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Horticultural Development

HORTICULTURAL DEVELOPMENT IN HIMACHAL PRADESH: IN RETROSPECT AND PROSPECT

R. Swarup, B. K. Sikka and C. S. Vaidya*

Perennial crops such as shrubs and trees generally remain as grossly under-exploited potential resources in hill agriculture. Some of the perennials are well suited to marginal lands with steep slopes or those of low fertility. Amongst these, fruits and nuts are usually grown by Himachal farmers and these crops afford them few advantages. Therefore, the farmers should adopt a particular mix of crops, and the eventual balance between annuals and perennials should be based on connected factors. As the attention of development planners is focussed on the total welfare of farm family rather than only on the productivity of major cereals, the potential importance of horticultural crops in mixed farming system deserves careful assessment, particularly in hill areas.

Fruits play a unique role in developing countries like India, both in economic and social sphere for improving income and nutritional[1] status, particularly of rural masses. Along with these, orchards help in maintaining ecological balance. Further, horticulture being a labour intensive crop, production of these commodities should be encouraged in a labour abundant and capital scarce country like ours.

Himachal Pradesh has vast natural resources, forest and water being the two most important ones. Arable land is, however, very limited, the net sown area being only about 11 per cent of its geographical area[2] and out of this, one-sixth is under horticultural crops. In this hilly State, foodgrains account for 92 per cent of the gross cropped area. The average size of holding is 1.5 hectare which cannot be considered economical by any standard, particularly when the fields are terraced, small, sloppy, stony, and scattered. Under such natural constraints, the majority of farmers cannot hope to improve their level of living by exclusive dependence on field crops. Even the new technology is likely to have little impact in the non-valley areas. This is so particularly because here not only the proportion of area suitable for crop farming is limited but also the State's capacity to intensify land use through traditional crop-mix is more severely handicapped. Thus, the only alternative is to utilise its natural endowments for other high pay-off[3] vocations and fruit cultivation is one such enterprise.

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* Agro-Economic Research Centre, Himachal Pradesh University, Shimla (H.P.).

1. H. M. Bakhru, "Nutritional Value of Fruits", *The Economic Times*, June 9, 1985, New Delhi, p. 6.

2. See R. Swarup and B. K. Sikka: Agricultural Development in Himachal Pradesh, Agricole Publishing Academy, New Delhi, 1983.

3. This is particularly significant for this hilly State because here horticulture broadly means fruit crops and its pay-off has to be viewed in the context of soil conservation potentiality as well.

Why Emphasis on Horticulture ?

Besides nutritional advantages, there are other compelling reasons also for which fruit production in hilly areas deserves preference. These include: (*i*) Given the terrain and agro-climatic features, horticulture is the only vocation through which higher income[4] per unit of land can be generated. (*ii*) Fruit farming helps in profitable utilisation of areas not so well suited for growing cereals and other field crops and in soil conservation as well. (*iii*) Fruit cultivation allows optimum utilisation of the gift of nature in making it possible to upgrade inferior fruit trees into superior ones by top-working and by adopting other techniques of vegetative propagation. (*iv*) Given suitable combination, fruit farming can even be taken as a complementary occupation[5] in hills to a set of other business propositions.

Location of Fruit Areas

The State comprises 12 districts and fruits are produced all over the State—low hill, mid hill, high hill and dry hill zone. Various types of fruits, *e.g.*, apples, oranges, peaches, plums, apricots, pears, cherry, dry fruits, etc., are grown at various elevations, ranging from 1,200 to 10,000 feet. The State has been divided into four zones, *viz.*, apple is grown in mid (3,000 to 5,000 ft.) and high hills (5,000 to 9,000 ft.) while other temperate fruits like peaches, plums and apricots are grown in mid hills. The sub-tropical fruits like citrus, guava, litchi, mango, etc., are grown in low hill zone (1,200 to 3,000 ft.) and dry fruits in dry hill zone (5,000 to 10,000 ft.).

