

# Production Parameters in a Romanian Buffalo Population

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## Abstract

The biological material of buffaloes in this area shows favorable characteristics in the direction of milk production with a total length of lactation almost close to the normal one, but the interval between births is quite high. Pure milk fat content on total lactation is 6.98% and 6.96% for normal lactation, with variations from the first lactation of 7.27% to 6.86% in the ninth lactation. The time of the dry period shows variation between 80.84 and 142.84 days and calving interval between 375.91 and 435.48 days.

**Keywords:** buffalo, milk, lactation

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## 1. Introduction

Buffalos reared in our country are equally suitable for both the operation to the production of milk and meat with priority growth trends for milk production. It should be noted that the share of the total cattle buffalos was at the beginning of last century by 28.30%, a level that is now reduced to 22.10% which shows a very strong effect in the cattle operation. Salaj County remains a large center for a very important and valuable buffalo herd. Buffalo milk because its composition can be used in the dairy industry, especial in mozzarella cheese, butter, cream and yogurt [1,2]. Buffalo milk compared with cow's milk has a higher fat and protein content which are very important components of milk and have a strong impact of nutritional and technological point of view [2, 3]. Milk and milk products provide one third of global consumption of animal protein [4]. Analysis of milk production and milk composition is important primarily to assess the production capacity of milk from milking animals [5].

Buffalo milk is the second one in the milk productions after the cow milk.

[6]. Milk production is greatly influenced not only by the improvement level of animal populations, but also mining technologies.

Due to the unmatched adaptation of buffalos and warm wetlands is estimated that optimal biological limit to annual production in lactating buffalo is about 2000-2400 kg and 145-175 kg fat than pure, this level is due primarily to expansion productive breeds valuable extension of economic and reducing specific consumption per unit of product obtained [7]. In order to improve milk production is very important that we determine the characteristically lactation curve of dairy animals [8]. The main objective of this study was to determine calving-interval, dry period, fat content and amount of fat in buffaloes.

## 2. Materials and methods

This study was realized on the buffalos from Salaj County, 112 heads of lactations IX. Currently most buffalos are used in environmental conditions, 3-4 heads that are the most common

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production systems and increase the oxen in this area and very little at farm level. For statistical interpretation of the data we used ANOVA program, Graph Pad in Stat.

### 3. Results and discussion

Mean values for calving-interval in buffaloes under study are higher than those reported by [9].

Calving-interval results obtained are reported in Table 1. Calving, lactation period varies so mean to lactating VIII is 375.91 days and that lactation is 435.48 days. [10] report, average values for calving interval in buffalo of  $415 \pm 4.04$  (days); the Italian buffalo  $407.2 \pm 77.5$  days [11]. [12] in the study conducted on buffalos reports for calving-interval values between 433-539 days and normal lactation milk production was obtained was lower for the buffalos in this study.

**Table 1.** Buffaloes calving-interval of lactations I-X

Lactation	min	max	mean	SD
I	430.10	440.20	435.48	5.08
II	422.11	430.20	425.83	4.08
III	411.21	421.37	417.76	5.58
IV	407.93	411.32	409.48	1.71
V	420.21	430.11	423.84	5.45
VI	428.15	439.18	432.51	5.86
VII	429.72	432.95	431.08	1.67
VIII	369.71	382.19	375.91	6.24
IX	381.72	390.21	387.03	4.62
X	390.21	412.11	399.38	11.37

The dry period of the buffalos varies depending of lactation, so the III lactation has an average of 80.84 days and 142.84 days in I lactation (Table 2). The duration of the dry period in the study conducted by [10] was  $136 \pm 2.01$  days. The mean values obtained for dry period were higher than those obtained by [13] and [14]. Italian buffalo have the duration of the dry period of  $151.1 \pm 55.8$

days [11]. [15] reports based on lactation averages of 177.45 and 205.34 days for the dry period in buffaloes. [16, 17] reported higher values of the duration of the dry period. Duration of the calving interval was shorter in buffaloes in this study than during the interval between births that were reported by [14, 18].

