

STUDY FOR INTRAPOPULATIONAL STRUCTURE TO A BLACK AND WHITE ROMANIAN COWS POPULATION

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Abstract

The research has been conducted on 210 cows bred in Iasi area. We analyse production features for cows, cows' ascendancy and for each group of paternal half-sisters. Consequently BNR population taken in study have a maximum production of milk in the third lactation, with an average of 6670 kg with 4.13% fat and 3.34% protein, and the minimum milk production was registered in the first lactation (6108 kg milk with 4.12% fat and 3.34% protein). The cows' mothers have an average of milk production of 7003.44 kg; the paternal grandmothers have an average production of 10877 kg milk and the maternal grandmothers have 6925.35 kg milk. The daughters of the used bulls for reproduction had good productive performances, remarking the daughters of 51454 bull (7019.33 kg milk), 51131 bull (6567.17 kg milk), and the smallest performances being recorded for the 51459 bull (5010.43 kg milk).

Key words: sires, ascendancy, productive performance

INTRODUCTION

It is very important to know dairy cows' intrapopulation structure for selection and breeding. The principal thing in cows breeding is exercise of pressing of selection usage of bulls from the artificial insemination network [3].

MATERIAL AND METHOD

The study was conducted on 210 Black and White Romanian cow breed in Iasi area, which has, at least one finished lactation. The primary data about quantitative and qualitative production and ascendancy, for this study, came from UARZ Iasi and from farm. Data was processed and interpreted using specific method for this research (average, standard deviation, the coefficient of variability) using the statistical program for analyzing the variation and co variation elaborate by Vasile Maciuc in 2002- 2003 at USAMV Iasi Romania.

The complexity of fallowed facts was imposed using a diversification methodology and respecting using a diversifications technology and respecting the methodology propose by literature.

RESULTS AND DISCUSSIONS

Analysing cows ascendancy, the animals provide from mother (M) with performance average of 7003.44 Kg milk, 291.21 Kg fat and 229.83 kg protein (figure 1). The grandmothers had performance of 6925.35 Kg milk and 279.58 Kg fat, for maternal grandmother, and 10877 Kg milk with 4.23% fat or 460.6 Kg pure fat for paternal grandmother.

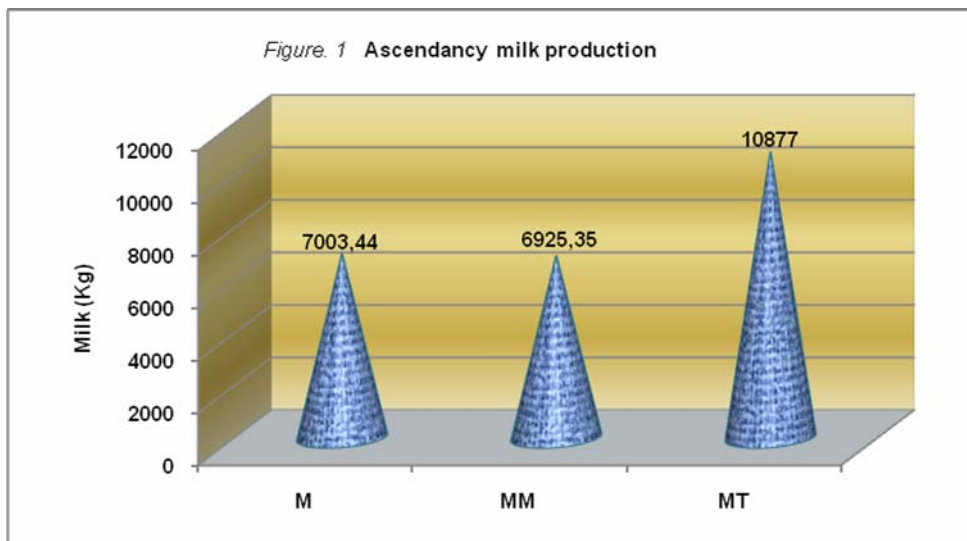
The total lactation of Black and White Romanian cows from Iasi area has 381.09 days for first lactation, with limits between 261 and 673 days. For next lactation, this is in low decrease, the shortest was represented by the 4th lactation with 315.88 days with limits between 252 and 437 days. Variability for total lactation days long was quite pronounced. Analysing productive performance for total lactation we can observed that the average of the 3rd lactation is the maximum of 7859.44 Kg milk, with 4.14% fat and 3.35% protein for an average of 381.23 days.

