

DRY PERIOD (DP) IN BRAZILIAN BUFFALOES

Marques, J.R.F., Moura Carvalho, L.O.D., Ramos A.A., Costa N.A. & Lourenço Jr., J.B.
 Brazilian Agricultural Research Organization (EMBRAPA),
 Agroforestry Research Center for the Eastern Amazon (CPATU),
 Belém, Pará, Brazil

INTRODUCTION

The period extending from the end of lactation to calving, in which the females stops producing milk in order to build up energy for calving and the next lactation is known as the dry period. Its extension is important to productive management of mixed or dairy herds. The few studies found in the literature consulted on the dry period in buffaloes (1, 2, 3, 4, 5, 6 and 7) show a variation between 116.38 and 267.90 days. Very few of them dealt with genetic parameters, none the less the heritability estimates available may serves as a basis for this study regardless of the great variation encountered, that is, 0.00 to 0.41. The only referenced value for repeatability was 0.20. Principal cause of variation were farm, period of years and season of calving.

MATERIAL AND METHODS

A total of 8,055 records of 1,933 female buffaloes were utilized coming from twelve properties in the states of Pará, São Paulo and Paraná, described in 8, 9, 10, 11 and 12. Six genetic groups were utilized: Jafarabadi, Mediterranean, Murrah, 1/2 Murrah - 1/2 Mediterranean (1/2 Mu), 3/4 Murrah, 1/4 Mediterranean (3/4 Mu) and 7/8 Murrah - 1/8 Mediterranean (7/8 Mu or above), the data being analyzed through the Genetic and Statistical Analysis System - SAEG (13) by the Least Squares and Maximum Likelihood Method through the ISLMMW program - 87 - Least Squares and Maximum Likelihood Computer Program (14), models 1, 2 and 3. The heritability and repeatability coefficients were estimated from variance components obtained in models 2 and 3 described through the correlation between paternal half-sibs for heritability and interclass correlation for repeatability (15).

RESULTS AND DISCUSSION

The general average obtained for 1,395 dry periods of female buffaloes was 151.31 ± 58.91 days with $VC = 38.93\%$. These results are equivalent to those reported for Egypt (1) and India (2). On the other hand, the dry periods encountered by some authors (4, 5 and 7) were longer. None the less, the value obtained of 116.19 ± 4.3 days (3), is the lowest of the literature consulted. It can be deduced by the value obtained in this paper that the present farm management is inefficient.

Index terms: Management, livestock, milk, repeatability.

for the milk-producing buffalo herds, which needs to observe elementary practices of productive management, particularly those involving lactating females. The principal factors influencing the dry period were the genetic group, the year and season of calving. The year of calving caused the largest effect, followed by the genetic group and the season of calving. In India, with Murrah buffaloes, calving season, farm, period of years and age of calving significantly affected the characteristic (2). In a report (3) was found that only the herd influenced the characteristic, is in concordance with other authors (4) in which references were also made to the calving season, and the farm x season interaction. In this study the effects of herd and/or farm may be associated to the genetic groups. The 1/2 Mu group presented the shortest dry period and the Mediterraneo group the longest. There is, however, equivalence between same groups, most of them being significantly different ($P < 0.01$) among themselves. For the calving year cause, the longest dry period was observed in 1977, 176.01 ± 7.31 days, while the shortest average duration was, in 1971, 111.61 ± 16.26 days. Perhaps the first is justified by climatic changes in the two previous years, with frost, especially in the south and southeast of Brazil. This reduced the quality of plants for forage and, as a consequence, caused a longer dry period. The second period, besides other causes not identified in this study. It was observed that females calving from Dec-Feb obtained shorter average dry periods, followed by those calving from Mar-May. The repeatability estimate of the dry period was obtained by the Least Squares Method, through buffaloes interclass correlation, adjusted for causes of genetic group, females within genetic group and year of calving, involving 1,243 records with $K=3.75$ controls per animal. The observed value was 0.183 ± 0.030 , near the estimate of 0.20 ± 0.12 reported in the literature (16) for the characteristic. In any case, it is not a reliable manner to support a selection program based on previous productions. The heritability was calculated in only 282 observations from female offspring of 10 breeders, with an average number of observations per breeder of $k=26.12$ female offspring. The obtained estimate, 0.072 ± 0.103 , through the method of interclass correlation of paternal half-sisters had dry period values adjusted for effects of herd, bull within herd, season and order of calving. In general, the estimated values found in the literature are close to zero, according to some citations (2 and 6). To serve as a basis, the highest value observed in literature was 0.41 ± 0.65 (5). Yet, there is no lack of estimates equivalent the average obtained here, that is, 0.03 and 0.12 ± 0.06 (1 and 4). These results confirm the great dependency of the characteristic on environmental factors. Better management, especially with regard to feeding, can increase the persistency of lactation in buffaloes during the dry period.

