

Smallholder Livestock Farming and Milk Cooperatives in Himachal Pradesh in the Indian Himalayas

Ranveer Singh¹, C. Shekher Vaidya¹ and Jagdish P. Bhati²

¹Agro-economic Research Centre, HP University, India

²Department of Economics, HP University, India

Introduction

In the western parts of the Indian Himalayas, where industrialisation is low and the farm sector is the major employer, the question raised is whether the farm sector alone will be able to absorb the growing labour force and provide a satisfactory income and standard of living to the local people. It has been asserted that there are still ample opportunities to generate more income and employment within this region through diversification and balanced integration of rural activities. The possession of livestock is the largest productive asset in rural areas. The already small landholdings in the region are fast becoming even smaller because of subdivision in response to the increasing population. In such a situation animal husbandry, which largely depends on common property resources, helps to supplement farm income. Livestock are not only direct providers of products like milk, meat, and wool, they also play a vital role in the development of agriculture. In the hilly areas of Himachal Pradesh (HP), one of the mountainous states in the Indian Himalayas, livestock are the main source of energy for ploughing and transportation, as well as of fertiliser in the form of manure. Therefore, keeping of livestock is common to all farming systems in the area. The poor crop productivity, low availability of arable land per capita, substantial availability of common property grazing lands, and lack of other income-generating activities have made the rearing of milch animals an economic compulsion. Besides the small investment, there are other factors, such as regular cash income and employment which have prompted all categories of farmers (marginal, small, and medium) and even agricultural labourers (the weaker section

of society) to supplement their incomes through livestock rearing as a subsidiary occupation. Animal husbandry contributes 10 to 32% of total household income in the different agro-climatic zones in the state.

Despite many development efforts, the livestock sector in hilly areas still suffers from inefficiency and underdevelopment. This paper analyses various aspects of the adoption of dairy farming by Himalayan farmers. It touches upon the following: farm size and livestock composition in different agroecological zones of HP; the dairy livestock population and production and contribution of livestock to household income; the role of infrastructural development in commercialising the dairy sector; the milk marketing system in the state, milk marketing costs, and price spread; reasons for the success and failure of farmers' milk cooperative societies; and some policy implications.

Livestock Farming in Himachal Pradesh

Farm size and composition of livestock holdings

Himachal Pradesh has four distinct agro-climatic zones differentiated by altitude (Table 19.1). More than 80% of landholdings are of small (1-2 ha) and marginal (<1 ha) size. The composition of livestock holdings in the different zones differs somewhat as a result of the differences in climatic conditions and availability of fodder. The values for different species for 1972 and 1992 are shown in Table 18.1. Traditionally cows are the predominant bovines because of the extensive grazing lands available in hilly areas. More recently there has been a trend in low and mid hill areas to substitute buffaloes for cows because of their higher milk productivity. Between 1972 and 1992, the total livestock population increased in all zones except the 'high hill wet zone', but the proportion of cattle decreased slightly and that of buffaloes increased. The average annual growth rate of the buffalo population was 2% in the low hills and 1.1% in the mid hills, compared with 0.3% and 0.2% for cattle.

Dairy livestock population and milk production

Cows and buffaloes are the main milch animals in HP; they contribute about 96% of the total milk production in the state. Table 18.2 shows the number of milch animals (cows and buffaloes) in HP in 1982 and 1992 by type. In 1992, 40% of the total milch population (cows and buffaloes) were over three years old. Sixty per cent of milch animals were cows, but most of them were indigenous breeds, only 17% of cows (10% of all milch animals) were crossbreeds. However, the number of crossbred cows increased at an average rate of nearly 17% per annum over the ten-year period.

The percentage of milch animals in lactation during different seasons is shown in Table 18.3, and the average daily milk yield for the different types of animals in

Table 18.1: Livestock composition, population density, and growth rates in different zones of Himachal Pradesh

	Low hill zone	Mid hill zone	High hill wet zone	High hill dry zone	Total state
Altitude (masl)	350-650	650-1800	1800-2000	2000-3500	350-3500
Human population per sq.km (1991)	225	194	128	40	153
Average farm size (ha)	2.2	2.2	1.0	1.3	1.2
Total geographical area ('000 sq.km)	14.3	5.6	3.0	10.6	33.5
Land Area* (% of total)					
Forests	29	27	25	27	28
Pastures	17	31	42	63	36
Cultivated land	24	24	20	4	17
Not available for cultivation	20	7	7	5	12
Livestock Population (total numbers in millions)					
1972	2.22	1.19	0.49	0.72	4.62
1992	2.36	1.26	0.44	0.76	5.09
Livestock Composition in 1972 (%)					
Cattle	45.5	54.2	47.5	28.7	45.3
Buffaloes	20.3	5.7	1.0	2.9	11.8
Sheep and goats	33.5	39.5	50.9	66.8	42.1
Other	0.7	0.6	0.6	1.6	0.8
Livestock Composition in 1992 (%)					
Cattle	39.3	53.1	53.0	28.3	42.3
Buffaloes	22.5	6.4	1.3	3.1	13.8
Sheep and goats	37.4	39.8	44.9	66.6	43.0
Other	0.8	0.7	0.8	2.0	0.9
Annual Growth Rate (1972 to 1992) (%)					
Cattle	0.3	0.2	-0.1	0.2	0.2
Buffaloes	2.0	1.1	0.3	0.6	1.8
Sheep and goats	1.2	0.5	-1.0	0.2	0.6
Other	2.8	2.8	3.2	2.3	2.7
Total	1.0	0.4	-0.5	0.3	0.6
Animals per sq.km of Forest and Pasture Land (1992)					
Cattle	139	178	99	20	88
Buffaloes	74	21	2	2	28
Sheep and goats	37	39	25	13	25
Other	4	2	2	2	2
Total	254	240	128	37	143
*Minor categories of land use like wasteland and fallow not shown					
Sources: Directorate of Economics and Statistics, Directorate of Land Records, and Directorate of Agriculture, Himachal Pradesh, Shimla					

