

**FATTENING CAPACITY OF MERINO OF CLUJ SHEEP
WITHIN DIFFERENT SYSTEMS**

**CAPACITATEA DE ÎNGRĂȘARE A RASEI MERINOS DE CLUJ
ÎN DIFERITE SISTEME**

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Merino of Cluj is breed was founded during 1959 – 1988, within the University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, as result of the work performed by research team coordinated by Professor Augustin Pop. Turcana breed (white variety, Sibiu ecotype) was used as maternal line, and Transylvanian Merino as paternal line. Merino of Cluj bred frames within mix morpho-type "meat-milk-fine wool", well adapted to hilly areas with high precipitation level.

In context of reorientation of the production directions, the breed is suitable for meat production being exploited on both pasture and intensively. When pasture fattening was performed for 150 days, body weights of 37.75 ± 0.30 kg and 42.00 ± 0.17 kg were recorded in the end of the fattening period, function of feeding level. When 100 days intensive fattening was performed, body weight of 40.62 ± 0.40 kg was recorded in the end of the fattening period. The average daily accumulation of body weight, when pasture fattening was performed, recorded values between 107.06 and 136.66 g, and 251.00 g when intensive fattening was performed.

Key words: young sheep, fattening on pasture, intensive fattening, Merino of Cluj

Introduction

The FAO campaign against "hunger and food insecurity", agriculture must deliver to consumer high quality products, abundant and accessible. These products must represent welfare source for both producers and consumers.

The major role in achieving these desiderates is played by the meat and its derivatives production, supplied by livestock, and sheep especially (Georgescu Ghe. et al., 2002). The worldwide need of animal products is about 240 millions tones, and from the total consumed proteins, the animal products supply a third. The developed countries supply about 42% from food need, and the developing countries the difference.

Romania, member of the UE, has the obligation to perform active contribution for supplying food products for community markets. In this context, the potential for the sheep meat market is high, due to the tradition, level of the sheep effective and pedioclimatical conditions favorable for sheep rearing. Besides these advantages, must be mentioned some restrictive elements as breed structure. From about 8 millions sheep, 65% are represented by Turcana and valuation of live meat is not favorable for the breeders because the valuation price is 2 times lower compared to carcass valuation. In 2006, Romania exported over one million fattened young sheep.

Materials and Methods

Young Merino of Cluj young sheep was the biological material used in this trial. Part of them was fattened exclusively on pasture and received concentrate supplements, and others were intensively fattened in shelters, section type. This type of shelters must be replaced up to 2011 with shelters with permanent bed, because they are not environmentally and animal friendly.

The experiment performed on pasture within Sheep Department Jucu from USAMV Cluj-Napoca. Two groups with 15 males each, paternal half-sibs, were realized. The individuals from one group were exclusively fed with green mass by grazing. The pasture was natural and belongs to the sub-type *Festuca rupicola-Agrostis capillaries*. The other group received low quantities of combined forage besides green mass. The combined forage had different energo-protein content function of fattening phase according to the following pattern.

Phase	Duration days	Group n = 15	Maintenance		
			Pasture	Supplement of combined forage	
				P.B.D. %	g/head/day
Adaptation	20	M	yes	-	-
		E	yes	16.00	100
Growing-fattening	100	M	yes	-	-
		E	yes	16.00	150
Finishing	30	M	yes	-	-
		E	yes	14.00	200

The young sheep from both groups were weighted in the end of each phase and in the end of the experimental period. The body weight, average daily accumulation of body weight, and specific consumption were recorded.