REFERENCES

- (1) Juma, K. H. & Al-Samarai, W. W. Some economics traits of Iraqi buffaloes; dairy characteristics. *Wld., Rev. Anim. Prod.*, v. 21, n.4, p.67-70, 1985.
- (2) Umrikar, O. D. & Deshpande, K. S. Genetics studies on lactation length and dry period in Murrah buffaloes. *Indian J. Anim. Sci.*, v. 55, n.10, p.888-892, 1985.
- (3) El-Kaschab, B., Danasouri, S. & Omar, S. Studies on some reproductive and productive traits of buffaloes in Egypt. *Tropenlandwirt.*, v. 87, p.109-120, 1986.
- (4) Singh, C.V. & Yadav, M.C. Effect of genetics and non-genetics factors on life time production traits in Indian buffaloes. *Indian J. Anim. Sci.*, v. 57, n.6, p.555-558, 1987b.
- (5) Taylor, S.P. & Jain, L.S. Genetic studies on production traits medium sized buffaloes. *Indian J. Anim. Sci.*, v. 57, n.7, p.711-714, 1987.
- (6) Kornel, D. & Patro, B.N. Genetic studies on the production and reproduction traits of Surti buffaloes. *Indian J. Anim. Sci.*, v. 58, n.10, p.1223-1225, 1988.
- (7) Mourad, K.A., Khattab, A.S. & Ibrahim, M.A.R. Effect of genetic and non genetic factors on reproductive traits in Egyptian buffaloes. *Buffalo Bull.*, v. 8, n.1, p.9-12, 1989.
- (8) Marques, J.R.F. Alguns aspectos da eficiência produtiva em bubalinos no Trópico Unido brasileiro. Belo Horizonte: UFMG. Escola de veterinária, 1984.88 p. Tese - Mestrado.
- (09) *Estação Experimental de Zootecnia de Andradina; EEZA. Andradina: IZ, 1980. 26p.*
- (10) Barbosa, C., Nogueira, J.R., Nardon, R.F., Pires, F.L., Campos, B.E. & Feitosa, A.S.L. Distribuição anual da produção de leite de plantel bovino tropical (5/8 Europeu X 3/8 Gir) e bubalino da raça Mediterrâneo. *Zootecnia*, v. 25, n. 3, p. 197-214, 1987.
- (11) Bernardes, W. & Bernardes, O. Exploração leiteira da búfala. Sarapuí, Faz. Paineiras do Ingai, 1989. 17p.
- (12) Traad da Silva, M.E., Pinto, J.M., Kroetz, I.A. & Perotto, D. Desempenho técnico de um sistema de produção de búfalos da raça Murrah no Paraná. Curitiba, IAPAR, 1990. no prelo.
- (13) Euclides, R.F. Manual de utilização do programa SAEG (Sistema de Análises Estatísticas e Genéticas - Versão PC-XT). Viçosa, fundação Arthur Bernardes, 1987. 83p.
- (14) Harvey, W.R. User's guide for LSMLNW PC - 1 Version; mixed model least-squares and maximum likelihood computer program Ohio, O.S. University, 1987. 74p.
- (15) Milagres, J.C. Melhoramento animal avançado; seleção. Viçosa, UFV, 1981. 101p.
- (16) Vij, P.K. & Tivana, M.S. Repeatability estimates of some production and reproduction traits in buffaloes. *Indian J. Anim. Sci.*, v. 59, n. 8, p. 1006-1007, 1989.