Table 18.4 (in 1997/1998). The overall lactation rate of crossbred cows was much higher than for indigenous cows, 74% compared with 55%. The crossbred cows in lactation also gave twice as much milk per day as the indigenous cows, 3.2 litres compared with 1.6 litres. Thus, overall, crossbred cows gave nearly three times as much milk per day per animal as did indigenous cows. Buffaloes had a lactation rate of 66% and a milk yield per lactating animal of three litres per day. Thus the overall production per animal per day was somewhat less than for crossbred cows, but more than twice as much as for indigenous cows.

Table 18.2: Productive and unproductive milch animals in Himachal Pradesh

Milch animals	1982		1992		Growth (% per year) 1982-92
	Number '000	% total	Number '000	% total	
Cows	623	61.8	648	59.7	0.4
a) Crossbred	42	4.2	112	10.3	16.6
In milk	29	2.9	84	7.7	18.5
Dry	13	1.3	28	2.6	12.0
b) Indigenous	581	57.6	536	49.4	-0.8
In milk	308	30.6	301	27.8	-0.2
Dry	272	27.0	235	21.6	-1.4
Buffaloes	386	38.2	436	40.3	1.3
In milk	221	21.9	300	27.7	3.6
Dry	165	16.4	136	12.6	-1.7
Total Milch Animals	1008	100.0	1084	100.0	0.8
Milch Animals That Have Not Calved					
Cows, crossbred	5.6	5.7	10.4	9.6	8.4
Cows, Indigenous	64.9	65.8	65.8	61.1	0.1
Buffaloes	28.1	28.5	31.6	29.3	1.3
Total	98.6	100.0	107.8	100.0	0.9

Table 18.3: Percentage of milch animals in lactation (1997/98) (%)

Season	Cows		Buffaloes
	Crossbred	Indigenous	
Summer	73	55	69
Rainy Season	75	51	63
Winter	74	59	67
Overall	74	55	66

Table 18.4: Average daily milk yield (1997/98) (litres per day)

	Cows			Buffaloes
	Crossbred	Indigenous	Difference (%)	
Lactating animals	3.2	1.6	206	3.1
All milch animals	2.4	0.9	278	2.0

The annual milk production in HP is rising continuously, mainly because the number of animals is increasing, but to some extent as a result of the increase in milk productivity with the trend towards more crossbred and improved breeds of animal. The annual gross milk production in the state increased from 0.4 million tonnes in 1984/85 to 0.7 million tonnes in 1997-98 (Table 18.5). The proportion of total milk contributed by cows and by goats increased slightly during this time, and the proportion from buffaloes went down.

Although the population increased, the amount of milk produced increased even more so that the amount of milk available per capita from within the state increased, from 1/4 to 1/3 of a litre per person per day. Even so, of the total milk sold from formal sources only 31% came from within the state. The amount of milk marketed

Table 18.5: Annual milk production in HP and share of different milch animals in the total

Year	Total milk production (million litres)	Percentage share			Milk availability per capita (l per day)
		Cows	Buffaloes	Goats	
1984/85	403	41.1	56.5	2.5	0.24
1985/86	431	41.1	56.4	2.5	0.25
1986/87	459	40.5	56.8	2.7	0.27
1987/88	478	39.5	57.8	2.7	0.27
1988/89	500	43.7	53.2	3.2	0.28
1989/90	529	45.8	52.7	1.6	0.29
1990/91	573	45.0	52.5	2.5	0.31
1991/92	597	44.4	52.2	3.4	0.32
1992/93	610	42.7	52.4	4.8	0.32
1993/94	554	42.5	52.8	4.7	0.34
1994/95	663	45.8	50.0	4.2	0.34
1995/96	676	44.8	51.0	4.3	0.34
1996/97	698	46.3	49.1	4.6	0.34
1997/98	714	43.5	50.4	6.1	0.33

formally in 1997/8 from different sources is shown in Table 18.6. The Himachal Pradesh State Cooperatives Milk Producers Federation (MilkFed) procured 9 million litres of which 1.6 million litres was supplied to the National Milk Grid. The remaining amount met 31% of the total demand. The rest of the demand was met by purchasing milk from the neighbouring states of Punjab and Haryana, 33% and 19% of total milk demand from the Milk Federations of Punjab and Haryana, and the remaining 17% from private dairies in Haryana and Punjab. This means there is an in-state deficit of 69% of the milk sold through formal sources. However, it must be remembered that only a little more than 1% of all milk produced actually passes through these formal channels

The farm size also influences the composition of livestock holdings. Table 18.7 shows the number and type of livestock kept on different sizes of farms in different zones.