The group intensively fattened within S.C. Seradria Co SRL București, Răscruți farm, county of Cluj, received in the beginning of the experiment exclusively alfalfa meal and combined forage, and after this period foraging was performed by phases, with total mixed ratio (TMR) ad libitum administered in two stages, according to the following pattern:

- *Adaptation phase / 15 days*

Trait	Combined forage 80 %	Hays– 20 %, of which:		TMR 100 %
		Hilly hay 70 %	Alfalfa hay 30 %	
C.P. – %	17.3	9.3	14.2	16
N.U.	1.18	0.47	0.48	1.04

- *Growing – fattening phase for 65 days*

Trait	Combined forage 71.25 %	Hilly hay 28.75 %	Amestec unic 100 %
C.P. – %	17.3	9.3	15
N.U.	1.18	0.47	0.97

- *Finishing phase during 20 days*

Trait	Combined forage – 60 %	Maize grains – 28 %	Hilly hay – 12 %	TMR – 100 %
C.P. – %	17.3	8.2	9.3	13
N.U.	1.18	1.20	0.47	1.10

The body weights in the beginning of the experimental period and in the end of each experimental phase were determined in this group. The average daily body weight accumulation and specific consumption were also determined. Within each fattening system, 5 animals were slaughtered. The quantitative and qualitative traits of the meat were investigated. Data concerning the cold carcass weight and slaughtering yield are presented in this paper. The raw data were processed with consecrated statistical methods.

Results and Discussions

In pasture fattening, the young sheep from both experimental groups, in the beginning of the trial were aged between 70 and 76 days, with average daily weight between 21.69 and 21.50 kg, (table 1).

Table 1

The evolution of the body weight in Merino of Cluj young sheep fattened on pasture, kg – n = 15

Phase	Control group (M)		Experimental group (E)	
	$\bar{X} \pm s_{\bar{x}}$	V %	$\bar{X} \pm s_{\bar{x}}$	V %
Beginning of the trial	21.69 ± 0.39	6.26	21.50 ± 0.34 ^{ns}	5.59
Final of adaptation 20 days	23.58 ± 0.30	4.53	23.96 ± 0.31 ^{ns}	4.54
Final growing-fattening 100 days	34.12 ± 0.26	2.71	37.52 ± 0.21 ^{***}	1.98
Final finishing 30 days	37.75 ± 0.30	2.81	42.00 ± 0.17 ^{***}	1.46

ns = p > 0.050; *** = p < 0.001

In the end of all 150 fattening period, the body weight in the group exclusively fattened on pasture (M) was of 37.75 ± 0.30 kg, and for the sheep fattened with green mass and combined forage (E) was of 42.00 ± 0.17 kg. The increase of the quantity of combined forage during growing-fattening and finishing phase, determined statistically very significant differences between averages.

The average daily body weight accumulation (table 2) recorded relatively low values. During entire experimentally period, low value (107.06 ± 2.02 g) was recorded in control group and in experimental group 136.66 ± 2.33 g.

Table 2

The evolution of the average daily body weight accumulation in Merino of Cluj young sheep fattened on pasture, kg – n = 15

Phase	Control group (M)		Experimental group (E)	
	$\bar{X} \pm s_{\bar{x}}$	V %	$\bar{X} \pm s_{\bar{x}}$	V %
Adaptation, 20 days	94.50 ± 6.87	25.18	123.28 ^{**} ± 2.47	6.95
Growing-fattening 100 days	105.40 ± 1.66	5.48	135.65 ^{***} ± 2.38	6.08
Finishing 30 days	120.93 ± 4.64	13.29	149.45 ^{***} ± 2.26	5.24
Total period, 150 days	107.06 ± 2.02	6.54	136.66 ^{***} ± 2.33	5.96

** = p < 0.010; *** = p < 0.001

The low value of the daily body weight accumulation is also reflected by the high specific consumption recorded in experimental groups, 9.25 N.U. and 970 g PBD/kg in control group and 8.42 N.U. și 934.10 g PBD/kg in experimental group. In intensive fattening, the body weight in the beginning of the trial was around 15.52 kg, according to the classical technology, and in the end body weight of 40.62 kg was recorded. Even lower with about 2 kg compared with the first fattening system, this body weight expresses by the accumulation of total weight of 25 kg the superiority of

the intensive system. This is also revealed by the average daily body weight accumulation of 251 g, double compared with the first system (table 3). The level of the recorded specific consumption is much lower compared to pasture fattening. The consumption of 5.68 N.U. with 834.06 g D.C.P. /kg gain is much lower compared to pasture fattening.

