

PRECOCIOUS REPRODUCTION OF YOUNG SHEEP OF MERINO DE PALAS BREED

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ABSTRACT - *The principal measure for raising the economic profitability from the sheep breeding section was to increase the lamb number from each female of the livestock, easy to accomplish by increasing the reproduction activity and the precociousness of the young sheep during that specific time. For using in reproduction the young females, without affecting the further body development, a special attention will be paid to the breeding technology, so that the sexual maturity be installed as soon as possible. As concerns the age and optimum weight of the young females, there was a large variety between populations. As for age, the complex research suggests for almost all the breeds an interval of 6 – 8 months, but it can be postponed until the age of 18 months. The situation of young females, proceeded from late lambing has shown that they could conceive from the first autumn, at the age of 4 months. As concerns the weight, the reproduction could take place without negative repercussions, when a body development of at least 60 – 70% from the one typical to the adult sheep like Merino- type, was reached and of 50 – 60% for the fertile type and English mutton-type sheep.*

Key words: sheep, precocious reproduction, Merino de Palas breed

INTRODUCTION

Making rentable the sheep breeding, under conditions of market economy requires the approach of new techniques, able to increase significantly the yields. This desideratum can be reached by a continuous effort for improving the productive and reproductive performances and breeding technologies, applied in sheep.

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The main measure for increasing the production in the field of sheep breeding is to increase the number of lambs from each female, by intensification of the reproduction activity and the precocious selection for reproduction of young female sheep.

For the selection for reproduction of the young females, without affecting the further body development, a special attention will be paid to the breeding technology, so that the sexual maturity be installed as soon as possible. As for age, Dyrmondon and Haresing, quoted by Gh. Sandu, suggest for almost all the breeds, the 6 – 8 months interval, but it can be postponed until the age of 18 months. As concerns the weight, the reproduction could take place without negative repercussions, when a body development of at least 60 – 70% from the one typical to the adult sheep like Merino- type was reached, and of 50 – 60% for the fertile type and English meat-type sheep (Niga, Marin, 1975; Pascal, 1995; Pascal, 1999, Pascal, 2001; Petcu et al, 1984).

MATERIALS AND METHODS

Merino de Palas sheep, managed under the conditions of the Central Station of Research for the Control of the Soil Erosion Perieni – Bîrlad, represented the biological material. The experimental groups of young females, used at covering, have been distributed in three different groups, by age. The females that made up the group 1 (G1) had 9 months, those from group 2 (G2) had 17 months, and those from the third experimental group (G3) had 21 months. The control group (CG) was made up of adult sheep from the same breed.

30 days before the covering, the stimulated feeding was practised, being administrated, at discretion, green mass and almost 0.3 kg of concentrates each day/head. The covering took place during 20 – 30 September 200 and the weaning of lambs took place at the age of 60 days.

The research has followed many aspects, the most important ones being represented by: the sheep age influence over the specific index of the reproduction function, the total duration of gestation by age, the body weight evolution of sheep by age at lambing, etc.

Data were centralised and then statistically processed. For the determination of the differences between the average values and of the statistical estimates, Fisher and Tukey tests were used.

RESULTS AND DISCUSSION

Expression of the sexual activity. In case of all groups, the fecundity has registered maximum values, every female found at covering and diagnosed to be pregnant, gave birth to at least one lamb. The raised value of this index represented a very good result on females from the four groups .

REPRODUCTION OF YOUNG FEMALES OF MERINO DE PALAS BREED

The analysis on data from *Table 1* has found out some differences of the calculated values for other indexes specific to the reproduction function. The calculation of the fertility index has indicated the most reduced values for G1, the average ones (83%) for the groups where the age at covering was of 17 or 19 months and the highest ones (94%) for the adult females from the control group.

Table 1

The principal indexes of reproduction (%)

Specification	G1	G2	G3	WG
Fecundation	100	100	100	100
Fertility	77	83	83	94
Prolificacy	107	108	117	123
Birth rate	82	90	96	116

The prolificacy had an ascendant curve connected to the animal's age. In the case of the group represented by females, which at covering had 9 months, the value of this index was of 107%, and it has increased until 108% at G2, reaching values of 117% and 123% at G3 and control group.

The birth rate was calculated in connection with the number of offspring obtained from the total number of sheep, and had the highest values in the adult sheep (116 %), and the lowest values at the experimental groups.

The sheep age and the body development. The development rate of female body from the four groups was assessed by the analysis of the constant weight, in connection with the age at covering and lambing (*Table 2*). For a more realistic analysis of the development and growth rate, body measurements were done (*Table 3*).

