

## **WOOL CLIP and REPRODUCTIVE ABILITY of EWES and LIVE WEIGHT of THEIR OFFSPRING**

**S. L. Drozd**

ascitsr\_priemnaya@ukr.net

Ascania Nova Institute of Animal Breeding in the Steppe Regions  
named after M. F. Ivanov - National Scientific Selection-Genetics  
Center for Sheep Breeding

Chervonoarmiyska Street, 1, Ascania Nova, Chaplinka district, Kherson  
region, 75230, Ukraine

*One important factor efficient conduct of Sheep breeding and directly Merino in Ukraine is to improve the reproductive ability of sheep. The growth of livestock and obtain high quality young sheep are not possible without raising ewes fertility. An equally important factor is to keep young sheep from birth to weaning. In addition, the study of growth and development in young postembryonic period provides an opportunity to further enhance wool and meat productivity. In connection with the foregoing, there are given the data of reproductive ability Ascanian Merino breed ewes with different levels of wool productivity. It is shown that in individuals with elevated pure wool clip multiparous higher (123.5%) than in animals with an average (107.7%) and low (121.1%) this indicator signs.*

*The level of the live weight of young sheep at birth and weaning is showed. Lambs received from mothers with high and medium pure wool clip had a higher live weight (4,9 kg) compared to youngsters received from mothers with low clip – 4,6 kg. A live weight at weaning third group of animals exceeded their peers and was – 20, 2 against 18, 2 kg and 18,7 kg respectively.*

*In addition, is defined absolute and relative growth, growth rate and the growth rate of young animals. According the absolute (15.1 kg) and relative (117.3%) gain of live weight the best lambs were in the third group. Overall directly proportional linear dependence is installed: the growth of mothers' pure wool clip, leads to increase of live weight gain of their lambs.*

**Key words:** sheep, reproduction, fertility, survival of young animals, live weight gain.

# НАСТРИГ ВОВНИ ТА ВІДТВОРЮВАЛЬНА ЗДАТНІСТЬ ВІВЦЕМАТОК І ЖИВА МАСА ЇХ ПОТОМКІВ

С. Л. Дрозд

ascitsr\_priemnaya@ukr.net

Інститут тваринництва степових районів імені М. Ф. Іванова  
“Асканія-Нова” – Національний науковий селекційно-генетичний  
центр з вівчарства

вул. Червоноармійська, 1, смт Асканія-Нова, Чаплинський р-н,  
Херсонська обл., 75230, Україна

*Одним з важливих факторів ефективного ведення вівчарства і безпосередньо тонкорунного в Україні є поліпшення відтворювальних здатностей овець. Зростання чисельності поголів'я та отримання висококласного молодняку не можливе без підвищення рівня плодючості вівцематок. Не менш важливим фактором є збереження молодняку від народження до відлучення. Крім цього, дослідження росту і розвитку молодняку у постембріональний період дає можливість для подальшого підвищення вовнової та м'ясної продуктивності. У зв'язку з викладеним, наведено дані стосовно відтворювальної здатності вівцематок асканійської тонкорунної породи з різним рівнем вовнової продуктивності. Показано, що у особин з підвищеним настригом чистої вовни багатоплідність вища (123,5%), ніж у тварин з середнім (107,7%) та низьким (121,1%) показником цієї ознаки.*

*Наведено також рівень живої маси отриманого молодняку при народженні та відлученні. Ягнята, отримані від матерів з високим та середнім настригом чистої вовни мали більш вищу живу масу (4,9 кг) порівняно з молодняком, отриманим від матерів з низьким настригом – 4,6 кг. А при відлученні жива маса тварин III групи перевищували своїх однолітків і становила – 20,2 кг проти 18,2 та 18,7 кг відповідно.*

*Крім цього, визначено абсолютний та відносний прирости, коефіцієнт росту молодняку і темпи приросту. За абсолютним (15,1 кг) та відносним (117,3%) приростами кращими виявилися ягнята третьої групи. В цілому встановлено прямопропорційну лінійну залежність – зі зростанням настригу чистої вовни матерів приріст живої маси їх молодняку підвищується.*

