

THE SLAUGHTER QUALITIES of DIFFERENT ORIGIN YOUNG SHEEP

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Aim. To determine the meat productivity level of young sheep the Ascanian Fine-Fleeced (AFF) and hybrids obtained from crossing Texel (T) and Merinolandschaf (M). To give a scientific substantiation of the feasibility such combination of genotypes in production conditions for increase the quantitative and qualitative indicators the meat productivity of sheep. **Methods.** Zootechnical, scientific and experimental, statistical. **Results.** At 4.5 months of age, the slaughter mass, as well as the pre-slaughter mass, was higher for the AFF × T crossbreeds and amounted to 12.5 kg. In purebred rams, this indicator is lower by 20.2%, and in cross-breeds AFF × M by 4.2% and is 10.4 and 12.0 kg, respectively. At 6.5 months of age, slaughter yield is 46.3-47.3% in crossbreeds versus 42.6% in purebred. As in the previous period, the higher carcass masses were for AFF × T hybrids and amounted to 17.3 kg, while for purebred 13.3 kg (23.1% less) and for AFF × M 15, 9 kg (8.1% less). Purebred and hybrid animals have a fairly high specific proportion of muscle tissue in the carcass - 68.2 ... 70.6% in 4.5 months and 65.4 ... 69.1 in 6.5 months. According to the chemical composition of the average meat sample, a significant difference between the genotypes has not been established. In purebred animals at 4.5 months of age, the amount of protein increases to 17.12%, against 12.93 ... 13.74% in crossbreeds.

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Conclusions. *The positive effect of crossbreeding on the increase in the meat productivity of young animals was established. For commercial production of lamb meat based on Ascanian Fine-Fleeced sheep, it is advisable to use industrial crossing with Texel and Merinolandschaf.*

Keywords: Ascanian Fine-Fleeced breed, Texel, Merinolandschaf, cross breeding, hybrids.

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ЗАБІЙНІ ЯКОСТІ МОЛОДНЯКУ ОВЕЦЬ РІЗНОГО ПОХОДЖЕННЯ

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Мета. *Визначити рівень м'ясної продуктивності молодняка асканійської тонкорунної породи (АТ) і помісей, отриманих від схрещування з баранами тексель (Т) і меріноландшаф (М). Дати наукове обґрунтування доцільності такої комбінації генотипів у виробничих умовах для підвищення кількісних і якісних показників м'ясної продуктивності овець. **Методи.** Зоотехнічні, науково-експериментальні, статистичні. **Результати.** У 4,5-місячному віці забійна маса, як і передзабійна, вище у помісей АТ×Т і склала 12,5 кг. У чистопорідних тварин цей показник менше на 20,2%, а у помісей АТ×М на 4,2% і становить 10,4 і 12,0 кг відповідно. У 6,5-місячному віці забійний вихід становить 46,3-47,3% у помісей проти 42,6% у чистопородних. Як і в попередній період більш високі показники маси охолодженої туші були у помісей АТ×Т і склали 17,3 кг, в той час як у чистопородних 13,3 кг (менше на 23,1%), у*

помісей АТ×М 15,9 кг (менше на 8,1%). Чистопородні і помісні тварини мають досить високу питому частку м'язової тканини в туші – 68,2...70,6% в 4,5 місяців і 65,4...69,1% у 6,5 місяців. За хімічним складом середньої проби м'яса значної різниці між генотипами не встановлено. У чистопородних тварин у 4,5-місячному віці спостерігається зростання кількості протеїну до 17,12%, проти 12,93...13,74% у помісей. **Висновки.** Встановлено позитивний вплив схрещування на збільшення показників м'ясної продуктивності молодняка. Для товарного виробництва ягнятини на основі асканійських тонкорунних овець доцільно використовувати промислове схрещування з баранами тексель і меріноландшаф.

Ключові слова: асканійська тонкорунна порода, тексель, меріноландшаф, схрещування, помісі.