Table 18.6: Milk marketing in Himachal Pradesh (1997/98)

	Quantity million litres	% of Total
Procured by HP MilkFed	9.1	38.0
Processed and marketed by HP Milk Fed	7.6	31.5
Milk supplied by outside agencies		
-Punjab MilkFed/ unions	8.0	33.4
-Haryana MilkFed/ unions	4.5	18.7
Sub-total	12.5	52.0
Punjab/Haryana private dairies		
- Milk time	1.2	5.1
- Others	2.8	11.4
Sub-total	4.0	16.5
Total outside agencies	16.5	68.6
Total marketed	24.1	100

Table 18.7: Number and type of livestock kept on different sizes of farm in different zones in Himachal Pradesh

Zone/farms ¹	Oxen	Cows	Buffalo	Young stock	Sheep & Goats	Total (CEU ²)
Low hill zone						
Marginal farms	2.0	2.8	0.2	1.6	1.5	6.1
Small farms	2.1	2.8	0.8	1.4	6.4	7.7
Medium farms	2.6	3.0	0.9	3.8	6.1	9.6
All farms ³	2.1	2.7	0.7	1.7	4.1	7.2
Mid hill zone						
Marginal farms	2.2	2.6	0.8	1.1	0.6	6.3
Small farms	2.2	2.2	1.1	1.3	0.7	6.3
Medium farms	2.9	2.2	2.0	1.3	3.0	8.3
All farms	2.2	2.2	1.0	1.2	1.1	6.3
High hill wet zone						
Marginal farms	-	1.5	-	0.8	-	1.9
Small farms	0.2	1.6	-	0.9	0.1	2.4
Medium farms	-	2.0	-	2.0	-	3.0
All farms	0.1	1.6	-	0.8	0.1	2.1
High hill dry zone						
Marginal farms	1.2	1.5	-	0.7	68.9	17.0
Small farms	1.9	3.8	-	1.6	79.7	23.4
Medium farms	2.0	5.1	-	1.5	126.4	35.5
All farms	1.5	2.7	-	1.1	81.9	21.1
¹ marginal farms <1 ha (64%); small farms 1-2 ha (20%), medium farms 2-4 ha (11%)						
² cattle equivalent units –						
one adult cow, bullock, buffalo, or horse				= 1 CEU		
one sheep or goat				= 0.2 CEU		
one young stock of cattle or buffalo and other animals				= 0.5 CEU		
³ overall averages are weighted according to the number of farms sampled in each category						

As expected, within each zone, more animals were kept on larger farms. On similar sized farms, the average number of animals per farm was lower in the mid hill zone than in the low hill zone, and lowest in the high hill wet zone. In the high hill dry zone, however, the economy is mainly pastoral with migratory animal herds, and the number of animals per farm in this zone (mostly sheep and goats) was much higher than in any of the others. Farmers who had a sufficient supply of fodder from crop by-products or other resources preferred to have stall-fed animals with a high milk yield.

Contribution of livestock to household income

In mountain areas livestock can help reduce income inequalities between small and larger farms. This is because livestock rearing in the mountains depends on open access to common property resources (CPR), which are relatively plentiful. The average income from livestock on farms of different size in different zones, and the proportion this represents of total income, are shown in Table 18.8. In most zones, marginal farms had nearly as many animals as small farms, and probably more per farm hectare, but even so the average per household income from livestock was

Table 18.8: Income from livestock on different sizes of farm in Himachal Pradesh (IRs per farm)

	Low hills		Mid hills		High hills wet zone		High hills dry zone	
	IRs	%	IRs	%	IRs	%	IRs	%
Marginal farms	1810	19	4240	41	6670	8	8120	96
Small farms	4800	44	4940	31	8370	7	9860	93
Medium farms	6440	30	8450	23	18380	7	15620	93
All farms	3350	30	5910	30	8010 ¹	7	9900	95

Note: percentages denote the share of livestock income in total farm income

¹the much higher overall income in this zone is the result of intensive apple production; the high income from livestock compared to herd size results from the increased number of crossbred cows and improved management practices

markedly lower as the animals on the marginal farms were of poorer quality (particularly in the low hills). The trend on larger farms is to keep fewer animals, each of better quality. These crossbred animals are more costly to buy and to maintain as they require higher doses of concentrate feeds and stall feeding because of their heavy build, which increases risk of slipping and death while grazing on slopes.

