ANALYSIS OF SMALL SCALE DAIRY FARMING IN BUNDELKHAND

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India is at the threshold of achieving white revolution and the annual growth rate in milk production is highest in the world. India is now the largest producer of milk with 74·3 million tonnes, but the average per capita consumption of milk has just doubled from 100 gm some 50 years back to 206 gm per day and it is still below the world average of 300 gm per day. Milk is important to the nutrition of people and milk products have an important role in Indian traditional diet. Milk production through traditional dairying has became the mainstay for millions of rural families and produces nutritious milk in addition to valuable meat and some by-products like skins, manure and hides.

In India, dairy development is recognized as an important activity suitable for increasing the income level of rural families, especially the small and marginal farmers and land less agricultural labourers. Dairying is a valuable treasure and source of poverty eradication, employment generation and an instrument of social change in rural India. The bulk of milk production in our country is in the hand of million of small producers scattered all over. Traditional dairying in India is characterized by small-scale backyard type production in rural areas and only a few large commercial farms are found near urban areas. Dairying in Uttar Pradesh, like other state rest with the individual unit of small size. Most of the farmers belong to the small or marginal category, owing two or three heads of cattle and less then two hectare of land. Hence, an attempt was made to study the potentiality and constraints of small scale dairy farming among different categories of farmers with regards to milk production in village Rund Karari of Jhansi district in Bundelkhand Region.

METHODOLOGY :

The study was conducted in Jhansi district of Bundelkhand region. A village named Rund Karari was selected purposively because this village has maximum number of small-scale dairy production unit. A preliminary survey was conducted in that village to know the total number of farm families falling in different land holding categories. On the basis of the that preliminary survey approximately 30% farmers from each category were randomly selected. By this way the present study was conducted on 84 dairy farmers i.e. Large-30, small-36, medium-10 and land less labourers-8.

A well-structured interview schedule was designed covering questions on both the species of dairy animals (cattle and buffalo), general feeds to be offered for the animals and their population and production potential. The questions mainly focussed on dairy production and questions included farmers' purpose of cattle and buffalo rearing, constrains in rearing, different animal husbandry practices and possible solutions for improving the production potential of dairy animals. The structured interview schedule contained both closed and open-ended questions in order to maximize the amount of data collected.

RESULTS AND DISCUSSION :

1. **Dairy animal population and production potential :** Average population (heads/ farmer) ranged (Table 1) from 0·50 to 1·53 and 0 to 0·13, respectively for non-descriptive and

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crossbred cattle. It was observed that non-descriptive cattle were more than crossbred cattle held by large farmers. A similar trend was observed in non-descriptive and graded buffalo population with a range of 0·20 to 3·94 and 0 to 0·80 (heads/farmer), respectively. Marginal farmers and landless labour didn't have either crossbred cattle or graded buffalo with them as the cost of animal and maintenance were more when compare to non-descriptive animals. Higher population (heads/farmer) in case of large farmers was reflecting their economic soundness. Average milk yield (l/day/head) ranged from 1·1 to 1·25 and 5·0 to 5·5, respectively for non-descriptive and crossbred cattle.Although the population is low, even than higher milk production (l/head) was recorded in cattle (non-descriptive) belongs to landless labour. It seems mainly due to proper care of their income generating assets. Non-descriptive and gradedbuffalo milk yield (l/day/head) ranged from 2·0 to 3·0 and 6·4 to 6·67, respectively. Significantly higher production (l/head) was recorded both in crossbred cattle and graded buffalo compare to non-descriptive animals. Among the crossbred cattle and graded buffalo, higher production was recorded in buffaloes. Although the cross bred cattle and graded buffaloes consist only17percent to the total population, they contributed 38·19 percent (160 l/day) of total milk production of the selected farmers. A wide variation in calving interval of individual animals was observed.Calving interval of two years and more was observed in non-descriptive cattle (89%) and buffaloes (92%).

Table 1. Dairy animal population and production potential in the study area

Parameter	Cattle								Buffaloes							
	Non-descriptive				Crossbred				Non-descriptive				Graded			
	L	S	M	LL	L	S	M	LL	L	S	M	LL	L	S	M	LL
Animal Population	46	20	10	4	4	2	–	–	142	14	2	8	24	20	–	–
Average Animal Population/farmer (heads)*	1·53	0·56	1·00	5·503	0·1	0·06	–	–	3·94	0·39	0·20	1·00	0·80	0·56	–	–
Average Milk yield/head (1/day)**	1·13	1·2	1·1	1·25	5·5	5·0	–	–	2·56	2·86	3·0	2·0	6·67	6·4	–	–
Calving interval (months)	15-24	18-24	18-26	16-26	14-15	14	–	–	16-26	15-24	18	20-28	16-17	15-18	–	–
Milk production (1/day)**	26	12	5·5	2·5	11	5	–	–	182	20	3	8	80	64	–	–

L = Large farmers,   S = Small farmers,   M = Medium Farmers,   LL = Landless labour

Values are average of 30 consecutive days during the study period

2. Purpose of cattle and buffalo rearing : In large farmers (86·7%), the very purpose of cattle and buffalo rearing (Table 2) was source of additional income generation, followed by source of milk and very least purpose was source of draught power as most of the farming practices were now a days became mechanized. A similar trend was observed in case of small farmers.

