transportation from orchard to the market. Nearly two-thirds of the orchardists interviewed to seek information regarding the problem of packing material, revealed that there was a shortage of the same. The packing material is costly and there is hardly any credit facility. The boxes for packing stone fruits and apple were also short in supply due to the restrictions on felling of pine trees. The material for making boxes often comes from other states due to which the carriage charges are quite high and the supply is very slow.

With the introduction of advanced technology the corrugated cartons are available as an alternative to the conventional wooden packing boxes. It has provided much relief to the producers. A modern corrugated carton manufacturing unit has come up at Pragti Nagar

with a capacity to manufacture 30 million cartons annually, but the alone unit can not cater the needs of the state.

Transportation is a necessity as the roads play a vital role in the expansion of orchards in the state. It has been observed that the road network has basically remained the same and not many changes have occurred since 1995. The roadways have acted as important channels of diffusion of orchards in the state as a result most of the fruit orchards have come up along roadsides. Table 3 shows that more than 50 per cent of the orchards in the state were located within a distance of five kilometers from the motorable road. In certain areas where sub-tropical fruits dominate the scene about 73 per cent of the orchards were located within a distance of five kilometres from the motorable road. However, in some areas falling in Kinnaur and Kullu districts where apple fruit is dominant many orchards are located in the interior and are not connected by any kind of road. The orchards in such areas have experienced slower spatial spread.

In the stone fruits dominant areas around Sirmaur, about 29 per cent of fruit growers have been facing the problem of transportation. Certain tehsils such as Pacchad and Paonta Sahib in Sirmaur district were connected with motorable roads only in the 1970's.

There are still certain orchards uphill where road linkage is not available. In the Rajgarh tehsil of Sirmaur district ( Fig 1) the growers complained that due to lack of roads, the highly perishable peach (stone fruit) gets spoiled many a time. This results in high post-harvest losses during the transportation of the fruit. The growers expressed that the government should provide refrigeration at competitive rates so that the peach can be transported to the market with minimum damage.

The apple and partially plum growing southwestern parts of the state, comprising Shimla and Solan districts are well served by the National Highway, State Highways and many other metalled roads. About 17 per cent growers of these areas have also reported the problem of transportation. The sub-tropical fruits dominant areas lying in the lower hills with almost plain topography are also well served by roads. Therefore only 6 per cent of the fruit growers reported the problem of transportation. Besides the problem of motorable roads, the orchardists of Shimla, Sirmaur and Solan districts reported the shortage of vehicles during the fruit season for transporting the produce to the market.

The marketing system for fruits especially for apples in the state has developed from many years. It is a totally private sector

**Table 3**

**Himachal Pradesh : Location of Orchards with Respect to Motorable Roads**

Fruits	Distance from Road			Total Growers
	0-5 Km	5-10 Km	Above10 Km	
Apple	33(33)	40(40)	27(27)	100
Stone fruits	49(70)	14(20)	7(10)	70
Sub-tropical fruits	22(73)	6(20)	2(7)	30
<b>Total</b>	<b>104(52)</b>	<b>60(30)</b>	<b>36(18)</b>	<b>200</b>

