



## Study of Socio-economic Status of Farmers Management Practices at Selected Dairy Farms in Uttar Pradesh

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### ABSTRACT

According to the current data the population of the cattle in our country was drastically increased in few years and their contribution in the total milk production was remarkable. Generally, the small & marginal farmer who maintains bulk of the livestock in the country, are the targeted group in this study. It benefited poorly endowed areas like drought prone, arid and semi-arid areas. The sector also provided additional employment opportunities to the people in the rural areas especially to the female population who manage the livestock in the household, thereby empowering rural women with livestock in the household, proving as a source of economic empowerment. In present investigation had surveyed a total of 71 farms from different districts of Uttar Pradesh which were mostly private and trustee and the actual observation of each and every farm has been taken into account. The present paper attempted to study the type of farm ownership, existing animal pattern on the farm, percentage of animal on different categories on the farm, housing pattern, feeding pattern, breeding pattern, labour pattern, milking pattern, health care pattern and source of water available at the farm as a whole and to the farmer in individual, which plays a vital role in the production of milk and farm management. It was found that the socio-economic status indirectly influence the milk production of the dairy farms.

### HIGHLIGHTS

- Investigated farm management practices, all of which play an important role in milk production and farm management.
- About 40% of animals were in milking and rest of the 60 per cent of the animals are dry.

**Keywords:** Socio-economic status, Management practices, Dairy herds, Feeding, Farm labour

India is endowed with the livestock population accounting for 16 per cent of the world cattle and 57 per cent of world's buffalo population. Domestic animals in India play an important role in supplementing the income of rural masses particularly those of the landless, small and marginal farmers. Animal component constitute over 30 per cent of the country's gross agricultural output. Population of cattle in the country was increasing till 15<sup>th</sup> census in 1992. However, population of cattle decreased from 204.58 million in 1992 to 198.88 million in 1997 & again to 187.38 million in 2003. From the results of 16<sup>th</sup> Livestock Census conducted in 1997 and 17<sup>th</sup> Livestock Census conducted in 2003, it has been observed that there is clear shift of preference towards high yielding animals.

As per livestock censuses of 1997 and 2003, crossbred cattle population has increased by 22.82 per cent and indigenous cattle population has decreased by 10.23 per cent (Belakeri *et al.*, 2017). The buffalo population has increased from 89918 thousands to 97922 thousands thus registering an increase of about 9 per cent. There is a decline in indigenous male cattle population, which may be due to mechanization of agricultural activities. The data

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of 1997 and 2003 shows that there is 14 per cent decrease during the period. Similarly, female indigenous cattle population decreased by 6.34 per cent during the same period. Further, the increase in female crossbred cattle and female buffalo population was 34 per cent and 12.26 per cent respectively. The decrease in indigenous cattle population and increase in crossbred cattle population with overall increase in milk production indicates preferences for crossbred cattle population. Only a limited number of studies are on record in this field under the Indo-Gangetic agro-climatic conditions. There is a need to carryout a comparative study to bring out the significance of various practices pertaining to herd management with different categories of lactating cattle. Accordingly the present investigation envisages.

The approach to the 11th Plan envisages achieving an overall growth between 6 to 7 per cent per annum for the sector as a whole, with milk group achieving a growth of 5 per cent per annum and meat and poultry achieving a growth of 10 per cent per annum. The benefit of higher growth will be equitable, benefiting mainly the small & marginal farmers and landless labourers who maintain bulk of the livestock in the country. It will also benefit poorly endowed areas like drought prone, arid and semi-arid areas. The sector will also provide additional employment opportunities to the people in the rural areas especially to the female population who manage the livestock in the household, thereby empowering rural women with livestock in the household, proving as a source of economic empowerment

Over the past several plans, measures have been taken to improve productivity and production to meet the growing demand for livestock products in the country. These included up gradation of genetic stocks, improved feed, fodder and nutrition management, provision of improved health services and building up market infrastructure for livestock products to ensure that the primary producers get a remunerative price. However, the animal husbandry sector has a very large untapped potential for both improving economy and creating employment opportunities in the rural area.

### Locale of the Study

The state of Uttar Pradesh which area-wise occupies the fourth place and population-wise ranks first amongst all

