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Man Power Utilization in Management of Different Groups of Cattle under Various Operations at Dairy Farm

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ABSTRACT

The present study was undertaken to investigate the man power utilization in management of different groups of cattle at Agrim dairy farm, Jaipur, Rajasthan. The study was carried out on 140 animals in different groups of animals under various operations which are milking, washing the animals, cleaning the shed, feeding, watering and miscellaneous works. The animals were divided into six groups i.e. milch (G_1), pregnant (G_2), dry animal (G_3), calves (G_4), heifers (G_5) and bull & bullock (G_6). It was observed that the average time taken in milking operation was 14.05±0.048 min/animal/day. The average time taken in washing and cleaning operation in milch, pregnant, dry cows, calves, heifers and bull & bullock was 9.85±0.058, 7.90±0.073, 7.25±0.060, 7.10±0.066, 8.95±0.069 and 8.75±0.077 man-minutes/animal/day, respectively. Milch cows took more time in washing and cleaning operation than other categories of animals. This might be due to clean milk production. Feeding and watering operation of milch cows also took more time over the pregnant and dry animals because of the additional work involved in soaking of concentrate mixture two times prior to feeding at the time of milking. Pregnant cows took more time for miscellaneous works because of additional care shown towards their management.

Key Words: Dairy Farm, Feeding, Manpower utilization, Management, Milking.

INTRODUCTION

Management plays a vital role in maintaining health and especially growth in cattle and buffalo. The man power requirement of dairy farm depends upon various managemental and other factors. The best housing for animals should allow proficient use of labour for various operations. Labour cost is next only to feed cost in the management of dairy farm hence greater the labour efficiency, larger the returns from dairying. Land, labour and capital are the three primary resources in a dairy farm. Livestock sector provides on an average 35 million human employment per year (http://www.agriinfo.in). Labour management practices in agriculture are a marginally and fragmentally researched subject with limited theoretical background in agricultural economics (Mugera and Bitsch, 2005). Estimation of labour required for different dairy farm activities reduces the wastage of labour force. Labour requirement of a dairy farm depends upon various factors *viz.,* the efficiency of labourers, species, type and number of animals maintained, feeding practices, the design of animal housing, the degree of mechanization etc. Growing competition has led to continuing consolidation and increasing reliance on hired labour. Availability of employees is the most common pre-expansion labor management challenge for dairy farmers. The

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average total labour requirement was lower in loose cow sheds than in tie-stalls. The dairy farming is a labour intensive enterprise as compared to crop production and other allied enterprises. It has been estimated that on an average one person can look after all activities of 10 milking animals along with their followers excluding the work of harvesting of fodder. Kaur (2015) revealed that the participation of majority of women was high in activities such as cleaning of cattle shed, watering, milking, feeding the animals and disposal of cow dung and least in dairy related record maintenance, getting loans or credits from the banks, taking animals for grazing, fodder collection and harvesting the fodder crops.

The dairy farming is a two-stage production system, i.e. cultivation of fodder crops and management of milch animals, currently contributes about 187.7 Mt (Anonymous, 2019) of milk. Man-power is the most critical resources which influence the profitability of dairy farming. Judicious use of man-power is the major challenge faced by dairy farmers. Information about the man-power utilization for various dairy farm operations is essential from the viewpoint of man-power deployment and management. Studies on man-power utilization for different types of dairy farm unit seem to be a logical approach for assessing the labour requirement on dairy farming. The results of labour use will help in incorporating the available scientific knowledge and make the best use of available resources and time in management of dairy farms. By these studies efficiency of the labour can be increased to a greater extent. Man-power and energy utilization for the dairy farm depends largely on the type, condition and lay-out of the building, working efficiency of the labour, species and number of animals maintained, categories of animals, method of milking, feeding practices as well as types of feed and fodder, distance of fodder field from the animal house and degree of mechanization in farm.

Proper management of labour is a must for earning profits in dairy farming in the present day competitive market. Hence, the present investigation was undertaken to estimate the time requirement for various dairy farm operations of different categories of animals for efficient utilization of labour force.