Growth of Fruit Farming

Himachal Pradesh has made significant progress in the production of fruits in general and apple in particular during the last one and a half decade. Tables I and II give districtwise area and production of various fruits during 1972-73 to 1984-85. The figures suggest that the maximum area and production, proportionately as well as absolutely, of fruits is in Shimla district followed by Kullu while the lowest is in Lahaul-Spiti. The highest compound growth rate (CGR) for area under apples is observed in Kinnaur district while it is the lowest in Shimla district. But in absolute terms, in Shimla district the area under apples is at least nine times that of Kinnaur. The area under citrus has been increasing at an annual growth rate of 22 per cent in Una district, but in absolute terms, Kangra accounts for the highest area. In regard to apple production, the highest CGR (14.68 per cent) is observed in Kinnaur district followed by Shimla district (11.76 per cent). In the case of citrus, the highest production is observed in Kangra district, but it is decreasing at

4. For details, see B. K. Sikka and R. Swarup, "Repayment Capacity and Incremental Income of Land Development Banks Loan—A Case Study of Apple Orchardists in Himachal Pradesh", Agro-Economic Research Centre, Himachal Pradesh University, Shimla, 1983 (mimeo.).

5. For details see B. K. Sikka and R. Swarup: (*i*) Economics of Apple Production and (*ii*) Economics of Citrus Production in Himachal Pradesh, Agro-Economic Research Centre, Himachal Pradesh University, Shimla, 1985 (mimeo.).

TABLE I. CHANGES IN AREA UNDER FRUIT CROPS IN HIMACHAL PRADESH DURING 1972-73 TO 1984-85

(area in hectares)

Districts	Apple			Other temperate fruits			Nuts and dry fruits		
	Area		CGR (%)	Area		CGR (%)	Area		CGR (%)
	1972-73	1984-85		1972-73	1984-85		1972-73	1984-85	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Shimla	15,125	21,066	2·94	1,649	2,665	3·59	354	1,027	10·14
Mandi	4,352	7,504	4·48	1,124	4,142	11·52	218	1,840	11·91
Chamba.. ..	804	2,532	10·24	195	1,019	13·93	45	814	22·37
Bilaspur.. ..	—	—	—	216	694	9·31	—	79	—
Kinnaur.. ..	827	2,929	11·10	140	305	5·66	164	923	8·93
Solan	142	500	9·33	2,106	4,443	6·29	30	705	9·43
Sirmur	2,287	3,177	3·06	673	2,454	11·16	64	1,586	17·39
Kullu	7,131	11,574	3·86	831	3,301	10·26	165	784	10·29
Kangra	335	495	3·54	1,885	3,853	6·69	150	1,599	13·45
Una	—	—	—	50	478	19·65	—	97	9·57
Hamirpur ..	—	—	—	90	258	9·25	—	340	18·44
Lahaul-Spiti ..	—	63	—	—	37	—	—	10	—
Himachal Pradesh	31,003	49,840	4·05	8,959	23,649	8·15	1,190	9,804	12·89

Districts	Citrus			Other sub-tropical fruits			Total		
	Area		CGR (%)	Area		CGR (%)	Area		CGR (%)
	1972-73	1984-85		1972-73	1984-85		1972-73	1984-85	
(1)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
Shimla	620	625	13·69	130	84	5·79	17,878	25,467	2·18
Mandi	1,933	3,252	12·75	1,227	1,906	8·56	8,854	18,644	5·70
Chamba.. ..	291	831	15·88	110	357	9·22	1,445	5,553	9·05
Bilaspur	490	2,444	19·45	800	1,476	9·26	1,506	4,693	6·44
Kinnaur.. ..	—	—	—	—	—	—	1,131	4,157	8·41
Solan	366	2,551	12·84	131	990	13·36	2,775	9,189	8·82
Sirmur	1,600	2,182	8·79	383	761	10·68	5,007	10,160	4·01
Kullu	195	303	13·97	—	34	24·86	8,322	15,996	2·89
Kangra	4,375	9,115	14·12	2,899	6,495	15·02	9,644	21,557	5·48
Una	Neg.	1,151	21·69	—	616	12·30	50	2,342	11·13
Hamirpur ..	Neg.	1,348	17·04	—	766	11·73	90	2,712	12·35
Lahaul-Spiti ..	—	—	—	—	—	—	—	110	—
Himachal Pradesh	9,870	23,802	13·91	5,680	13,485	11·97	56,702	1,20,580	6·08

TABLE II. CHANGES IN PRODUCTION OF FRUIT CROPS IN HIMACHAL PRADESH DURING 1972-73 TO 1984-85

(thousand tonnes)