states in the country, has an area of over 2,94,411 sq. kms. It spreads from 24° to 31° north latitudes and from 77° to 85° longitudes. It is divided into 57 districts and comprises of 1,12,566 inhabited villages (Pandu *et al.* 2022). Its population has been estimated at over 11.08 crores which accounts for 16.18 per cent of the country's population, of the 82.1 per cent are living in rural areas (Siddiki *et al.*, 2015). It has a population of over 3.23 crore workers, of which the 1.89 crores are cultivators and 5.17 millions form the agricultural labour force. The whole Uttar Pradesh is differentiated into three agro-climatic zones, viz. (I) the hilly region, (ii) the Gangetic alluvium and, (iii) the central plateau (Anonymous, 1976). Since this study was confined to the Uttar Pradesh, farms were selected randomly, which falls under the last two zones. The description of agro-climatic variables has been limited to these only. Falling under the sub-tropical interior belt of country, these regions display the typical seasonal rhythm of the monsoon climate. The month of January and February in winter are the coldest and summer months of May and June are hottest which causes a wide fluctuation in temperature ranging from 5° – 17 °C during winter to 27° – 42 °C in summer months. The average normal rainfall received in these regions about 96 - 102 cms. and its duration spreads over 44 - 48 days (Pandu *et al.*, 2022). About 50 per cent of there is received during the months of July to September. The soils are fertile consisting mostly of alluvial, calcareous, clay, sandy loam and red loamy and the main crops grown are wheat, rice, barley, gram, maize and millets. As per the 1982 census, the state had a milch animal population of 1.45 million of which 46 per cent are cattle and 54 per cent are buffaloes (Gupta, 1988), which have been estimated to produce over 7.9 million tonnes of milk during 1988-89 (Stephen, 2007). As per the 1982 census, the total population of cattle and buffaloes in U.P. has been estimated as 41.9 millions (Maurya *et al.*, 2021). It has been most benefited by the Green Revolution and Operation Flood-II which have made it the most developed agricultural and dairying region of the state (Zimmermann, 2012). The milk production units situated with in the rural and urban areas of the Uttar Pradesh situated under Gangetic plain and the central plateau regions of the state were chosen for this study.

### Methodology

For this purpose a questionnaire or information sheet

containing questions or columns to record information about the description of the unit, herd statistics, data on animals house, different buildings and farm sheds, feeds and feeding, breeding, milking, milk production performance, the herd information's about various dairy operations. viz. cleaning of sheds, health care and hygiene, farm sanitation, veterinary work, daily working schedule of the unit and about the member or personnel employed and cost incurred on all these items was prepared.

The data were collected using the Performa of the questionnaire during the period from 2006-07. For this the dairy farms were visited by the author individually for a day and time spent by workers in doing various dairy operations and the cost spent on the various items of input at the farms were recorded by actual observations and the various farm records. Additional information were obtained by discussions and interviews with the owner and persons working in the dairy units and from the records, if any, available at the private and trustee dairy farms.

Multistage stratified random sampling procedure was used to the selection of milk producers for the study. A precise sampling design adopted in the present study for the selection of dairy-herds. The data collection comprised of two parts. The first part consisted of general information of the selected dairy units at the beginning of the study and the second comprised of information on the individual cost component at selected farms during the visit of investigator. The bovines in the study area were classified local ,cross bred cow and buffaloes

### Statistical Analysis

The data collected during the period of inquiry were scrutinised, coded, appendices were prepared, tabulated and compiled systematically. Commensurate with the objectives of the study, tabular and functional analysis were performed as the empirical tools in the present study. These tools of economic analysis are presented and discussed in the section that follow:

### Tabular Analysis

In order to ascertain the socio-economic profile of dairy owners, and its variation in different areas and producer groups, tabular analysis was employed. The detailed information on the following aspects was studied with the help of tabular analysis.

1. Socio-economic characteristics of different farm owners
2. Existing Animal Pattern on the Farm
3. Existing Housing Pattern on the Farm
4. Percentage of animal on different categories of farm
5. Existing Pattern of Feeding on the Farm
6. Existing Pattern of Breeding on the Farm
7. Existing Pattern of Labour on the Farm
8. Existing Pattern of Milking on the Farm
9. Existing Pattern of Health Care on the Farm

### RESULTS AND DISCUSSION

For the very first objective, the survey of the different dairy farms has been carried out and data regarding different heads are presented in the following table for the achievement of the aforesaid goal. This table 1 includes socio-economic characteristics of different farm owner, existing animal pattern on the farm, percentage of animal on different categories on the farm, housing pattern, feeding pattern, breeding pattern labour pattern, milking pattern, health care pattern and source of water has been tabulated.

It has been seen that in small category of farms, the farm owners are mostly in the age group of 25 to 45 years and their mean is 34 years, for the medium category of farms it was 30-50 years and their mean is 40 years and for the large category of farm owners the range of age group was 35-50 years and their mean was 45 years. As far as, education is concerned most of the farm owners in different category of farms were literate and the highest educational qualification was post graduation in different streams. Mostly farm owners were male and married. No farm owner has been seen as female and only few were unmarried. Family size of most of the farm owners were in the range of 10, 12, 9 as the maximum and for the minimum 5 members in the family. In the small category of farms most of the owners have an experience of as more as 7 years and as low as 4 years. For the medium category of farms the experience ranges from 5 to 12 years and for the large category of farms it was 8 to 15 years. The total annual income of the farm owners were in the range of on an average ₹ 38666, 157000 and 263000 respectively for the small, medium

