

Effect of Herd Size on Performance of Cross-bred Cows and Murrah Buffaloes in Achhnera Block of Agra District

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Abstract

An investigation entitled "Effect of herd size on performance of Cross-bred cows and Murrah buffaloes in Achhanera block of Agra district was carried out and found that the milk production of cross-bred cows (2688 ± 33.60 , 2616 ± 27.10 and 2331 ± 24.30 lit.) was significantly ($P \leq 0.01$) better than murrah buffaloes (2319 ± 24.30 , 2226 ± 21.70 and 1846 ± 18.80 lit.) in small, medium and large herd size groups, respectively. The lactation length of cross-bred cows (332 ± 10.20 , 340 ± 11.61 and 368 ± 20 days) was significantly ($P \leq 0.01$) high in cross-bred cows than murrah buffaloes (311 ± 7.60 , 322 ± 8.11 and 334 ± 10.60 days) in small, medium and large herd size groups, respectively. The dry period of cross-bred cows (56 ± 1.16 , 63 ± 2.06 and 82 ± 2.96 days) was significantly ($P \leq 0.01$) lower than that of murrah buffaloes (102 ± 3.41 , 114 ± 3.69 and 132 ± 4.11 days) in small, medium and large herds, respectively. The intercalving period of cross-bred cows (388 ± 11.80 , 403 ± 13.62 and 450 ± 15.20 days) was shorter than murrah buffaloes (413 ± 10.40 , 436 ± 11.64 and 366 ± 13.80 days) in small, medium and large herd size groups, respectively. The effect of herd size on lactation length, dry period and intercalving period were significant ($P \leq 0.01$) in both milch animals. The investigation revealed that the performance of cross-bred cows as well as murrah buffaloes was decrease with increase herd size, significantly ($P \leq 0.01$). Small as well as medium herd size was better than large herd size.

Key words : Cross-bred cows, dry period, herd size, lactation length, milk production, murrah buffalo.

Introduction

Before independence, milk production in India was below 20 million tones and quality was also very poor, owing to the white revolution, India has emerged highest milk producer in the world i.e. 112.5 million tones with per capita availability of 263 gm/day. (Tanwar and Kumar 2014).

India is blessed with huge bovine population of 199.10 million cattle and 105.30 million buffalo accounting 16.24 percent and 56.90 percent, respectively in world bovine population and stand first in the world in number of bovine population. (Livestock census 2007 GOI).

The lactation length affects the total milk production as well as income from lactating animals. Dry period is the unproductive period of the animal when the farmer has to feed and take care of the

animals from his own pocket without getting any income from the animal. Therefore, a shorter dry period in milch animals could put the farmer at a clear advantage from an economic point of view. The length of lactation and dry period of each species of animal are among intrinsic characteristic which are also affected to some extent by the managerial conditions. The exotic breeds of cattle are bestowed with a longer lactation but a shorter dry period because of inherent genetic potentialities. Cross-breeding of cows with these exotic breeds imparts these potentialities to the cross-breds which results in a longer lactation period and a diminished dry period. The present study communicate data on milk production as well as length of lactation, dry period and intercalving period affected by different herd size groups Bhaskar (2016).

Materials and Methods

The present investigation was conducted in 5 villages of Achhanera Block, of Agra district. The

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demand for milk and milk products for this vast consuming centre is met mainly by the milk producers of the neighboring villages. After selection of villages, a list of families having crossbred cows and murrah buffaloes was prepared. In all, 73 dairy farms were selected for this study. There were a total of 140 animals, out of which 73 were cross-bred cows and remaining 67 murrah buffaloes, Which belonged to different herd size groups. Herd size divided in to 3 groups, viz.

- (i) Small - having one animal
- (ii) Medium - having two animals
- (iii) Large - having more than two animals.

From each of the selected milk producers, detailed information regarding milk yield per lactation and per day, value of milk per lactation and per day, lactation length, dry period and intercalving period were collected. The information on all aspects of production and reproduction were collected through the records

maintained by producers and personal interview. Thus obtained were subjected to statistical analysis and tested at 1 & 5% level of significance. The data pertained to year 2019-20.

