

Research Paper

Production and Feeding Patterns of Cattle in Manipur- Findings from Small Farmers

Oinam Krishnadas Singh*, Naresha. N and Tusoing Alphonse Houmai H

Department of Economics and Sociology, Punjab Agricultural University, Ludhiana, Punjab, India

Corresponding author: oinamkrishnadasmscecon@gmail.com (ORCID ID: 0000-0002-0589-0212)

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ABSTRACT

The purpose of this study was to examine the production and feeding patterns of cattle among the small farmers in the Thoubal district of Manipur. The findings revealed that, on average crossbred and local cow dairy farms maintained 1.60 and 1.25 milch animals, respectively. The investment percentage was found to be highest on milch animals followed by cattle shed and equipment for both the category of farm households which were ₹ 80756.82 for crossbred and ₹ 21506.75 for local cow, and the overall investment was ₹ 102263.57. On average milking crossbred cow was fed with 11.33 kg/day of dry fodder, 17.06 kg/day of green fodder, and 3.23 kg/day of concentrates, and for the local cow, it was 5.82 kg/day of dry fodder, 7.25 kg/day of green fodder, and 1.75 kg/day of concentrates, respectively. The average yield per crossbred cow was 9.50 liters/day, and that of the local cow was 1.60 liters/day. It can be concluded that training facilities by veterinary and extension workers on scientific knowledge and management techniques to the farmers for cattle farming should be encouraged. Improvements in cattle feeding patterns through green fodder cultivation are also encouraged, as farmers rely primarily on open grazing to feed their cattle's. The government should also increase the availability of marketing and credit facilities, as the study area falls short in these areas.

HIGHLIGHTS

- ① For both the crossbred and local cow categories of farm households, the highest investment percentage was found to be on milch animals, followed by cattle sheds and equipment.
- ② On average, a milking crossbred cow was fed 11.33 kg of dry fodder per day, 17.06 kg of green fodder per day, and 3.23 kg per day of concentrates, while a local cow was fed 5.82 kg of dry fodder per day, 7.25 kg of green fodder per day, and 1.75 kg per day of concentrates.
- ③ The average yield per crossbred cow was 9.50 liters/day, and that of the local cow was 1.60 liters/day training facilities by veterinary and extension workers on scientific knowledge and management techniques to the farmers for cattle farming should be encouraged as the area is lacking behind in such facilities.

Keywords: Milch animal, investment, feeding pattern, cattle

Dairy farming is regarded as one of India's most important tools for rural socio-economic development. During the fiscal year 2020, milk production was at 198 million metric tonnes and the production increased by 5.6 percent over the previous year. Milk is produced by millions of small and marginal farmers that spread across the country. Around 78 percent of milk producers are marginal or small farmers, accounting for roughly

68 percent of total milk production (Kumar *et al.*, 2013). This pattern may be found in most states across the country. The significance of dairy farming in improving the socio-economic condition of rural people is critical, as it reduces the rural economy's

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long-standing problems of unemployment and underemployment. The key feature of the Indian Dairy industry is still predominantly unorganized, and only 18-20 percent of the total milk production is channelized through the organized sector. This might be due to most of the small and marginal dairy farmers. The production pattern on a dairy farm is also heavily influenced by the profits earned. According to previous research (Kumar, 2003; Chand *et al.* 2002), animal investment remains the largest, followed by buildings and equipment. Small and marginal farmers' farming is typified by a mixed crop-livestock system, with livestock feeding mostly reliant on pastures and open grazing resources. About 33 percent of total fodder consumed by livestock comes from pastures, public lands, wastelands, fallows, and forests (Dixit and Birthal, 2010). The major problems faced by the farmers during production are high price of concentrate, the low availability of green and dry fodders, and the lack of veterinary facilities (Singh *et al.* 2019).

The livestock sector plays a significant role in the economy of northeast India. The income from crop cultivation and livestock production contributed around 68 percent of the total income of agricultural households (Vatta *et al.* 2021). Among India's northeast region, Manipur is also one of the top milk-producing states, and dairy farming is a subsidiary occupation in the state. Farmers raise one to three cattle that are fed by agricultural waste and open grazing in the field. The animals are used for milk production and farm labor in their field, and the residues are used as crop farming manure. Despite significant growth in production and returns from dairy farming in many other states, development in the dairy sector is not seen as

encouraging in Manipur. This is primarily due to a lack of scientific knowledge about milk production; the producers are small and marginal farmers. Understanding small farmers' cattle' production and feeding patterns is critical for developing the right production tactics for dairy farmers. As a result, the study was conducted to investigate the dynamics of cattle production and feeding patterns among small farmers.