**Ключові слова.** Вівці, відтворення, плодючість, збереженість молодняку, приріст живої маси.

# **НАСТРИГ ШЕРСТИ И ВОСПРОИЗВОДИТЕЛЬНАЯ СПОСОБНОСТЬ ОВЦЕМАТОК И ЖИВАЯ МАССА ИХ ПОТОМКОВ**

**С. Л. Дрозд**  
ascitsr\_priemnaya@ukr.net

Институт животноводства степных районов имени М. Ф. Иванова  
"Аскания-Нова" – Национальный научный селекционно-  
генетический центр по овцеводству  
ул. Красноармейская, 1, пгт Аскания-Нова, Чаплинский р-н,  
Херсонская обл., 75230, Украина

*Одним из важных факторов эффективного ведения овцеводства и непосредственно тонкорунного в Украине является улучшение воспроизводительных способностей овец. Рост численности поголовья и получение высококлассного молодняка невозможно без повышения уровня плодовитости овцематок. Не менее важным фактором является сохранение молодняка от рождения до отъема. Кроме того, исследования роста и развития молодняка в постэмбриональный период дает возможность для дальнейшего повышения шерстной и мясной продуктивности. В связи с изложенным, приведены данные о воспроизводительной способности овцематок асканийской тонкорунной породы с различными уровнем шерстной продуктивности. Показано, что у особей с повышенным настригом чистой шерсти многоплодие выше (123,5%), чем у животных со средним (107,7%) и низким (121,1%) показателем этого признака. Приведены также данные об уровне живой массы полученного молодняка при рождении и отъеме. Ягнята, полученные от матерей с высоким и средним настригом чистой шерсти, имели более высокую живую массу (4,9 кг) по сравнению с молодняком, полученным от матерей с низким настригом - 4,6 кг. А при отъеме живая масса животных III группы превышала своих сверстников и составила - 20,2 кг против 18,2 и 18,7 кг соответственно.*

*Кроме этого, определены абсолютный и относительный приросты, коэффициент роста молодняка и темпы прироста. По абсолютным (15,1 кг) и относительным (117,3%) приростам лучшими оказались ягнята третьей группы. В целом установлена прямопропорциональная линейная зависимость – с ростом настрига чистой шерсти матерей прирост живой массы их молодняка увеличивается.*

**Ключевые слова.** Овцы, воспроизведение, плодовитость, сохранность молодняка, прирост живой массы.

Today in Ukraine, as elsewhere in the world, the question of providing people with food, and industry with raw materials of animal origin is relevant. One of untapped reserves in this area is a branch of sheep breeding, animals which produce raw materials for industry (wool, sheepskin, leather, lambskin etc.) and for the production of valuable for human foods: milk, meat, fat [1].

One way of ensuring the effectiveness of the industry is the increase in the number of sheep primarily due to increased fertility, which is a genetically determined trait, as evidenced by the substantial variability in sheep of different breeds [2]. However heredity this feature is low and varies from 5 to 10% in different populations [3].

Thus, an important factor in effective management of fine-fleece sheep breeding directly in Ukraine is to improve the reproductive ability of sheep raising fertility ie, fertility and preservation lambs from birth to weaning, which will enable to obtain high quality and growth of young livestock [4].

On all the above-mentioned influences several factors (climatic conditions in some regions, feeding and maintenance) without which it is impossible to obtain and conservation of valuable young sheep and increase the number of young livestock in the country.

The consideration of zone of sheep breeding is an important factor of planning terms mating ewes. Comfortable conditions pairing (low temperature during daylight hours) in August and September contribute to increase of the high fertility of ewes by 15-20% and provide an opportunity to get lambs in winter (January-February), i.e. in the grazing period lambs are well developed and can effectively use cheap green fodder.

The creation for ewes the improved conditions of maintenance and feeding during 3-4 weeks before pairing, i.e. intensive increase in body weight, increases the number of animals that are in the estrus state with high capacity for fertilization. [5].

The full feeding of young lambs in the period of postembryonic development positively affects the development of skeletal, digestive system, live weight, shape and size of animals, their growth and development, and further on the level of performance. Study of the growth and development of young lambs in a period of their life makes it possible to further focus on the improving of the processes of their wool or meat productivity [6].

The aim of our research was to study the effect of selection ewes for wool performance on their impregnable ability and fertility, as well as the live weight, average daily and relative gain, and also the growth rate

of young animals.

**Material and methods research.** Work carried out in conditions of breeding farm "Askania Nova" on stock of ewes Taurian type Ascanian fine fleece breeds that were distributed in terms of productivity wool into three groups: - low - 2.4 kg (n = 60), II - with average - 3.0 kg (n = 60) and group III - high - 3.6 kg (n = 60) of pure wool clip. The insemination was done with sperm of 137 ram sires which had different levels of wool performance: high, medium and relatively low. Unwashed wool clip has been accounted by the way of individual weighing of each rune up to the nearest 0.1 kg during shearing. Clip of pure fiber wool samples was accounted by washing and moisture removal device on the CA-53A [7]. Out of pure wool defined calculation method based on the data.