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УБОЙНЫЕ КАЧЕСТВА МОЛОДНЯКА ОВЕЦ РАЗНОГО ПРОИСХОЖДЕНИЯ

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Цель. Определить уровень мясной продуктивности молодняка асканийской тонкорунной породы (АТ) и помесей, полученных от скрещивания с баранами тексель (Т) и меріноландшаф (М). Дать научное обоснование целесообразности такой комбинации генотипов в производственных условиях для повышения количественных и качественных показателей мясной продуктивности овец. **Методы.** Зоотехнические, научно-экспериментальные, статистические. **Результаты.** В 4,5-месячном возрасте убойная масса, как и предубойная, выше у помесей АТ×Т и составила 12,5 кг. У чистопородных животных этот показатель меньше на

20,2%, а у помесей АТ×М на 4,2% и составляет 10,4 и 12,0 кг соответственно. В 6,5-месячном возрасте убойный выход составляет 46,3-47,3% у помесей против 42,6% у чистопородных. Как и в предыдущий период более высокие показатели массы охлажденной туши были у помесей АТ×Т и составили 17,3 кг, в то время как у чистопородных 13,3 кг (меньше на 23,1%), у помесей АТ×М 15,9 кг (меньше на 8,1%). Чистопородные и помесные животные имеют достаточно высокую удельную долю мышечной ткани в туше – 68,2...70,6% в 4,5 месяцев и 65,4...69,1 в 6,5 месяцев. По химическому составу средней пробы мяса значительной разницы между генотипами не установлено. У чистопородных животных в 4,5-месячном возрасте наблюдается рост количества протеина до 17,12%, против 12,93...13,74% у помесей. **Выводы.** Установлено положительное влияние скрещивания на увеличение показателей мясной продуктивности молодняка. Для товарного производства ягнятины на основе асканийских тонкорунных овец целесообразно использовать промышленное скрещивание с баранами тексель и мериноландшаф.

Ключевые слова: асканийская тонкорунная порода, тексель, мериноландшаф, скрещивание, помеси.

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Formulation of the problem. It is characteristic that the central link in sheep selection has been transferred from wool to meat productivity for the modern stage of development the sheep breeding. This is due to the fact that mutton is an economically significant product, whose share in gross income from the sale of all products is 80-90% or more.

One of the most competitive among Fine-Fleeced sheep breeds is Ascanian, which combines high wool and meat productivity, and is also highly adaptable to the extreme conditions of southern Ukraine, has a fairly high fecundity and precocity. In modern conditions, there is a need, in addition to preserving and improving the Ascanian Fine-Fleeced sheep, to develop breeding methods for increasing their productive qualities.

Analysis of recent researches and publications. One of the main methods of increasing and improving the meat qualities of merino sheep can be interbreeding crossings based on the rational use of genetic resources of meat breeds [1, 3, 6].

The study of fattening and meat qualities the different origins young sheep indicates a more efficient use of feed and higher growth energy the local animals in comparison with purebreds. Heterozygosity of crossbreeds, due to heredity, allowed them to better adapt to environ-

mental conditions and more fully show their genetic potential. Among the local young sheep, the best fattening and meat qualities were characterized by the descendants of Australian Meat Merino sheep [2, 4, 5].

The advantage of local animals over purebred peers in terms of pre-slaughter and slaughter weight, carcass weight was established. Analysis of the morphological composition of carcasses the young animals of different genotypes showed that purebred animals compared to domestic animals had less meat by 6.42%, and the meat ratio of local animals was 3.07 vs. 3.01 in purebreds [8, 9].

Therefore, to increase the growth energy and improve the meat qualities the sheep of Fine-Fleeced breeds, it is advisable to cross them with sheep of the meat direction. The study of productive qualities of local offspring the different genotypes obtained from crossing ewes of Ascanian Fine-Fleeced breed with sheep of meat direction productivity is relevant and has both scientific and practical interest.

The aim of the article. Given the urgency of this problem, we set the task to investigate the meat productivity level of young Ascanian Fine-Fleeced breed and crossbreeds obtained from their crossing with rams of Texel and Merinolandschaf. Make science-based suggestions for production to increase and improve sheep meat productivity.

The material and technique of researches. The experimental work has been done at the SI "EF of the "Ascania-Nova" IABSR - NSSGCSB" Kherson region. The ewes of the Ascanian Fine-Fleeced breed were mated with rams sires of Texel (T) and Merinolandschaf (M) breed as a control the purebred (AFF) were taken. Three groups of ram lambs were formed: the control from the purebred Ascanian Fine-Fleeced breed (AFF) and experimental two-breed groups with Texel (AFF × T) and Merinolandschaf (AFF × M).