*Source: Field Work, 2006*

*Note: Figures in parentheses are per centage of total number of growers.*

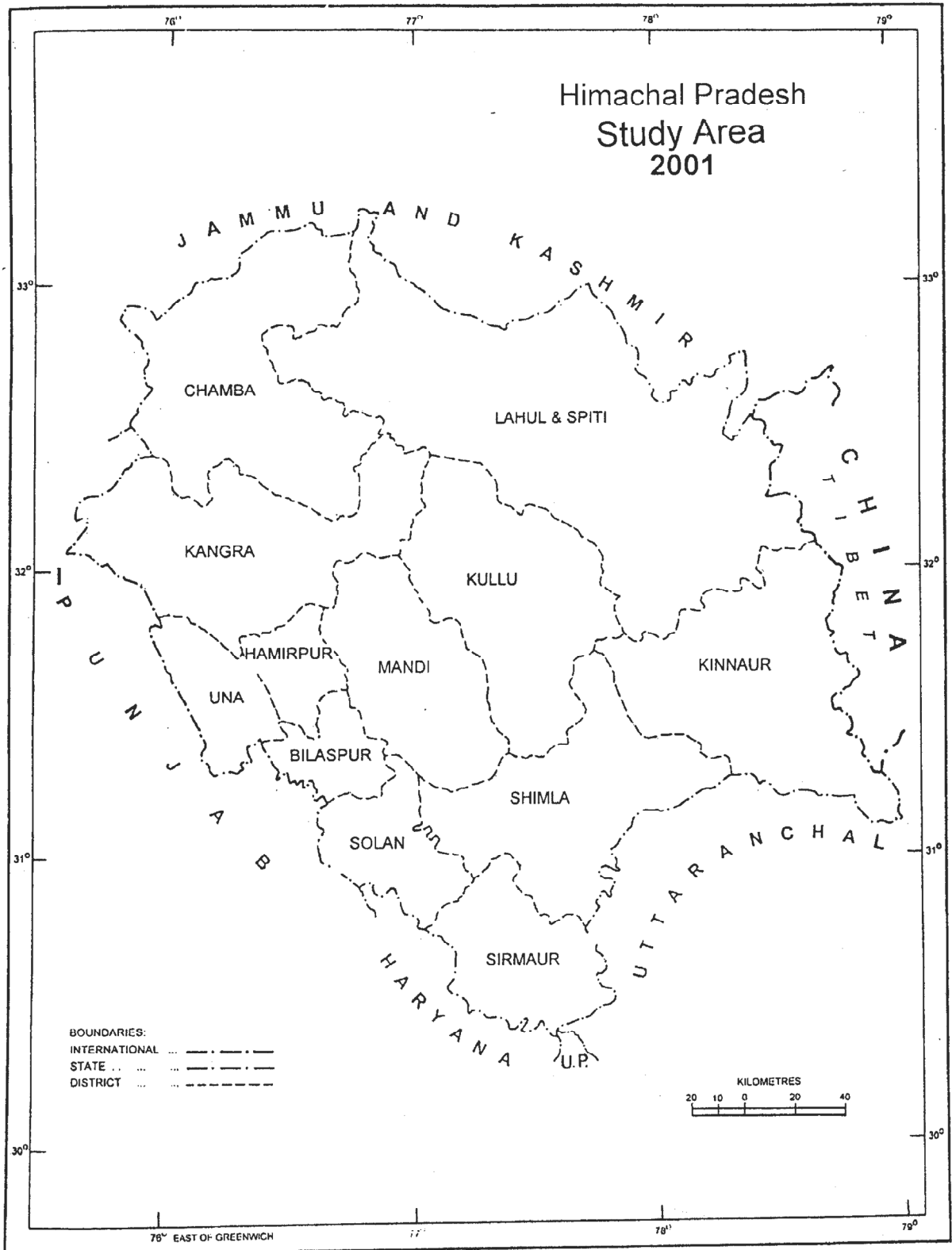


Fig. 1



operation with little government involvement in arranging packing material, facilities in the terminal markets and limited grading and packing facilities in the areas of production. There is practically total absence of any such agency which can make the growers aware about the prevailing market trends. Information gathered from the sample growers revealed that they suffered major losses due to receiving delayed, inadequate and at times faulty information regarding the market prices.

About 23 per cent of the growers of sub-tropical fruits belt comprising Una and Hamirpur districts face the problems of marketing the fruits. The problem is reported to be more (43 per cent) in stone fruit areas of Sirmaur and in the apple belt of Shimla, Mandi and Kinnaur districts (40 per cent).

