

Economic Performance of Cross-bred Cows and Murrah Buffaloes under Different Herd Size Groups

VIKASH BABU, BHIMSEN, M.L. BHASKAR AND RAJEEV KUMAR

Deptt. of Animal Husbandry & Dairying, R.B.S. College, Bichpuri, Agra

Abstract

The lactational milk yield of cross-bred cows and Murrah buffaloes in different herd size groups viz., small, medium and large was investigated and found that milk production of cross-bred cows was significantly ($P < 0.01$) higher in all herd size groups than Murrah buffaloes. The cost of milk production per litre was more in case of Murrah buffaloes as compared to cross-bred cows. It is due to low milk yield and higher net maintenance cost of Murrah buffaloes as compared to cross-bred cows. However, input-output ratio and net return per litre was higher in cross-bred cow than that of Murrah buffaloes. Thus maintenance of cross-bred cows is more profitable seeing the input-output ratio and net return per litre as compared to Murrah buffaloes. The study further revealed that large herd size was more suitable in case of cross-bred cows than of Murrah buffaloes.

Key words: cross-bred cow, Murrah buffaloes, milk production, input-output, herd size

Introduction

Livestock farming is the most suitable production system that has enormous potential to improve the socio economic status of the large percentage of the rural population. Currently dairying provides million farm families the triple benefit of nutritive food, supplementary income and productive employment. Dairy animals, apart from their role in milk production, contribute huge quantity of organic manure (Tanwar and Kumar 2014)

India is blessed with huge bovine population of 199.10 million cattle and 105.3 million buffalo accounting 16.24 and 16.9 percent, respectively, in the world population and stands first in the world in the number of bovine population (Livestock census 2007 GOI). The economics of milk production could be envisaged through two angles viz., 1) decreasing the unit cost of milk production and 2) increasing the milk productivity of milch animals. Any attempt to achieve these objectives will encourage the producers to produce more milk by mobilization of the available resource. Thus, Indian dairying has made a remarkable progress in our country despite large influx in human population (Kumar and Bhaskar 2013).

As per a recent estimate, 5 dairy cows in India produced as much milk as 1 dairy cow in USA and 10 dairy cows in India produced the quantity of milk that is produced by a single dairy cow in New Zealand (Prakash Mishra et al. 2009). Indian dairy farmers have undoubtedly made the best efforts to make India

number one producer of milk in the world. The milk production showed a continuous rise and now in the year 2014-15, the estimated production has reached to 146.30 million tons from 22.5 million tons in 1970-71, to 31.6 million tons in 1980-81, 53.9 million tons in 1990-91 and 80.60 million tons in 2000-01 and 121.8 million tons 2010-11. The per capita availability of milk has also been estimated to 290 gm in 2011-12 from 127 gm in 1979-80. This increase in per capita availability is a big achievement keeping in view the huge increase in population of our country.

The dairy enterprise shall have to be through as an economic proposition instead of a way of life. Increasing population and decreasing the unit count of production is, therefore, of crucial importance in dairy production, lower cost per unit of milk production will encourage the producer to produce more milk by mobilization the resources from other enterprises. On one hand, on the other hand, there will be more demand for milk due to a reduction in its price. For these reasons, it seems desirable to initiate studies in the economics of livestock production particularly milch animals.

Thus keeping in view the role of dairying as an instrument in augmenting income of rural households through increased production of milk which in addition to providing incentive to the milk producers. The present study was therefore, under taken to assess the economic performance of cross-bred cows and Murrah buffaloes affected by different herd size groups

with following objectives:

1. To estimate milk production performance of cross-bred cows and Murrah buffaloes in different herd size groups.
2. To estimate cost of milk production per litre of these animals.
3. To calculate input-output ratio of these animals.
4. To calculate net return per litre of these animals.

Methodology

The present investigation was conducted at Sadarvan village in Bichpuri Block of district Agra. A list of families having cross-bred cows and Murrah buffaloes was prepared. In all, 43 dairy families were selected for this study and classified into three herd size groups on the basis of number of milch animals maintained by them.

The following herd sizes were framed :-

1. Family having one animal (small)
2. Family having two animals (medium)
3. Family having more than two animals (large)

The information pertaining to milk production and maintenance cost were collected from 43 families revealed that there were a total of 90 animals, out of which 41 were cross-bred cows and remaining 49 Murrah buffaloes which belonged to different lactation numbers and herd size under study through pre-prepared schedules and questionnaires.

Results and Discussion

The milk production performance of cross-bred cows and Murrah buffaloes in different herd size groups has been investigated and compiled in Table 1. It is observed from the above table that average milk yield per lactation per animal of cross-bred cows and Murrah buffaloes in small, medium and large herd size groups was found to be 2682±21 and 2322±17, 2542±31 and 2217±20 and 2126±36 and 1867±25 litre respectively.