MATERIALS AND METHODS

The current study was carried out in Thoubal district of Manipur state, India. The respondent farmers were chosen using a multistage sampling plan. A total of four villages were chosen, two from each block of Thoubal and Lilong. Further, 100 dairy farmers were randomly selected from these four villages, with 60 farmers rearing crossbred cows and 40 farmers rearing local non-descript cows based on an adult milch cow. A well-structured pre-tested personal interview schedule was used to acquire primary data from the selected dairy farmers. Descriptive statistics tools like frequency, percentage, and range were used for the study. Thus the collected data were compiled, tabulated, and analyzed to interpret the study's findings.

RESULTS AND DISCUSSION

Socio-economic profile of respondent farmers

The socio-economic profile of the respondent households has a profound influence on the decision-making process and profitability of the dairy enterprise. It is noticed in Table 1 that overall, 56 percent of respondent farmers were in a joint family, and 44 percent of the respondent farmers were a nuclear family type. The overall dairy

Table 1: Socio-economic profile of respondent farmers

Particulars	Crossbred cow	Local cow	Overall
Family type			
Nuclear	26 (43.34)	18 (45.00)	44 (44)
Joint	34 (56.66)	22 (55.00)	56 (56)
Total no. of households	60 (100)	40 (100)	100 (100)
Avg. age (in year)	43	49	46
Avg. landholding (in ha)	0.61 (57.54)	0.45 (42.45)	1.06 (100)
Literacy rate (%)	93.33	87.5	89.00

Note: Figure in parentheses denotes the percentage to the respective total.

farms were owned and managed by persons the age of average 46 years, which was in line with the findings of Rathod *et al.* (2011), who reported that a higher proportion of dairy farmers were in the middle age group. This might be due to the farmers being more enthusiastic, committed, and efficient in working with agriculture and related activities for a living, and with the increase in age, more experience in the field. The overall literacy rate was 89 percent which was 93.33 percent for crossbred and 87.5 percent for the local cow farm category, respectively. The overall average landholding was 1.06 ha which constitutes 0.61 ha for the crossbred farm category and 0.45 ha for the local cow farm category. Similar findings were shown by Prasad *et al.* (2001) where the majority of the dairy farmers were marginal landholdings.

Herd size (Milch cow)

The number of milch cows owned by the dairy farmer and types of breed reared indicates the dairy farmers' economic status. The given Table 2 shows that the types of breed reared by respondent households were 100 milch crossbred cows (Jessey and Holstein Friesian) and 50 local milch cows (non-descript local breed) only. Most respondent dairy farmers were in small herd size groups, which rear 1-4 animals per household with an overall average herd size of 2.85, which is 1.60 for the crossbred farm category and 1.25 for the local cow farm category. These findings concede with the findings of Saadullah and Hossain (2000). This might be due to dairy farming being labor-intensive farming and managed as a way of life.

Table 2: Distribution of respondent household according to the number of milch cow

Types	Crossbred cow	Local cow	Overall
Milking	70(70.00)	40(80.00)	110(73.33)
Dry	30(30.00)	10(20.00)	40(26.66)
Total (Milch)	100(100)	50(100)	150(100)
Avg. herd size (mich cow)	1.60(60)	1.25(40)	2.85(100)

Note: The figure in parentheses denotes percentage to the total

Fixed Investment in Dairying

Milch animals, cattle sheds, storage sheds, and dairy equipment were considered dairy assets.

The magnitude and design of investment in dairy enterprises' fixed assets is an essential measure of milk producers' income-generating capacity. Table 3 shows the fixed investment per household was shown for different farm categories.

Table 3: Average fixed investment in dairying per household (₹/animal)

Items	Crossbred Cow	Local Cow	Overall
Cattle Shed	7916.66 (9.80)	3876 (18.02)	11792.66 (11.53)
Milchcow	71500 (88.53)	17100 (79.50)	88600 (86.63)
Dairy Equipment's	1340.16 (1.65)	530.75 (2.46)	1870.91 (1.82)
Total investment	80756.82 (100)	21506.75 (100)	102263.57 (100)

Note: Figure in parentheses denotes percentage of the respective total

It was revealed that there was a significant variation in the total investment in dairy assets among the two household categories, which were ₹ 80756.82 for crossbred and ₹ 21506.75 for local cows, and the overall investment was ₹ 102263.57. The investment percentage was highest on milch cows followed by cattle shed and equipment for both the category of farm households.

Feeding pattern of milch cow

The feeding pattern of a cow is the key to increasing milk productivity and efficiency in milk production. It was observed from Table 4 that dry fodder, green fodder, and concentrates types of feeds were given to all the animals irrespective of milking or dry. Further, it was observed that the feed intake comprising of dry fodder, green fodder, and concentrated feed of milking cows was higher as compared to dry animals for both categories. On average, milking crossbred cow was fed with 11.33 kg/day of dry fodder, 17.06 kg/day of green fodder, and 3.23 kg/day of concentrates, respectively. A dry crossbred cow was also fed with 9.50 kg/day of dry fodder, 11 kg/kg of green fodder, and 1.5 kg/day of concentrates daily. For the local cow farm category also on average milking local cow was fed with 5.82/day kg of dry fodder, 7.25 kg/day of green fodder, and 1.75 kg/day of concentrates, respectively. A local dry cow was also fed with 5 kg/day of dry fodder, 3.10 kg/day of green fodder, and 0.5 kg/day

of concentrates.

