
RESEARCH ARTICLE

Performance in crossbreed cows under different housing systems

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Manuscript received: July, 10, 2017; Decision on manuscript: August, 25, 2017; Manuscript accepted: September, 15, 2017

Abstract

The effect of housing systems on reproductive disorder, reproductive performance, studied on Sixteen advanced pregnant Holstein Fresian cows and 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 reproductive disorder, reproductive performance showed Non-significant ($P<0.05$) differences between conventional and loose housing system. Total cost involved per day was significantly higher ($P<0.05$) in case of conventional housing when compared with loose housing system. Cost of fodder, treatment and miscellaneous items were did not differ significantly between housing system. Average weekly milk production was significantly higher ($P<0.01$) in loose housing (19.54 ± 0.26 kg/day) than in conventional housing system (18.26 ± 0.25 kg/day). Rearing of cows under loose housing is beneficial over conventional housing system which gives better milk production without affecting reproductive performance with minimum occurrence of reproductive disorders and minimum time utilization for feeding and cleaning except milking time, than conventional housing system. Moreover, the rearing of cattle under loose housing system was cost effective than the conventional housing system.

Key words: Reproductive disorder, reproductive performance, housing, cows.

Introduction

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 millions tones in 2013-14. 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 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 of animals is 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 the fact 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 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 in to two groups containing 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 dystokia 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 early in the morning and evening. Days first post partum estrus, post partum conception, conception rate and service period had been recorded.

Results and discussion

The reproductive disorders was recorded in terms of number of cases of dystokia occurrence, retention of placenta and post partum genital prolapse during and after parturition and are presented in (Table 1).The number of cases of dystokia, retention of placenta and post partum genital prolapse in cows under loose housing system were 1, 2 and 1 while under conventional housing system were 2. The overall mean of cases under loose housing and conventional housing system were 1.33 ± 0.33 and 1.66±0.33, respectively. The statistical analysis of the data indicated that, the housing system used for rearing of cows in the present study had no significant effect on occurrence of reproductive disorder (Table 2). However, Mee (2012) observed increased risk of occurrence of dystokia, particularly in heifers in confinement. Mandali *et al*., (2001) observed higher occurrence of metritis and dystokia (2.12%) in buffaloes reared in open yard system. They also reported that, the post partum genital prolapsed was highest (5.23%) in pakka housing system. These findings are in agreement with present study.

Table 1: Reproductive disorder (number of cases) in the HF crossbred cattle under conventional and loose housing system

Variables	**Name of housing system (number of cases)**	
	Conventional Housing	**Loose housing**
Dystokia	2	1
Retention of placenta	2	2
Post partum genital Prolapse	1	1
Average	**1.66±0.33**	**1.33±0.33**
t-value	**1.00 NS**	

NS- Non Significant (* P<0.05)

Table 2: Post partum estrus (in days) of the crossbred cattle under conventional and loose housing system

Conventional housing	Post partum estrus (days)	Loose housing	Post partum estrus (days)
A1	83	**B1**	28
A2	59	**B2**	45
A3	37	**B3**	60
A4	65	**B4**	81
A5	39	**B5**	63
A6	65	**B6**	34
A7	70	**B7**	38
A8	31	**B8**	41
Average	**56.125±6.5**	**Average**	**48.750±6.27**
t-value	**0.699 NS**		

NS- Non Significant (* P<0.05)

Table 3: Influence of conventional and loose housing system on post partum conception (days) of the crossbred cattle

Conventional housing	Post partum estrus (days)	Loose housing	Post partum estrus (days)
A1	181	**B1**	65
A2	92	**B2**	108
A3	151	**B3**	153
A4	152	**B4**	174
A5	92	**B5**	91
A6	127	**B6**	59
A7	173	**B7**	123
A8	52	**B8**	61
Average	**127.5±15.98**	**Average**	**104.27±15.53**
t-value	**1.341 NS**		

NS- Non Significant (* P<0.05)

Table 4: Conception rate (%) of the crossbred cattle under conventional and loose housing system

Conventional housing	Inseminations/ conception	Loose housing	Inseminations/ conception
A1	181	**B1**	65
A2	92	**B2**	108
A3	151	**B3**	153
A4	152	**B4**	174
A5	92	**B5**	91
A6	127	**B6**	59
A7	173	**B7**	123
A8	52	**B8**	61
Average	**2.25±1.08**	**Average**	**1.87±0.90**
Conception rate	**37.5 %**	**Conception rate**	**50%**
t- value	**0.890 NS**		

NS- Non Significant (* P<0.05)

Table 5: Service period (in days) of the crossbred cattle under conventional and loose housing system

Conventional housing	Service period (days)	Loose housing	Service period (days)
A1	107	**B1**	65
A2	92	**B2**	66
A3	88	**B3**	90
A4	89	**B4**	110
A5	92	**B5**	91
A6	86	**B6**	59
A7	90	**B7**	60
A8	52	**B8**	62
Average	**87.00±5.49**	**Average**	**75.37±6.72**
t-value	**1.463 NS**		

NS- Non Significant (* P<0.05)

The reproductive performance of HF cross bred cattle in terms of post partum estrus (in days) is presented in (Table 3).The days of post partum estrus in cows under loose housing system varies from 28 to 81 days and 31 to 83 days under conventional housing system. The overall mean, under loose housing, was 48.750 ± 6.27 days and under conventional housing was 56.125 ± 6.5 days. This is tested by t-test and it was found that housing system had no significant effect on post partum estrus (Table 3). From the overall result of the study it was concluded that the loose housing system might be given sufficient freedom to estrus expression and detection. The statistical analysis of the data indicated that the post partum conception (days) did not differ significantly between group (A) and (B). However, there was numerically increase in the post partum conception in days of cross bred cattle housed in conventional housing than loose housing system. The result of the present study is in agreement with the reports of Brestenesky *et al*., (1985).

The Inseminations (per conception) in cows under loose housing and conventional housing system varies from 3 to 1 and 4 to 1, respectively. The overall mean under loose housing was 1.87 ± 0.90 while under conventional housing system it was 2.25 ± 1.08.

The statistical analysis of the data indicated that, the conception rate of cattle housed in Group (A) and (B) is did not differ significantly (Table 4). The result of the present study is concurrent with reports of Reimers *et al.*, (1985) and Sharma (1999). It was concluded that the conception rate was significantly higher ($P<0.05$) in loose housing system than in conventional tie barn housing.

The range of service period in days of HF crossbred cattle reared under loose and conventional housing system was 59 to 110 and 52 to 107 days, respectively. The overall mean for service period (in days) of HF crossbred cows under loose housing system was 75.37 ± 6.72 while, it was 87.00 ±5.49 under the conventional housing system. (Table 5) The result of the present study is in agreement with the reports of Madke *et al.*, (2011).

Hence, it is concluded that, the type of housing system had non significant ($P<0.05$) effect on the occurrence of reproductive disorders viz. dystokia, retention of placenta and post partum genital prolapse in HF crossbreed cattle. This might be due to the fact that animals in both housing were provided with sufficient space and comfort. Loose housing system require less manpower time as compared to conventional housing system.

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