Results and Discussion

The Table 1 revealed that the lactation milk yield of cross-bred cows and Murrah buffaloes were found to be 2688 ± 33.60 and 2319 ± 24.30 , 2616 ± 27.11 and 2226 ± 21.72 and 2331 ± 24.60 and 1846 ± 16.83 litre in small, medium and large herd size groups, respectively. The per day milk yield per animal was also calculated and found to be 8.10 ± 0.26 and 7.46 ± 0.20 , 7.56 ± 0.19 and 6.91 ± 0.17 and 6.33 ± 0.16 and 5.53 ± 0.12 litres in aforesaid animals and herd size groups, respectively. These results revealed that the cross-bred cows have significantly ($P \leq 0.01$) greater milk yield than murrah buffaloes during different herd size groups. The same bred was observed in per day milk yield per animals in both ruminants. The herd size

Table 1: Production performance of Crossbred Cow and Murrah Buffaloes in different Herd Size Groups

Herd size	Cross Bred Cows	Murrah buffaloes	Test of significance
Milk production / Lactation / Animal (Lit.)			
Small	2688 ± 33.6 (13)	2319 ± 24.3 (17)	08.92 ⁺⁺
Medium	2616 ± 27.11 (28)	2226 ± 21.72 (18)	06.83 ⁺⁺
Large	2331 ± 24.6 (32)	1846 ± 16.83 (32)	12.27 ⁺⁺
Average	2504 ± 28.1 (73)	2068 ± 27.1 (67)	9.863 ⁺⁺
F-Value	5.14 ⁺⁺	4.91 ⁺⁺	
Milk Production per day per animal (Lit.)			
Small	8.10 ± 0.26 (13)	7.46 ± 0.20 (17)	7.161 ⁺⁺
Medium	7.56 ± 0.19 (28)	6.91 ± 0.17 (18)	5.872 ⁺⁺
Large	6.33 ± 0.16 (32)	5.53 ± 0.12 (32)	10.216 ⁺⁺
Average	7.12 ± 0.20 (73)	6.39 ± 0.16 (67)	
F-Value	4.81 ⁺⁺	3.98 ⁺⁺	
Value of Milk /Lactation/Animal (Rs.)			
Small	80640 ± 289.1 (13)	88122 ± 306 (17)	14.765 ⁺⁺
Medium	78480 ± 243.0 (28)	84588 ± 296 (18)	11.415 ⁺⁺
Large	69930 ± 230.6 (32)	70148 ± 242 (32)	4.113 ⁺⁺
Average	75117 ± 253 (73)	78588 ± 281 (67)	7.934 ⁺⁺
F-Value	6.13 ⁺⁺	5.642 ⁺⁺	
Value of milk per day per animal (Rs.)			
Small	243.0 ± 01.60 (13)	283.48 ± 2.11 (17)	4.319 ⁺⁺
Medium	227.0 ± 2.08 (28)	262.58 ± 2.06 (18)	6.821 ⁺⁺
Large	189.9 ± 01.16 (32)	210.14 ± 1.83 (32)	3.926 ⁺⁺
Average	213.6 ± 1.62 (73)	242.84 ± 2.01 (67)	4.936 ⁺⁺
F-Value	5.063 ⁺⁺	3.616 ⁺⁺	

Note: Figure in parentheses indicate number of animals. ++ = Significant $P \leq 0.01$

Table 2: Reproductive performance of cross-bred cows and Murrah buffaloes in different Herd size groups

