

## RESEARCHES REGARDING THE FATTENING OF KIDS IN INTENSIVE AND SEMI-INTENSIVE SYSTEM

Camelia Zoia Zamfir<sup>1\*</sup>, Ana Enciu<sup>1</sup>, Maria Stanciu<sup>1</sup>, Daniela Jitariu<sup>2</sup>,  
Carmen Ana Pivodă<sup>1</sup>, Maria Sauer<sup>1</sup>

<sup>1</sup>Institute of Research-Development for Sheep and Goat Breeding of Palas-Constanța, Romania

<sup>2</sup>Ovidius University of Constanța, Romania

### Abstract

Due to the increasing interest in the world for the kid meat we intend to optimize the technology of fattening the lambs and to obtain the improvement of the carcasses through the use of the industrial crossbreeding of the Carpathian breed with Boer breed. It was done the fattening in intensive system of 100 days, structured in 3 stages: accommodation, proper fattening and finishing; or semi-intensive fattening of 200 days structured in 3 stages: 1<sup>st</sup> stage – Stable-staying, divided into two periods, accommodation and growing and fattening; 2<sup>nd</sup> stage – Grazing, divided into accommodation and growing and fattening; 3<sup>rd</sup> stage – Stable – staying divided into accommodation and finishing. At the fattening of kids in semi-intensive system in the beginning of the experiment the two lots had similar average body weights but in the end of the fattening it is emphasized a difference of the body weight which is bigger with 15% at the lot of Boer x Carpathian crossbred kids besides the lot of Carpathian kids, obtaining bigger dimensions of the carcasses at Boer x Carpathian kids. There were obtained higher values of the slaughtering output at the Boer x Carpathian crossbred kids, besides of those of kids of Carpathian breed. By cutting the carcasses from the goat youth fattened in semi-intensive system, on graze and in stable, at the experimental lots, with Boer x Carpathians crossbreds registered higher slaughtering and commercial outputs comparative to those made by Carpathian kids.

**Key words:** fattening, intensive system, accommodation, finish

### INTRODUCTION

Lately, at international level, the meat of goat kids is more and more appreciated by the consumers due to its organ-lepta qualities and for its reduced content of fats [3; 6]. The production of goat meat has developed a lot during the last years, in many countries of the world, both in the countries of the Middle East and Asia, and also in West Europe. Due to the increased interest for kid meat, also the interest of the breeders for the exploitation of goats increased. The goat meat assures proteins with biological value and healthy fats due to a high proportion between non-saturated and saturated fat acids and a low content of cholesterol [3; 4].

The use of industrial crossbreeding represents a rapid way to improve and increase the meat production, permitting the

improvement of the performances of the obtained products associating the qualities of two breeds and so having benefits from the effect of complementarities and heterosis [6]. The method is frequently used in many countries, which oriented the goat breeding to the meat production, namely by crossbreeding the local breeds with Boer breed [3]. The orientation to the increase of the quantity of kid meat and in the same time the increase of the quality of the carcasses obtained from them is an activity that can make the goat exploitations more profitable.

### MATERIAL AND METHOD

The works were made on effectives of goats from the **Institutue of Research – Development for Sheep and Goat Breeding of Palas - Constanța** – goats of Carpathian breed. The animals which were subjects of the works were individually monitored by their own performances, registering data regarding: the control of productions;

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\*Corresponding author: zamfirzoica@yahoo.com  
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indicators of reproduction; weight of kids at birth and the evolution of the body weight during the whole period of growing until weaning and calculation of the weight increasing rate, the control of fodder consumption; body measurements.

The maintenance of goats is made in stable for 150-160 days and 205-215 days on graze. For goats, fodder ratios were provided depending on the physiological estate of animals. The given daily ratio was balanced in mineral substances and vitamins, for preventing the metabolism dysfunctions [1; 5]. The necessary of vitamins was assured through green fodders when possible or by adding premixes in the concentrated fodders, which also assure the necessary mineral substances. The control of fodder consumption was made during the stable period by weighing the fodders, on lots, in the moment of feeding and the rests that remained unconsumed, every 24 hours, and for the grazing period the quantity of consumed green mass was established using the method of control points. The feeding of the youth was made beginning with the age of 8-10 days, when the kids were fed, in special featured folds, hay of very good quality, vitamin hays and concentrated fodders, the feeding being at discretion, until weaning, and after that the fattening in intensive system was made, on a period of 100 days, structured in 3 stages: **1<sup>st</sup> stage - "accommodation"** (15 days), the animals were fed with fodders as unique mixture which was given „ad libitum”, in 3 daily ratios, the content in nutrients of the daily ratio being of 0.97 UNC, 92 g PDIN and 89 g PDIE; **2<sup>nd</sup> stage "proper fattening "** (60 days), unique mixture was provided, the content in nutrients of the daily ratio being of 1.29 UNC, 159 g PDIN and 125 g PDIE; the fodders were given in two daily ratios; **the 3<sup>rd</sup> stage a III-a - "finishing"** (25 days), the content in nutrients of the daily ratio being of 1.55 UNC, 201 PDIN and 156 g PDIE; or the semi-intensive fattening of 200 days structured in 3 stages: 1<sup>st</sup> stage – Stable-staying, divided into two periods, accommodation and growing and fattening; 2<sup>nd</sup> stage – Grazing, divided into accommodation and growing and fattening; 3<sup>rd</sup>

stage – Stable – staying divided into accommodation and finishing.