Control slaughter of ram lambs (3 animals from each group) was carried out according to the methodology for assessing the sheep meat productivity at 4.5 months of age and 6.5 months [7]. The morphological composition of the carcasses was determined by the deboning of the right half of carcasses after 24-hour cooling, while the yield of pulp, bones and fat was determined. The chemical composition in the average sample of meat, in the long back muscle (*mus. Longissimus dorsi*) and the amount of intramuscular fat have been determined.

Biometric data processing was performed using MS Excel software using the statistical functions.

Research results. The level of meat productivity the crossbred and purebred young animals at different age periods was determined. Therefore, at 4.5 months of age, the largest pre-slaughter mass was in AFF × T ram lambs and amounted to 29.1 kg. In this indicator, they ex-

ceeded purebred animals by 9.6% and hybrids AFF × M by 2.8%. The results of the control slaughter indicate that the slaughter mass, as well as before the slaughter mass, was greater for the AFF × T cross-sections and amounted to 12.5 kg. In purebred ram lambs, this indicator is lower by 20.2%, and in the AFF × M crossbreeds by 4.2% and is 10.4 and 12.0 kg, respectively. It was found that in the carcasses of experimental lambs, the amount of internal fat was in the range from 0.300 to 0.347 kg, with a tendency to increase in purebred animals. One can note an increase in slaughter yield in crossbred ram lambs compared with purebred by 2.9 ... 3.4 absolute percent. At the same time, no significant difference was found between crossbreeds, and their indicators were in the range 42.4 ... 42.9%.

The mass of chilled carcass was the highest in the AFF × T crossbreeds - 11.6 kg, which is 17.2 and 4.3% more than in purebred and AFF × M animals.

Up to 6.5 months of age, the average live weight of Fine-Fleeced ram lambs increased by 8.4 kg and amounted to 34.7 kg. In experimental animals, this indicator is higher and amounts to: 39.5 kg in AFF × T crossbreeds and 37.6 kg in AFF × M crossbreeds. Crossbred animals in terms of live weight prevailed over purebreds by 13.8 and 8.9%.

Table 1. Slaughter indexes of young animals experimental groups ($\bar{X} \pm S_{\bar{X}}$)

Indexes	Genotypes		
	AFF	AFF x T	AFF x M
4,5 months			
Pre-slaughter weight, kg	26,3±0,67	29,1±0,93	28,3±0,88
Weight of fresh carcass, kg	10,1±0,13	12,2±0,38**	11,7±0,30**
Weight of internal fat, kg	0,347±0,05	0,300±0,01	0,318±0,06
Slaughter weight, kg	10,4±0,18	12,5±0,37**	12,0±0,32*
Slaughter yield,%	39,5	42,9	42,4
Weight of chilled carcass, kg	9,6±0,14	11,6±0,36**	11,1±0,28**
6,5 months			
Pre-slaughter weight, kg	34,7±0,67	39,5±1,50	37,8±0,44
Weight of fresh carcass, kg	14,2±0,46	18,3±0,91	16,8±0,42
Weight of internal fat, kg	0,540±0,08	0,460±0,04	0,677±0,10
Slaughter weight, kg	14,8±0,54	18,7±0,96*	17,5±0,33*
Slaughter yield,%	42,6	47,3	46,3
Weight of chilled carcass, kg	13,3±0,42	17,3±0,89*	15,9±0,43**

Note - the probability of difference compared to AFF

* P>0,95; ** P>0,99; *** P>0,999.

Indicators of slaughter mass at 6.5 months age, as in the previous period, are higher for hybrids AFF × T. Moreover, the difference increased to 26.3% ($P > 0.95$) compared with purebred ram lambs and up to 6.8 % with AFF × M animals. The weight of internal fat was the highest in crossbreeds AFF × M and amounted to 0.677 kg, exceeding purebred and AFF × T ram lambs by 20.2 and 32.1%, respectively. In 6.5-month-old animals, in comparison with 4.5-month-old animals, the slaughter yield increases by 3.1 absolute percent for purebred sheep and by 3.9 ... 4.4 in crossbreeds. There is a tendency to increase this indicator in AFF × T ram lambs compared with other groups. Slaughter yield is 46.3-47.3% in crossbreeds versus 42.6% in purebred.

