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# Disposal trend analysis in crossbred cattle and Murrah buffaloes under organised farm conditions

**Dr. P Ravi and Dr. AKS Tomar**

**Abstract**
Disposal trend of crossbred cattle and Murrah buffaloes over 36 years (1969-2004) was investigated at Livestock Production Management, Indian Veterinary Research Institute, Izatnagar (UP). Of the total, 93.52% animals were disposed off from the herd due to various reasons like death (28.40%), culling (20.75%), transfer (39.92%) stillbirths (3.28%) and sacrifice (0.88%). Within the three major groups i.e., halfbred cattle group (HBC), higher crossbred grades (HCS) and Murrah buffaloes (MUB) significant differences ($P<0.05$) in various types of disposal modes were observed. Within the total disposal, maximum contribution was made by transfer (33.01% in MUB to 41.73% in HCG) and significant difference existed among all the three groups/species. The second most important factor which contributed to total disposal after transfer was death and differences in mortally rates were significant among the groups, though, HCG and HUB and HUB expressed almost similar mortality rate (around 30%). Halfbred cattle (25.57%) were superior to rest of the both groups with respect to mortality percentage. Higher mortality rate in cattle crosses with more than 50% exotic inheritance may be due to increased exotic inheritance. Culling rate among the different genetic groups of crossbred cattle ranged from 17.83% (JFH) to 29.17% (BH). Culling was the third most important contributory factor to the total disposal and it ranged from 18.56% (in HCG) to 25.65% (HBC). The present study was concluded that practical herd management programme will ultimately reduce the undesirable disposal from the herd and this in turn will be reflected into formation of superior crossbred cattle and Murrah buffalo herd.

**Keywords:** Disposal rate, mortality, culling, transfer, Murrah buffaloes and herd

## Introduction
Animals are disposed off farm any herd due to mortality, culling, transfer to other herds/places and slaughter (Jana *et al.*, 1998 [2]; Kumar and Jain, 2000 [4]; Sudheer and Xavier, 2000 and Singh and Gurnani, 2003 [9]. But in the addition to these prevailing disposal methods, disposal of animals for special functions (exchanges, gifts, etc.) and sale of animals for meat production (beef) are some of other reasons which are in practice among beef producing countries, where cattle are reared for beef production (Rege *et al.*, 1993) [8]. Hence, the knowledge of disposal trend is very important for managing dairy farm efficiently and it will not only ensure constant profitability from cattle/buffalo farm, but it will also assist in maintaining constant desirable herd strength throughout the year. Therefore, the specific disposal trend exhibited by female stock breeding plans. This will not assist in getting regular and time bound replacement of disposed females but it will also help in maintaining a constant ratio of milch to dry females i.e. around 70:30 throughout the year (Kumar *et al.*,1997) [3] in organized farm. The disposal trend in case of dairy cattle and buffaloes is available in developed countries, such statistics are rather scanty in developing countries like India. Keeping in view, the importance of disposal trend to a dairy farmer and its relevance in the planning, execution and successful implementation of any animal improvement programme, the present study was planned to analysis the disposal pattern in crossbred cattle and Murrah buffaloes under organised farm conditions.

## Materials and Methods
The present study on disposal trend analysis in crossbred cattle and Murrah buffaloes under organized farm conditions was undertaken in Livestock Production Research Farm, Indian Veterinary Research Institute, Izatnagar (UP), India. The Relevant data for the present study were obtained from all traceable records on crossbred cattle and Murrah buffaloes, over a period of 36 years (1969-70 to 2003-04). The data were collected from History-Sheets, Livestock Inventory Registers, Growth and Milk Registers etc.

The Indian Veterinary Research Institute, Izatnagar, Bareilly (UP), is situated at a latitude of 28.22º N and longitude of 79.22º E. The climatic conditions are extremely hot during summers (May-June) as well as very cold during winters (December – February). The humidity has been observed to be quite high from 15th June to 30th September. The Halfbreds viz. Holstein Friesian (F) x Hariana (H), Brown Swiss (B) x Hariana and Jersey (J) x Hariana were generated through inseminating the foundation Hariana cows with the imported frozen semen of exotic cattle breeds like Holstein-Friesian, Brown Swiss and Jersey. The three and four breed crosses were also generated in the process involving two/three exotic cattle breeds. All animals are maintained under stall-fed conditions with loose housing systems. The herd under study contained halfbred comprising of FH, BS, JH, higher crossbred grades comprising of FBH, FJH, JFH, JBH, BFH, BJH, FBJH and Murrah buffaloes. The Standard statistical methodologies were used for analysing the disposal data

**Results and Discussion**

On the basis of total number of crossbred cattle and Murrah buffaloes available at this farm over 36 years (1969-2004), of the total 93.52% animals were disposed off from the herd due to various reasons like death (28.40%), culling (20.75%), transfer (39.92%) stillbirths (3.28%) and sacrifice (0.88%, Table1). Taneja *et al*. (1989) [11] reported similar overall mortality rate, Whereas Mukerjee and Tomar (1997) reported higher values of mortality rate in crossbred dairy cattle (44%). Taneja *et al*. (1989) [11] and Jana *et al*. (1998) [2] reported comparatively higher overall culling rates in crossbred cattle. Chirinos *et al*. (1999) [1] reported culling rate in Hoistein Friesian cattle similar to that of present finding. Comparatively lower transfer rates were reported by Taneja *et al*. (1989) [11] and Jana *et al*. (1998) [2] in crossbred dairy cattle. Higher slaughter rate was reported by Taneja *et al* (1989) [11] in crossbred dairy cattle.