During grazing period the fattening of the goat youth was made with green mass from a graze cultivated with fodder mix: 70-75% grain plants (*Dactylis glomerata*, *Festuca pratensis*, *Lolium perene*) an 25% perennial vegetable plants (*Medicago sativa*, *Trifolium repens*). During the stable period of the goat youth received the ratio containing 0.88 g SU, 0.84 UNC, 89 g PDIN, 72 g PDIE.

When finishing the fattening period there were made appreciations on the living animal, through the biometric method, which consists in stating the value of the main body areas which have a high heritability coefficient.

The control slaughtering was done through an adequate working methodology, regarding slaughtering, bleeding, skinning and eviscerating. It was evaluated the rate of the body parts, by detaching the head, the extremities, the viscera, the testicles, and then weighing them separately, the weighing of the carcasses at warm and cool (after 24 hours of refrigeration, at 4°C).

The calculation of the slaughtering output was made as follows: the slaughter output - as proportion between the weight of the carcasses after 24 hours from the sacrificing and the weight of the living animal; the commercial output – where also the internal organs were included.

The data were statistically processed.

## RESULTS AND DISCUSSIONS

After weaning the kids, the lots of kids were made and the semi-intensive and intensive fattening were made. The evolution of the body weight of the goat youth fattened in semi-intensive system, on graze and in stables, is shown in table no. 1

At the fattening of the kids from Carpathian breed and of the Boer X Carpathian crossbreds fattened in semi-intensive system the following weights and daily average rates were obtained: the initial weight was of  $11.36 \pm 0.32$  kg at Boer x Carpathian crossbreds and of  $11.18 \pm 0.27$  kg at the kids of Carpathian breed, similar average body weights in the beginning of the experiment at the two lots of male goat

youth; from table no. 2 it can be noticed, in the end of fattening, a difference of the body weight which is bigger with 15% at the lot of crossbred kids of Boer x Carpathian besides the lot of Carpathian kids,  $15.25 \pm 0.75$  kg at the Boer x Carpathian crossbreds and  $11.97 \pm 0.56$  kg at the Carpathian kids; the average daily increasing rate being of  $101.66 \pm 5.48$  g la at the Boer x Carpathian crossbreds and of  $79.80 \pm 3.71$  g at the kids of Carpathian breed, smaller with 22% than the crossbreds.

The kids of Carpathian breed from ICDCOC-Palas had in the beginning of fattening the average weight of  $12.72 \pm 0.32$

kg and those from SCDCOC Caransebeş,  $12.01 \pm 0.35$  kg.

The Boer x Carpathian crossbreds kids from ICDCOC-Palas had in the beginning of fattening the average weight of  $13.85 \pm 0.37$  kg and those from SCDCOC Caransebeş  $12.25 \pm 0.44$  kg.

The average weight in the end of the fattening period, at the kids of Carpathian breed, from ICDCOC-Palas was of  $26.23 \pm 0.81$  kg and of  $25.81 \pm 0.49$  kg, at those from SCDCOC Caransebeş, the total average increasing rate of weight was of  $13.51 \pm 0.67$  kg and of  $18.80 \pm 0.57$  kg, and the average daily increasing rate was of  $135.1 \pm 4.89$  g/day and of  $138.0 \pm 5.48$  g/day.

Table 1 The evolution of the body weight of the goat youth fattened in semi-intensive system, on graze and in stable

Specification	n	Boer x Carpathian Crossbreds		n	Carpathian	
		$\bar{X} \pm s_{\bar{x}}$	V%		$\bar{X} \pm s_{\bar{x}}$	V%
Initial average body weight (kg)	12	$11.36 \pm 0.32$	9.75	12	$11.18 \pm 0.27$	8.36
Final average body weight (kg)	12	$26.61 \pm 0.67$	8.84	12	$23.15 \pm 0.89$	13.30
Increase in weight (kg)	12	$15.25 \pm 0.75$	18.88	12	$11.97 \pm 0.56$	16.19
Average daily increasing rate (g)	12	$101.66 \pm 5.48$	18.65	12	$79.80 \pm 3.71$	16.09

The difference between the body weights in the end of the fattening period of the Boer x Carpathian crossbreds was with 8% bigger

at the crossbreds from ICDCOC-Palas and with 6% bigger at the crossbreds from SCDCOC Caransebeş.

