



UNIVERSITY OF LIFE SCIENCES
"KING MIHAI I" FROM Timisoara
**Multidisciplinary Conference on
Sustainable Development**



25-26 May 2023

THE SYNTHESIS POTENTIAL OF MILK IN BUFFALOES COWS FROM THE FĂGĂRAȘ AREA

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Abstract: Currently, approximately 20,000 buffaloes are raised in Romania, of which 11% are found in the Făgăraș area. The present study was carried out to estimate the capacity of milk synthesis by 205 buffaloes cows raised in this area, which achieved 1059 lactations, with the rank of lactations from 1 to 14, in an observation interval of 15 years, by determining the correlation between the indicators of milk production and reproduction (lactation duration, total amount of milk of a lactation, total amount of fat, total amount of protein, interval between calvings and service period). The variability analysis shows a lack of homogeneity of the milk production and reproduction characteristics, regardless of the lactation rank, their average being moderately representative, except for the interval from calving to the fertile mount where the average is not representative. Reducing the variability of milk production and reproduction indicators can be achieved over time through management. Increasing the potential of milk production, in buffaloes cows, can be done through a simultaneous selection that takes into account the duration of lactation, the milk production from the control days and the service period. Based on the correlation between some measurable indicators of the synthesis potential of milk, the value of other characteristics of milk production can be predetermined.

• Introduction

The question arises whether for selection work in buffalo herds it is preferable to have the total production per lactation as a selection criterion, or to take into account the size of the two factors that determine it: the lactogenic capacity of the udder and the duration of lactation, especially since these two indicators have different sources of formation.

In this paper, we set out to find out the importance of the milk synthesis capacity of the udder and the body of buffaloes dairy as a whole. As indicators of the potential of milk synthesis, two indicators were used derived from the milk measured on the control days, namely the sum of kg milk measured and the average production of the control days, which were put in relation to the amount of milk milked, with the total amount of lactation fat and the estimated amount of protein.

• Material and method

The work was carried out based on the records made during 15 years, on 205 buffaloes dairy raised in 5 farms in the Făgăraș area, which produced 1059 lactations, with the rank of lactations from 1 to 14. For each lactation, the effective duration of lactation (DL), the total amount of milk of a lactation (TL), the total amount of fat (TG), the total amount of protein (TP), the interval between calvings (CI) and service were taken into account period (SP). For each of these main indicators, the arithmetic mean, standard deviation and coefficient of variability were statistically calculated. The sum of the amounts of milk from the control days (\sum kg) was deduced from the total lactation (TL) based on the 28-day interval between the control days and the average value of the amount of milk milked in a control day (LP) was deduced also from total lactation using the duration of lactation. The obtained data were statistically processed and interpreted. In order to determine and interpret the main statistical indicators, a simple variance analysis was used. To determine how strong the relationship between the variables is, the correlation coefficient was also calculated.

• Acknowledgements

This work was supported by the project "Program for increasing performance and innovation in doctoral and postdoctoral excellence research - PROINVENT", at the University of Agronomic Sciences and Veterinary Medicine in Bucharest, with funding POCU through Funding Agreement no. 62487/03.06.2022 - SMIS code: 153299.

• Results and discussions

Duration of lactation in buffaloes dairy

Rank lactation	Number heads (n)	Duration of lactation DL (days)		
		$\sum n/n^1$	s^2	CV% ³
1	174	199.1	69.78	35
2	169	209.6	72.27	34
3	146	229.5	73.04	32
4	132	236.3	66.11	28
5	113	238.2	63.89	27
6	86	259.0	74.19	29
7	72	242.3	65.90	27
8	57	242.1	63.62	26
9	43	233.7	67.51	29
10	32	244.4	50.11	21
11	15	231.6	75.22	32
12	9	251.1	48.01	19
13	6	239.8	55.11	23
14	5	193.8	83.58	43

