
Chapter 10

Account of a Mountain Farmer's Crop Replacement Process on Farm Land in the Indian Himalayas

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Introduction

Improvements in the economy and quality of life of farming communities in Himachal Pradesh (HP), particularly apple and vegetable farmers, is widely acknowledged as a success story in the hills and mountains of the Hindu Kush-Himalayas. The significant point is that this success has been achieved without using the conventional strategies that focus mainly on industrialisation. The majority (75%) of farming families in the apple growing area of Himachal belong to small and marginal farming categories. The state has created a new concept in the development of hill economies through transformation brought about in agriculture, horticulture¹, and animal husbandry.

Case

Mr. Dhani, an experienced farmer from Himachal Pradesh, narrated his experience of crop choice and replacement over five decades. From 1940-50, 50 farmers in this area harvested wild mushrooms (*Morchella spp.*), wild fruits, and medicinal herbs from the forest to earn cash to supplement the shortages in food supplies from their farmlands (Box 10.1). Mr. Dhani himself used to grow at least 17 crop species besides keeping animals and growing fodder species. Farming was based upon subsistence, and at least nine types of staple crops were grown to fit into the diverse niches of his 27 ha farm. Besides rice, wheat, and barley, a range of minor crops, such as finger-millet, persomillet, grain chenopods, foxtail millet,

¹ Here meaning fruit and vegetable farming

and buckwheat, was grown. In those days food sufficiency was the priority. Mustard and sesame crops were grown for vegetable oil for home consumption and butter ghee used to be harvested from the seeds of the *chiuri* (*Diploknema butyracea*) tree. He himself grew potatoes and cocoyams but not modern vegetables and fruits such as apples. He, like other farmers, depended on the forests for fruits and wild vegetables. Farmers depended on the outside world only for commodities such as metal implements, salt, and clothes.

Agriculture was integrated: livestock, crops, grazing lands, and forests - thus there was plenty of manure to apply to the land. Table 10.1 indicates that this state continued until 1960-70. After Himachal became a fully-fledged state of India, it made efforts to improve farming incomes, especially in remote areas. Suddenly rural life became attractive. Roads broke the barriers of isolation and remoteness and provided market opportunities. After the road infrastructure improved, potatoes became the first source of income generation for Mr. Dhani, followed by peas and tomatoes (vegetable crops) (Figure 10.1). Farmers gradually abandoned the practice of collecting food and medicinal herbs from the wild as they had less time because of attractive interventions in farming.

Table 10.1: History of Crop Replacement by Mr. Dhani over the Past 40-50 Years

Year	Staple crops ^a	Grain legumes ^b	Tuber crops ^c	Oilseed crops ^d	Vegetable crops ^e	Fruit ^f	Total
1940-50	9	4	2	2	0	0	17
1950-60	9	4	2	2	0	0	17
1960-70	9	4	2	2	0	0	17
1970-80	4	4	2	2	2	0	14
1980-90	0	1	2	1	3	7	14

a Wheat, barley, maize, rice, finger millet, chenopod, persimillett, foxtail millet, buckwheat
 b Lentils, native soyabean, black gram, kidney bean
 c Potatoes and taro
 d Mustard and sesame
 e Peas, onions, and tomatoes
 f Apples, peaches, plums, almonds, apricots, pears, kiwi fruit

By the 1990s Mr. Dhani was able to completely replace food grain crops with fruit orchards, mainly apples, and supplemented cash flow through commercial vegetable crops (Table 10.1). Agricultural development in Himachal focussed on the promotion of fruit cultivation because of the suitability of the climate for apples, pears, plums, and off-season vegetables, so, as with Mr. Dhani, almost all farmers adopted cash crop farming, their choice of crop depending on the type of farmland.

In addition to using some arable land, the approach has been to convert non-agricultural land that was not suitable for crop cultivation into fruit orchards. The