Table 2 The evolution of the body weight of the kids fattened in intensive system (100 days)

Lot	Weight in the beginning of fattening (kg)		Weight in the end of fattening (kg)		Total weight increasing rate (kg)		Daily average increasing rate (g)	
	$\bar{X} \pm s_{\bar{x}}$	V%	$\bar{X} \pm s_{\bar{x}}$	V%	$\bar{X} \pm s_{\bar{x}}$	V%	$\bar{X} \pm s_{\bar{x}}$	V%
Carpathian Breed - ICDCOC-Palas (n=25)	$12.72 \pm 0.32$	12.57	$26.23 \pm 0.81$	15.44	$13.51 \pm 0.67$	24.79	$135.1 \pm 4.89$	18.0
Boer x Carpathian Crossbreds ICDCOC-Palas (n=25)	$13.85 \pm 0.37$	13.35	$28.51 \pm 0.76$	13.32	$14.66 \pm 0.52$	17.73	$146.6 \pm 5.1$	17.39
Carpathian Breed SCDCOC Caransebeş (n=25)	$12.01 \pm 0.35$	14.57	$25.81 \pm 0.49$	9.49	$13.80 \pm 0.57$	20.65	$138.0 \pm 5.48$	19.85
Boer x Carpathian Crossbreds SCDCOC Caransebeş (n=25)	$12.25 \pm 0.44$	17.95	$27.35 \pm 0.58$	10.60	$15.10 \pm 0.47$	15.56	$151.0 \pm 5.14$	17.01

The specific average consumption at the crossbreeds kids of Boer x Carpathian from ICDCOC Palas was of 8.91 UNC/ kg increasing rate and of 1087 g PDIN/ kg increasing rate, of 869 g PDIE/kg, as it is shown in table 3.

At the crossbreeds kids of Boer x Carpathian from SCDCOC Caransebeș the specific average consumption was of 8.65 UNC/ kg increasing rate and of 1055 g PDIN/ kg increasing rate, 843 g PDIE/kg increasing rate being also the lowest consumption for the crossbreeds kids of Boer x Carpathian.

The specific average consumption at the kids of Carpathian breed from ICDCOC Palas was of 9.67 UNC/ kg increasing rate and of 1180 g PDIN/ kg increasing rate, 943 g PDIE/kg increasing rate, and at the kids of Carpathian breed from SCDCOC Caransebeș the specific average consumption was of 9.47 UNC/ kg increasing rate and of 1155 g PDIN/ kg increasing rate, 923 g PDIE/kg

increasing rate, being also the lowest consumption for the crossbreeds kids of Carpathian breed.

As a result of experimental sacrifices at the lots of kids intensively fattened, appreciations of carcasses were made, bigger dimensions of the carcasses of the Boer x Carpathian crossbred kids being found, especially higher dimensions of the kid's leg, the width of leg and the length of the leg, comparatively to those from the carcasses of the kids of Carpathian breed. In table 4 the results of the experimental sacrifices are presented, emphasizing the higher values of the slaughter output at the crossbred kids of Boer x Carpathian, 45.66±1.02%, besides 43.42±0.95% at the kids of Carpathian breed, due to the bigger weight of the carcasses (13.02±1.12 kg at the crossbred kids of Boer x Carpathian and 11.39±1.02 kg at the kids of Carpathian breed), and also the commercial output, 50.57±1.13% besides 48.76±0.98%.

Table 3 The average consumption of UNC, PDIN and PDIE/kg increasing rate at fattening of kids in intensive system

Breed/ population	Total increasing rate(kg)	Total consumption of UNC	Average consumption of UNC /kg increasing rate	Total consumption of PDIN	Total consumption of PDIN/kg	Total consumption of PDIE	Consumption PDIE/kg
Kids Boer x Carpathian ICDCOC Palas	14.66	130.7	8.91	15945	1087	12735	869
Carpathian ICDCOC Palas	13.51	130.7	9.67	15945	1180	12735	943
Boer x Carpathian SCDCOC Caransebeș	15.10	130.7	8.65	15945	1055	12735	843
Carpathian SCDCOC Caransebeș	13.80	130.7	9,47	15945	1155	12735	923

Table 4 The results of the experimental sacrifices at the kids intensively fattened

Specification	UM	Kids of Carpathian breed (n=9)		Kids of Boer x Carpathian crossbreeds (n=9)	
		$\bar{X} \pm s_{\bar{x}}$	V%	$\bar{X} \pm s_{\bar{x}}$	V%
Living weight	kg	26.23±0.81	15.44	28.51±0.76	13.32
Weight of the carcass	kg	11.39±1.02	26.86	13.02±1.12	25.80
Slaughter output	%	43.42±0.95	6.56	45.66±1.02	6.71
Commercial output	%	48.76±0.98	6.02	50.57±1.13	6.70
Meat/ Bones proportion		3.22/1		4,02/1	

By cutting the carcasses from the goat youth fattened in semi-intensive system, on graze and in stable, at the experimental lots, with Boer x Carpathian crossbreds, and at those from witness lot the results were those presented in s table 5.