The facilities of post-harvest handling of fruits, grading and packing houses, cold storage, etc. are limited in comparison to the demand. At present, the Delhi is the main market for orchard produce of the state and about 80 per cent of the fruit is first sent to Delhi and then redistributed to other terminal markets located in various parts of the country. Recently, Chandigarh has also started catering to about 10 per cent of the Himachal fruits. In Delhi, the marketing is mainly handled by the middlemen or commission agents. These people earn maximum profits, whereas the growers get only 20-25 per cent of the profit. Further, there are no regulated markets for fruits. Transactions are carried out in the wholesale markets which are managed and operated by associations, fruit merchants or commission agents. These people derive the maximum profits thus depriving both the producer and the consumer from due benefits. The state government in 1970's framed a policy of marketing of fruits to encourage the marketing and processing facilities in the public, co-operative and private sectors to

ensure economic disposal of marketable fruits. The government has also taken steps to invite foreign collaboration to set up such facilities. A chain of packing and grading houses are set up at Mandi, Kullu, Shimla, Sirmaur, Kinnaur and Solan. Processing plants at transshipment centers and cold stores have also been developed by the government.

**(D) Institutional Problems :** In addition to the above mentioned problems, fruit farming in the state is also affected by inadequate institutional support such as the non-availability of pesticides, sprays and technical know-how. The analysis in this regard has shown that the fruit growers of Himachal are reasonably satisfied with the help being provided by the government. According to the sample survey about 40 per cent of growers reported that they are fully satisfied with the help by the government, about 20 per cent complained that the government is not providing any sort of help while about another 40 per cent felt that some help is being provided by the state government. There are also complaints that the subsidy has decreased over the years compared to what was being provided previously.

The growers of non-apple growing areas often hold a prejudice against the ones engaged with apple cultivation. They complain that the government fulfills the demands of fruit growers belonging to the apple region only because there are many representatives of apple growers in the government. However, both sets of growers feel that government has not yet made much effort to help them in adversity. The culled apple or apple which is not fit for table serving is being sold to the Himachal Pradesh Horticultural Produce Marketing and Processing Corporation Ltd. at a very low rate. Nearly 80 per cent growers of Shimla and Kullu districts reported that the prices were not

remunerative. More than 60 per cent of the growers reported that cash was not paid in time and a few complained that the prices fixed by the corporation were not announced timely and moreover announced prices were usually not paid. Only a few orchardists reported that they had no problems.

There is also lack of technical know-how, i.e. lack of knowledge regarding various orchard operations such as pruning, spraying, planting of saplings, use of fertilizers, etc. Due to the non-availability of information, the growers indulge in this activity on self knowledge which often leads to low production and disease in the orchards.

Orchards are also suffering from the problems of pests. Among these, San Jose scale (*Ouadrspisiotus Permeicous*) is the most destructive pest affecting specially the apple fruit in Himachal Pradesh. Biological control of the pest has been initiated and the research is going to this effect. The state department of Horticulture prepares the package of practices for guiding the fruit growers regarding the negative effect of pests and insects on the fruits. The Kisan melas, demonstrations and seminars also provide the fruit growers with useful information regarding various new varieties which are being introduced alongwith the techniques of growing healthy fruit trees and increasing the production.

Besides the above mentioned problems, the orchard industry of the state as a whole suffers from low productivity as the strains of different fruits have become outdated and have degenerated. The current plant density of 250 to 350 trees per hectare in the state is quite low as compared to 800 to 1000 per hectare which is considered ideal (Azad, et.al 1998). As a result, the yield per unit area is low. Besides, the cultivation costs are also higher. The orchards in Himachal Pradesh are mostly located on steep lands. The soil is poor and there is non-

availability of assured irrigation. Excessive precipitation during the rainy season, heavy snowfall during winters and hailing during the spring season in many areas create their own problems. To overcome these, plants with good anchorage that can support heavy crop loads and weight of snow during the winter should be planted. There is also a need of such varieties that are drought resistant and resistant to pests and diseases.

### Section III

#### Prospects of Fruit Cultivation

The prospects of the fruit Industry of Himachal Pradesh are bright as India has limited area available for the cultivation of hill fruits which find a domestic market in the country. The nearness to the wholesale market of Delhi, also enhances the prospects for fruit cultivation. The fruits are sent to all parts of India as well as abroad from Delhi where 80 per cent of the Himachal's fruit produce is sold followed by Chandigarh (10 per cent). Another reason of bright prospects for orchard crops in Himachal Pradesh is the coming up of a fairly well developed institutional frame work for the development of this activity in the form of research, extension, credit, marketing, processing and communication network (The Tribune News Service, 2001). Also due to the cool climatic conditions the maturity of many fruits is delayed by about a month as compared to similar fruits produced in the plains. This leads to earning of better profits and further ensures the success of fruit growing.