**Table 1:** Socio-economic characteristics of different farm owners selected under study

Factors	Small			Medium			Large		
	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean
Age	45	25	34	50	30	40	50	35	45
Education	Graduation	Matric	—	P.G.	Matric	—	P.G.	Inter	—
Gender	Male	Male	—	Male	Male	—	Male	Male	—
Marital Status	Marr.	Unmm.	—	Marr.	Marr.	—	Marr.	Marr.	—
Family Size	10	5	7	12	6	8.4	9	6	6.6
Experience	7	4	5.5	12	5	8	15	8	11.25
Ann. Income	50000	30000	38666	120000	250000	157910	350000	200000	263000

**Table 2:** Existing Animal Pattern on the Farm

Type of Farms\ Animals	Cow			Buffalo			Both	
	Adult (>18 mnths)	Calf (Upto 6 mnths)	Adult (>18 mnths)	Calf (Upto 6 mnths)	Adult (>18 mnths)	Calf (Upto 6 mnths)	Adult (>18 mnths)	Calf (Upto 6 mnths)
Small	7	6	6	5	2	2		
Medium	8	7	20	19	20	18		
Large	4	4	0	0	4	3		
<b>Total</b>	<b>19</b>	<b>17</b>	<b>26</b>	<b>24</b>	<b>26</b>	<b>23</b>		

**Table 3:** Existing Housing Pattern on the Farm

Type of Farm	System of Housing			Tying System			Calf rearing			Floor type		
	Loose	Barn	Both	Single Row	Double Row		Suckling	Weaning	Both	Pucca	Kaccha	Both
					Face to Face	Tail to Tail						
Small	15	0	0	15	0	0	15	0	0	0	5	10
Medium	10	15	23	0	6	42	32	4	12	11	0	37
Large	0	0	8	0	0	8	0	2	8	0	0	8

and large category of farm owners. According to Stephen, (Maurya *et al.*, 2021), socio-economic factors of farmers on the milk production of crossbred cows in which a basic study on milk production of crossbred cattle showed that the different centers, years of calving, parity and herd strength exerted highly significant influence on milk yield and the season of calving had significant effect at 5 per cent significant level. Socioeconomic factors of farmer such as land holding, occupation, educational levels type of sheds did not influence the milk yield of cows. The next table 2 shows the type of animal present on the selected dairy farms which were categorized as only cow, only buffalo and both category present on the different selected farms under the study.

The table 2 shows that in small, medium and large farm categories contain 7, 8 and 4 in cows; 6, 20 and 0 in

buffaloes and 2, 20 and 4 respectively numbers of farm in both type (cow and buffalo). On total 19 farms were having only cow, 26 farms were having buffalo and 26 farms had both cow and buffalo. The table 3 shows the existing housing pattern, tying system, calf rearing and floor type present on the selected dairy farms.

In system of housing the small, medium and large farm categories contains 15, 10 and 0 in loose type; 0, 15 and 0 in barn type; while, 15, 0 and 0 respectively, numbers of farms in both type. Similarly, in tying system single row 15,0 and 0; double row (face to face) system 0,6 and 0; double row (tail to tail) system 0,42 and 0 respectively, numbers of farm. Likewise, in calving system suckling type 15, 32 and 0; in weaning type 0, 4 and 2; in both types 0, 12 and 8, respectively, numbers of farms. Also, in floor type in *pucca* 0, 11 and 0; in *kaccha* 5, 0 and 0; in both types

10, 37 and 8 respectively, numbers of farm. Next table 4 shows the percentage of milking and dry animal present the farm under study which is very important aspect for any farm to sustain in the long run to provide the profit for the uplift of living standard of farming population.

**Table 4:** Percentage of animal on different categories of farm

Sl. No.	Category of Farm	Milking percent	Dry Percent
1	Small	39.69	60.30
2	Medium	45.48	58.53
3	Large	63.62	36.37
	<b>Total</b>	<b>51.41</b>	<b>48.58</b>

According to above table, in small category of farms only about 40 percent of animals were in milking and rest of the 60 per cent of the animals are dry. In case of medium category of farms about 45 per cent of the animals were in milking condition and rest of the about 55 per cent of animals were in dry condition. As far as large categories of farms were concerned only about 51 per cent of the animals were in milking condition and rest were in dry condition. Next table 5 shows the feeding pattern of farm animal on the selected farms under study.