Analysing medium value and variability estimators for production traits of six lactation long it is obvious that maximum normal lactation was the third one with a production of 6670 Kg milk with variation

limits between 4757 Kg and 8739 Kg milk for an average of 302.17 days, followed by second lactation with an average of 6390.75 Kg milk with 4.13% fat and 3.34% protein for an average of 301.21 days lactation long.

Following the production of pure fat from milk for normal lactation it is obvious

increasing from 251.74 Kg in the first lactation, to 263.71 Kg in the second lactation, having maximum level in the third lactation (275.69 Kg). The same evolution was for protein quantity, for normal lactation (204 kg in the first lactation increasing until 220.75 Kg in the third lactation).



In Black and White Romanian Cows population was identify 21 genetic groups with more than 3 daughters (half-sister from father line) and the production indices are presented in the table number 2.

From 21 sires, with most daughters was sire cod 51471 with 38 daughters, sire cod 5472 with 34 daughters, sire cod 51131 with 12 daughters, sire cod 51123 with 11 daughters and sires 51036, 51519, 51526 with 10 daughters each.

Analysing the milk production average for this genetic structure it is obvious that are valuable genetic families with performance of 6500 Kg milk and more for first lactation.

From 21 genetic families, 4 families have to the first lactation 6500 milk kg and seven families have between 6000 and 6500 milk Kg. In the population take in study was a genetic family from sire cod 51454 with 3 daughters with an average for the first lactation of 7019.33 Kg milk and a genetic family (cod 51131) with 12 daughters with an average milk production of 6567.17 milk

kg. The variability amplitude for milk production was between 4010 Kg milk and maximum of 8464 Kg milk, which shows the value and the genetic potential of Black and White Romanian Cows from the farm take in study.

Nine genetic families have production between 5500 Kg milk and 6000 Kg milk (family of sire 18070 with 3 half-sisters, families 20003, 51128, 51460 with 4 half-sisters, family 51121 with 7 half-sisters, genetic family 51123 with 11 half-sisters, families 51129 and 51456 with 5 half sisters each and family 51519 with 10 paternal half sister).

All that genetic structure shows the genetic value of Black and White Romanian cows from the farm take in study and is necessary a careful selection with retention and multiply of valorous genotypes from the valorous genetic structures simultaneous with removing animals of genetic structure with small performances from reproduction.

Table 1.(a)
Medium values and variability estimators for production traits on successive lactation at population take in study