The prospects of orchard crops are bright if the fruit trees plantation activity is accelerated in private lands and also fruit trees are planted on areas lying vacant. The acceleration needs to be done in the sub-tropical region of the state which remained backward in fruit cultivation due to local conditions. Fruit cultivation can be intensified

specially in Una, Hamirpur, Bilaspur, Kangra, Mandi, Solan, Sirmaur, Chamba and Shimla districts. The land under the categories of cultivable lands, culturable waste lands and fallow lands can be brought under fruit trees. The lands such as panchayat lands, *shamlat* lands, etc. are of this type. The wastelands in the Sub-tropical fruit belt can be utilized for cultivating more mango, guava, *jamun*, *bael* and *karonda*. The wastelands of temperate can be utilized for growing walnut, hazel nut, wild apricot and wild pomegranate.

#### Section IV

##### Conclusions and Policy Recommendations

The fruit cultivation in Himachal Pradesh has been suffering from innumerable problems since the early 1950's. Due to these problems, there has been an imbalance in the spatial diffusion of fruit cultivation. The study leads to the following conclusions and recommendations:

##### Conclusions

1. Dissection by gullies and erosion of soil during heavy monsoon rains has been the most serious problem for the fruit growers.
2. The size of land holdings on the whole is too small and holdings are fragmented. This has affected the efficiency of the cultivators in different areas.
3. Labour is also not available particularly during peak seasons and the available labour exploits the fruit growers by overcharging.
4. There is also a shortage of packing material i.e. wood for making packing boxes is often brought from the neighbouring Haryana and Punjab states, hence the activity depends on other states.
5. The fruit growers are not very much satisfied with the availability of pesticides, sprays and technical assistance, though the provision of roads has been a big relief.

6. The facilities for storage of fruits are not available to the producers. Also they are exploited by the commission agents and the middle men while marketing.

##### Recommendations

There is immense scope for the development of fruit orchards in Himachal Pradesh. It is expected that in the near future, this sector would be in a position to play an important role in the economy of the state. Cultivation of fruits can be enhanced by taking the following steps:

**Diversification** : There is enough scope in the state for the diversification of fruit cultivation by introducing high valued fruit crops which have so far remained out of scene due to certain limitations. These crops include walnut, peanut, hazelnut (nut crops), cherry, kiwi fruit, oil yielding fruit crops like olive and aonla, pomegranate, etc. These fruits if cultivated on commercial basis can earn handsome income for the cultivators.

**Improvement of productivity** : The productivity and quality of fruits can be improved by introducing standardised technologies. The production can also be accelerated in dry lands and rain fed areas by employing or adopting new technologies that are suitable for these regions. Further modern and new farm techniques need to be adopted while conducting various farm operations. The quality saplings should be purchased from a reliable source, to improve production of fruits.

**Exploring new markets** : Though, in future, the domestic market will continue to be the main arena of fruits of Himachal Pradesh, yet efforts should be made to explore the marketing potential of SAARC countries, West Asian region and Middle East. Further, due to a lower level of use of pesticide in the state as compared to other countries, there is a scope to export the produce to places outside India.

**Development of fruit processing industry :**

There is a great scope for the development of fruit processing industry in Himachal Pradesh due to the availability of a wide range of fruits in the state for processing. There are also opportunities for the industry linked fruit production for processing both for domestic and export markets. There should be development of fruit plantation in concentrated pockets especially for serving the fruit processing industries e.g. juice making apple varieties, grape varieties for fruit based wine industry, fresh fruits for processing etc. French government has also assured help for the development of horticulture in the state (The Tribune News Service, 2002)

**Consolidation of Landholdings:**

Consolidation of land holding is essential to check the problems associated with fragmented land holdings.

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