**Table 5:** Existing Pattern of Feeding on the Farm

Type of Farm	Concentrate (No. of time in a day)	Green (No. of time in a day)	Dry (No. of time in a day)
Small	2	2	2
Medium	2	2	2
Large	2	2	2

In all categories of farms viz. small, medium and large type of farm the concentrate, green and dry feed is given two times a day. Optimization of sustainable dairy-cow feeding systems with an economic-ecological LP farm model using various optimization processes”, in which author has tried to show that feed production accounts for a substantial proportion of the environmental impact of animal husbandry. To enable assessment of the sustainability of dairy-cow feeding systems, a life cycle assessment (LCA) as well as additional social indicators was incorporated at farm level in a linear optimization model. Various feeding strategies were investigated using different optimization options for multi-objective problems. The feeding of by products from the food industry

can reduce the environmental impact of milk production, but such by products can only be used on a limited basis. Fairly significant reductions are possible by decreasing the use of concentrates and increasing the percentage of roughage. Incorporating the sustainability evaluation in the farm model allows us to selectively consider different multi-objective systems in the optimization process, and to define the Pareto-efficient solution space (Zimmermann, A. 2012). Next table 6 shows that breeding pattern being followed on the different types of farms selected under study. In which mainly two types of breeding pattern were followed, natural system of breeding and artificial insemination.

**Table 6:** Existing Pattern of Breeding on the Farm

Type of Farm	System of Breeding		
	Natural	AI	Both
Small	10	0	5
Medium	19	3	26
Large	0	0	8

In system of breeding natural the small, medium and large farm categories contains 10, 19 and 0 in natural type; 0, 3 and 0 in AI type; 5, 26 and 8 respectively, numbers of farms in both types. Some of the study conducted in the improvement of breeding practices includes comparisons of feeding, the management of reproduction, calf rearing, milk recording, breeding organization, and the economic of buffalo farming in Italy and Asia. Authors have given the first priority for the development of the buffalo industry in Asia is to improve nutrition. It is also necessary to establish the infrastructure for breed improvement and production recording (Sastry and Gall, 1985). In this series the next table 7 shows that the pattern of labour use on different type of farm selected for this study. The labours employed were on daily wages basis.

**Table 7:** Existing Pattern of Labour on the Farm

Type of Farm	Daily Wages			Permanent		
	Male	Female	Both	Male	Female	Both
Small	2	0	13	0	0	0
Medium	11	0	37	0	0	0
Large	0	0	8	0	0	0

In daily wages small, medium and large farm categories having 2, 11 and 0 in male; 0, 0 and 0 in female; 13, 37

and 8 numbers of farms in both. Similarly, in permanent 0, 0 and 0 respectively, numbers of farms in all male, female and both. A study of landless, small and large farms in Haryana, India, by Mishra *et al.* (2020) showed that net cost of producing a liter of buffaloes milk decreased with increase in size of land holding. Expenditure on green fodders and concentrates had a positive effect on milk yield in all categories; expenditure on dry fodder or human labour had a negative effect on milk yield in the landless category. Next table 8 shows the existing pattern of milking on the farm in which hand milking includes full hand, striping and knuckling method of milking, number of milking done per day (Sharma *et al.*, 2022).

**Table 8:** Existing Pattern of Milking on the Farm

Type of Farm	Milking System		
	Hand Milking		Machine
	Full hand, Striping, Knuckling (All)	No. of Milking Done (Per day)	
Small	15	2	0
Medium	48	2	0
Large	8	2	0

According to above table, which shows the method of milking system, the small, medium and large farm categories having 15, 48 and 8 respectively, numbers of farm in hand milking; two times milking per day is done in all farm categories; zero numbers of farm adopt machine milking in all farm categories. Some of the past study reveals the buffalo keepers adopted various milking practices to great extent. They found the mean knowledge index in milking practices was 70.16 per cent whereas the adoption index was 67.85 per cent (Stephen *et al.*, 2014). Next table shows the pattern of health care and veterinary services available on the selected farms, in which on farm, off farm and both type of services of animal health care was presented in different category of farm.

**Table 9:** Existing Pattern of Health Care on the Farm

Type of Farm	Veterinary		
	On Farm	Off Farm	Both
Small	0	15	0
Medium	13	18	17
Large	0	0	8

In this category the availability of veterinary on the small, medium and large farm categories contain 0, 13 and 0 in on farm type; 15, 18 and 0 in off farm type; 0, 17 and 8 respectively, numbers of farm in both type. According to some past studies the small farmers were ahead to medium farmers. However, the large farmer’s level of adoption for health care practices was found to be higher to be higher as compared to other categories of farmers (Dagar and Upadhyay, 2022).

## CONCLUSION

The present paper attempted to study the type of farm ownership, existing animal pattern on the farm, percentage of animal on different categories on the farm, housing pattern, feeding pattern, breeding pattern, labour pattern, milking pattern, health care pattern and source of water available at the farm as a whole and to the farmer in individual, which plays a vital role in the production of milk and farm management. As far as large categories of farms were concerned only about 51 per cent of the animals were in milking condition and rest were in dry condition. This is scientifically not recommended for any farm to perform good and sustainable in long run.

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