To characterize the reproductive capacity it was defined impregnable ability and fertility of ewes, preservation of lambs from birth to weaning. The viability and survival of lambs determined by their accounting period from birth to weaning, and the growth and development - individual weighting, followed by increments calculation formulas:

Average daily gain

$$AG=W_4 - W_0 \quad (1)$$

Relatively (A percentage over time)

$$RG = \frac{W_4 - W_0}{0,5(W_4 + W_0)} \bullet 100 \quad (2)$$

$W_0$  - live weight at birth,  $W_4$  - live weight at weaning. Growth coefficient of youngsters, which have been tested, is determined by the formula:

$$C_i = \frac{W_4}{W_0}, \quad (3)$$

The growth rate calculated by the formula:

$$Gr = C_i \bullet 100 \quad (4)$$

The resulting material processed by methods of variation statistics Ploynskiy [8].

**Results.** Table 1 presents data on fertilization ewes, lambs obtaining and preservation. Found that the largest number of fertilized females was in the group with average pure wool clip - 80.0%, the lowest - low clip (68.3%). A similar dependence was set by the results of lambing. 80.5% of ewes lambing in the first group, in the second - 81.3%, in the third - 73.9%. However, while in the second group largest number of ewes were fertilized and had lambing, the prolificacy per 100 ewes in animals with high clip was higher by 15.8% compared with the second and on 2.3% - with the first group ( $P < 0, 05$ ). Prolificacy variability factor is quite high and amounts to: I

group - 33.73%, the second - 24.74%, and the highest - in the third group 39.56%. These data indicate a high variability of this indicator in females with a high wool clip. Number of lambs obtained in the second and third group was the same, but their survival is significantly higher in the group with an average clip of pure wool and made 85.7%.

**Table 1. Reproductive ability ewes of Ascanian fine-wool breed**

Index	Group of ewes		
	I	II	III
<i>n</i>	60	60	60
Fertilized ewes	41	48	46
%	68,3	80,0	76,7
Lambing %	80,5	81,3	73,9
Lambs were received	40	42	42
Twins	121,2±7,23	107,7±4,32	123,5±8,51
Preservation,%	70,0	85,7	73,8

In addition, it was determined the level and direction of correlation between pure wool clip and prolificacy in all three groups. It was established that the correlation coefficient in the first group had a negative value (-0.291), and in the second group - positive. That is, the straight relationship between characteristics of fine-wool ewes, which were studied, is not established.

Before weaning ewes with lambs were kept in the sheep pens. Complete feeding during this period led to the sufficient growth and development of young animals.

Table 2 shows: the level of live weight at birth and weaning of lambs which were obtained, and their absolute, relative gain and factor of increasing of body weight during this period.

Established that the weight of lambs at birth was quite high and it was 4.6 kg in the first group (with a coefficient of variability of 20.3%), so in the second and third - 4.9 kg ( $C_v$  respectively 16.6 and 20.2 %). At the moment of weaning the live weight of animals in the first two groups was almost identical (18.2 and 18,7kg), and in the third (ewes with high wool clip) by 2.0 and 1.5 kg higher compared to the animals of the same age ( $P < 0,05$ ). The coefficient of variability in all three groups was at a high level and ranged from 21.5 to 25.1%.

**Table 2. The live weight of lambs at birth, weaning and increase in body weight during this period**

Index	Group of ewes		
	I	II	III
The live weight			
At birth, kg	4,6±0,15	4,9±0,13	4,9±0,15
Cv,%	20,3	16,6	20,2
At weaning, kg	18,2±0,88	18,7±0,68	20,2±0,89
Cv,%	25,1	21,5	24,1
Gain of the live weight			
Absolute, kg	13,4±0,72	13,9±1,24	15,1±0,85
Cv,%	18,7	22,7	26,4
Relative, %	112,8±2,86	115,8±1,22	117,3±1,53
Cv,%	29,5	10,0	15,3
The coefficient of growth of young animal	3,9	3,9	4,1
The growth rate,%	387,6±4,33	393,2±3,03	405,4±5,20

The lambs of the third group have had the absolute best growth (15.1 kg, Cv-26,4%), in the first and second group figure was almost at the same level (13.4 and 13.9 kg, respectively,  $P < 0.05$ ). However, the absolute increase in body weight per unit time does not describe the real growth rate. For this purpose, it is determined the relative increase in body weight lambs. In this context, we have established directly proportional linear relationship. That is, with the growth of mothers pure wool clip the gain of live weight of their lambs increases.