Table 3

The evolution of the body weight and average daily body weight accumulation in Merino of Cluj young sheep intensively fattened, kg – n = 15

Phase	Body weight		Average daily body weight accumulation	
	$\bar{X} \pm s_{\bar{x}}$	V %	$\bar{X} \pm s_{\bar{x}}$	V %
Beginning of the trial	15.52 ± 0.27	6.90		
Final of adaptation 15days	17.38 ± 0.27	6.01	124.00 ± 6.52	20,35
Final growing-fattening 65days	35.19 ± 0.32	3.54	274.05 ± 10.06	14,21
Final finishing 20 days	40.62 ± 0.40	3.84	271.33 ± 16.48	23,52
Total period, 150 days			251.00 ± 5.13	7.91

Concerning the carcass weight and slaughter yield in both fattening systems (table 4) even slaughter weight recorded for intensive fattening (group I) is lower in E group, the cold carcass weight is higher in group I compared to E group. The same was recorded for slaughter yield.

Table 4

The carcass weight and slaughter yield in Merino of Cluj young sheep fattened in different systems, kg, %, n = 5

index	Group C	Group E	Group I
	$\bar{X} \pm s_{\bar{x}}$	$\bar{X} \pm s_{\bar{x}}$	$\bar{X} \pm s_{\bar{x}}$
Slaughter weight	37.75 ± 0.30	42.00 ± 0.17	40.62 ± 0.40
Cold carcass weight	17.38 ± 0.14	19.68 ± 0.12	19.87 ± 0.36
Slaughter yield	46.06 ± 0.06	46.86 ± 0.08	48.91 ± 0.26

The values recorded for slaughter yield, allow the framing of carcasses according to Romanian standard, 1st quality class (Pop A., E Mireşan, 1991, Pascal C., 2004), and according to French system the young sheep fattened on pasture frames in category "grass lamb", where the yield must frame within the interval 46.00 – 47.00 %. The young sheep intensively fattened frame within the category "rearing lamb" with yield between 48.00 – 55.00 % (Dudouet C., 2003).

Conclusions

Based on results, we can emphasize the special potential of the Merino of Cluj breed for the meat production. In pasture fattening, average weight carcasses were obtained, and CE directives frame this category within carcasses of 16.00 – 19.00 kg. When green forage was supplemented with combined forage and within intensive fattening, the carcasses are framed within heavy group with weight between 19.00 – 22.00 kg (according to the CEE 2137/92 and 461/93 Regulations).

Even no specialized for meat production Merinos de Cluj breed realized good slaughter yields, which can be improved by optimization of the technologies or exploitation of some hybrids with specialized breeds (Tshabalala P.A. et al., 2003; Borton R.J. et al., 2005).

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Rasa Merinos de Cluj, formată în perioada 1959 – 1988, în cadrul Universității de Științe Agricole și Medicină Veterinară Cluj-Napoca, de către un colectiv condus de profesorul Augustin Pop, prin încrucișarea pe linie maternă a rasei Țurcană, varietatea albă, ecotipul sibian cu rasa Merinos transilvănean, pe linie paternă, se înscrie în tipul morfo-productiv mixt de „carne-lapte-lână fină”, fiind de asemenea bine adaptată zonelor de deal și colinare cu un nivel al precipitațiilor mai ridicat. În contextul reorientării direcțiilor de producție, rasa corespunde pe deplin direcției de producție, carne, fiind exploatată benefic pentru această producție atât pe pășune, cât și în sistem intensiv. Astfel, în cazul îngrășării pe pășune timp de 150 de zile realizează mase corporale la finalul perioadei de îngrășare cuprinse între $37,75 \pm 0,30$ kg și $42,00 \pm 0,17$ kg, în funcție de nivelul de hrănire, iar în cazul îngrășării intensive de „100 de zile” realizează o masa la finalul ciclului de îngrășare de $40,62 \pm 0,40$ kg. Acumularea medie zilnică de masă corporală a atins valori în cazul îngrășării pe pășune între 107,06 și 136,66 g, iar în cazul îngrășării intensive acumularea medie zilnică de masă corporală a fost de 251,00 g.

Cuvinte cheie: tineret ovin, îngrășare pe pășune, îngrășare intensivă, Merinos de Cluj