

WEIGHT GROWTH OF ILE DE FRANCE LAMBS ACCORDING TO THE GENEALOGY LINE

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Abstract

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The aim of the study was to compare the weight growth and average daily gain of Ile de France lambs of different sex and type of birth according to the genealogy line. The study was conducted with 153 Ile de France lambs reared in the Institute of Animal Science – Kostinbrod. The lambs were offspring's of three imported rams (№ 3015, 3127 and 3323) founders of the genealogy line in the flock. The weight growth of 63 male and 90 female lambs born as single (62) and twins (91) was traced. The lambs were divided in three groups according to their origin: I group – of ram № 3015, II group – of ram № 3127, III group – of ram № 3323. 612 measuring of live weight at birth, at 10 days, at 30 days and at 70 days (± 2 days) were made. The average daily gain between 10–30 days and 30–70 days was calculated. The age to measure the weights and define the average daily gain considered the selection requirements of the specialized meat breeds. The obtained information was evaluated by the methods of variation statistics. The parameters of the live weight and the average daily gain of Ile de France lambs from three genealogical lines at different ages, sex and type of birth were established as a result of the present study. No essential differences in the live weight and the average daily gains of the different ages in the male and female single and twins from the studied genealogical line were observed. The average values of the weight at birth, at 10, 30 and 70 days (4.89 kg, 7.72 kg, 13.19 kg and 24.53 kg) and the average daily gain between 10-30 days and 30-70 days (0.270 kg and 0.285 kg) respond to the standard of the breed and showed that appropriate selection was done in the particular conditions of rearing in IAS – Kostinbrod.

Key words: Ile de France, genealogic line, live weight, average daily gain

Introduction

The import of Ile de France sheep in our country started in the 1960s of the last century. The first studies on the productive quality of these animals were done by Dimitrov (1988). The dynamics of variation of the live weight and average daily gain of the lambs of certain ages according to the sex and type of birth are important from selection point of view and define the breeding policy in the flocks of the breed (Raicheva and Ivanova, 2005; Ivanova et al., 2006; Raicheva et al., 2007).

The Ile de France sheep with their growing capacities, conformation, carcass quality and good acclimatization can be used for rearing in pure as well as for crossing to get high quality lambs for meat.

Through the years some investigations on the intensity of growth of pure bred lambs and of the crosses with different base (Chakurov and Marinova, 1986; Ivanov et al., 1992; Ivanov et al., 1996; Slavov, 2007) were done, but studies on the weight growth and average daily gain according to the selection requirements of the specialized meat breeds are limited.

The collection of new and topical information for the weight growth of animals of Ile de France breed will give an opportunity to juxtapose the results and estimate their development in the conditions in Bulgaria.

The aim of the study was to compare the weight growth and average daily gain of Ile de France lambs of different sex and type of birth according to the genealogy line.

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Materials and Methods

The study was conducted with 153 Ile de France lambs reared in the Institute of Animal Science – Kostinbrod (IAS – Kostinbrod). The lambs were off springs of three imported rams (№ 3015, 3127 and 3323) founders of the genealogy line in the flock. The weight growth of 63 male and 90 female lambs born as single (62) and twins (91) was traced. The lambs were divided in three groups according to their origin: I group – of ram № 3015, II group – of ram № 3127, III group – of ram № 3323. Only lambs born in winter were included in the trial. 612 measuring of live weight at birth, at 10 days, at 30 days and at 70 days (± 2 days) were made. The average daily gain between 10-30 days and 30-70 days was calculated. The age to measure the weights and define the average daily gain considered the selection requirements of the specialized meat breeds.

The obtained information was evaluated by the methods of variation statistics and analyzed by the statistical package of EXCEL 2003. The significance of the differences between means of the studied traits was evaluated by t-criterion of Student.

Results and Discussion

The values for the live weight and the average daily gain at different ages of the single born male lambs from the studied line did not show considerable differences (Table 1). There were no significant differences between the off springs of the three rams as well as with the total average of the respective category. The live weights at birth of the single born male lambs were between 5.12 kg and 5.68 kg, at 10 days – 8.40 kg and 9.04 kg, at 30 days – 14.68 kg and 15.71 kg and at 70 days – 26.13 kg and 30.37 kg (Table 1). The average daily gain between 10–30 days varied from 0.292 kg to 0.363 kg, and – between 30–70 days – from 0.285 kg to 0.366 kg. The mean values for the live weight at 70 days

(28.80 kg) and the average daily gains 10–30 and 30–70 days (0.321 kg and 0.344 kg) were similar to those reported by UPRA (1991) (29.06 kg; 0.302 kg and 0.357 kg) for the studied category. The results showed tendency for higher values when compared to the obtained at previous studies of the same flock (Raicheva and Ivanova, 2005; Ivanova et al., 2006). This showed that appropriate selection was carried out to achieve the breed standards in the conditions of our country.

