

GENETIC ANALYSIS AND EVALUATION OF PRODUCTION TRAITS  
IN THE BUFFALO

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Two studies were carried out on buffaloes in Sri Lanka. The first was a survey of 80 farmers to study buffalo farming and production levels in Polonnaruwa and Mannar districts. Ninety-five percent of the farmers cultivated either paddyland and/or highland and all used indigenous buffaloes. The shortage of grazing land was the major limitation to buffalo farming in both districts. The age at first calving, calving interval, number of calves/life time were 44 months, 14.5 months and 9.8 calves respectively. Buffalo cows that were grazed longer had 2-3 months shorter calving intervals, were 2-3 months younger at first calving and produced significantly (10-12 litres) more milk per herd per day and four more calves per lifespan. Buffaloes milked had four months shorter calving intervals than those not milked. Calving intervals were two months shorter and milk yields were higher among dams that were not worked in the fields. The milk yields and lactation lengths were 1.6 litre/day and 6.5 months respectively. On an average Polonnaruwa animals produced 28 litres more milk than those of Mannar (317 litres) in a lactation.

In the second investigation, data from the first four lactations over an eleven year period from 1971 to 1981 on 273 pure Murrah (M) and 233 Murrah Grades (GM) from the Ridiyagama Farm were used in the analysis. The total number of calvings over this 11 year study was 820 for M and 774 for GM. Although the first calvings occurred at almost equal frequencies in maha and yala in the M and GM groups, subsequent conceptions and calvings occurred in a ratio of almost 3:1 in maha and yala respectively. Murrah heifers had their first calves at the age of 50.7 months while heifers calved at 48.7 months, the difference

being statistically significant ( $P < 0.05$ ). Male calves outweighed female calves at birth by 830g. A mean reduction of 0.39kg of birth weight and an increase of 1.8 month per year of age at corresponding calvings was observed over the study period.

The 305-day adjusted milk yields of M breed were 1501, 1533, 1488 and 1364kg at I, II, III and IV lactations while the respective figures were 1359, 1342, 1271 and 1258kg for GM. Milk yields differed among the breeds ( $P < 0.05$ ) for all lactations except the fourth. The least square means for the first, second, third and fourth lactation lengths of breed groups pooled were 359, 327, 319 and 314 days. The means of the first, second and third calving intervals were 640, 507 and 485 respectively. A mean reduction of 80.1kg in a 305-day milk yield and 4.5 days in lactation length per year was observed over the study period. Animals calved in yala had 102 litre and 21 days more in the milk yield and length of lactation at II and III lactations than maha calves. Buffalo cows conceived during August to October had 136 days shorter ( $P < 0.01$ ) calving interval than dams conceived during January to March at third calving. Therefore in addition to its effect on calving pattern, season was also found to influence the milk yield, lactation length and calving interval.

Upgrading at Ridiyagama has resulted in an improvement of birth weight, milk yield and lactation length but has had no effect on calving interval and age at calving. The observed mean reduction in milk yield and birth weight per year may be attributed to genetic deterioration and limitations on the level of management. Unless more genetic variability could be incorporated into the gene pool further progress in milk production and birth weight is likely to be restricted.