Herd size	Cross bred cows	Murrah buffaloes	Test of significance
Lactation period in days			
Small	332 ± 10.2 (13)	311 ± 7.63 (17)	7.46 ⁺⁺
Medium	340 ± 11.6 (28)	322 ± 8.11 (18)	4.31 ⁺⁺
Large	368 ± 13.2 (32)	334 ± 10.62 (32)	9.83 ⁺⁺
Average	353 ± 11.4 (73)	325 ± 8.88 (67)	7.37 ⁺⁺
F-Value	5.162 ⁺⁺	4.169 ⁺⁺	
Dry period in days			
Small	56 ± 1.16 (13)	102 ± 3.41 (17)	14.63 ⁺⁺
Medium	63 ± 2.06 (28)	114 ± 3.69 (18)	12.18 ⁺⁺
Large	82 ± 2.96 (32)	132 ± 4.11 (32)	11.06 ⁺⁺
Average	70 ± 2.26 (73)	119 ± 3.74 (67)	12.39 ⁺⁺
F-Value	7.91 ⁺⁺	8.86 ⁺⁺	
Inter- calving production in days			
Small	388 ± 11.8 (13)	413 ± 10.4 (17)	4.112 ⁺⁺
Medium	403 ± 13.6 (28)	436 ± 11.64 (18)	3.912 ⁺⁺
Large	450 ± 15.20 (32)	466 ± 13.8 (32)	3.416 ⁺⁺
Average	423 ± 13.3 (73)	444 ± 11.4 (67)	
F-Value	11.691 ⁺⁺	14.213 ⁺⁺	

Note: Figure in parentheses indicate number of animals. ++ = Significant $P \leq 0.01$

have significant ($P \leq 0.01$) effect on milk production. The milk yield decrease with increase herd size in both milch animals.

The value of milk per lactation per animals and per day per animal was also calculated and found same effect as milk production. These observations indicated that small as well as medium herd size is better than large herd size groups in both milch ruminants.

Management by village families for augmenting milk production. With the increasing herd size it appears difficult to feed and manage these animals properly and consequently the level of milk production decreased. The milk production performance of murrah buffaloes under field conditions of study was found to be better than those already reported (Rao et. al. 2000)

The reproductive quality of cross-bred cows and murrah buffaloes in respect to lactation length, dry period and inter-calving period under different herd size groups was determined (Table 2) and found that the lactation length of cross-bred cows and murrah buffaloes in small, medium and large herd size groups was found to be 332 ± 10.2 and 311 ± 7.63 , 340 ± 11.6 and 322 ± 8.11 and 368 ± 13.2 and 334 ± 10.62 days,

respectively. The cross-bred cows have longer lactation period than murrah buffaloes in all herd size groups, significantly ($P \leq 0.01$). These results compared favourably with the results of Kumar and Gupta (1992) & Bhaskar (2016). Further, it is evident that the length of lactation in cross-bred cows and murrah buffaloes was influenced by herd size of animals. The dry period of cross-bred cows and murrah buffaloes in small, medium and large herd size groups were 56 ± 1.16 and 102 ± 3.41 , 63 ± 2.06 and 114 ± 3.69 and 82 ± 2.96 and 132 ± 4.11 days, respectively. The present study indicated that the dry period of cross-bred cows was significantly much shorter than that of murrah buffaloes in all herd size groups.

The table further revealed that the herd size had significant effect on dry period of cross-bred cows as well as murrah buffaloes. The dry period was increase with increase in herd size of both ruminants. The managerial conditions play vital role in influencing the dry period of cross-bred cows and murrah buffaloes. Since the farmer families pay greater heed to the smaller herds of animals; because it is difficult for them to manage a large herd size of animals, which is difficult to manage. The intercalving period of crossbred cows and murrah buffaloes in

above herd size groups were found to be 388 ± 11.80 and 413 ± 10.40 , 403 ± 13.62 and 436 ± 11.64 and 450 ± 15.20 and 466 ± 13.80 days, in small, medium and large herd size, respectively. The intercalving period of cross-bred cows was significantly ($P < 0.01$) shorter than murrah buffaloes in all herd size groups. The table further revealed that the herd size had significant ($P \leq 0.01$) effect on the intercalving period of both animals. The table further revealed that intercalving period was increased with increase in herd size of cross-bred cows as well as murrah buffaloes in all herd size groups. Hence, it could be inferred from present study that upkeep of crossbred cows is more profitable proposition than murrah buffaloes. The study further suggested that upkeep of small as well as medium herd size is better for both type of milch animals.

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