Within the three major groups i.e. halfbred cattle group (HBC), higher crossbred grades (HCS) and Murrah buffaloes (MUB), significant differences ($P<0.05$) in various types of disposal modes were observed. These results were in agreement with the observations of Jana *et al*. (1998) [2]. The overall disposal in all the three groups were 94.55, 93.84 and 87.73% respectively, in HCG, HBC and MUB. Within the total disposal, maximum contribution was made by transfer (33.01% in MUB to 41.73% in HCG) and significant difference existed among all the three groups/species. The second most important factor which contributed to total disposal after transfer was death and differences in mortally rates were significant among the groups, though, HCG and HUB and HUB expressed almost similar mortality rate (around 30%). Halfbred cattle (25.57%) were superior to rest of the both groups with respect to mortality percentage. Jana *et al*. (1998) [2] also confirmed this finding. Higher mortality rate in cattle crosses with more than 50% exotic inheritance may be due to increased exotic inheritance. Buffaloes are also similar to that of HCG group with respect to mortality % (Table 1).

Genetic groupwise studies indicated that most of the HCG group animals were eliminated from the herd in the process of evaluation of these genetic groups probably due to their comparatively lower production status or due to poor adaptability in the local tropical environment. It was evident from the fact that 100% animals of BH, JH, JFH, BJH/JBH, FBJH etc, were eliminated from the herd (Table 1). The overall mortality in the eliminated genetic groups ranged 32.59% (FBJH) to 40.22% (JH). In general, crossbreds with higher exotic inheritance expressed mortality around 30% or more in all groups. Similar findings were reported by Rao and Nagarcenkar (1980); Jana *et al*. (1998) [2] and kumar *et al*. (2001b) [5].

Culling was the third most important contributory factor to the total disposal and it ranged from 18.56% (in HCG) to 25.65% (HBC). These results were in agreement with the observations of Singh and Gurnani (2003) [9]. Significant differences ($P<0.05$) in culling rate existed in HBC and HCG/MUB. The stillbirth rate in HCG 93.90%) was significantly higher ($P<0.05$) than HBC (2.52%) and HUB (2.28%) Similarly, sacrifice rate in MUB (2.32%) was significantly higher than that in HBC (0.86%) and HCG (0.59%, Table1). Comparative higher sacrifice/slaughter rates in crossbred cattle were reported by Taneja *et al*. (1989) [11].

Culling rate among different genetic groups of crossbred cattle ranged from 17.83% (JFH) to 29.17% (BH). Culling in FH genetic group is comparatively higher (22.51%) as compared to FBH and FJH (around 18%. Table 1). Indicating that selection pressure was more in FH as compared to rest of the existing groups. The observations of Jana *et al*. (1998) [2] corroborate the present findings. It may be due to the fact that FH group was found to be best and was recommended for retention after termination of AICRP on cattle.

Overall transfer rate in different genetic groups of cattle ranged from 28.26% (JH) to 44.02% (JFH). Most of the genetic groups expressed a transfer rate higher than 35% (Table 1). Such higher transfer rates may be due to the fact that most of the surplus animals, which were males specifically, were transferred from the herd as early as possible and this has resulted into enhanced transfer rates in different genetic groups. On the other hand, it indicated towards high selection intensity applied in the male group as only fewer superior males kept for breeding purpose and majority of them were either transferred or culled. Overall stillbirth rate ranged from 0% (BJH/JBH) to 5.28% (FBJH). The existing genetic groups (FH.FBH and FJH) expressed 3.0% (FH) to 4.37% stillbirth rate) FJH, Table 1). Wijeratne and Stewart (1970) [12] reported highly significant difference in stillbirth rates of Friesian and Guernsey cattle.