Specification	n.	Statistics	Total lactation						Normal lactation					
			Lactation length (days)	Milk kg	Fat %	Fat Kg.	Prot. %	Prot. Kg.	Lactation length (days)	Milk kg	Fat %	Fat Kg.	Prot. %	Prot. Kg.
Lactation I	210	\bar{X}	381.09	7441.92	4.13	308.93	3.35	250.05	301.55	6108	4.12	251.74	3.34	204
		$\pm s \bar{X}$	6.104	125.078	0.004	4.118	0.004	4.117	0.59	52.50	0.004	2.235	0.004	1.752
		s	76.449	1812.54	0.062	58.614	0.054	59.662	8.57	760.83	0.063	32.386	0.058	25.39
		V%	21.33	24.356	1.492	24.633	1.6	23.86	2.84	12.45	1.525	12.865	1.747	12.446
		Min	261	2189	4.04	185	3.13	150	262	4010	4.02	142	3.06	135
		Max	673	12958	4.59	533	3.45	435	305	8464	4.56	347	3.45	283
Lactation II	97	\bar{X}	360.3	7338.91	4.13	302.52	3.34	245.71	301.21	6390.75	4.13	263.71	3.34	213.88
		$\pm s \bar{X}$	7.88	145.485	0.004	6.027	0.006	4.94	0.841	80.006	0.009	3.297	0.006	2.569
		s	77.611	1432.85	0.044	59.36	0.061	48.70	8.285	787.966	0.09	32.471	0.064	25.299
		V%	21.541	19.524	1.072	19.596	1.825	19.82	2.751	12.33	2.187	12.313	1.909	11.829
		Min	267	4734	3.98	193	3.12	162	267	4540	3.98	187	3.12	153
		Max	642	12489	4.25	512	3.54	422	305	8474	4.9	349	3.54	283
Lactation III	48	\bar{X}	381.23	7859.44	4.14	325.15	3.35	260.85	302.17	6670	4.13	275.69	3.34	220.75
		$\pm s \bar{X}$	19.161	313.207	0.006	13.028	0.006	10.793	0.927	129.00	0.006	5.397	0.006	4.389
		s	132.74	2169.96	0.04	90.263	0.04	74.773	6.426	893.80	0.043	37.39	0.043	30.41
		V%	34.821	27.61	0.979	27.761	1.196	28.665	2.127	13.4	1.036	13.562	1.283	13.776
		Min	279	5349	4.07	220	3.22	154	279	4757	4.07	195	3.22	154
		Max	928	14153	4.25	594	3.42	479	305	8739	4.25	363	3.42	294

Table 1. (b)

Specification	n.	Statistics	Total lactation						Normal lactation					
			Lactation length (days)	Milk kg	Fat %	Fat Kg.	Prot. %	Prot. Kg.	Lactation length (days)	Milk kg	Fat %	Fat Kg.	Prot. %	Prot. Kg.
Lactation IV	26	\bar{X}	315.88	6574.58	4.12	272.92	3.35	220.23	293.92	6110.69	4.12	258.54	3.35	205.38
		$\pm s_x$	9,218	346.886	0.008	14.851	0.01	11.436	3.426	313.76	0.008	13.022	0.01	10.363
		s	47.005	1768.77	0.043	75.723	0.05	58.315	17.47	1599.86	0.043	66.397	0.051	52.84
		V%	14.88	26.903	1.04	27.745	1.495	26.479	5.944	26.181	1.041	25.682	1.512	25.727
		Min	252	3327	4.05	137	3.17	113	252	3327	4.05	137	3.17	113
		Max	437	10313	4.26	421	3.43	340	305	10313	4.26	421	3.43	340
Lactation V	15	\bar{X}	340.53	6784.33	4.12	293.07	3.38	235.73	299.2	6218.73	4.11	255.93	3.38	216.67
		$\pm s_x$	19.48	376.204	0.008	17.066	0.01	14.513	3.027	274.908	0.007	11.358	0.011	12.487
		s	75.446	1457.03	0.032	66.097	0.04	56.207	11.724	1064.71	0.027	43.988	0.043	48.363
		V%	22.155	21.476	0.776	22.553	1.18	23.843	3.919	17.121	0.655	17.187	1.26	22.321
		Min	275	4636	4.08	189	3.3	155	275	4636	4.08	189	3.3	155
		Max	527	10255	4.2	421	3.43	344	305	8090	4.17	337	3.43	337
Lactation VI	5	\bar{X}	337.4	6800.2	4.11	279.2	3.37	228.8	297.6	6309.8	4.11	259.2	3.36	212.2
		$\pm s_x$	29.286	885.198	0.004	36.398	0.017	29.708	7.4	828.102	0.006	34.012	0.017	27.942
		s	65.485	1979.36	0.008	81.389	0.038	66.428	16.547	1851.69	0.013	76.054	0.038	62.48
		V%	19.409	29.107	0.204	29.151	1.123	29.033	5.56	29.346	0.317	29.342	1.144	29.44
		Min	268	3742	4.1	153	3.33	128	268	3742	4.1	153	3.33	128
		Max	432	8910	4.12	365	3.41	303	305	8862	4.13	363	3.41	301