MATERIALS AND METHODS

The aim of the present investigation was to examine the man-power utilization in management of different groups of dairy animals.

Table 1. Herd strength of different categories of animals at Agrim dairy farm

Group	Category of animals	Strength
G_1	Milch	75
G_2	Pregnant	15
G_3	Dry	10
G_4	Calves	16
G_5	Heifers	20
G_6	Bulls & Bullock	04
Total		140

The current study was conducted on man power utilization in management of different groups of cattle at Agrim dairy farm, Jaipur located 80 km from SKN College of agriculture, Jobner, Jaipur. The housing system adopted at dairy farm is loose housing as well as conventional barn. Two types of labour temporary and permanent as well as male and female were engaged on dairy farm for routine work (Table 2). Total 14 labourers were occupied on dairy farm for routine operations.

Table 2. Type of Labour at Agrim dairy farm.

Type of Labour	Agrim dairy farm		
	Male	Female	Total
Permanent	08	02	10
Temporary	02	02	04
Total labour	10	04	14

Data Recorded of Time Taken in Various Activities

The data were recorded without disturbing the

normal ongoing routine activities of the farm. The labours engaged in the livestock farm activities were also not conscious about the recording of data. The study was carried out in different groups of animals, which were basically categorized according to their status of animals. These animals were maintained in different sheds of the farm according to their groups. The animals were divided into six groups. The various operations are milking, washing the animals, cleaning the shed, feeding, watering and miscellaneous works. The miscellaneous works included deworming, vaccination, dehorning, A.I and treatment of animals. In case of bulls grooming the skin, exercise and servicing were also included. The data obtained from the study was analyzed by using statistical tools as per the procedure laid down by Snedecor & Cochran (1994). The different statistical tools such as mean, standard error (SE) and coefficient of variance (CV) were worked out to compare the data.

RESULTS AND DISCUSSION

Average time taken in various activities on milch, pregnant and dry animals was presented in Table 3. The average time taken in milking operation was 14.05±0.048 man-minutes /animal/ day. These findings were in accordance with those observed by Sreedhar and Ranganadham (2009). However, Brien *et al* (2007) observed that labour requirement for milking operation is 17.29 minutes. Sathiyabarathi *et al* (2015) observed that the labour requirement for milking process is the maximum (> 50%).

The average time taken for washing of animal and cleaning of shed in milch, pregnant and dry animals was 9.85±0.058, 7.90±0.073 and 7.25±0.060 man-minutes/animal/day, respectively. Milch animals required more time for washing and cleaning, while pregnant and dry animals required less time. This was because for producing clean milk production. Similar findings were reported by Sreedhar and Ranganadham (2009) and Panda and Samanta (2018).

The average time taken for feeding and watering of milch, pregnant and dry animals was 10.06±0.063, 8.27±0.070 and 7.45±0.065 man-minutes/animal/day, respectively. The feeding and watering operations required 25.55% of the total labour. Similar findings were reported by Sreedhar and Ranganadham (2009) regarding feeding and watering operations of milch cows. Sathiyabarathi *et al* (2015) reported that the labour requirement for the feeding operation was 25 per cent.

The average time taken for miscellaneous operation in milch, pregnant and dry animals was 0.97±0.043, 6.04±0.142 and 2.15±0.140 man-minutes/animal/day, respectively. It was reported that milch animals took less time for miscellaneous works where as pregnant animals took more time which might be due to the extra care shown towards their management. Similar findings were reported

Table 3. Average time taken for various activities on milch, pregnant and dry animals (man- minutes/ animal/day).

Sr. No.	Activity	Milch animal		Pregnant animal		Dry animal	
		Mean± S.E	C.V%	Mean± S.E	C.V%	Mean± S.E	C.V%
1	Milking operation	14.05±0.048	0.69	_	_	_	_
2	Cleaning	09.85±0.058	2.31	7.90±0.073	3.61	7.25±0.060	3.25
3	Feeding & Watering	10.06±0.063	2.43	8.27±0.070	3.31	7.45±0.065	3.43
4	Miscellaneous	0.97±0.043	7.66	6.04±0.140	4.76	2.15±0.140	11.27
5	Total working time	34.93		22.21		16.85	

Table 4. Average time taken for various activities on calf and heifers (man- minutes/animal/day).