**Table 1:** Overall disposal rates in the crossbred cattle and buffalo herds

| Genetic Groups/ Species | Total no of animals available | Total no of animals disposed | No of animals disposed due to | | | | |
|---|---|---|---|---|---|---|---|
| | | | Mortality | Culling | Transfer | Still birth | Sacrifice |
| Pooled | 12311 | 11514 (93.52) * | 3506 (28.48) [b] | 2580 (20.95) [b] | 4915 (39.92) [a] | 404 (3.28) | 109 (0.88) |
| Major groups | | | | | | | |
| Half bred cattle (HBC) | 3804 | 3570 (93.84) | 973 (25.57) [b] | 976 (25.65) [a] | 1492 (39.22) [b] | 96 (2.52) [b] | 33 (0.86) |
| Higher crossbred grades | 7047 | 6663 (94.55) | 2097 (29.75) [a] | 1308 (18.56) [b] | 2941 (41.73) [b] | 275 (3.90) [a] | 42 (0.59) [b] |
| Murrah buffaloes | 1460 | 1281 (87.73) | 436 (29.86) [a] | 296 (20.22) [b] | 482 (33.01) [c] | 33 (2.28) [b] | 34 (2.32) [a] |
| Crossbred cattle/Genetic groups | | | | | | | |
| FH | 2963 | 2729 (92.10) | 667 (22.51) [d] | 735 (24.80) [b] | 1221 (41.20) [a] | 89 (3.00) [b] | 17 (0.57) |
| BH | 473 | 473 (100.0) | 158 (33.40) | 138 (29.17) | 167 (35.30) | 3 (0.63) | 7 (1.48) |
| JH | 368 | 368 (100.0) | 148 (40.21) [a] | 103 (27.99) [ab] | 104 (28.26) | 4 (1.08) | 9 (2.44) |
| FBH | 2664 | 2523 (94.70) | 776 (29.13) | 501 (18.80) | 1128 (42.34) | 108 (4.05) | 10 (0.37) |
| FJH | 2717 | 2474 (91.05) | 743 (27.34) [c] | 498 (18.32) [c] | 1101 (40.52) [ab] | 119 (4.37) [a] | 13 (0.47) [c] |
| JFH | 611 | 611 (100) | 212 (34.69) [a] | 109 (17.83) [c] | 269 (44.02) [ab] | 11 (1.80) [bcd] | 10 (1.63) [a] |
| BFH | 749 | 749 (100) | 265 (35.38) [a] | 137 (18.29) [c] | 313 (41.78) [ab] | 25 (3.33) [a] | 9 (1.20) [abc] |
| BJH/JBH | 79 | 79 (100) | 27 (34.17) [ab] | 18 (22.78) [abc] | 34 (43.03) [abd] | - | - |
| FBJH | 227 | 227 (100) | 74 (32.59) [ab] | 45 (19.82) [c] | 96 (42.29) [abd] | 12 (5.28) [ab] | - |

*Figures within parentheses are respective percentages on the basis of available animals
Figures bearing different superscripts differ significantly ($P \leq 0.05$)

## Conclusion

Based on the findings the present study has concluded that high mortality rate in a herd is reflective of poor management and is causing economic losses to dairy owners due to depletion of superior genotypes from the herd and insufficient supply of young dairy stock for breeding. Therefore, it is essential to investigate the factors responsible for mortality in the herd and to keep mortality rate within the permissible limits i.e., 5% (up to 1 month) to 10%. Culling is another very essential process which eliminates inferior animals from the herd and thus helps in planning, operation and evaluating genetic improvement programmes as well as to improve the economics of dairy enterprise.

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## Reference

1. Chirinos ZR, Gonzalez-Stagnaro C, Madrid-Bury N, Rivera JC. Productive lifetime, longevity and culling causes in crossbred dual-purpose cattle. Revista – Cientitica – Facultad – de – Ciencias – Veterinarias - Universidad – del – Zulia. 1999;9(6):477-484.
2. Jana DN, Pandey HN, Srivastava BB. Disposal pattern in organized crossbred dairy herd. Indian J anim. Hlth. 1998;37(1):47-50
3. Kumar BA, Jana DN, Suman CL, Srivastava BB, Saxena M, Pandey HN. Studies on herd structure and replacement pattern in an organized crossbred dairy herd. Indian J Anim. Prod. Mgmt. 1997;13(3):149-151
4. Kumar H, Jain LS. Replacement rate in Surti Buffaloes. Indian J Dairy Sci. 2000;53(2):99-120.
5. Kumar RC, Sreenivasa Moorthy PR, Sarjan Rao K, Venugopal Naidu K. Influence of variations in dam gestation length and parity on calf mortality. Cheiron, 2001b;30(1&2):6-11.
6. Mukeherjee K, Tomar SS. Age specific female calf mortality in a herd of Brown Swiss crosses. Indian J Anim. Sci. 1999;69(12):1063-1064.
7. Rao MK, Nagercenkar R. Calf mortality in crossbred dairy cattle. Trop. Anim. Hlth. Prod. 1980;12(3):137-144.
8. Rege JEO, Von Kaufmann RR, Mani RI. On-Farm performance of Bunaji (White Fulani) cattle. 1.Herd structures and cattle disposal. Anim. Prod. 1993;57(2):199-209.
9. Singh MK, Gurnani M. Factors affecting disposal treds in crossbred cattle at closed organised farm. Indian J Anim. Sci. 2003;73(3):296-299.
10. Sudeer S, Xavier CJ. Disposal pattern of breeding bulls in Kerela. Indian J Anim. Reprod. 2000;21(1):72-73.
11. Taneja VK, Dwivedi VK, Nivsarkar AE, Saxena MM, Nautiyal LP. Disposal pattern in three halfbred groups. Indian J Anim. Sci. 1989;59(5):158-161
12. Wijeratne WVS, Stewart DL. Stillbirths in cattle. British Vet. J. 1970;126:238-251.