Districts	Apple			Other temperate fruits			Nuts and dry fruits		
	Production		CGR (%)	Production		CGR (%)	Production		CGR (%)
	1972-73	1984-85		1972-73	1984-85		1972-73	1984-85	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Shimla	16·2	129·7	11·76	1·3	3·0	—3·77	0·4	0·2	—9·78
Mandi	2·6	6·5	2·83	0·7	4·0	6·22	0·2	0·3	3·02
Chamba.. ..	0·5	0·8	9·17	0·1	0·5	6·03	Neg.	0·2	8·85
Bilaspur	—	—	—	0·1	0·1	—1·59	—	Neg.	16·84
Kinnaur.. ..	0·6	5·3	14·68	0·1	0·2	—3·91	0·2	0·5	5·69
Solan	0·3	0·2	—3·99	0·9	4·6	11·16	Neg.	0·3	11·34
Sirmur	1·4	1·7	—8·65	0·4	2·6	11·10	Neg.	0·2	6·03
Kullu	7·8	26·0	7·9	0·7	8·9	15·37	0·2	0·2	10·74
Kangra	0·4	0·1	—15·36	1·2	2·2	—0·75	0·2	0·2	—5·89
Una	—	—	—	—	0·3	57·08	—	Neg.	—
Hamirpur ..	—	—	—	—	0·1	36·64	—	Neg.	—
Lahaul-Spiti ..	—	Neg.	—	—	Neg.	—	—	Neg.	—
Himachal Pradesh	29·8	170·6	9·34	5·5	26·4	6·41	1·2	2·2	1·51

Districts	Citrus			Other sub-tropical fruits			Total		
	Production		CGR (%)	Production		CGR (%)	Production		CGR (%)
	1972-73	1984-85		1972-73	1984-85		1972-73	1984-85	
(1)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
Shimla	0·6	0·6	0·93	0·1	0·1	1·65	18·6	13·6	14·38
Mandi	1·9	0·1	—13·81	1·2	0·8	0·47	6·7	11·7	4·38
Chamba.. ..	0·3	0·1	—0·15	0·1	0·2	9·19	1·3	1·7	2·08
Bilaspur	0·5	0·4	11·07	0·5	0·8	8·23	1·4	1·3	—0·57
Kinnaur.. ..	—	—	—	—	—	—	0·8	6·0	14·76
Solan	0·3	0·2	0·98	0·1	0·2	11·75	1·7	5·4	9·30
Sirmur	1·6	0·5	7·18	0·4	0·9	14·18	3·8	6·0	3·58
Kullu	0·2	Neg.	—44·71	—	Neg.	—	8·9	35·6	10·25
Kangra	4·4	1·4	—5·91	2·9	7·4	3·03	9·0	11·2	1·70
Una	Neg.	0·5	72·65	Neg.	1·7	51·04	Neg.	2·4	14·34
Hamirpur ..	Neg.	0·2	49·37	Neg.	0·7	37·87	Neg.	1·0	4·00
Lahaul-Spiti ..	—	Neg.	—	—	—	—	—	Neg.	—
Himachal Pradesh	9·9	4·0	—5·97	5·6	12·7	2·71	52·0	215·9	11·57

Note:— (*i*) Total may not tally because of rounding the figures to thousand tonnes.
(*ii*) Neg. = Figures below 100 tonnes.

the compound growth rate of about six per cent. The production in Himachal Pradesh does not depict any specific trend because of climatic conditions, but the production in the State is increasing at a much faster rate than the area.[6] Thus, the State has rightly earned the status of 'Fruit Bowl of India'.

This indicates that horticultural planning in Himachal is concentrated more on yield increasing technologies. In this regard, the Directorate of Horticulture which was established in 1971 has been playing a vital role by providing inputs including know-how and do-how to the orchardists. To provide better marketing facilities the State Department of Horticulture aims at (*i*) collection and dissemination of market intelligence, (*ii*) quality control work relating to the fruit market through centralised packing house complexes of the H. P. Horticultural Produce Marketing and Processing Corporation (HPMC), (*iii*) training of farmers in the scientific picking/grading, packing and handling of fruits, (*iv*) standardisation of picking, maturity standards for fruits for different purposes, (*v*) conducting surveys of important markets regarding the time and value of arrivals and quantitative/qualitative demand of different kinds of fruits in different months of the year and (*vi*) creation of demand for fresh and processed fruits in the consuming markets.

