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OCCURRENCE OF DISEASES AND TIME UTILIZATION PATTERN OF DIFFERENT HOUSING SYSTEMS IN CROSSBRED COWS

A.U. GAWADE[1], S.M. BHOKRE[2] AND A.V. KHANVILKAR[3]

Department of Livestock Production and Management

Krantisinha Nana Patil College of Veterinary Sciences, Shirwal

Maharashtra Animal and Fishery Sciences University, Nagpur (M.S.)

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ABSTRACT

The present study was conducted to investigate the effect of housing system on occurrence of diseases and time utilization pattern. Sixteen advanced pregnant Holstein Fresian cows were randomly divided equally into two groups of eight animals each (Group A as under conventional tie barn housing system and Group B as under loose housing system). Both the groups were reared under similar system of feeding and management except housing system. Most of the major parameters of occurrence of diseases showed non-significant differences between conventional and loose housing system. Time requirement for feeding and cleaning operation was significantly higher ($P < 0.01$) in conventional housing system (94.02 ± 1.4 and 92.49 ± 2.9 mins) than, that of loose housing system (61.49 ± 0.77 and 66.86 ± 0.65 mins) however, time requirement for milking operation was significantly higher ($P < 0.01$) in loose housing system (233.2 ± 4.19 mins) than, that of conventional housing system (209.12 ± 4.2 mins).Total time (minutes) utilization per day in conventional housing was significantly higher ($P < 0.05$) than, that of loose housing system. Rearing of cows under loose housing is beneficial over conventional housing system which gives better milk production without affecting health and minimum time utilization for feeding and cleaning operations except milking operation time than, that of conventional housing system. Moreover,the rearing of cattle under loose housing system was cost effective than, that of the conventional housing system.

Key words: Holstein fresian cows, Housing, Occurrence of diseases, Time utilization pattern.

Dairy industry in India is emerging as the most dynamic and fast expanding component in the animal husbandry sector. Milk production in the country has increased from 112 million tones in the year 2009-10 to 122 million tones in the year 2010-11 and now increased to the tune of 127.5 million tones in 2013-14 and that to 135.8 million tones in 2015-16. Housing plays a key role in dairy cattle management. An ideal housing enables in moderating the range of microclimate to which the animals are exposed and the degree of comfort depends upon the types of housing. It also improves the dairy cattle productivity by protecting them from extreme climate (Sharma and Singh, 2002). Dairy housing systems have a substantial impact on the overall health and longevity of dairy cattle. The different housing systems like loose and conventional housing systems are used in dairy cattle. In recent years, there has been a trend for housing dairy cows in loose housing system. Loose housing system is suitable for most part of the country. This system is cheaper to construct, easier to expand or modify and flexible in their use. Feeding and management operations of animals are easier in this system because of common feeding and watering arrangements. Animals are comfortable and can move freely and express their natural group behaviour to great extent. Reproductive efficiency in widest possible meaning reflects adaptation. It has been suggested in many herds, that the lower reproductive performance of cows may be due to

1 M.V.Sc, Student, KNP College of Veterinary Sciences, Shirwal, Dist- Satara.

2 Corresponding author: Assistant Professor, Dept of LPM, KNP College of Veterinary Sciences Shirwal, Distt- Satara, E-mail: drsaibhokre@gmail.com.

3 Associate Professor and Head, Dept of LPM, KNP College of Veterinary Sciences Shirwal, Dist-Satara.

the fact that, they are being confined continually on concrete surfaces (Britt, 1982).The housing system should facilitate full expression of reproductive performance and minimizing of reproductive disorders. The main aim of the present study was to improve housing systems in existing dairy farming in order to favour better conditions of animal welfare, hygiene of milking animals and to reduce cost of rearing.

MATERIALS AND METHODS

Total Sixteen advanced (last trimester) pregnant Holstein Fresian (HF) crossbred cows which are in the second and third parity were selected from a well managed herd of private dairy farmers. These animals were randomly divided equally into two groups having eight animals in each group. Both the groups were reared under similar system of feeding and management except housing system. The cows were observed for recording of occurrence of dystocia daily for five days before expected date of parturition to till parturition, while retention of placenta after 12 hours of parturition and post partum genital prolapse after parturition. The cows were observed daily for estrus signs early in the morning and evening. Days of first post partum estrus, post partum conception, conception rate and service period was recorded.

RESULTS AND DISCUSSION

The occurrence of diseases was recorded for the period of four months during summer season, (February to May 2012) in terms of number of cases of foot diseases, metabolic diseases, infectious diseases and other diseases such as fever, indigestion in all months and is presented in Table No. 1.

The number of cases like occurrence of foot diseases, metabolic diseases, infectious diseases and other diseases in cows under loose housing system were 3, 2, 2 and 2, while under conventional housing system 4, 3, 4 and 2. The overall mean under loose housing was 2.25 ± 0.25 and under conventional housing was 3.25 ± 0.47.