At covering, in the case of all experimental groups (G1, G2 and G3), the average body weight was over 75% of the specific one for the adult sheep (control group), the requirements for reproduction being fulfilled. The reduced value of the justification coefficient certified that the individuals of the groups were characterized by homogeneousness in this indicator. As for the weight at covering, some differences between all the groups have been established, with $p > 0.01$ between G1 and G4, G3 and G1, G2 and G1.

The differences registered for the age at covering and at lambing had the significance between groups for $p > 0.01$.

Analysing the females group, with the average age at covering of 292.21 ± 1.91 days, we found out that they had a weight of 42.070 ± 0.379 kg, which represented 75.5% of the weight at covering of sheep-mothers (control group). The age at lambing was influenced by the average duration of gestation.

We have also studied the evolution of other indicators, resulted from some biometrical measures on sheep from the four groups, differentiated by the age at covering.

Table 2

Age and weight of sheep at covering and lambing

Group	Statistics	The age of sheep (days)		The weight of sheep	
		At covering	At lambing	At covering	At lambing
G1	$\bar{X} \pm s \bar{x}$	292.210±1.91	436.00±12.452	42.070±0.379	48.850±0.513
	s	11.375	33.562	2.568	2.618
	V%	3.893	14.562	6.105	5.360
	minimum	265	411	38	45
	maximum	308	463	47	56
G2	$\bar{X} \pm s \bar{x}$	518.210±1.633	667.490±3.532	50.300±0.505	59.110±0.470
	s	11.197	24.211	3.464	3.225
	V%	9.717	7.081	6.886	5.456
	minimum	477	624	45	53
	maximum	539	693	53	61
G3	$\bar{X} \pm s \bar{x}$	638.55±5.827	790.720±10.547	50.611±0.637	60.020±0.621
	s	14.723	44.747	2.704	2.635
	V%	11.306	6.057	5.342	4.391
	minimum	578	729	48	57
	maximum	645	801	57	66
Control group	$\bar{X} \pm s \bar{x}$	1302.67±10.289	1454.780±10.289	55.720±0.620	62.010±0.714
	S	13.652	43.652	2.630	3.029
	V%	13.959	11.959	5.186	5.223
	minimum	1060	1205	49	56
	maximum	1385	1537	62	68

Table 3

Body size (cm)

Specification	Investigated groups							
	G 1		G 2		G 3		CG	
	$\bar{X} \pm s \bar{x}$	V%	$\bar{X} \pm s \bar{x}$	V%	$\bar{X} \pm s \bar{x}$	V%	$\bar{X} \pm s \bar{x}$	V%
Height at withers	67.0±0.198	9.25	67.94±0.43	3.69	69.22±0.20	6.69	69.50±0.24	5.1
Height at croup	68.72±0.31	11.9	69.78±0.27	7.44	69.94±0.20	7.25	70.12±0.83	4.56
Body length	66.56±0.40	8.58	68.56±0.16	8.84	70.07±0.56	9.07	71.04±0.22	9.26
Deepness of thorax	32.50±0.37	4.86	32.39±0.14	8.76	33.28±0.15	8.45	35.33±0.26	3.22
Thoracic perimeter	96.06±0.31	7.84	97.83±0.18	8.03	98.83±0.21	9.24	100.3±0.62	6.8
Shinbone perimeter	11.56±0.12	4.42	11.98±0.52	8.45	12.06±0.57	9.36	12.98±0.26	3.72

REPRODUCTION OF YOUNG FEMALES OF MERINO DE PALAS BREED

The obtained results have shown that in the case of young females, the average values of the studied parameters were very close to those specific to the adult sheep, the differences having the significance $p > 0.01$ in almost all the cases. The constant differences between the highest values at withers and the body length, between G3 and G2, and the thoracic perimeter between G4 and G3, were exceptions, having the significance for $p > 0.05$.

In the gestation period, the body weight has greatly increased, because of the weight of the animals at lambing, comparatively to the age at covering (15.58% and 15.11%).

The weight of lambs at birth was between the biological limits, specific for this breed, between 3.820 ± 0.960 kg in lambs of the younger females (G1) and 4.210 ± 1.372 kg in lambs of the females of G3

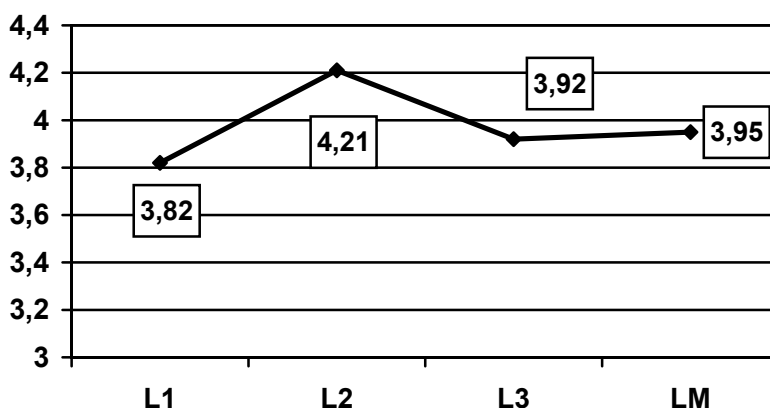


Figure 1- The weight of lambs at birth, correlated to their mothers' age (kg)