As in the previous period, the AFF × T crossbreeds had large masses of chilled carcasses and amounted to 17.3 kg, while in purebred 13.3 kg (23.1% less) ($P > 0.95$), crossbreeds of AFF × M 15.9 kg (8.1% less).

In general, carcasses obtained from Texel hybrids lambs prevailed over crossbreeds on the Merinolandschaf and purebred Merino at both 4.5 and 6.5 months of age. At 6.5 months of age, the animals were characterized by high rates of slaughter weight, slaughter yield and carcass weight. We note a higher precocity of Texel hybrids, which already at the age of 4.5 months are characterized by rather high indicators of meat productivity.

Not only indicators of slaughter mass and slaughter yield determine the level of meat productivity, but also by the morphological and varietal composition of chilled carcasses.

Muscle tissue is the main constituent part of the carcass, and the result of evaluating meat productivity and nutritional value of meat largely depends on the phase of its development. In the carcasses of 4.5-month-old ram lambs, a different ratio of tissues is noted (Table 2). The largest percentage of muscle tissue was observed in animals with AFF × T crossbreeds on average 70.6%. At the same time, in other groups this indicator does not differ significantly and amounts to 68.2% for purebred and 68.8% for AFF × M hybrids. The highest meat ratio is natural for AFF × T ram lambs - 2.40 versus 2.15 and 2.21 for Merino and hybrids AFF × M, respectively.

At 6.5 months of age, the muscle tissue proportion slightly decreases to 65.4 ... 69.1%, but the superiority of the AFF × T crossbreeds over other groups remains. The amount of adipose tissue is the highest in crossbreeds AFF × M and is 0.84 kg or 5.3% of the carcass. In other groups, the specific gravity is 4.9% in Merino and 3.6% in AFF × T. In AFF × M hybrids, the highest specific proportion of bone tissue was also noted: 29.2% versus 28.2% in purebred and 27.3% at hybrid AFF × T.

Table 2. Morphological and varietal composition of the experimental ram lambs carcasses ($\bar{X} \pm S_{\bar{x}}$)

Indexes		Age					
		4,5 months			6,5 months		
		AFF	AFF x T	AFF x M	AFF	AFF x T	AFF x M
Weight of chilled carcass, kg		9,60±0,14	11,6±0,36**	11,13±0,28**	13,34±0,42	17,3±0,89*	15,88±0,43**
Muscle tissue	kg	6,55±0,07	8,18±0,42*	7,66±0,32*	8,93±0,40	11,94±0,75*	10,39±0,29*
	% by weight of carcass	68,2	70,6	68,8	66,9	69,1	65,4
Fat tissue	kg	-	-	-	0,65±0,02	0,62±0,05	0,84±0,06
	% by weight of carcass	-	-	-	4,9	3,6	5,3
Bone tissue	kg	3,05±0,12	3,40±0,05	3,47±0,07*	3,76±0,03	4,73±0,11**	4,64±0,17
	% by weight of carcass	31,8	29,4	31,2	28,2	27,3	29,2
Meat ratio		2,15	2,41	2,21	2,55	2,65	2,42
I sort: meat		4,95±0,03	6,11±0,29**	5,82±0,15**	6,41±0,27	9,04±0,62*	7,45±0,28
fat		-	-	-	0,53±0,02	0,52±0,04	0,74±0,04
bones and tendons		2,16±0,08	2,21±0,10	2,35±0,04	2,56±0,09	3,41±0,07**	3,09±0,11*
Total I sort		7,07±0,05	8,34±0,20**	8,12±0,12**	9,49±0,25	12,98±0,64**	11,27±0,38*
II sort: meat		1,34±0,06	1,81±0,14*	1,62±0,17	2,11±0,16	2,54±0,14	2,37±0,19
fat		-	-	-	0,12±0,00	0,11±0,02	0,09±0,03
bones and tendons		0,47±0,02	0,87±0,22	0,62±0,05	0,69±0,07	0,76±0,04	0,91±0,05
Total II sort		1,81±0,08	2,70±0,35	2,37±0,05	2,92±0,22	3,41±0,20	3,37±0,17
III sort: meat		0,29±0,03	0,31±0,01	0,28±0,02	0,41±0,08	0,34±0,07	0,59±0,09
fat		-	-	-	-	-	-
bones and tendons		0,43±0,04	0,50±0,02	0,49±0,01	0,51±0,04	0,57±0,07	0,65±0,04
Total III sort		0,72±0,07	0,81±0,02	0,77±0,03	0,93±0,12	0,91±0,13	1,24±0,13