The costs of maintaining a buffalo, crossbred cow, or indigenous cow were estimated from data collected in a sample survey. The results are shown in Table 18.9. The net maintenance cost (cost minus the value of dung) was highest for buffalo, somewhat less for crossbred cows, and much lower for indigenous cows. Crossbred cows had a slightly higher yield than buffalo; local cows had a much lower yield. Buffalo milk commanded a higher price per litre because the percentage of fat is higher. Overall the average net return per animal per day was IRs 4.4 from crossbred cows, IRs 3.2 from buffalo, and IRs 0.8 from local cows, indicating that all other factors being equal, crossbred cows are likely to provide the best returns.

There is a need to augment the milk production on small farms. Development of a marketing infrastructure can play an important role in this. If the infrastructural facilities for milk marketing are increased in rural areas the cash flow on small farms will also increase as these farmers could start rearing livestock along commercial lines.

Table 18.9: Economics of milk production in selected milkshed areas (IRs per day per animal in 1999)

	Cows		Buffaloes
	Crossbred	Local	
Maintenance cost	35.6	9.4	44.0
Value of dung	4.0	1.6	6.7
Net maintenance cost	30.6	7.9	37.3
Milk yield (litres)	5.0	1.2	4.5
Cost of milk per litre (IRs)	6.1	6.3	8.3
Price of milk per litre (IRs)	7.0	7.0	9.0
Gain per litre (IRs)	0.9	0.7	0.7
Gain per day (IRs)	4.4	0.8	3.2

Role of Infrastructural Development in Commercialising the Livestock Sector

Infrastructural development stimulates and sustains the commercialisation of agriculture, and the commercialisation of agriculture enhances economic development. The infrastructure needed for agricultural development includes rural transport facilities, agro-processing and storage facilities, agricultural research and extension services, and institutions for marketing and credit. Infrastructural facilities affect the basic structure of agricultural production, marketing, and consumption in a variety of ways. The development of infrastructure accompanies the development of a market, and the development of marketing is accompanied by movements towards specialisation, division of labour, monetisation of the rural economy, and use of market-oriented inputs in farm production, all of which are characteristics of advanced agricultural economies. Without adequate rural roads, it is difficult to transport any perishable agricultural surplus to urban areas. Without some minimum level of agricultural infrastructure, efforts to stimulate more rapid increases in agricultural output such as milk production will be frustrated. Improved roads and transport facilities reduce transport losses and input costs of farms. Therefore, the transition of small farmer subsistence dairy farming to small farmer commercial dairy farming is inevitably linked with the development of infrastructural marketing facilities. By marketing we mean all those economic activities that are performed after the produce leaves the original point of production till it reaches the ultimate consumer. The efficiency with which the total marketing task is performed depends on how effectively the different marketing activities, when put together, merge into a total system.

In order to examine the marketing problems for dairy products, we need to understand the total marketing system and the operational characteristics of the system. In the following we describe the present marketing system in HP, including how much surplus milk is actually available on farms.

The Milk Marketing System in HP

A marketing channel is the sequence in which a product moves from producer to consumer through various intermediaries and functionaries in the market. Various middlemen and related agencies are involved in the purchase and sale of milk and its products as they move from producers to consumers. They buy and sell for their own gain. Milk wholesalers are the local buyers or rural assemblers who buy milk and its products from farmers in the producing area and transport the products to the large cities where they are sold to other wholesalers and processors who may handle many different or only a limited number of products. The retailer buys milk and its

products from a wholesaler for re-sale to the ultimate consumers. Wholesalers and retailers secure their incomes from the margin between the buying and selling prices. Milk processors and manufacturers primarily exist to process milk to another form (e.g., butter, ghee, curd, and khoya). They often act as their own agents in the milk producing areas and undertake the wholesaling of their finished products to retailers. Many milk processors attempt to reach the ultimate consumers through advertising.

Our field survey revealed that there are four types of milk marketing channel in HP: (i) producer - consumer, (ii) producer - other producer - consumer, (iii) producer - trader - consumer, (iv) producer- MilkFed - retailer- consumer. The way in which each of these functions is described below.

- Producer-Consumer — This marketing channel is the one most favoured by dairy farmers whose villages lie near to towns. Since there is no middleman involved, farmers receive the full price paid by the consumer. Milk is distributed door-to-door in the morning to a set number of households, and the payment is collected once a month. The animals are milked twice a day – morning and evening – and the evening milk is mixed with the morning milk before selling. Some farmers keep refrigerators for this purpose, while others just keep the milk overnight in a cool place. On average, each dairy farmer supplies 10-15 litres of milk per day to customers. The milk is carried from the farm in plastic cans carried in sling bags or haversacks. In most cases, farmers carry the milk by bus, but milkmen who do not have the means simply walk. In the morning and evening, public transport buses serve major villages near the periphery of cities to provide transport to daily commuters. Villagers who are employed in the city may also carry their farm milk for sale. The farmers have regular customer households to which they supply milk. If they have a shortfall of milk, they will purchase it from other farmers in the village in order to maintain the regular supply to their customers. Some of these milkmen also sell small quantities of fresh vegetables from their own farm to the milk customers. Households usually pay for milk on a monthly basis, but they pay directly for vegetables and other fresh farm products. During 1999 the per litre retail price of milk ranged from IRs 11-13 for cows milk and IRs 13-15 for buffalo milk. The per litre purchase price of milk in villages was about IRs 8 for cow's milk and IRs 10 for buffalo milk.
- Producer-Other Producer-Consumer — This channel is similar to the one above except that the milk vendor in addition to selling his own milk also buys milk from other producers who have a small marketable surplus which they don't find feasible to sell themselves, or from farmers with insufficient manpower available for marketing. Such milk purchases are normally paid for on a monthly basis.