The interiors of the State are fairly well linked with roads and the transportation facilities[7] are improving. The orchardists have also installed gravitational ropeways to move the fruits from the orchards to the roadhead. The State is well connected with the consuming market and at least three-fourths of Himachal's fruit production is marketed at Delhi market.

The other factor responsible for the increase in area under fruits is the profitability of fruits in general and of apples and citrus fruits in particular vis-a-vis other field crops. Table III shows the profitability[8] of raising apple in temperate zone and of citrus in sub-tropical zone. It can be seen from this table that Himachal farmers are getting more from raising fruit crops and also the fruit crops are generating more employment opportunities because they are labour intensive.

Shift in Area towards Fruit Crops

As discussed earlier, due to larger profits in fruit cultivation, the farmers are shifting their land to this enterprise and also utilise their otherwise waste

6. Figures of area in Himachal Pradesh are reported by two agencies : (*a*) Directorate of Land Records and (*b*) Department of Horticulture. The general cultivation practice is that in a newly planted orchard, some inter-crop is taken till the fruit trees allow so, and till they start bearing fruits. Till such time the former agency records the area under the particular field crop grown, while the latter agency considers it to be the area under the fruit which has been planted. Thus, there are large differences in the figures of these two agencies. For the present study, the area reported by the Department of Horticulture has been used.

7. For details, see B. K. Sikka and R. Swarup: Movement of Himachal Apples and Potatoes, Agro-Economic Research Centre, Himachal Pradesh University, Shimla, 1985 (mimeo.).

8. Apple and citrus fruits are the most important fruits grown in the temperate and sub-tropical zones respectively of Himachal Pradesh. Therefore, the profitability has been discussed for these fruits only. The Agro-Economic Research Centre, H. P. University conducted a comprehensive study to work out the economics of apple and citrus fruits in the State. In the case of apple, 143 orchardists from Shimla and Kullu areas were surveyed while for citrus 97 orchardists of Sirmur and Kangra districts were selected.

TABLE III. NET RETURNS OF IMPORTANT FRUITS AND CROPS GROWN IN HIMACHAL PRADESH

(*Rs./ha.*)

Crop	Temperate zone	Sub-tropical zone
(1)	(2)	(3)
Apple	11,097	*
Citrus	*	2,969
Wheat	461	1,143
Maize	120	365
Paddy	421	721
Potato	3,862	628
Gram	324	344
Barley	251	—
Peas	333	—
Small millets	292	—
Sugarcane	—	2,068
Cropping intensity (%)	123	156

* Not grown in these zones.

Note:— Net returns are over cost C.

Source: Sikka and Swarup: Economics of Apple Production in Himachal Pradesh, *op. cit.*, pp. 121 and 143 and Economics of Citrus Production in Himachal Pradesh, *op. cit.*, pp. 73 and 90.

land for fruit trees. The data from land records do not tell us from which source the increase in area under fruit has occurred. For this purpose, a field survey of 950 farmers, spread over the entire State and randomly selected,[9] was undertaken. The sample was divided into two groups on the basis of nature of fruits grown in the area, *i.e.*, temperate fruits, *viz.*, apple and stone fruits and sub-tropical fruits, *viz.*, orange, mango, litchi, etc. These were further classified into four size of holding groups: (*i*) marginal (below one hectare), (*ii*) small (1 to 2 hectares), (*iii*) medium (2 to 4 hectares) and (*iv*) large (above 4 hectares).

It may be observed from Table IV that the maximum area under fruits has been shifted from field crops followed by waste/barren land. A few orchardists reported that they have also planted fruit trees on field boundaries. The table shows that about 40 per cent of the area in temperate zone has been shifted from field crops to fruit crops, whereas in sub-tropical zone, only 15 per cent of the area has been shifted under fruit crops from field crops, while for the whole State, a shift of about 27 per cent of the area has been observed in this regard.