Table 4: Average daily intake of feeds and fodders per milch cow

Items	Breed /Types of cow	Kg/day
Dry fodder	Crossbred Milking Cow	11.33
	Crossbred Dry Cow	9.50
	Local Milking Cow	5.82
	Local Dry Cow	5.00
Green fodder	Crossbred Milking Cow	17.06
	Crossbred Dry Cow	11.00
	Local Milking Cow	7.25
	Local Dry Cow	3.10
Concentrate feed	Crossbred Milking Cow	3.23
	Crossbred Dry Cow	1.50
	Local Milking Cow	1.75
	Local Dry Cow	0.50

Veterinary and other extension participation

Table 5 depicts that 66.67 percent of the crossbred cow farm category was active participation in the veterinary and extension works, followed by 25 percent and 8.33 percent, which were in the moderate and low groups, respectively. For the local cow farm category, 70 percent of respondent farmers were in the low-level group, 17.5 percent in the medium, and 12.5 percent in a high-level group of veterinary and extension participation.

Table 5: Distribution of respondent households acc. to veterinary & extension participation

Particulars	Crossbred cow	Local cow	Overall
Low (below 10 times)	5(8.33)	28(70.00)	33(33.00)
Medium (10-20 times)	15(25.00)	7(17.5)	22(22.00)
High (above 20 times)	40(66.67)	5(12.5)	45(45.00)
Total	60(100)	40(100)	100(100)

Note: Figure in parentheses denotes the percentage of the respective total.

Milk production

In dairy farming, milk is the main output, and it is the yield of milk that ultimately brings a return to the dairy farmers. Table 6 shows that 58.33 percent of crossbred cow farmers were in the medium category of milk production, followed by 41.67

percent of farmers in the high category of milk production. For the local cow farm category, 100 percent of the respondent farmers were in the low category of milk production. Overall 40 percent of the respondent farmers were in the low category of milk production, followed by 35 percent in medium and 25 percent in the high category of milk production. The average yield per crossbred cow was 9.50 liters/day, and that of the local cow was 1.60 liters/day, respectively.

Table 6: Daily average milk yield (liter/animal/day)

Particulars	Farm Category		
	Crossbred Cow	Local Cow	Overall
Low (0-5 liter)	0	40(100)	40(40)
Medium (5-10litre)	35(58.33)	0	35(35)
High (10 and above)	25(41.67)	0	25(25)
Total households	60(100)	40(100)	100(100)
Avg. milk yield	9.50	1.60	11.10

Note: Figure in parentheses denotes percentage to the respective total.

Annual income

It was reflected in Table 7 that 46 percent of the overall farm category belonged to the high-income group, which is followed by 40 percent of low-income groups and 14 percent of the medium-income group. For the crossbred farm category, 76.67 percent of dairy farmers were in high-income groups and followed by 23.37 percent of the respondent in the -medium-income group with an average income of ₹ 142973.54.

Table 7: Annual income of respondent households from animal husbandry

Particulars	Crossbred cow	Local cow	Overall
Low (below ₹ 50,000)	0	40(100)	40(40.00)
Medium (₹ 50,000 - ₹ 1,00,00)	14(23.33)	0	14(14.00)
High (₹ 1,00,000 and above)	46(76.67)	0	46(46.00)
Total no. of households	60(100)	40(100)	100(100)
Average income (₹)	142973.54	35587.50	178561.04

Note: Figure in parentheses denotes percentage to the respective total.

In the case of the local cow farm category, 100 percent of the respondent farmers were in

low-income groups with an average income of ₹ 35587.50. There is an entirely contradictory in the income level between crossbred and local farm categories. This is because the local variety of cows had a very low deficient level of milk productivity compared to a hybrid cow.

CONCLUSION

It can be noticed from the above findings that there is a big difference in the production and feeding patterns between the crossbred and local farm categories. This is due to the available local non-descript cow being low milk producing type by breed compared to a hybrid cow and managed as a way of life. Factors like poor scientific knowledge and management, feeding pattern, veterinary and other extension works, infrastructure facilities, etc., also lead to the low milk productivity for the local cow farm category. Even though the average milk productivity is 9.5 liter per animal for the crossbred farm category, most of the respondent farmers were in the medium level milk production. The factors mentioned above also affect the milk productivity and income of the crossbred farm category. To improve the overall production and feeding patterns both the farm category, it can be concluded that providing training facilities by veterinary and extension workers on scientific knowledge and management techniques should be encouraged. Improvements in cattle feeding patterns through green fodder cultivation are also encouraged, as farmers rely primarily on open grazing to feed their cattle. The government should also increase the availability of marketing and credit facilities, as the study area falls short in these areas.

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