Reproduction parameters in buffaloes dairy

Rank lactation	n	Service period SP (days)			Calving interval CI (days)		
		$\sum n/n$	s	CV%	$\sum n/n$	s	CV%
1	x	x	x	x	443.2	144.30	33
2	140.2	127.12	91	465.6	135.38	29	
3	150.6	135.38	90	450.8	113.96	25	
4	135.8	113.96	84	438.8	112.29	26	
5	123.9	112.23	91	440.0	108.93	25	
6	125.0	108.86	87	464.9	141.59	30	
7	136.0	94.59	70	440.2	108.07	25	
8	125.2	108.07	86	414.7	143.12	35	
9	119.6	110.48	92	413.7	72.25	17	
10	98.7	72.25	73	400.4	66.09	17	
11	85.4	66.09	77	366.1	159.46	44	
12	115.6	102.84	89	430.5	110.35	26	
13	115.5	110.35	96	419.4	104.72	25	
14	104.4	104.72	100	x	x	x	

Parameters of milk production in buffaloes dairy

Lactation rank	Milk production								
	Total quantity TL (kg)			Fat quantity TG (kg)			Protein quantity TP (kg)		
	$\sum n/n^1$	s^2	CV% ²	$\sum n/n^1$	s^2	CV% ²	$\sum n/n^1$	s^2	CV% ²
1	965.5	364.87	38	68.6	26.44	39	42.4	13.60	32
2	1062.9	424.56	40	74.3	31.40	42	49.0	15.17	31
3	1248.2	480.25	38	85.5	35.67	42	59.5	17.73	30
4	1278.6	462.76	36	87.4	36.08	41	61.7	19.69	32
5	1315.5	467.67	36	89.5	35.99	40	60.1	20.70	34
6	1467.8	537.01	37	100.7	40.76	40	68.7	25.63	37
7	1340.0	464.95	35	95.1	35.11	37	62.1	17.22	28
8	1365.3	455.46	33	94.0	32.09	34	61.3	19.08	31
9	1360.7	355.80	26	94.3	24.95	26	58.9	14.86	25
10	1390.9	491.24	35	96.3	32.95	34	60.5	19.45	32
11	1255.9	272.58	22	86.9	20.00	23	51.9	10.27	20
12	1554.8	458.22	29	109.8	31.53	29	67.4	16.95	25
13	1501.3	641.52	43	101.3	45.32	45	66.8	19.18	29
14	1128.0	526.50	47	69.8	29.69	43	44.0	20.35	46

Average milk quantities milked

Rank lactation	\sum kg control days [%e]	Milk milked/day control (LP)	Milk milked/day feed (LFZ)
1	34.48	4.85	2.18
2	37.96	5.07	2.28
3	44.58	5.44	2.77
4	45.66	5.41	2.91
5	46.98	5.52	2.99
6	52.42	5.67	3.16
7	47.86	5.53	3.04
8	48.76	5.64	3.29
9	48.60	5.82	3.29
10	49.68	5.69	3.47
11	44.85	5.42	3.43
12	55.53	6.19	3.61
13	53.62	6.26	3.58
14	40.29	5.82	x

Correlation between the indicators studied on control day and on feed day

The correlation between:	Value (r)
\sum kg control days and the total milked quantity	0.221
\sum kg control days and kg fat	0.229
\sum kg control days and kg protein	0.231
Milk milked/day and total quantity	0.834
Milk milked/day and fat kg	0.728
Milk milked/day and kg protein	0.634
Milk milked per feed day and lactation duration	0.68
Milk milked per feed day and service period	-0.73
Milk milked per feed day calving interval	-0.66

The correlation between the average daily production of milk and the total production of milk, fat and protein per lactation is very high because actually synthesizing milk means synthesizing butter and proteins. The correlation of the second indicator proposed to estimate the milk synthesis capacity with the amounts of butter and protein synthesized per total lactation is much lower. The explanation is simple, the size of the second indicator is also determined by the duration of lactation, which does not correlate with the synthesis of butter and protein.

• Conclusions

The calendar year (external environment) has the greatest participation in inducing the variability of milk production parameters in buffaloes, reducing its influence can be done through good organization. Age (lactation rank) has the smallest participation in inducing the variability of milk production and it is not necessarily necessary to include it in the selection activity. Reducing the variability of milk production indicators can be achieved over time through management. Lactation duration is an important productivity indicator in milk production in buffaloes. Increasing the potential of milk production, in buffaloes dairy, can be done through a simultaneous selection that takes into account the duration of lactation, the milk production from the control days and the service period. Based on the correlation between some measurable indicators of the synthesis potential of milk, the value of other characteristics of milk production can be predetermined.