

## MILK YIELD PER DAY OF CALVING INTERVAL (MY / DCI) IN BRAZILIAN BUFFALOES

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### INTRODUCTION

Other economic characteristics, besides those of daily milk yield, may also determine the performance of milk-producing herds, given the necessity of a parameter that has high heritability and a desirable genetic correlation with other characteristics of lactation. Among them, one of the economic measures developed by research (1), is the milk yield per day of calving interval, which can fulfill these requirements, probably supplying a superestimate of heritability. Some authors have studied the characteristic (2, 3, 4, 5, 6, 7, 8, 9) and the extreme values gathered from literature were 3.71 and 4.70 Kg, with an amplitude of 0.69 Kg. Despite the few references for heritability, the variation was 0.20 to 0.40 and for repeatability was 0.34 to 0.63. The most important causes of variation were: farm, year and season. The milk yield per day of calving interval constitutes an expressive rate of productivity because it takes into account, besides the total yield of milk, the calving interval.

### MATERIAL AND METHODS

A total of 8,055 records of 1,933 female buffaloes were utilized, from twelve properties in the states of Pará, São Paulo and Paraná, covering the time period from 1950 to 1988. A description of the properties may be found in several papers (10, 11, 12, 13 and 14). Six genetic groups were utilized: Jafarabadi, Mediterrâneo, Murrah, 1/2 Murrah - 1/2 Mediterrâneo (1/2 Mu), 3/4 Murrah - 1/4 Mediterrâneo (3/4 Mu) and 7/8 Murrah - 1/8 (7/8 Mu or above) Mediterrâneo with the data being analyzed by the System of Genetic and Statistical Analyses-SAEG (15) and by the Least Squares and Maximum Likelihood Method, through the LSLMMV Program - 87 (Least Squares and Maximum Likelihood Computer Program, models 1, 2 and 3. The coefficients of heritability and repeatability were estimated from variance components obtained in models 2 and 3, described by the correlation between paternal half-sibs, for heritability and the interclass correlation, for repeatability. The pattern error for the estimate of heritability and repeatability was calculated according to SWIGER.

**Index terms:** Management, productivity, parameters, correlation

## RESULTS AND DISCUSSION

The general average was  $3.75 \pm 1.23$  Kg of milk per day of calving interval, with VC= 32.74% for a total of 1,587 observations. The main causes of variation were genetic group, year, season and order of calving. Year of calving was responsible for 15.46% of the total variation and it was confirmed that the highest average occurred in 1971, that is,  $5.75 \pm 0.29$  and the lowest,  $2.18 \pm 0.38$  Kg of milk in 1969. The difference between the averages of the two years was highest in the yearly averages, superior to 0.18 Kg of milk. Several reasons may exist for such occurrences, none the less, the scarcity of data and its distribution does not permit their identification, thus they may be considered as casual occurrences. Regarding the effect of the season of calving, data from this study confirm reports in literature that also found significant effect of season (2,3, 7). Other authors (5) observed the same effect, affecting the characteristic, that is, the year, season and order of calving. Females calving from Dec - Feb, and from Mar - May, presented better performance in milk yield per day of calving interval than those calved in other seasons. The same occurred with data on milk yield and fat per lactation analyzed in the previous items. Order of calving exercised linear effects and significant squares ( $P < 0.01$ ). The repeatability coefficient was obtained through the buffaloes interclass correlation for 365 calving intervals, produced by 165 animals with the average number of observations per female being 2.09. The estimate reached,  $0.344 \pm 0.065$ , had the data adjusted for the effects of the female and year of calving. The estimate of repeatability is similar to that of some authors (3), however it is inferior to the value of 63% reported by others (8). The estimate value represents only an intermediate number, not constituting a reliable parameter for establishing programs of genetic improvement, through mass selection, based on the repetition of data obtained, it presents a small error. The estimate of heritability was calculated utilizing 348 observations from female offspring of fourteen breeders, through interclass correlation of paternal half-sisters with  $K= 20.43$ , the values being adjusted for significant effects of herds, father within herd and order of calving ( $P < 0.01$ ). The value obtained,  $0.262 \pm 0.153$  for the estimate of heritability, is superior to that of some authors (2, 3, 7). It is, however, compatible with the variations presented by others (5 and 9). In this particular case, the suppositions of GILL (1) are not confirmed because the heritability achieved for milk yield per day presented an even much higher average than that estimated in this present study for this characteristic. In general, the literature consulted likewise did not confirm this supposition, because the values for heritability for milk yield per day of calving interval presented levels similar to those found for milk yield per day. An improvement program will probably be more effective in

this present study utilizing milk yield per day than milk yield per day of calving interval.

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