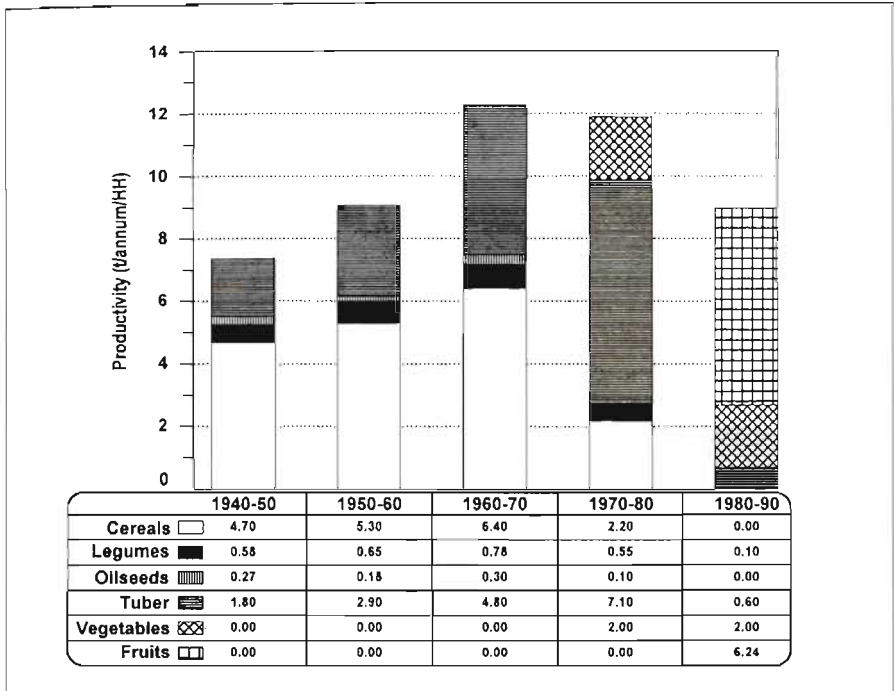


Figure 10.1: Trends in Crop Replacements by Himachal Farmers (Mr. Dhani)

horticultural development programme has brought about a number of positive changes which have transformed the economy of this mountain farmer and the living standard of his family. Horticultural enterprise has flourished in the area because of the comparative advantages and the unlimited demands for fruit and vegetables in the adjoining lowlands of India. Mr. Dhani no longer grows food crops, but he is not worried about food security as he has enough money to buy food.

At a glance, the transition from subsistence to market-oriented cash crop farming seems successful. It is true that cash cropping has increased the household incomes of small mountain farmers. However, farmers are now facing marketing and other technical problems for potatoes and apples. Mr. Dhani expressed his concerns. Because of the initial success, large numbers of rural communities transformed their cultivated fields into apple orchards, and this process is now continuing in adjoining states. In order to retain the comparative advantages of the hills and to harness the potential of mountain niches, new opportunities for alternative cash crops have to be explored. So far efforts have focused mainly on introducing crops from similar agroclimatic zones. Not much effort has gone into exploring and harnessing local plant resources and indigenous crops for the development of cash crops.

The government is providing options for floriculture, vegetables, and kiwi fruit, but the success of these enterprises depends on the market. Mr. Dhani has doubts. For big farmers floriculture could be an attractive option, but for small farmers kiwi fruit (Chinese gooseberry) and vegetables could be beneficial alternatives. The cost of flower seeds can be as high as IRs 30,000/ha. Flowers are a highly perishable commodity, and marketing is difficult and expensive as market outlets are located in metropolitan cities. Mr. Dhani's experience suggests that kiwi fruit farming is considerably more profitable than apple farming. In 1996 he harvested 800 kg of kiwi fruit which he sold at the rate of Rs 96.00 per kg. The cost of cultivation was 17-34 times less than that of apple farming. The domestic market is still unexploited. Since Indian consumers have a taste for sweet foods, Mr. Dhani suggested that the market potential for kiwi fruit would improve if researchers could improve the sweetness of the fruit (TSS, a measure of sweetness).

Mr. Dhani's is a case that explains the ongoing trend of thinking among hill farmers by and large. Here in the hills, farmers are looking for improvements in their living standards and issues such as agrobiodiversity conservation are of less concern to them.

Domestication of medicinal plants is another attractive option. Many medicinal plants in Nepal, Bhutan, Pakistan and the Indian Himalayas are collected as wild plants. China is the only country with substantial experience in farming medicinal plants. In Nepal and India, scientists have tried to domesticate medicinal plants on arable land, whereas in China they were introduced on to marginal lands or leased forest or intercropped with agroforestry. Learning from farmers in other areas should be a priority in searching for appropriate technologies. Necessary training should be given *in situ* so that a large number of women farmers can participate, because women are the repositories of skills and knowledge.

Agrobiodiversity is not only a function of the total number of species and cultivars. The replacement of traditional crops by new species has increased the agrobiodiversity of new crop species and reduced the diversity of old local crop species. Biodiversity is difficult to define under these circumstances but should be considered over space and time.