The live weight and the average daily gain at different ages did not show high differences in the twins born male lambs from the investigated line (Table 2). Significant differences between the off springs of the three rams as well as with the total average of the respective category were not observed. The live weights at birth of the twins born male lambs were between 4.40 kg and 5.04 kg, at 10 days – 6.84 kg and 7.27 kg, at 30 days – 11.47 kg and 11.98 kg and at 70 days – 22.11 kg and 22.65 kg (Table 2). The average daily gain between 10–30 days varied from 0.211 kg to 0.257 kg, and – between 30–70 days – from 0.237 kg to 0.275 kg. The average values for the live weight at 70 days (22.16 kg) and the average daily gains 10–30 and 30–70 days (0.226 kg and 0.265 kg) were lower compared to the reported by UPRA (1991) (25.29 kg; 0.256 kg and 0.328 kg) for the studied category (Table 2). This can be explained with the influence of non genetic factors, mainly organization reasons when rearing the lambs.

No significant differences between the investigated three lines of the single born female lambs with the total average of the respective category were found. The live weights at birth of the single born female lambs were between 5.10 kg and 5.61 kg, at 10 days – 7.97 kg and 8.54 kg, at 30 days – 13.93 kg and 15.28 kg and at 70 days – 26.97 kg and 27.75 kg (Table 3). The average daily gain between 10–30 days was in the range of 0.281 kg to 0.327 kg, and – between 30–70 days – 0.313 kg and 0.334 kg. The average values for the live weight at 70 days (27.57 kg) and the average daily gains 10–30 and 30–70 days (0.319 kg and 0.317 kg)

Table 1

Live weight and average daily gain at the single born male lambs at different agis

Traits	Total		3015		3127		3323		Sign.
	n = 24		n = 9		n = 9		n = 6		
	X	SE	X	SE	X	SE	X	SE	
Live weight at birth, kg	5.29	0.211	5.2	0.395	5.12	0.278	5.68	0.466	NS
Live weight at 10 days, kg	8.67	0.316	9.04	0.63	8.49	0.396	8.4	0.668	NS
Live weight at 30 days, kg	15.15	0.677	14.88	1.433	15.71	0.611	14.68	1.567	NS
Live weight at 70 days, kg	28.8	1.169	29.02	2.172	30.37	1.615	26.13	2.308	NS
Average daily gain 10–30 days, kg	0.321	0.025	0.292	0.055	0.363	0.018	0.3	0.049	NS
Average daily gain 30–70 days, kg	0.344	0.023	0.362	0.048	0.366	0.03	0.285	0.032	NS

Note: NS – no significant

were relative to the reported by UPRA (1991) (26.59 kg; 0.289 kg and 0.320 kg) for the studied category. The lambs from ram № 3323 showed tendency for lower live weight at birth, at 30 days and average daily gain at 10–30 days (Table 3). Similar to the male lambs, the single born female lambs displayed a trend toward higher values in comparison to the previously obtained in our studies (Raicheva and Ivanova, 2005; Raicheva et al., 2007). This confirmed that the applied selection scheme in the flock was successful.

The results for the twins born female lambs showed that the lambs from line № 3323 had with significantly lowest live weight at birth, at 30 days and gain at 10-30 days ($P < 0.05$; $P < 0.001$), as for the rest of the traits the same tendency was observed (Table 4). The live weight at birth of the twins born female lambs were between 4.13 kg and 4.69 kg, at 10 days – 6.71 kg and 7.43 kg, at 30 days – 10.71 kg and 12.77 kg and at 70 days – 20.16 kg and 23.02 kg (Table 4). The average daily gain between 10–30 days varied

Table 2
Live weight and average daily gain at the twins born male lambs at different ages

Traits	Total		3015		3127		3323		Sign.
	n = 39		n = 13		n = 18		n = 8		
	X	SE	X	SE	X	SE	X	SE	
Live weight at birth, kg	4.65	0.134	5.04	0.273	4.47	0.157	4.4	0.283	NS
Live weight at 10 days, kg	7.08	0.214	7.27	0.431	7.05	0.3	6.84	0.43	NS
Live weight at 30 days, kg	11.6	0.374	11.47	0.576	11.53	0.652	11.98	0.65	NS
Live weight at 70 days, kg	22.16	0.656	22.65	1.045	22.11	0.954	21.46	1.796	NS
Average daily gain 10–30 days, kg	0.226	0.012	0.211	0.016	0.224	0.021	0.257	0.021	NS
Average daily gain 30–70 days, kg	0.265	0.011	0.275	0.017	0.27	0.015	0.237	0.034	NS

Note: NS – no significant

Table 3
Live weight and average daily gain at the single born female lambs at different ages