In animals of all genotypes, the meat coefficient increases with age. In purebred, ram lambs, this indicator increased by 18.6% and amounts to 2.55. In crossbreeds, growth is slightly less within 9.5 ... 10.4%, indicators reach 2.65 for AFF × T and 2.42 for AFF × M.

The study of the carcasses morphological composition is supplemented by data on their varietal cuts. It was found that in purebred animals at the age of 4.5 months, the yield of the first grade is 73.6%. At 6.5 months of age, this figure decreases to 71.1%.

In crossbreeds at 4.5 months of age, the proportion of the first grade cuts is 71.8% in AFFxT and 72.9% in AFFxM. In 6.5 months, this indicator increases for AFFxT to 75.0%. At the same time, both in purebred and in crossbred animals, the specific weight of bones decreases, meat, and fat increase. In general, a positive effect was established on the level of sheep meat productivity from the crossing the Ascanian Fine-Fleeced breed ewes with Texel and Merinolandschaf rams.

The results of the average meat sample chemical composition analysis indicate high quality characteristics of the resulting carcasses (table. 3). At 4.5 months of age, in animals of different genotypes, the total moisture indicator is in the range 71.97 ... 75.83% with a tendency to increase in crossbred animals. In purebred Merino, an increase for protein is observed up to 17.12%, against 12.93 ... 13.74% in crossbreeds. By the amount of fat, no difference between the groups was noted, the indicators are 9.68 ... 10.27%. The advantage for intramuscular fat was observed in purebred animals 1.27 versus 1.02 and 1.16 in crossbreeds.

Table 3. Chemical composition of the average meat sample experimental ram lambs, %

Indexes	Genotypes		
	AFF	AFF × T	AFF × M
4,5 months			
Total moisture	71,97±1,00	75,83±0,79	75,56±1,08
Protein	17,12±0,24	12,93±0,64	13,74±1,63
Fat	10,08±0,17	10,27±0,26	9,68±0,84
Ash	0,96±0,01	0,97±0,01	1,02±0,03
6,5 months			
Total moisture	69,02±0,24	72,01±0,14	69,33±2,19
Protein	17,01±0,57	17,5±0,14	17,11±0,34
Fat	13,04±0,49	9,59±0,48	12,65±2,49
Ash	0,92±0,04	0,90±0,07	0,91±0,04

At 6.5 months of age, the amount of total moisture decreases to 69.02% in Merino and to 70.01 and 69.33% in crossbreeds. The protein content in hybrids rises to 17.11 and 17.5%, while in purebred ram lambs it remains at the same level. In AFF × M hybrids and Merino animals, the amount of fat increases by 2.96.2.97 absolute percent, while in AFF × T animals there is a slight decrease by 0.68.

A greater amount of intramuscular fat was observed in purebred ram lambs - 3.04. In carcasses of hybrids, this indicator is also: 2.01 in AFF × T and 1.99 in AFF × M.

Conclusions and perspectives. The positive effect of crossbreeding on the increase in meat productivity indicators of crossbreeds' young animals was established. The slaughter yield in young animals of 4.5 months age was 39.5% in purebred animals, 44.9% in crossbreeds AFF × T and 42.4% in AFF × M. At 6.5 months age, these indicators increase to 42.6 ... 47.3%. According to the morphological and varietal composition, carcasses of crossbreed ram lambs AFF × T prevailed over AFF × M and purebred Merino at 4.5 and 6.5 months age.

For commercial production of lamb meat based on Ascanian Fine-Fleeced sheep, it is advisable to use industrial crossing with sheep of meat breeds Texel and Merinolandschaf.

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