

# Chapter 3

## Parameters for Local-level Livestock Development Planning: a Study in Himachal Pradesh, India

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Mixed farming systems involving agricultural crops, pastures, and livestock provide optimal production, as they are able to tap rural resources efficiently. Income from crop cultivation in Himachal Pradesh, where landholdings are small, is not sufficient to meet family and farm expenditure. Commercial livestock-rearing is one of the most suitable enterprises that can be adopted by farmers in hill areas to boost incomes.

### Objectives

The objectives of the study were to examine existing practices of feeding, breeding, and managing livestock; analyse farmers interaction with input and output agencies; and identify awareness of, attitude to, and adoption of improved practices among farmers and support systems.

### Methodology

A cluster of four villages, representing good access to veterinary facilities, roads, transportation, and markets for farm/livestock products, was selected in Shimla District. Another cluster of villages was selected in Chaki Mor area representing poor accessibility in terms of livestock-related infrastructure. Twenty farm households were sampled from each site.

### General features of sampled farm households

In the accessible area, the average landholding was 1.41 ha, and grassland covered 62% of the area. In the inaccessible area, the average landholding was 1.62 ha and 53% was grassland. Foodgrain crops dominated the cropping pattern in both areas. Fodder crops were also grown by farmers in the accessible area; this accounted for 15% of the gross cropped area. Livestock-rearing constituted 40% of total income in the accessible area and 21% in the inaccessible area.

### Structure of livestock holdings

The accessible area had a larger population of crossbred cows than the inaccessible area. In the inaccessible area, buffalo-rearing was more common than in the accessible area. This is because veterinary facilities are satisfactory in the accessible area, but not in the inaccessible area. In the accessible area, each household kept an average of 3.9 cows, of which 95% were crossbred. In the inaccessible area, each household kept an

average of 0.8 cows, of which 90% were a local breed. On average, each household had 8.3 heads of livestock in the accessible area and 6.4 heads in the inaccessible area.

Feeding of green fodder on a large scale only takes place during the rainy season; a small quantity is fed during the winter and dry summer season (tree leaves only). During the winter and dry summer season, animals are fed dry fodder. Dry fodder constituted dry grass that was obtained from private grassland, common property resources, and borders of agricultural fields; this was supplemented with crop by-products. The share of green leaf fodder from common property resources was 66%, and the share from private trees raised on grassland and borders of cultivated fields was 34%. Common property resources were the major source of dry fodder, accounting for 87% of total feed. The quantity of concentrates fed to animals was highest for lactating crossbred cows and buffaloes, followed by non-lactating crossbred in-calf cows and lactating local breed cows. In Himachal Pradesh, compound feed is manufactured by H.P. Agro-Industries Corporation Ltd and distributed by the Milk Marketing Federation and the Animal Husbandry Department.

All heifer calves from local breed cows were retained in both study areas. This was also true for sheep and goats. For crossbred cows, 30% of replacement stock was purchased in the accessible area and 90% in the inaccessible area. Buffaloes and local breed cows are inseminated by natural service, whereas crossbred cows were all sired by AI. In inaccessible areas, the AI facility was poor, however. The number of AIs per conception was 1.90 in both areas.

On average, the annual quantity of milk produced per household was 7,209 l in the accessible area and 2,245 l in the inaccessible area. The marketed surplus of milk was higher in the accessible area than in the inaccessible area.

Households were engaged in the purchase and sale of crossbred cows, buffaloes, sheep, and goats. Buffaloes were purchased in milk. All cow purchases were crossbred. Crossbred cows were purchased using farmers' resources without external sources of finance. Buffaloes were purchased on a 50% cash-deposit and 50% monthly-installment basis. No example of bank loan or subsidy was found in sample households.

In the accessible area, the most important consideration in buying crossbred cows was for additional income. Self-employment was the next most important consideration. Good quality milk was the most important reason for the purchase of buffaloes. In the inaccessible area, households purchased crossbred cows for additional income and for self-employment and buffaloes as an additional source of income. The most common reasons for sale of animals were an immediate cash requirement by the household, followed by shortage of feeding materials. In the inaccessible area, buffaloes were sold after lactation to traders who take the animals to Punjab for superior feeding.