Almost all the authors have found out a positive phenotypical correlation between the sheep weight at lambing and the lambs weight (Kincaid 1968, Newton, quoted by Gh. Sandu). The investigations carried out and the lack of differences between the average body weight of the lambs at birth have shown that if the mother-sheep had a very good management condition at covering, the age and the body weight have diminished the influence on the lambs weight at birth.

The gestation duration. The total average duration of gestation has been studied for each of the four groups and, separately, for those who have already given birth to different sex offspring, and for those who had twins.

Analysing the obtained data, one could say that, for all the three experimental groups of young females (in comparison with the control group), the total duration of gestation was reduced, therefore, age was a principal factor of

influence. The differences between the groups were insignificant, excepting the one between the total average duration of gestation (groups G4 and G2), which was significant for $p > 0,05$.

The highest value of the average time of gestation, in the case of lamb's sex at birth, was constant in sheep that had males. The same conclusion was drawn up in the case of analysing the total duration of gestation. This was higher compared to the one registered, in case of sheep with only one lamb.

These results allowed us to assess that the sex of lambs and their number were factors of influence during the total period of lambing.

Table 4

The gestation period in sheep

Group	Statistics	Total period of gestation (days)			
		Total	Sheep that gave birth to males	Sheep that gave birth to females	Sheep having twins
G1	$\bar{X} \pm s \bar{x}$	148.790±440	149.630±0.313	148.132±0.410	150.012±0.235
	s	0.827	0.565	0.547	0.524
	V%	4.134	4.855	3.987	5.025
	minim	142	143	142	142
	maxim	151	149	149	153
G2	$\bar{X} \pm s \bar{x}$	149.185±0.485	151.024±0.254	148.065±0.654	153.051±0.144
	s	3.327	2.227	4.325	3.477
	V%	2.230	4.587	5.021	8.808
	minim	146	146	146	148
	maxim	158	157	158	158
G3	$\bar{X} \pm s \bar{x}$	152.060±1.065	153.251±0.985	152.027±1.013	154.368±1.021
	s	4.518	4.023	4.612	3.580
	V%	2.971	5.456	3.158	6.147
	minim	147	150	147	146
	maxim	159	158	156	159
Control group	$\bar{X} \pm s \bar{x}$	152.610±1.688	153.987±1.022	151.977±0.958	154.216±1.212
	s	7.163	8.147	7.015	6.325
	V%	4.694	5.874	3.452	6.014
	minim	147	150	147	148
	maxim	163	158	160	163

Body weight of lambs at birth. This parameter had a special importance, because it influenced directly the post-partum vivacity and the consumption duration of the first foremilk. It also had subsequent positive influences on body growth and development. During the investigations, we have tried to establish

REPRODUCTION OF YOUNG FEMALES OF MERINO DE PALAS BREED

how the lamb weight was influenced at birth by female age and weight at covering.

The determinations have shown that the highest average weight of lambs at birth was of 4.21 kg and it was signalled in sheep from G2. In case of females, who had 9 months at covering, the average weight of lambs at birth was of 3.82 kg. The age at covering did not influence this indicator, because the established value was between the biological limits, typical of that breed. In case of adult sheep, the average lamb weight was higher by 3.6%.

CONCLUSIONS

Covering, applied at the early age of the young sheep contributes at diminishing the interval between generations and at increasing the yield.

Under the conditions of a very good management of the individuals from the experimental groups, and the principal index characteristic to the reproduction function had reduced values, we can assess that the age at covering is a very important factor.

Although, in connection with the age at covering, the index specific to the function of reproduction has registered superior values in adult sheep, the attentive selection of young females at covering represents a viable solution for increasing the production.

The results obtained during the investigation, and the insignificant differences between the average body weights of lambs at birth show that if the sheep-mothers have a very good management at covering, the age and the body weight diminish their influence on this indicator.

The average total period of gestation was reduced at the groups of lower age at covering, therefore, the age is a principal factor influencing the gestation.

Because the sheep with male lambs and twins had a total higher average duration of gestation, we can conclude that the sex and the number of lambs have a significant influence on the lambing interval.

The value of the obtained results on the investigated period can be practical solutions to encourage the early use at covering, only for sheep with a very good body development, contributing to the increase in the obtained income from this field.

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C. PASCAL ET AL.

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