**Table 2.** Buffaloes during the dry period of lactations I-X

Lactation	min	max	mean	SD
I	135.21	148.19	142.84	6.78
II	79.18	83.14	80.84	2.05
III	83.21	88.56	85.65	2.70
IV	96.56	111.21	105.88	8.09
V	89.56	105.15	95.62	8.35
VI	88.72	101.21	94.02	6.45
VII	79.56	96.51	88.08	8.47
VIII	89.72	97.89	92.23	4.60
IX	89.32	95.21	92.23	2.94
X	95.29	99.54	97.33	2.12

Lowest values for fat content can be seen in lactation VI - 6.28% and higher lactation I - 7.52% with variations depending on lactation and by individuals. Values for the amount of fat in milk

are comparable to those reported by [7]. The average amount of fat is 100.62 kg and 107.99 kg in lactation the X-ninth lactation (Table 4).

**Table 3** The fat content in buffaloes in lactations I-X

Lactation	min	max	mean	SD
I	7.11	7.52	7.27	0.21
II	6.81	7.13	6.95	0.16
III	6.54	6.89	6.76	0.19
IV	6.55	6.82	6.72	0.15
V	6.72	6.88	6.79	0.08
VI	6.28	6.65	6.51	0.20
VII	6.56	6.81	6.69	0.12
VIII	6.55	6.89	6.73	0.17
IX	6.54	6.80	6.70	0.14
X	6.69	7.01	6.86	0.16

**Table 4.** The fat in buffaloes in lactations I-X

Lactation	min	max	mean	SD
I	104.12	108.21	106.18	1.61
II	99.78	104.42	101.91	2.13
III	101.19	112.54	107.01	5.06
IV	106.32	108.59	107.36	1.10
V	97.65	110.69	105.17	6.14
VI	102.18	109.32	106.76	2.78
VII	98.54	110.04	102.20	5.27
VIII	96.77	108.22	105.01	4.71
IX	106.54	109.42	107.99	1.12
X	99.65	102.25	100.62	1.09

The maximum production of milk buffalos is studied lactation-VI and-VIII. Comparison of these data with those from literature can say that these are good production performance. It may indicate that production performance are higher average yields are obtained from buffaloes in other areas, which are less favorable agricultural conditions, which vary by locality of reference. The fat content is lower than that obtained pure sials [7] the Romanian breed of buffaloes. Milk production increases with lactation in the study conducted by [19]. The amount of milk obtained from normal lactating buffaloes studied is lower than that reported by [19]. In terms of milk production, it occupies a total lactation average of 1240.17 kg milk/lactation normal, with small variations from one lactation to another. Breeding activity is good and corresponds to a birth index of 92% with variations depending on the reference lactation between 85-98%. The average duration of total lactation averaged 280.54 days and is well correlated with the level of milk production. [9] reports average lactation milk production beyond that of buffalos in this study. Establishing individual milk production is

achieved at the expense of periodic verification is made on 28 and 42 days.

#### 4. Conclusions

Salaj county buffalo milk is collected together with the cow because the milk processing factories not separate in this way provides a encouraging farmers to raise buffalos. An interesting aspect is the milk fat content in that its lowest level is the number of buffaloes in lactation VI of 6.51%, 7.21% from the buffalos of lactation I, but the differences are mainly due to lactation, nutrition technology, structural variations of rations from one period to another. At buffalos exploited in this area is required and exploit optimization technology growth, improve milk quality, issues that can help improve production traits in buffaloes. Buffalo milk is very important in the dairy industry in our country. Assess the level of buffaloes for milk production are mainly estimates of attributes such as quantity of milk, fat and protein content, the amount of fat and protein, uniformity or consistency of milk production, precocity, economy and the reproduction indices.

## Acknowledgements

Financial support was granted from Romanian Ministry of Education, Research and Innovation, project PN II-RU-TE No. 108/2010.