### **Awareness, attitudes and decision-making of farm households**

Supplementing household income was the primary reason for keeping milch animals in the accessible area. Availability of grass from common property resources, requirement of good quality milk for home consumption, and the need for farmyard manure were other reasons mentioned. Households in the inaccessible area indicated their desire for good quality milk for home consumption as the most important factor

influencing their decision to keep milch animals. Employment opportunities, requirement for farmyard manure, utilisation of crop by-products, and availability of fodder from common property resources were other reasons. A bullock pair was kept specifically for ploughing. Employment opportunities was the reason for maintaining pack animals. Supplementary household income was the main reason for rearing sheep and goats in both study areas.

Most farmers mentioned that crossbred cows required more feed than local breeds. Labour requirements were also higher. There was an overwhelming feeling that crossbred cows were more susceptible to disease. All agreed that crossbred cows had a higher milk yield potential than local breeds. In both areas, all respondents felt that male calves of local breeds were superior work animals to male calves of crossbreds.

Most of the respondents who preferred crossbred cows with high milk yields were influenced by considerations of economy. Crossbred cows were considered best suited to the cold climate in the hills. Availability of grass and pasture, and a good network of veterinary services and markets, also influenced the attitude of farmers to keeping crossbred cows. Jersey was the most preferred breed in both areas. However, some farmers in the accessible area preferred Holstein. A higher butterfat content and a good demand for milk were the main reasons for preferring buffaloes. Also, respondents considered buffaloes more resistant to disease. Supplementary household income and availability of grazing on common property resources were the main reasons for keeping sheep and goats. Employment opportunities and tradition were the main reasons for keeping mules/horses.

Crossbred cows required the most green fodder, followed by buffaloes; local breed cows required the least. Animals in milk required most green fodder; those that were not lactating or were not in calf required the least. Non-lactating crossbred cows required more concentrates than non-lactating buffaloes. Compounded cattle feed requirements were considered to be greater for crossbred cows than local breed cows. No farmer fed compound cattle feed to buffaloes (in milk or dry); they considered that only crossbred cows required compound cattle feed.

In the accessible area, farmers preferred not to create milk co-operatives as there was a satisfactory market for milk in neighbouring urban centres and the price was better for direct sales to consumers than through a co-operative. In the inaccessible area, the low milk price offered by traders and the small quantities of milk for sale were the main reasons for farmers forming milk marketing co-operatives.

In the accessible area, there was a high degree of awareness among farmers regarding veterinary care. Veterinary treatments and vaccination are performed at the farm. In the inaccessible area, treatment and vaccination were performed at the farm and in the hospital. More farmers contacted the pharmacist at the veterinary hospital than the veterinary doctor for treatment of sick animals.

In the majority of cases, husbands collected the money from the sale of milk in both areas. In the accessible area, most decisions regarding spending the money from sale of milk were made jointly by the husband and wife. In both areas, the husband usually took decisions on the purchase of animals, although the wife did in a few households. The wife usually took decisions regarding the feeding of animals.

Neighbours, friends, others (mostly livestock traders), and veterinary officials (doctor, pharmacist, other) were consulted before purchasing animals. In the accessible area, neighbours, friends and veterinary officials were consulted about the feeding schedule. In the inaccessible area, most households consulted others (livestock traders) regarding the feeding schedule; a few consulted neighbours and friends.

Women's work participation in animal-keeping is higher than that of men. In the accessible area, 30% of women took the decision on selection of the breed of animal for rearing; 45% of decisions were taken jointly by women and men; and 25% of decisions were made by men. Women had a greater role than men in decision-making on type of livestock, selling of livestock, and spending of livestock income. Men took the decisions regarding marketing of livestock products and borrowing money. Women and men took decisions jointly on buying inputs.

In the inaccessible area, men took most major decisions. However, women took decisions regarding investment of livestock income. Men, or women and men jointly, took decisions about borrowing money for livestock-rearing.

In the accessible area, most respondents suggested that extension services for livestock-rearing should be strengthened. They also wanted improvement in the cattle feed market. Other suggestions were improvements in veterinary facilities, arrangements for milk marketing in the winter season, and construction of rural link roads.

In the inaccessible area, most respondents suggested improvements in milk marketing, rural link roads, extension services, and veterinary facilities as key factors that would encourage livestock-rearing.

Most respondents wanted veterinary doctors to provide training for diagnosing and treating sick animals through training camps in villages. Training/awareness camps regarding AI and natural service methods, and cultivation and storage of fodder were also suggested by farmers in both areas. Respondents suggested organisation of livestock trade for selling/purchasing of animals in their areas.