9. Field survey was conducted during 1986 in all the districts except Lahaul and Spiti.

TABLE IV. SHIFT IN AREA TOWARDS FRUIT CROPS IN HIMACHAL PRADESH

Category	Land use pattern before orchards			Existing land use pattern			Previous utilisation of orchard land		Shift of area to orchards from	
	Land holding (*bighas*)*	Area under field crops	Area put to other uses	Area under field crops	Area under orchards	Area under other uses	Field crops (*bighas*)	Barren and other land (*bighas*)	Field crops (col. 8 as per cent of col. 3)	Barren and other land (col. 9 as per cent of col. 4)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Temperate zone										
Marginal ..	8·74	84·4	15·6	52·2	44·3	3·6	2·82	1·05	38·2	77·2
Small	17·77	79·0	21·0	52·8	39·7	7·5	4·65	2·40	33·1	64·2
Medium ..	29·24	79·9	20·1	51·2	37·9	10·9	8·37	2·70	35·9	45·8
Large	72·90	61·3	38·7	33·6	41·7	24·7	20·21	10·20	45·2	36·2
Overall ..	32·16	69·6	30·4	41·6	40·7	17·7	9·01	4·09	40·3	41·8
Sub-tropical zone										
Marginal ..	8·31	86·0	14·0	65·2	28·4	6·4	1·73	0·63	24·2	54·3
Small	19·28	86·2	13·8	72·9	18·3	8·8	2·55	0·57	15·4	36·3
Medium ..	30·81	81·7	18·3	69·7	16·4	13·9	3·69	1·35	14·7	23·9
Large	92·28	53·8	46·2	46·7	8·7	44·6	6·46	1·33	13·0	3·1
Overall ..	37·67	65·4	34·6	55·9	12·4	31·7	3·61	1·07	14·7	8·2
Himachal Pradesh										
Marginal ..	8·52	85·2	14·8	58·6	36·5	4·9	2·27	0·84	31·2	66·7
Small	18·53	82·7	17·3	63·2	28·6	8·2	3·60	1·69	23·5	52·7
Medium ..	30·03	80·8	19·2	60·7	26·8	12·5	6·03	2·03	24·8	35·2
Large	82·59	57·2	42·8	41·0	23·1	35·9	13·34	5·76	28·3	16·3
Overall ..	34·92	67·3	32·7	49·2	25·5	25·3	6·31	2·58	26·8	22·6

* 12·5 *bighas* = one hectare.

Note:— Figures in cols. (3) to (7) are percentages to the total land holding (col. 2).

Programmes and Policies in Developing Horticulture

To boost up horticulture in the State, the State Government has initiated a number of programmes and policies. During 1974, the HPMC was established with the aid of World Bank. Under this project infrastructural facilities have been developed. These include : (*i*) introduction of grading and setting up of packing centres/warehouses on scientific lines in the producing areas, (*ii*) setting up of a processing plant with 19,000 tonnes capacity at Parwanu so that the culled fruits are fully utilised, (*iii*) provision of cold storage facilities in consuming markets, (*iv*) provision of adequate transport facilities, (*v*) forwarding and sale of fruits, (*vi*) construction of metalled roads in the producing area for efficient transportation of fruits to markets, and (*vii*) introducing corrugated cartons as an alternative to the wooden box so that the burden on forest is minimised. This project has greatly helped in developing horticulture in this State.

The problems: Viewing the overall progress of horticulture in Himachal Pradesh, it may be stated that more emphasis has been laid on the production of fruits. But the State cannot develop much if the problems are not properly tackled. The problems listed here deserve to be looked into with urgency. These are: (*i*) grading and standardisation, (*ii*) quality control, (*iii*) quick transportation and safe transhipment, (*iv*) statutory control over the use of culled fruits for table purposes, (*v*) utilisation of fruits unfit for table use, (*vi*) storage and regulation of supply to check gluts in the market, (*vii*) adequate and effective checks to prevent the exploitation of fruit growers in the markets, (*viii*) market intelligence and (*ix*) market research.

It will not be possible to solve these problems in a short span of time. It is, therefore, suggested that the strategy of horticultural development should be planned in the following manner: In the short run, larger resources and energy be devoted to effectively regulate major fruit markets in the country and to develop organised marketing channels together with maximum utilisation of the existing marketing infrastructure in the major marketing centres. The long-term strategy should have three components: (*i*) to frame a plan for technological improvement, (*ii*) to conduct market development and product development research and (*iii*) to have a well defined national programme of action for the development of fruit production, marketing and utilisation.