Table 1: Occurrence of diseases (number of cases) in the crossbred cattle under conventional and loose housing system

Name of housing system/Variables	Conventional Housing system (Number of Cases)	Loose housing system (Number of Cases)
Foot diseases	4	3
Metabolic diseases	3	2
Infectious diseases	4	2
Other diseases	2	2
Average	3.25 ± 0.47	2.25 ± 0.25
t-value	2.44 NS	

NS- Non Significant (P < 0.05)

It was found that, housing system had no significant (P < 0.05) effect on occurrence of diseases. Simenson *et al.* (2010) reported lower incidence of metabolic diseases like ketosis, indigestion in free stalls than tie stalls. Matzke *et al.* (1989) reported significantly lower incidence of CMT-positive udder, udder infections and teat injuries in loose housing, however, in present study it was numerically lower in loose housing than conventional housing system. Further, Siebert and Senft (1984) reported less risk of other injuries like of leg, udder, dewlap, shoulder, hips and claws in dairy cows reared under loose housing than tying stalls. These findings were in agreement with the present findings. From the findings of the present study, it might be concluded that, the present study had been conducted for short duration and on the small size of experimental group.

The time requirement for milking, cleaning, feeding and other operations and total time requirement per day in minutes were recorded for all months and results are presented in Table No.2.

The average time requirement for milking, cleaning, feeding and other operations in cows under loose housing system were 233.20 ± 4.19, 66.86 ± 0.65, 61.49 ± 0.77, 24.74 ± 3.7 minutes, respectively and 209.12 ± 4.2, 92.49 ± 2.9, 94.02 ±1.4, 37.81 ±7.71 minutes, respectively under conventional housing system. The total time required for all operations performed under loose housing and conventional housing system were 286.32 ± 3.31 and 433.57 ± 9.87 minutes, respectively. Time utilization for feeding and cleaning operations in (minutes per day) in conventional housing was significantly higher (P < 0.01) than under loose housing system but time utilization for milking (minutes per day) in loose housing was significantly higher (P < 0.01) than, cattle under conventional housing system.

Table 2. Time utilization pattern (minutes per day) in crossbred cattle under conventional and loose housing system during the experimental period (4 months)

Month	Variables									
	Time for feeding		Time for cleaning		Time for milking		Time for other operations		Total time in 24 hrs.	
	Conventional housing	Loose housing	conventional housing	Loose housing	Conventional housing	Loose housing	Conventional housing	Loose housing	Conventional housing	Loose housing
February	91.27±0.57	60.06± 2.34	97.41±1.27	67.51± 1.71	210±1.87	236.37±4.86	49.65±0.35	31.82± 3.07	448.68±4.08	395.79± 6.24
March	92.54±0.48	61.28± 1.45	96.83±1.32	66.18± 2.02	211.45±1.45	238.56±2.62	49.8±2.87	17.71± 1.69	450.64±6.16	383.75± 7.79
April	94.76±1.28	63.67± 1.78	89.26±1.49	65.45± 1.71	208.26±1.46	237.19±0.57	17.34±1.44	19.03± 0.27	409.63±5.68	385.35± 4.34
May	97.53±1.55	60.96± 1.85	86.46±2.03	68.32± 0.92	206.8±.174	220.7±0.84	34.46±0.39	30.41± 0.62	425.33±5.72	380.41± 4.24
Overall mean	94.02±1.4	61.49± 0.77	92.49±2.9	66.86± 0.65	209.12±4.20	233.20±4.19	37.81±7.71	24.74± 3.7	433.57±9.87	386.32± 3.31
t-value	24.16 **		8.75 **		7.0 **		1.73		5.3*	

*Significant (P < 0.05) **Significant (P < 0.01)

Time utilization for other operations did not differ significantly (P < 0.05).Total minutes utilization per day in conventional housing was significantly higher (P < 0.05) than, that of loose housing system. It was revealed that, milking operation time was considerably higher in both housing systems However, was less than what it was observed by Nanda *et al*. (1988). They observed that, total milking operation time with calf work was 44.75 (minutes per day) per cow. However, in present study milking operation time under loose housing and conventional housing system were 233.20 ± 4.19 and 209.12 ± 4.2 minutes, respectively per day for all cows.

Labour for cleaning operation ranged from 8.18 to 12.17 minutes/cow which was less compare to Rai (1991).Findings on labour for feeding operation was in agreement with Singh (1989) However, it was considerably less compared to that reported by Rai (1991). Dosanjh and Gill (1994).

The (Number of cases) of occurrence of foot diseases, metabolic diseases, infectious diseases and other diseases in cows under loose housing system were 3, 2, 2and 2, and under conventional housing system was 4, 3, 4 and 2.The overall mean under loose housing was 2.25 ± 0.25 and under conventional housing was 3.25 ± 0.47.

CONCLUSION

The occurrence of diseases did not differ significantly (P < 0.05) in both groups of housing system in all months. The main reason might be the same construction material and flooring for both the housing systems.

Time utilization for feeding and cleaning operation per day in conventional housing was significantly higher (P < 0.01) than cattle under loose housing system, however, time utilization for milking operation was significantly higher (P < 0.01) under loose housing than under conventional housing

system. Total time (minutes) utilization per day in conventional housing was significantly higher ($P < 0.05$) than, that of loose housing system. So, loose housing system was the less labor time consuming compared to the with conventional tie barn system.

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