- Producer-Trader-Consumer — In villages without easy access to urban areas, milk traders have become important. Farmers sell milk to a trader who in turn sells directly to consumers. This is the most common milk marketing channel in HP. Small milk producers bring their surplus milk to the nearest road where the trader waits. The milk volume is measured and the viscosity checked with a lactometer before the milk is transferred to a bigger container. The milk price is based on the viscosity. In 1999 the rates were IRs 6, IRs 7, IRs 8 per litre for average lactometer readings of 10, 15, or 20 respectively; and 9 per litre for a reading of over 20. The cow and buffalo milk is mixed and sold to the final consumer at IRs 12-14 per litre. Depending on the size of the business, a trader may hire one or two people to help. Payments are normally made to the farmers at the end of each month. However, traders may give an advance loan to needy farmers to purchase milch animals or cattle feed, or even for consumption. The advance is adjusted in the subsequent milk payments to the farmers. But traders are generally careful about advancing such loans and restrict the amount to a maximum of 70-80% of the monthly milk payment. After collecting milk, the trader carries it to town by bus or on a motorcycle. Milk is sold door-to-door to regular customer households and owners of teashops in the city. This method is popular in those villages that are far from urban consumption areas. Normally, each trader collects milk from 20-30 small dairy farmers and retails this milk to teashop owners and about 50-60 households. Traders generally handle 300-500 litres per day.
- Producer-MilkFed (through VDCs)-Retailer-Consumer — The Government of Himachal Pradesh has encouraged the formation of village dairy cooperative societies (VDCs) in order to provide an efficient marketing channel to small dairy farmers in areas where there is no marketing outlet. The dairy cooperatives are organised into primary milk producers' societies at the village level; these supply the milk to the Himachal Pradesh State Cooperative Milk Producers' Federation (MilkFed), which is responsible for milk procurement, processing, and distribution to urban centres. The VDCs aim both to help their members to increase their milk production and to arrange for the profitable sale of milk to consumers through MilkFed.

The MilkFed was established in January 1980 during the implementation of the Operation Flood-II Project in Himachal Pradesh on the 'Anand Pattern', which envisages developing the dairy sector through development of cooperatives in rural areas. MilkFed has established 3 dairy processing plants and 22 milk chilling plants in various parts of the state (Table 19.10). In 1997-98, MilkFed had 250 village dairy cooperatives through which 18,000 farmer members sold 9 million litres of milk.

Farmers bring milk to the VDC collection centre at a fixed time in the morning when the MilkFed vehicle arrives. The milk is measured and checked for viscosity before it

is accepted. The milk is transported to the nearest milk chilling centre and cooled so that it can be transported to the more distant dairy processing plant without the quality deteriorating. At the dairy plants, the milk is processed into pasteurised milk and ghee. The pasteurised milk (standard with 4.5% fat and about 8.5% solid non fat (snf), or toned milk with 3.1% fat and about 8.6% SNF) is packed in 500 ml and 1,000 ml polypacks which are transported to retailers for sale to the consumers. Chilled loose milk is also sold to consumers from mobile tankers at specified places and times in some cities and towns. About 10-15% of the total procurement is sold loose.

The total capacity of milk chilling plants in the state is 54,000 litres per day, but the average utilisation from 1994/95 to 1998/99 was only 24%, or 4.7 million litres per annum (Table 18.10). The total capacity of the three dairy processing plants in the state is 40,000 litres milk per day (15 million litres per year potential, compared with the 9 million litres actually processed in 1997/98). There is a difference between the amount of milk passing through the chilling centres and the total quantity handled by the processing plants. There are three main reasons for this: part of the total is