Table 5 The sacrifice output at the male goat youth semi-intensively fattened

Specification	UM	Boer x Carpathian crossbred (n=8)		Carpathian Breed (n=8)	
		$\bar{X} \pm s_{\bar{x}}$	V%	$\bar{X} \pm s_{\bar{x}}$	V%
Body weight at sacrifice	kg	26.61 ± 0.32	8.84	23.15 ± 0.89	13.30
Weight of the carcass	kg	12.05 ± 0.45	10.56	10.15 ± 0.52	14.49
Slaughter output	kg	45.28 ± 1.07	6.68	43.84 ± 1.15	7.41
Commercial output	%	49.72 ± 1.57	8.93	48.85 ± 1.61	9.32
Meat/ Bones proportion		4.11/1		3.09/1	

The crossbreds of Boer x Carpathian had at sacrifice, an output of 45,28% and a commercial output of 49,72%, and the kids of Carpathian breed, a slaughter output of 43,84% and commercial output of 48,85%. By determining the proportion of meat/bones at the crossbreds of Boer x Carpathian, it is found a proportion of 4,11/1, and at the kids of Carpathian breed, a proportion of 3,09/1.

## CONCLUSIONS

➤ At the fattening of Carpathian breed kids and of Boer X Carpathian crossbreds fattened in semi-intensive system it was found out:

- Average body weight which are similar at the two lots in the beginning of the experiment;

- In the end of fattening it is emphasized a difference of the body weight which is bigger with 13% at the lot of Boer x Carpathian crossbreds kids besides the lot of Carpathian kids, 15.25 ± 0.75 kg at Boer x Carpathian crossbreds and 11.97 ± 0,56 kg at the kids of Carpathian breed.

➤ At the fattening of kids from Carpathian breed and of the crossbred kids of Boer X Carpathian fattened in intensive system, the following were found:

- The average weight in the end of fattening, at the kids of Carpathian breed was of 26.23 ± 0.81 kg and of 25.81 ± 0.49 kg, the total average weight increasing rate was of 13.51 ± 0.67 kg and of 18.80 ± 0.57 kg. and the daily average increasing rate was of 135.1 ± 4.89 g/day and of 138.0 ± 5,48 g/day;

- At Boer x Carpathian crossbreds kids the average weight in the end of fattening period was of 28.51 ± 0.76 kg and 27.35 ± 0,58 kg, the total weight increasing rate was of 14.66 ± 0.52 kg and of 15.10 ± 0.47 kg, and the average daily increasing rate of 146.6 ± 5.1 g/day and of 151.0 ± 0,47 g/day;

- The specific average consumption at Boer x Carpathian crossbreds kids was of 8.91 UNC/ kg increasing rate and of 1087 g PDIN/ kg increasing rate. de 869 g PDIE/kg; and of 6.46 UN/ kg increasing rate and of 926,6 g PBD/ kg increasing rate;

- The specific average consumption at kids of Carpathian breed was of 9.67 UNC/ kg increasing rate and of 1180 g PDIN/ kg increasing rate. 943 g PDIE/kg increasing rate; of 9.47 UNC/ kg increasing rate and of 1155 g PDIN/ kg increasing rate, 923 g PDIE/kg increasing rate.

➤ By fattening the kids in intensive system higher dimensions of the carcasses were obtained sat the crossbred kids of Boer x Carpathian, especially higher dimensions of the kid's leg, the width of leg and the length of the leg, and also higher values of the slaughter output at the crossbred kids of Boer x Carpathian, 45.66±1.02%, besides 43.42±0.95% at the kids of Carpathian breed, and also the commercial output, 50.57±1.13% besides 48.76±0,98%.

➤ By cutting the carcasses from the goat youth fattened in semi-intensive system, on graze and in stable the Boer x Carpathian crossbreds had, at sacrifice, a slaughter

output of 45.28% and a commercial output of 49,72%, and the kids of Carpathian breed, a slaughter output of 43.84% and a commercial output of 48,85%.

► By determining the proportion of meat/bones it is found a proportion of 4,11/1, and at the kids of Carpathian breed, a proportion of 3,09/1.

The use of industrial crossbreeding between the local Carpathian breed and Boer breed determined the achievement of high quality carcasses both in the fattening in intensive system, and also in semi-intensive system.

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