## References

1. Fundora, O., Gonzalez, Lezcano, M.E., Montejo, O., Pompa, A., Enriquez, N., A comparative study of milk composition and stability of Murrah river buffaloes and Holstein cows grazing star grass, Cuban Journal of Agricultural Science, 2001, 35, 219-222.
2. Aspilcueta-Borquis, R.R., Di Palo, R., Araujo Neto, F.R., Baldi, G.M.F., Albuquerque, L.G., Zicarelli L., Tonhati, H., Genetic parameter estimates for buffalo milk yield, milk quality and mozzarella production and Bayesian inference analysis of their relationships, Genetics and Molecular Research, 2010, 3, 1636-1644.
3. Barłowska, J.M., Szwajkowska, Z., Litwinczuk, Krol, J., Nutritional Value and Technological Suitability of Milk from Various, Animal Species Used for Dairy Production, Comprehensive Reviews in Food Science and Food Safety, 2011, 10, 291-302, doi: 10.1111/j.1541-4337.2011.00163.x.
4. FAO, Production yearbook Food and Agri. Organization, Rome, Italy, 1998.
5. Mech, A., Dhali, A., Prakash, B., Rajkhowa, C., Variation in milk yield and milk composition during the entire lactation period in Mithun cows (*Bos frontalis*), Livestock Research for Rural Development, 2008, 20, 5.
6. CNIEL, (Centre National Interprofessionnel de l'Economie Laitière). L'économie laitière en chiffres, 2002, 183.
7. Velea C., Zanc, C.A., Creșterea și exploatarea bubalinelor, Editura Texte, Dej, 2010.
8. Keskin, I., Dag, B., Comparison of different mathematical models for describing the complete lactation of akkaraman ewes in Turkey, Asian-Australian Journal of Animal Sciences, 2006, 19: 1551-1555.
9. Marai, I.F.M., Daader, A.H.A., Soliman, M., El-Menshawy, S.M.S., Non-genetic factors affecting growth and reproduction traits of buffaloes under dry management housing (in sub-tropical environment) in Egypt, Livestock Research for Rural Development, 2009, 21, 3.
10. Hamid, S.K., Farooq, M., Mian, M.A., Syed, M., Jamal, S., Milk production performance and inter-relationship among traits of economic importance in buffaloes maintained at commercial dairy farms, Livestock Research for Rural Development, 2003, 15.
11. Partha, N.R., Service Period, Calving Interval and Dry Period in Italian Buffaloes, Zentralblatt für Veterinärmedizin Reihe A, 1970, 17, 284-286, doi: 10.1111/j.1439-0442.1970.tb02055.x.
12. Thokal, M.R., Kothalkar, V.K., Udar, S.A., Effect of season of calving on production performance of purnathadi buffaloes, Indian J. Anim. Res., 2004, 38, 25-28.
13. Juma, K.H., Said, S.I., Baghdasar, G.A., Dairy characteristics and their genetic parameters, Buffalo Bulletin, Iraqi buffaloes, 1994, 13, 2, 27-33.
14. Syed, M., Khan, Z., Shah, M.A.P., Production performance, persistency of lactation and repeatability of some quantitative traits in Nili-Ravi buffaloes. Sarhad J. Agri., 1996, 12, 1, 1-9.
15. Hussain, Z.K., Javed, S.M.I., Hussai, G.S., Kiyani, Some environmental effects on productive performance of nili-ravi buffaloes in azad kashmir, J. Anim. Pl. Sci., 2006, 16, 3-4.
16. Gupta, B.D., Kaushik, S.N., Mishra, R.R., Study on reproductive efficiency parameters of Murrah buffaloes, Ind. J. Dairy Sci., 1994, 47, 4, 257-264.
17. Khan, M.A., Genetic analysis of a purebred herd of Nili-Ravi buffaloes, University of Agriculture, Faisalabad, Pakistan, 1986.
18. Nadir, I.A., Syed, M., Farooq, M., Body measurements as indicators of production and reproduction traits in Nili Ravi buffaloes. M.S.C. (Hons. Thesis. Faculty of Animal Husbandry and Veterinary Sciences, NWFP, Agricultural University, Peshawar, Pakistan. Unpublished, 1999.
19. Afzal, M., Anwar, M., Mirza, M.A., Some factors affecting milk yield and lactation length in Nili Ravi buffaloes, Pakistan Vet. J., 2007, 27, 3, 113-117.