Table 18.10: Capacity utilisation of milk chilling plants in Himachal Pradesh

Location of plant	District	Year Establi shed	Capacity l/day	Capacity utilisation					Average 1994-1999
				1994-95	1995-96	1996-97	1997-98	1998-99	
Mandi unit									
Bhambla	Mandi	1979	2,000	10.8	8.1	5.5	2.8	2.0	5.8
Sighyani	Mandi	1971	2,000	36.0	25.4	23.5	17.7	7.5	22.0
Kunnu	Mandi	1971	2,000	29.7	21.3	25.1	22.5	14.7	22.7
Kataula	Mandi	1971	2,000	15.9	12.0	10.6	11.3	10.2	12.0
Kotli	Mandi	1971	2,000	23.9	22.9	32.8	30.7	22.0	26.5
Bilaspur	Bilaspur	1980	2,000	21.4	17.4	15.4	23.8	15.4	18.7
Mohal	Kullu	1982	2,000	10.1	12.7	17.7	13.4	8.9	12.6
Kangra unit									
Milwan	Kangra	1977	2,000	30.1	20.6	15.2	17.4	16.3	19.9
Darkata	Kangra	1975	2,000	13.6	9.6	12.1	10.7	10.6	11.3
Raja-ka-talab	Kangra	1982	2,000	8.9	5.9	8.0	4.8	7.1	7.1
Bangana	Una	1980	2,000	2.6	1.4	-	3.4	4.0	2.8
Jhalera	Una	1978	2,000	7.9	4.8	6.5	12.1	10.9	8.4
Jalari	Hamirpur	1978	2,000	6.1	5.3	7.4	5.7	5.4	6.0
Chamba	Chamba	1980	2,000	4.3	3.9	8.3	6.9	6.8	6.0
Shimla unit									
Rajgarh	Sirmour	1970	2,000	72.6	70.9	93.2	99.5	75.3	82.3
Bagthan	Sirmour	1968	5,000	43.3	38.8	43.0	45.1	45.9	43.2
Sarahan	Sirmour	1972	4,000	23.4	22.7	26.2	27.1	25.2	24.9
Renuka	Sirmour	1980	2,000	39.2	33.1	31.5	29.0	27.5	32.1
Nahan	Sirmour	1970	5,000	1.5	15.2	21.8	28.2	35.0	20.3
Maryog	Solan	1970	2,000	12.9	13.6	16.5	14.8	12.4	14.0
Nalagarh	Solan	1974	2,000	6.5	4.0	3.3	5.4	1.8	4.2
Kepu	Shimla	1986	4,000	67.4	67.6	50.5	51.3	56.5	58.7
Total/average			54,000	22	18	24	24	23	24

toned milk, which is prepared in part from reconstituted powdered milk; the quantity of milk is increased by diluting to achieve the appropriate fat concentration; and the packed milk from Punjab traded by MilkFed is included in the total quantity handled.

Milk marketing cost and price spread

Marketing of milk effectively costs nothing except time when the producer sells to the consumer direct from the farm. If a farmer sells milk at a local market there will be an additional marketing cost for transportation. If there are middlemen involved between the producer and the consumer the marketing costs will increase accordingly. Normally market middlemen (functionaries or institutions) move commodities from producers to consumers. Every function or service involves a cost. The intermediaries or middlemen must meet the cost of the functions they perform and also make a profit. The actual marketing margins vary from producing point to producing point, commodity to commodity, marketing channel to marketing channel, market to market, and over time.

The price spread is the difference between the price paid by the ultimate consumer and the price received by the producer. It normally reflects the extent of the services given and their costs, for example the cost of labour, transportation, equipment, spoilage, and the degree of risk involved in marketing.

The price spread and marketing margin for milk sold off-farm were estimated from a field survey performed in 1999. The results are shown in Table 18.11. The producer's share in consumer's money was highest, 85%, when milk was sold direct to the consumer. The producers had a slightly higher share in consumers' money

Table 18.11: Price of loose milk marketed through different channels (IRs per litre)

	HP MilkFederation		Through Traders		Direct Sale	
	IRs	%	IRs	%	IRs	%
Price per litre received by producer	7.1 ¹	64.6	7.0	58.3	11.0	84.7
Costs incurred for						
- Transportation	1.8	15.9	0.2	1.5	0.7	5.0
- Chilling	0.4	3.7	-	-	-	-
- Handling ²	0	0	0.3	2.5	1.3	9.6
- Other	0.2 ³	1.9	0.2	1.8	1.1	0.7
Sub-total	2.4	21.5	0.7	5.8	2.0	15.3
Margin/profit	1.5	13.9	4.3	35.9	-	-
Consumer price	11.0	100	12.0	100	13.0	100

¹A coop commission of 2 paise per litre has been deducted calculated on the basis of fat and snf percentage

²Handling charges cover the cost of door-to-door distribution of loose milk, not applicable to MilkFed as consumers come to the parked tanker to purchase milk

³Includes 3% of the value of milk given as bonus to cooperative by federation

(66%) following sale through MilkFed than sale through traders (58%), mainly because MilkFed charged the consumers less. The costs incurred by MilkFed for transportation, chilling, and handling of milk accounted for 22% of the consumer price, whereas the costs incurred by traders (transportation, handling, and other expenses such as depreciation of utensils) were only 6% of the consumer price. Although the milk isn't chilled, the spoilage costs for traders are low because the milk is delivered directly to the consumers. The profit margins for MilkFed and traders were 14 and 36% respectively. If MilkFed had charged the same price to the consumer as the traders, its profit margin would still have been only 20%. The costs of marketing incurred by MilkFed are much higher than those incurred by the traders or producers.

The urban milk market in HP is highly competitive as packed milk is also supplied from public and private milk plants in the neighbouring states of Haryana and Punjab. For this reason, standard prices are fixed by the dairies in the three states for all brands of marketed milk. The retail price of standardised milk in 1999 was US 36 cents (IRs 16) which is higher than the price of loose milk sold by MilkFed and private traders. The costs involved in marketing toned milk are shown in Table 18.12. Toned milk is sold at IRs 12.5 per litre. MilkFed's total cost of production is IRs 13.85, a net loss of IRs 1.35 per litre. This loss is the result of the low volume procured and processed and thus under utilisation of the plant capacity leading to a higher processing cost per litre of milk. The cost of establishing the plant is the major cost item per litre in processing, 23% of the total.