Table 2. Farmers' purpose in cattle and buffalo rearing in the study area

Purpose	Large Farmers		Small Farmers		Medium Farmers		Landless Labourers	
	No.	%	No.	%	No.	%	No.	%
Source of additional income	26	86·7	36	100	10	100	8	100
Source of draught power	4	13·3	10	27·8	4	40	63	75
Source of Milk	20	66·7	28	77·8	10	100	8	100
Source of manure	14	46·7	18	50·0	6	60	8	100
Inheritance	4	13·3	8	22·2	4	40	2	25
Social status	8	26·7	2	5·6	2	20	–	–

Medium farmers responded in similar way except social status being their least purpose, as the income from milk would equally contribute to the total income along with cultivation. Source of manure is as equal as source of additional income generation and source of milk for landless labourers. The large, small and medium farmers utilize the manure as fertiliser for their land, where as the land less labour has no option other than selling out, hence the manure is equally important as milk in income generation.

3. Net income from the milk production : The net income (Table 3) from the milk production (rupees/day/farmer) indicated that about 55% of the farmers owing non-descriptive cattle did not get any return since the milk production was very low and the total income from milk was just enough to meet the daily expenses in feeding. Another 37·5% farmers had income up to rupees 10 and 7·5% between 11-20 per day. Among the farmers who maintained crossbred cattle, about 33·3% of the farmers had a daily income between 41-50 and 66·7% of the farmer's 51-60 rupees. Fifty-four farmers (32·5%) who maintained non-descriptive cattle and buffalo did not get any return. A daily income between rupees 61-70 and 71-80 observed in 58·3 and 41·7% of the farmers, respectively who maintained graded buffaloes.

Table 3. Net income (Rs/day/head) from the milk production

| Purpose | Cattle | | | | Buffalo | | | |
| | Non-descriptive | | Crossbred | | Non-descriptive | | Graded | |
	No.	%	No.	%	No.	%	No.	%
Nil	44	55·0	–	–	54	32·5	–	–
1–10	30	37·5	–	–	76	45·8	–	–
11–20	6	7·5	–	–	26	15·7	–	–
21–30	–	-	–	–	6	3·6	–	–
31–40	–	–	–	–	4	2·4	–	–
41–50	–	–	2	33·3	–	–	–	–
51–60	–	–	4	66·7	–	–	–	–
61–70	–	–	–	–	–	–	14	58·3
71–80	–	–	–	–	–	–	10	41·7

Assumptions : No extra labour involvement
Milk price (4% FCM) = 10·50 Rupees/kg

4. Buffalo calf mortality : A wide variation was observed in buffalo calf mortality among different categories of farmers. The male calves were not taken care of properly during their early life assuming no additional income generation from them. Moreover mechanization of farming practices, in addition to the shortage of fodder and economic problems further led to negligence of male calves.

Table 4. Buffalo calf mortality among different farmers (%)

| Farmers | Male calf | | | Female calf | | |
| | Population | Mortality | | Population | Mortality | |
		No.	%		No.	%
Large farmers	18	8	44·4	28	2	7·14
Small farmers	14	4	28·6	4	–	–
Medium farmers	–	–	–	2	–	–
Landless labourers	4	2	50·0	4	2	50·0
Total	**36**	**14**	**38·89**	**38**	**4**	**10·53**

* Data is on the basis of recall of events by the farmers for the last 12 months form the date of study.

5. Constraints in cattle and buffalo rearing and production : The major constraint expressed by large farmers was lack of veterinary hospital as it essential in amelioration of day-to-day problems in dairy animal health and management for optimum production, followed by shortage of green fodder especially in summer. All the small farmers expressed shortage of green fodder as their main constraint in cattle and buffalo rearing, followed by lack of veterinary hospital. No single farmer was aware of fodder conservation techniques. The water scarcity problem especially during the summer leading to fooder scarcity in this region. Poor market facilities were considered as an important constraint in production by the large and small farmers, as they contribute about 96 percent of the total milk production. The medium farmers and landless labour expressed lack of loan facilities as their major constraint in production as the money/economy being the major limiting factor for their further development and were unable to purchase and maintain large number of dairy animals, hence they need some assistance in the form of loan.

Table 5. Constraints expressed by the farmers in cattle and buffalo rearing

Farmers / Constraints	Large		Small		Marginal		Land less		Pooled	
	R	S	R	S	R	S	R	S	R	S
Shortage of green fodder	I	3	I	3	I	3	I	3	I	12
Shortage of grazing land	II	2	II	2	III	1	I	3	V	8
Shortage of water in summer	III	1	III	1	II	2	I	3	VI	7
Lack of veterinary Hospital	I	3	II	2	I	3	I	3	II	11
High cost of drugs	II	2	II	2	I	3	I	3	III	10
Lack of knowledge about diseases	III	1	I	3	II	2	I	3	IV	9
Poor market facilities	I	2	I	2	I	2	II	1	VI	7
Lack of loan facilities	II	1	II	1	II	1	I	2	VII	5

R = Rank, S = Score

CONCLUSION :

It can be concluded 5small-scale dairy farming has substantial contribution in achie- ving the white revolution and enhancing the per capita availability and consumption of milk in India. The major contribution in the milk production and daily income of the farmer is from the cross-bred cows and graded buffaloes, hence the dairy farming with crossbred cows and graded buffaloes is highly remunerative enterprise and the farmers can get maximum benefit if the risk factors like under feeding, disease incidence and infertility are kept in check. Strengthening of dairy extension needs considerable attention; Effective training should be given small dairy holders to improve their technical skills on fodder preservation, feeding and management of dairy animals. This will help in prosperity and employment of rural youth and check the migration to the urban areas.

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