Another indicator characterizing the level of increase in body weight of animals, is the coefficient of growth. In the first two groups, it was the same and was 3.9, and in the third group was higher and amounted to 4.1. Therefore it may be noted that the lambs during the suckling period, which were obtained from mothers with high wool clip, have had better energy of growth than their peers of the first two groups.

The growth rates show the percentage change current level of the index compared to the previous and determine the growth in a specific period of ontogenesis. Relevant calculations have shown that in this case there is a similar relationship - the higher the wool clip ewes, the rate of growth of young animals live weight is bigger (387.6 ... 405.4%,  $P 0.99$ ).

**Conclusions.** Fertilizing ability of Ascanian fine fleece breed ewes depends on level of their wool productivity. Between these characteris-

tics there is a direct proportional relationship. In addition, youngsters, which were received from females with high clip of wool, are characterized by better parameters of their meat productivity and increasing of precocity in a certain period of time.

The optimum combination of parental pairs with high performance of wool of Ascanian fine-wool breed will help to maximize the biological capacity of animals to produce lambs with high meat performance.

### List of the quoted literature

1. Antonets O.H. Plemenni i productyvni yakosti ovets tavriskoho typu u plemzavodi DP "DH Askaniyske" [The breeding and productive qualities sheep of Taurian type breed in the breeding farm of SE "Askaniyske"] / O.H. Antonets // *Naukoviy visnyk "Askania Nova"*. – Nova Kahovka: Piyel, 2012. – Vyp. 5, chastyna I. – P. 16.

2. Shtompel M.V., Tehnologiya vyrobnytstva produktsiyi vivcharstva [The technology of production of sheep-breeding products] / M. V. Shtompel, B. O. Vovchenko. – Kyiv, Vyshcha osvita, 2005. – 343 p.

3. Ivina-Malyarenko O.S. Plodyuchest vitsematok tavriskoho typu askaniyskoyi tonkorunnoyi porody z riznoyu hustotoyu vovny [The fertility of ewes Taurian type Ascanian fine fleece breed with different density of wool] / O.S. Ivina-Malyarenko // *Mizhvidomchiy tematychniy naukoviy zbirnyk "Vivcharstvo"* - Nova Kahovka: Piyel, 2007. – Vyp. 34, – P. 38.

4. Antonets A.G. Vosproizvodityelniye sposobnosti ovtsematok i harakteristika produktivnykh kachestv ovets tavrisheskogo tipa v zavisimosti ot toniny shersti [Reproductive ability of ewes and characterization of productive qualities of sheep Taurine types depending on the fineness of wool] / A.G. Antonets : materialy Mizhnarod. konf. molodyh uchonyh – vyhovantsev shkil vydatnykh akademikov M.F. Ivanova i L.K. Grebnya – Kyiv: Agrarna nauka, 2000, P. 11. (in Russian)

5. Danilenko H. Osoblyvosti vidtvorennya ovets u suchasnykh umovah [The features of sheep reproduction in modern conditions] / H. Danilenko // *Propozitsiya*. – 2000. - № 1. – P. 62-65.

6. Pohyl V.I. Osoblyvosti rostu ta rozvitku molodnyaku intensivnykh typiv riznogo pohodzhennya [Features of growth and development of young animals of intensive types of different origins] / V.I.Pohyl, A.O. Honcharov // *Naukoviy visnyk "Askania Nova"*. – Nova Kahovka: Piyel, 2012. – Vyp. 5, chastyna I. – P. 164.

7. Myetodicheskoye rukovodstvo. Opredyeleniye kachestva nyemytoy shersti i vyhoda chistogo volokna. [Methodological Guide. Determining the quality of unwashed wool and output of pure fiber.] // Pod red. G.A. Zaytseva. – Moscow: - VO Agropromizdat. – 1989. – 48 p. (in Russian)

8. Plohinskiy N.A. Rukovodstvo po biometriyi dlya zootehnikov. [Guide of Biometrics for zootechnicians.] – Moscow. Kolos. – 1969. – 247 p. (in Russian)