Table 18.12: Costs involved in marketing of packed toned milk in Himachal Pradesh (1999)

	IRs/litre	% of consumer price
Procurement price	6.50	52.0
Transportation	1.20	9.6
Processing	0.62	5.0
Packing	0.45	3.6
Marketing	0.34	2.7
Establishment	2.89	23.1
Administration	0.39	3.1
Repair and maintenance	0.18	1.4
Interest	0.54	4.3
Depreciation	0.24	1.9
Retailer margin	0.50	4.0
Total cost	13.85	110.8
Consumer price	12.50	100.00
Federation margin/loss	-1.35	10.8

Source: Himachal Pradesh MilkFed, Totu, Shimla

Reasons for the Success and Failure of Dairy Cooperatives

Small dairy farmers' problems can be solved by helping them increase their milk production and providing a remunerative market. Small farmers are mostly poor: they don't have assets, are not organised, and don't have sufficient skills. Since small dairy farmers are not organised, middlemen can exploit them and take a big margin from the sale of milk. Dairy cooperatives can play an important role in solving this problem. As in other parts of the country, village dairy cooperatives have been organised in rural areas of HP under the programme of 'Operation Flood' with the aim of ensuring a remunerative market outlet to milk producers and ensuring a regular supply of milk to consumers.

Estimates by the Directorate of Animal Husbandry indicate that at present only 8% of the total milk sold is being collected by the dairy cooperatives. This means they still have a lot of scope to expand. There are 250 dairy cooperatives in HP, a quarter of which are non-functional. Cooperatives fail for a number of reasons, not least because when the principle of cooperation is applied (viz., management by members), vested interests can enter the organisations and turn them into footholds of power and prestige. The worst deficiency in the cooperative movement in HP is inefficient management. Other problems include lack of a proper policy for credit, irregularities in granting loans and maintaining accounts, and lack of trained staff.

The key to the success of dairy cooperatives lies in ensuring sound business practices, having competent managerial personnel, and systematic training of members and office bearers of the cooperative institutions. In addition to organisational factors, business environment factors such as government policies, the presence of competitive organisations, and the attitude of people towards cooperatives, are equally important in making the dairy cooperative society a successful venture.

Despite the failure of so many, most of the remaining dairy cooperatives in HP are functioning well, but some have serious problems. We compared a functional and a non-functional dairy cooperative to discover the factors that can make a particular society a success or failure.

The Tonda village dairy cooperative, in the milkshed area of Rajgarh town MCC in Sirmour district, was selected for detailed study of a successful cooperative. This cooperative is 54 km from the next town and has 85 members who supply 300 litres of milk daily to the VDC (MilkFed). The benefits of the VDC as perceived by its members are summarised in Table 18.13. The most important factor was the timely and regular procurement of milk, followed by the fact that any quantity of milk,

Working of coop as perceived by its members	% of members	Reasons why members are satisfied with its performance	% of members	Improvements suggested by members	% of members
Timely and regular procurement	90	No other alternative	90	Increase milk price	96
Small quantities also accepted	78	Availability of cattle feed, fodder seed	80	Cash advance facility	87
Provide cattle feed and fodder seed	72	Fair dealing	72	More cattle feed	83
Procurement of milk at convenient point	57	Honest and hard working officials	58	Organise dairy awareness camps in villages	70
Assured and timely payment	54	Milk price on basis of quality	48	Evening milk collection	68
Equal treatment to all members	46	Training for dairy farming	10	Special rebate in snf level for fixing milk price	66
Correct measurement of fat and solid non fats	30			AI and veterinary facilities	61
Training in dairy farming	10			Better pay for secretary	28
				Timely collection of milk	16
				Reduce transportation cost	12

however small, is accepted by the cooperative, thereby safeguarding the interests of very small dairy holders. Other factors included the provision of cattle feed and fodder seeds, and the collection of milk at a convenient point. The main factors that contributed to members' confidence in the dairy cooperative are shown in Table 18.14. Assured payment, regular purchase of milk, and the fact that there was no better alternative were the most important reasons, but honest officials were also a major reason.

Factors that make members stay in coop	%	Features that can make members stay even if other marketing agencies offer better facilities	%
Assured payment	90	No other alternative as other agencies don't buy very small quantities	65
No better alternative	87	Other organisations offer facilities for short time only	50
Regular purchase of milk	80	Democratic organisation	12
Honest officials	52	Coop help in area development	10
Democratic organisation	41		
Small quantities accepted	38		
Lack of time	27		
Federal officials help in getting loans for milch animals	18		

The Gaura village cooperative, five km from Maryog MCC, was selected for detailed study as an example of a non-functional dairy cooperative. The cooperative society was established in 1985 and had 40 members who supplied 300 litres of milk daily. It ceased to function in 1997. The main reasons given by members for leaving are shown in Table 18.15, together with a list of the conditions that would encourage them to rejoin. The most important reasons for the failure were late and irregular payments to farmers, corrupt co-op officials, and the low price of milk. Some members reported that the cooperative was dominated by rich farmers who cornered the cattle feed and fodder seeds meant for distribution to members. If these conditions were reversed, the members would consider rejoining.