Traits	Total		3015		3127		3323		Sign.
	n = 38		n = 11		n = 19		n = 8		
	X	SE	X	SE	X	SE	X	SE	
Live weight at birth, kg	5.28	0.096	5.61	0.23	5.23	0.151	5.1	0.347	NS
Live weight at 10 days, kg	8.41	0.196	8.27	0.507	8.54	0.289	7.97	0.793	NS
Live weight at 30 days, kg	14.92	0.331	15.28	0.795	15.03	0.586	13.93	0.809	NS
Live weight at 70 days, kg	27.57	0.582	26.97	1.207	27.75	1.103	27.52	1.208	NS
Average daily gain 10–30 days, kg	0.319	0.011	0.327	0.027	0.324	0.019	0.281	0.02	NS
Average daily gain 30–70 days, kg	0.317	0.011	0.313	0.3	0.314	0.018	0.334	0.024	NS

Note: NS – no significant

Table 4
Live weight and average daily gain at the twins born female lambs at different ages

Traits	Total		3015		3127		3323		Sign.
	n = 52		n = 25		n = 19		n = 8		
	X	SE	X	SE	X	SE	X	SE	
Live weight at birth, kg	4.58	0.119	4.69	0.197	4.63	0.179	4.13	0.16	2 > 4* 3 > 4*
Live weight at 10 days, kg	7.29	0.191	7.43	0.335	7.36	0.256	6.71	0.271	NS
Live weight at 30 days, kg	12.26	0.315	12.36	0.525	12.77	0.435	10.71	0.414	2 > 4* 3 > 4**
Live weight at 70 days, kg	22.19	0.6	22.21	0.94	23.02	0.849	20.16	1.527	NS
Average daily gain 10–30 days, kg	0.247	0.01	0.244	0.113	0.271	0.015	0.2	0.023	3 > 4*
Average daily gain 30–70 days, kg	0.247	0.012	0.244	0.016	0.257	0.021	0.236	0.036	NS

Note: Significant at: * – $P < 0.05$; ** – $P < 0.001$; NS – no significant

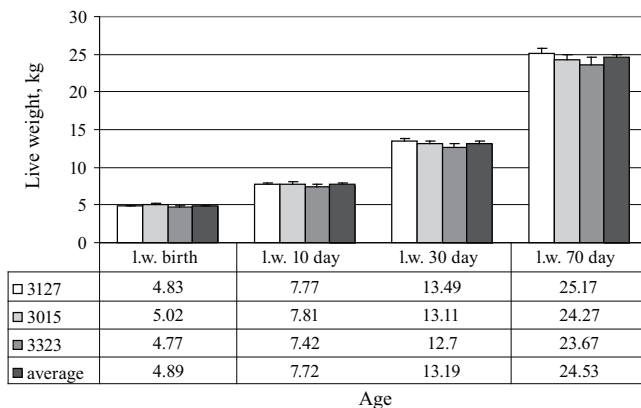


Fig. 1. Lambs live weight at different age and origin

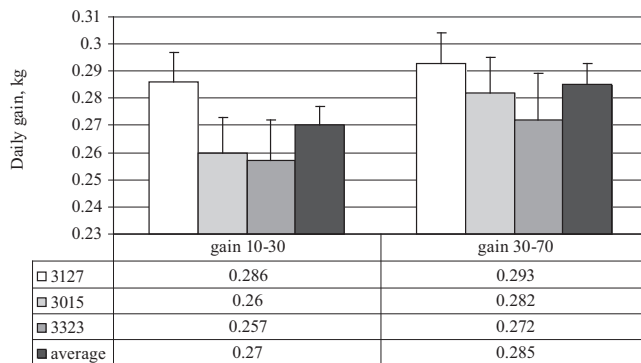


Fig. 2. Daily gain at different age and origin

from 0.200 kg to 0.271 kg, and – between 30–70 days – from 0.236 kg to 0.257 kg. The average values for the live weight at 70 days (22.19 kg) and the average daily gain 10–30 and 30–70 days (0.247 kg and 0.247 kg) were close to the reported by UPRA (1991) (23.63 kg; 0.248 kg and 0.299 kg) for the studied category. The tendency for higher values in this category of lambs compared to the obtained by us (Raicheva and Ivanova, 2005; Ivanova et al., 2006) showed the positive effect of the conducted selection in the flock.

The average values of the weight growth and average daily gain of the generation of the three rams were inessential and not significant (Figures 1 and 2). Insignificantly tendency for higher live weight and average daily gain of the lambs from line № 3127 was observed. The obtained results showed that the animals had equal live weight and average daily gain and respond to the parameters of the selection traits of the breed.

Conclusion

The parameters of the live weight and the average daily gain of Ile de France lambs from three genealogical lines at different ages, sex and type of birth reared in IAS – Kostinbrod were established as a result of the present study.

No essential differences in the live weight and the average daily gains of the different ages in the male and female single and twins from the studied genealogical line were observed.

The average values of the weight at birth, at 10, 30 and 70 days (4.89 kg, 7.72 kg, 13.19 kg and 24.53 kg) and the average daily gain between 10–30 days and 30–70 days (0.270 kg and 0.285 kg) respond to the standard of the breed and showed that appropriate selection was done in the particular conditions of rearing in IAS – Kostinbrod.

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