The overall average milk yield of aforesaid animals and herd size groups was found to be 2356 ± 26 and 2061 ± 21 litre. The above table further reveals that the milk yield of cross-bred cows in all herd size groups was greater than that of Murrah buffaloes. The statistical analysis revealed that the difference in milk yield of small, medium and large herd size groups per family keeping either crossbred cows or Murrah buffaloes were significant at 1 % level of probability. The study also revealed that the milk production of cross-bred cows as well as Murrah buffaloes was found higher in small herd size but when the herd size increased further, the level of milk production decrease significantly. These observations indicated that small herd size is more effective from the stand point of feeding and better management by village families for

augmenting milk production. The medium and large herd size appears difficult to feed and manage these animals properly and consequently the level of milk production decreased. The data presented in Table-2 indicated that the maintenance cost of cross-bred cows and Murrah buffaloes was found to be Rs.37427 284 and 39207 th 481; 34228 ± 326 and 36416 ± 499 and 27968 ± 349 and 32505 ± 533 in small, medium and large herd size groups, respectively. The statistical analysis revealed that herd size variation in either crossbred cows or Murrah buffaloes had significant effect on the maintenance of these animals. The above table further revealed that the maintenance cost of both type animals decreased significantly as the size of herd increased. The dung value and net maintenance cost followed the same trend as the maintenance cost but in case of dung value, the higher value was obtained from Murrah buffaloes than cross-bred cows in all herd size groups. The statistical analysis on these data suggested that the herd size variation in cross-bred cows had significant ($p < 0.01$) effect on dung value, but it was insignificant in case of Murrah buffaloes. It is further observed from Table-2 that the cost of milk production per litre of cross-bred cows or Murrah buffaloes was found to be 12.90 +0.51 and 15.30 ± 0.64; 12.40 ± 0.46 and 14.80 ± 0.71 and 11.90 ± 0.62 and 15.50 ± 0.81 in small, medium and large herd size groups, respectively.. The table also revealed that the cost of milk production per litre decreased marginally with increase in the number of animals in a family. The statistical analysis on these data also revealed that the cost of milk production per litre was significantly ($p < 0.01$) greater in Murrah buffaloes than cross-bred cows in all herd size groups. The analysis of variance for these data revealed that increase in the herd size of both species of animals had little effect on the cost of milk production.

The Table 2 also revealed that the input-output ratio of cross-bred cows was increase with increase in the herd size of animals. But in case of Murrah buffaloes it was also increased upto small and medium herd size but decreased there after slightly. The statistical analysis revealed that input-output ratio of cross-bred cows was significantly ($p < 0.01$) higher in all herd size groups than that of Murrah buffaloes. The net return per litre of milk followed the same trend as input-output ratio. Thus maintenance of cross-bred cows is more profitable seeing the input-output ratio and net return per litre as compared to Murrah buffaloes, It is further observed that large herd size is more suitable in case of cross-bred cows as compared to Murrah buffaloes.

Table 1: Milk production per lactation per animal in different herd size groups

S. No.	Herd size family	Cross-bred cows		Murrah buffaloes		Average		Test of Significance
		No. of animal	Milk production (Lit.)	No. of animal	Milk production (Lit.)	No. of animal	Milk production (Lit.)	
1.	Small	8	2682.26±21	7	2322±17	15	2502±19	4.9**
2.	Medium	12	2542±31	18	2217±20	30	2380±26	5.034**
3.	Large	21	2126±36	24	1867±25	45	1998±31	5.96**
	Overall	41	2356±29	49	2061±21	90	2197±25	5.02**

** Significance at $p \leq 0.01$

Table 2 : Cost of Milk production/lactation/animal under different herd size groups

Items	Herd size family	Cross-bred cows	Murrah buffaloes	Overall average	Test of significant
Maintenance Cost	Small	37427±284	39207±481	38317±402	2.31*
	Medium	34228±326	36416±499	35322±411	2.26*
	Large	27968±349	32505±533	30237±501	2.43*
	Overall	31644±320	34899±504	33278±438	2.34*
Dung Value	Small	2826±71	3676±43	3251±76	6.36**
	Medium	2706±32	3598±21	3152±86	5.93**
	Large	2668±93	3550±63	3099±54	4.68**
	Overall	22649±65	3585±42	13142±72	5.65**
NetMaintenanceCost	Small	34601±93	35532±68	55066±51	2.03**
	Medium	31522±68	32818±51	32170±41	2.19**
	Large	25300±86	28975±73	27138±56	2.28**
	Overall	28926±82	31323±64	30136±49	2.17**
Cost of milk production	Small	12.90±0.51	15.30±0.64	14.10±0.57	4.83**
	Medium	12.40±0.46	14.80±0.71	13.60±0.60	3.81**
	Large	11.90±0.62	15.50±0.81	13.70±0.71	3.66**
	Overall	12.24±0.53	15.21±0.71	13.73±0.63	4.10**
Input-Output ratio	Small	1:1.40±0.02	1:1.31±0.02	1:1.36±0.02	3.53**
	Medium	1:1.45±0.02	1:1.35±0.02	1:1.40±0.03	4.21**
	Large	1:1.51±0.03	1:1.29±0.03	1:1.40±0.03	5.39**
	Overall	1:1.05±0.02	1:1.310.02	1:1.38±0.02	4.38*
Net return/Litre	Small	5.10±0.10	4.70±0.10	4.90±0.10	2.48**
	Medium	5.60±0.10	5.40±0.11	5.40±0.11	2.11**
	Large	6.10±0.10	4.50±0.12	5.30±0.12	5.33**
	Overall	5.76±0.10	4.78±0.11	5.27±0.11	3.31**

* Significance at $p \leq 0.05$ ** Significance at $p \leq 0.01$ **References**

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