Sr. No.	Activity	Calf		Heifer	
		Mean± S.E	C.V%	Mean± S.E	C.V%
1	Cleaning	7.10±0.066	3.71	8.95±0.069	3.00
2	Feeding & Watering	7.94±0.067	3.27	9.78±0.063	2.53
3	Miscellaneous	0.94±0.208	38.1	1.71±0.139	14.10
4	Total working time	15.98		20.44	

by Sreedhar and Ranganadham (2009) regarding miscellaneous operations. However, Wadhawani *et al* (2015) reported more time regarding miscellaneous operation of milch cows (8.9±0.1 man minutes /cow).

The total working time spent in various activities in milch, pregnant and dry cows was 34.93, 22.21 and 16.85 man-minutes /animal/day, respectively. The milking operation accounted 40.56% of the total labour requirement. The maximum time taken in milking operation than other operations might be due to combination of various activities i.e. handling of animal during milking, calf managed at milking, weighing and distribution of milk and method and interval of milking twice a day as well as time taken for milkman rope, wiping the udder, stimulating the udder, taking out first strip and actual milking time etc. for hand milking. The total working time spent in milch cows was 34.93 man minutes which is lower than the value reported by Sreedhar and Ranganadham (2009) for buffaloes. The difference in time required for cows over buffaloes may be due to the differences in managerial practices of cows. Milking operation was one which taking more time than other operation in management of milch cows. Feeding of milch cows took more time than pregnant and dry cows which might be due to the extra time required in soaking of concentrate mixture two times prior to milking.

Average time taken in various activities on calves and heifers was presented in Table 4. The average time taken for washing of animal and cleaning of shed of calves and heifers was 7.10±0.066 and 8.95±0.069 man-minutes/animal/day, respectively. Heifers took more time for cleaning operation, while calves took less time. This might be due to the difference in size of shed. Similar findings were reported by Panda and Samanta (2018).

The average time taken for feeding and watering of calves and heifers was 7.94±0.067 and 9.78±0.063 man-minutes/animal/day, respectively. Less time was observed in feeding and watering of calves, while heifers required more time in feeding and watering operation. This may be due to higher feed requirement based on their body weight.

The average time taken for miscellaneous operation in calves and heifers was 0.94±0.208 and 1.71±0.139 man-minutes/animal/day, respectively. The total working time taken for various activities in calves and heifers was 15.98 and 20.44 man-minutes/animal/day, respectively. It was observed that heifers required more total working time than calves. Similar findings was reported by Babu *et al* (2003) who found that total time spent for different activities of calf rearing ranges from 14.54 to 15.72 man- minutes/calf/day.

The average time taken in various activities on bull & bullocks was presented in Table 5. The average time taken for washing of animal and cleaning of shed of bull & bullocks was 8.75±0.077 man-minutes/animal/day. The average time taken for feeding & watering of bull & bullocks was 9.60±0.120 man-minutes/animal/day. The average time taken for miscellaneous work of bull & bullocks was 8.87±0.110 man-minutes/animal/day. It was reported that total working time required for bull & bullocks was 27.22 man-minutes/animal/ days.

Table 5. Average time taken for various activities on Bull & Bullocks (man-minutes/animal/day).

Sr.No.	Activity	Bull &Bullocks	
		Mean± S.E	C.V%
1	Cleaning	8.75±0.077	3.42
2	Feeding & Watering	9.60±0.120	5.34
3	Miscellaneous	8.87±0.110	2.15
4	Total working time	27.22	

CONCLUSION

It may be concluded that more time taken in milking operation than the other operations. The milch cows took more time in washing and cleaning operation than other categories of animals. Feeding and watering operation of milch cows also took more time over the pregnant and dry animals because of the additional work involved in soaking of concentrate mixture two times prior to feeding at the time of milking. Pregnant cows took more time for miscellaneous works because of additional care shown towards their management.

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