In the accessible area, lack of demand for milk in winter, non-availability in the market of medicines for animal treatment, lack of quality feed, shortage of drinking water during the summer season, lack of extension services for livestock-rearing, lack of veterinary dispensary near to village, lack of quality bulls for breeding, lack of veterinary facilities, and lack of roads were constraints reported by farmers.

In the inaccessible area, lack of marketing facilities, lack of roads, lack of veterinary facilities, lack of extension services for livestock-rearing, lack of improved breeds of milch animals, and lack of quality bulls were constraints identified by farmers.

## **Dependence of livestock on common property resources**

In the accessible area, fodder was produced on cultivated land although farmers still depend heavily on common property resources for fodder. As farm size increases, dependence on common property resources for fodder decreases. Dependence on common property resources was greater in the accessible area than in the inaccessible area.

## **Parameters and processes for livestock development planning**

The emphasis on using dairy development not only as a means of increasing milk production, but also as an instrument for helping small and marginal farmers, reflects a change in the social content of livestock development programmes in Himachal Pradesh.

Adoption of crossbreeding has become widespread in the state. However, it is not uniform across the region. Diffusion and adoption of crossbreeding offers considerable scope for increasing milk production, employment, and income generation through cattle development. However, realisation of this potential depends on the extent to which it is possible to remove constraints that hinder dairy development.

### **Breed improvement**

Most important for dairy development is improving cattle breeds through an efficient AI programme. This calls for improvement in the skills of AI personnel and reduction in the size of areas covered by AI centres.

### **Feeding of animals**

Another important part of development planning should be fodder and feed. Most farmers are highly dependent on common property resources for obtaining fodder. There is vast potential for increasing fodder supply from common property resources and farmers' private land (grassland). However, this calls for organised efforts by a number of agencies. Organising farmers at panchayat level for managing common property resources can play an important role.

Attempts should be made over the long term to maximise livestock production from the limited land available. It will be difficult to sustain the milk production programme unless it is integrated with agriculture. In this context, attempts should be made to use locally available raw materials for production of concentrate feed. Even with this, the prospects for increasing production will depend on the extent to which farmers take up fodder production on-farm (grassland and agriculture land) as an integral part of milk production.

### **Milk marketing**

Organisational support for milk producers through the co-operative infrastructure should be streamlined and expanded. Organisation of villages for milk procurement should be extended to remote areas where no marketing agency/system exists.

### **Processing of milk**

Milk-processing and chilling should be streamlined with proper and efficient management. Traditional milk products processed at the household level should be popularised by encouraging co-operatives to market these products.

### **Training and human resource development**

There is considerable scope for increasing milch animal productivity by improving animal husbandry practices. Farmers should be trained to identify when animals are

in oestrous, to reduce calving interval by inseminating cows early in lactation, to reduce costs by instigating optimal feeding schedules, and to take advantage of improved calf-rearing practices. This requires an effective extension service.

Since women play a crucial role in dairying, extension programmes should be oriented towards their needs. This warrants induction of women workers into the dairy extension and management services. Adoption of crossbreeding technology at the farm level demands economic viability of milk production. In turn, this requires not only reduction in the cost of milk production, but also continuous monitoring of the milk price and cattle-feed price so that farmers receive a remunerative price for milk.

## **Planning process for livestock development**

The main parameters identified for livestock development such as breed, feed, market, and veterinary services are components of development planning at the state level. In the process of state planning, various suitable programmes for each parameter will be framed for execution. Furthermore, a target will be fixed for each specific activity/programme, keeping in view the physical and financial resources available from the government for livestock sector. Targets will be spread over a five-year plan period.

## **Prioritisation of activities**

Prioritisation of activities is an important aspect of development. Activities/parameters that have relatively greater potential and are able to generate results in a relatively short period will be given priority. Subsequent activities will be placed accordingly. The sensitivity of particular activities/programmes will also be analysed.

## **Flexibility and monitoring of planning process**

Flexibility in planning is also important. The plan should be adaptable to needs that arise in implementation. Monitoring is essential for smooth functioning of planned programmes. Appropriate and suitable performance indicators should be developed for monitoring. The performance of each selected indicator should be evaluated each year and the plan modified accordingly.