Table 2
Medium value of milk production indices for genetic groups to the Black and White Romanian Cows from SCDCB Dancu Iasi

Genetic groups	Normal lactation, days					Milk, kg					Fat, kg					Protein, kg					
	n	\bar{X}	s	Min	Max	\bar{X}	s	Min	Max	\bar{X}	s	Min	Max	\bar{X}	s	Min	Max	\bar{X}	s	Min	Max
	18070	3	291.33	11.84	284	305	5738.67	1093.95	4573	6743	250.33	47.089	205	299	185.67	33.561	151	218			
18646	5	302.40	5.81	292	305	6105.00	488.66	5559	6873	251.22	20.027	229	283	202.82	13.484	185	222				
20003	4	305	0	305	305	5645.50	200.99	5398	5871	232.25	7.974	222	241	191.50	7.724	181	199				
51036	10	297.30	13.42	270	305	6268.90	741.40	4735	7409	259.70	31.542	194	307	205.60	25.505	150	251				
51038	9	303.67	4.00	293	305	6526.89	876.32	5249	7890	268.11	36.22	216	325	220.33	28.32	176	265				
51121	7	299.71	10.27	278	305	5755.29	485.43	5098	6502	237.86	20.095	208	267	191.57	15.894	171	219				
51123	11	305	0	305	305	5850.82	673.01	5182	7332	242.45	28.098	214	307	195.82	23.43	171	249				
51128	4	294.25	18.92	266	305	5687.00	569.23	4848	6113	233.25	22.853	200	252	189.50	19.330	161	204				
51129	5	298.80	9.06	285	305	5869.00	446.66	5389	6344	242.20	18.102	223	263	197.60	13.164	182	211				
51131	12	303.33	3.98	293	305	6567.17	533.30	6112	7823	271.33	22.976	249	325	213.08	17.28	187	246				
51132	4	305	0	305	305	6276.75	463.91	5974	6957	258.75	17.557	249	285	208.00	15.384	199	231				
51453	4	305	0	305	305	6534.25	453.85	5724	7226	268.50	31.775	234	296	219.50	24.691	193	242				
51454	3	305	0	305	305	7019.33	544.05	6490	7577	289.33	23.502	266	313	236.33	20.033	217	257				
51456	5	305	0	305	305	5762.00	319.10	5314	6131	237.20	12.029	220	249	192	8.746	179	201				
51459	7	297.29	16.42	261	305	5010.43	523.79	4010	5461	216.14	39.376	165	293	168.43	17.077	135	182				
51460	4	305	0	305	305	5801.25	534.50	5032	6218	239.00	20.801	209	254	194.25	18.554	168	210				
51471	38	303.45	4.50	285	305	6280.37	873.22	4667	8464	255.11	40.401	142	347	211.21	29.538	155	283				
51472	34	300.26	9.904	274	305	6105.03	757.23	4502	8080	250.21	31.046	185	331	204.53	25.638	151	272				
51509	3	305	0	305	305	6497.33	142.83	6379	6656	266.33	5.508	261	272	217	6.245	210	222				
51519	10	298	14.82	267	305	5822.30	623.16	4934	6931	239.90	25.022	205	284	195.60	20.408	167	235				
51526	10	301.10	8.95	278	305	6225.70	967.48	4579	7367	255.30	40.053	188	303	209.60	31.528	157	247				

CONCLUSIONS

Following the study we can conclude the following:

Population ascendancy was valuable (M=7003.44 Kg milk, MM =6925.35 Kg milk, MT =10877 Kg milk)

Maximum lactation was represented by the third lactation with a milk production of 6670 Kg with variations between 4757 Kg and 8739 Kg for an average of 302.17 days per normal lactation.

From 21 genetic families, four families have to the first lactation over 6500Kg milk and seven families between 6000 and 6500 kg milk. Was a genetic family from sire 51454 with 3 half-sisters a with an average milk production of 7019.33 Kg and one genetic family (cod 51131) from 12 half-sisters with an average milk production of 6567.17 Kg.

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