Dairy cooperatives are only popular in those areas where there are no other milk marketing channels. In areas where private marketing channels have emerged, the members have opted out of, or not formed, cooperatives. In peri-urban areas, small dairy holders prefer to sell milk directly to the consumers. This practice has been encouraged by cheap and dependable bus transport facilities and timely payment from the clients. In areas where the marketable surplus of milk is higher and towns are at a distance, milk marketing channels involving non-farmer milk-traders have emerged. These traders purchase milk regularly, offer competitive prices, and also provide loan advances to the suppliers of milk. The main reasons given for preferring to sell milk directly to consumers or to traders are summarised in Table 18.16.

Suggestions and Policy Implications

Proper breeding, feeding, and weeding out of livestock are lacking at present in villages and are urgently needed so that higher returns can be obtained from dairy

Table 18.15: Reasons given by members for leaving, and considering rejoining, a dairy cooperative

Reasons for leaving	%	Reasons for re-joining	%
Late and irregular payment	86	Increased price of milk	98
Corrupt coop officials	81	Honest and efficient officials	89
Low price of milk	78	Timely and regular payment	83
No incentives for good milk	55	Correct and regular measurement of snf and fat	75
No proper regular measurement of fat and snf	53	Increase in timely and sufficient supply of cattle feed	45
Dominance of rich people	43	Correct recording of milk quantity supplied	39
Desired quantity of cattle feed not available	40		
No correct recording of milk quantity supplied	35		
Bad behaviour of secretary	22		
No proper records of society maintained	19		

Table 18.16: Reasons for selling milk directly to consumers and traders

Reasons for selling milk directly to consumers	%	Reasons for selling milk to traders	%
Better price	100	No other agency	95
Near to town	100	Regular purchase	92
No fat/snf verification	96	Town far away	70
Cheap transportation available	85	Loan against milk	62
Timely payment	82	No fat/snf measurement	36
Permanent customers	60	Near to village	32
Old relationship with customers	30	Technical guidance from traders	9
Can sell vegetables to customers	15		
Advance can be obtained	7		

animals. Agro-forestry on degraded common land for soil and water conservation and to enhance the supply of green leaf fodder has yet to become popular. It is essential to train farmers in integrated dairy development. But there must first be a marketing channel for the extra milk produced. A milk marketing strategy should be developed for a cluster of villages before the producers are organised.

The issues in livestock planning and management include reducing farm income inequalities, improving the production efficiency of milch animals, improving the quality of animals, and meeting fodder needs without degrading the natural resources.

The higher growth rates observed in the number of buffaloes and crossbred cows indicate that farmers are choosing animals with higher milk yields and responding to the consumer's preference for high fat buffalo milk.

The most important difference observed between the successful and failed dairy cooperatives was accountability. To whom is the dairy cooperative accountable? Are its decisions mostly made in the interests of its members or are they shaped in response to government objectives and policies? Do cooperative officials mostly look down to their members or up towards higher officials? Do members see the cooperative as belonging to themselves or to the government? Many factors lie behind the failure of village dairy cooperatives. They include the fact that, because the majority of the farmers are less well educated and have small landholdings, the cooperatives can become dominated by rich aspirants for political power; that there is no genuine cooperative leadership; and that the cooperatives have become a government movement without much scope or incentive to survive and prosper on their own. For a cooperative to be successful, it should be democratically controlled by its members and professionally managed with honest workers who pass on benefits to the members.

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Chapter 19

Gender Roles in Livestock Management: Experiences and Lessons from Projects in the African Highlands

Esther L. Njico

Centre for Gender Studies, University of Venda,
South Africa

Introduction

Livestock were a key component in defining status in African communities before the coming of capitalism. Previously people held the mistaken view that "the importance of livestock reflects limited opportunities for cultivation, and rainfall is too unreliable to permit a pastoral economy" (O'Connor 1966). This mistaken view has led to a great dearth of information about livestock production and its importance in the way of life of most African communities. A close examination shows that livestock are considered very valuable; many grain producers regularly convert their grain into livestock, especially in times of uncertainty. Most communities that are able to raise cattle, camels, or goats do so to the fullest extent possible. Among East Africans wealth and cattle are interrelated as cattle represent money, as well as being used for subsistence, and are only slaughtered and eaten on special occasions.

This picture of the value of livestock is changing, however. The time has passed when livestock were used as currency with cattle constituting an almost exclusive hallmark of wealth. Modernisation has brought pressure to accumulate capital in the form of cash rather than livestock, and the pressure on land and the need to modernise agricultural production mean that livestock are no longer as highly valued as in the early part of the 20th century. The political structures have also had a negative impact on livestock ownership; capitalism insists on intensive production, and the time when livestock were kept for sustenance is long past. Nevertheless, for rural communities, livestock are still very important for household income and wealth.