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ЗБІРНИК ІНФОРМАЦІЙНИХ ПОВІДОМЛЕНЬ, СТАТТЕЙ, ДОПОВІДЕЙ І ТЕЗ НАУКОВО-ПРАКТИЧНИХ КОНФЕРЕНЦІЙ ВИКЛАДАЧІВ, АСПІРАНТІВ, МАГІСТРІВ, СТУДЕНТІВ

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З М І С Т

PRODUCTIVITY FEATURES OF ROMANOV SHEEP IN KHERSON REGION CONDITIONS

Mamedov S.M. - seeker of Higher Education Science Ph.D.

SHEI (State Higher Educational Institution) "Kherson State Agrarian and Economic University"

Problem statement. *Livestock* production *efficiency* is determined not only by modern technologies, but also by presence of animals with high genetic potential for productivity at the farm. Sheep breeding is a traditional branch of animal husbandry that has accompanied humanity for more than 2 millennia [1]. A lot of sheep breeds have been created during this time which differ in a number of features.

Breeding work is based on knowledge of inheritance laws of biological and economic-beneficial features, or productivity level of domestic animals, which is determined by hereditary factors and environmental conditions. Rational use of knowledge largely determines result of technological breeding process [2].

Suharlyov V. O., Derevyanko O.P. [3] highlight that modern sheep breeding technologies are more intensive and this fact has defined relevant requirements for animals: high level of productive traits and ability to provide high quality products. Sheep with a strong constitution, disease-resistant and well-adapted for breeding in various production conditions meet these requirements. It is important that sheep are precocious and well offset by the cost of feed.

At the same time, a number of scientists believe that modern system of animal breeding is actually subject to influence of economic factors which lead to threatening unification of animals, dominance of one breed or type. As a result, this may lead to loss of genetic diversity due to implementation of

imperfect programs to intensify industry. There are also threats to lose local pores [4, 5].

In this case, it should be remembered that each breed is a result of long, focused and hard work and has its own unique gene pool. In modern conditions, there is a significant reduction in number of sheep in farms of various forms of ownership [6], which leads to loss of biodiversity.

Analysis of recent research and publications. So, specialists in sheep industry face two challenges: obtaining high-quality products in sufficient quantities and preserving natural genetic diversity, which determines adaptability of both technological and climatic conditions. Traditionally, highly productive animals are animals that are well adapted to environmental conditions [1,2,3].

The best adaptation to climate conditions is noted in local breeds, for example, traditional breeds of Turkey: Akkaraman, Morkaraman, Dağlıç, Ivesi (Awassi), Kıvırcık etc. [7] They are characterized by small size, high endurance and ability to provide offspring, wool, milk and meat in conditions of limited feeding.

A number of scientists [1,3,8-11] recognize the Romanov breed of sheep as the world leader in terms of reproduction and productivity per ewe. Technological features include precocity, polyestricity, multiplicity and combined productivity and with a unique plasticity - ability to adapt to different climatic and technological conditions, and ability to transmit their features to offspring [9,10].

At the same time, influence of extreme summer temperatures on well-being of animals and their productivity has been studied for a long time, but a scientific approach to this issue is still being developed [13]. Nezhlukchenko N.V. has studied their effect on reproductive performance of fine-wool sheep [14].

The purpose of the study. These factors determined choice of sheep breed for our farm "Primorsk - 2012" in Kherson region.

In fact, a flock of sheep was formed in 2017 from animals that were purchased in farms of different levels of breeding work and in different regions of Ukraine. Common characteristics for purchased livestock were belonging to the Romanov breed. It was confirmed by breeding certificates of origin and level of productive characteristics, which corresponded to breed standard: at the age of 100 days, lambs weighed 20-22 kg, at 8-9 months - 35-40 kg, sexual maturity at 10-12 months, trimmed wool at least 1.3 kg, sheepskin of fur type. Actually, 100% of flock was imported from other regions of Ukraine.

The purpose of work at this stage was to evaluate reproductive capacity of available ewes and female lambs in period of 2018-2019, in terms of adaptation to climate of Southern Ukraine, which is characterized by grueling dry days in summer.

Evaluation of animal productivity has begun since 2017, based on indicators of their own lifetime productivity, by maternal qualities - since 2018. Statistical analysis was performed using biometric analysis methods [15]. Animals were kept in the same farm, under same conditions of care and maintenance. Sheep production technology is traditional and is based on pasture use throughout growing season. In Kherson region, the period of active grazing is from mid-March to November.

Sheep mating is held in autumn, and lambing is held in spring. Ewes with newborn lambs are kept in individual cages for the first five days. Care for formation of large sacmanas (**flock of ewes with lambs of the same age)** is individual. Lambs are kept close to ewes for up to 4 months.

Presenting of main material. In June 2017 the flock of farm had 77 sheep, and it consisted of 3 breeding rams and 74 ewes, all animals up to 3 years old. Thus, all animals were of full-age and had productive

characteristics at a level that met requirements of breed standard. Transportation of animals and formation of new flocks are stressful factors that determine changes in physiological state of animals and are traditionally characterized by a decrease in live weight. We evaluated live weight indicators of experimental animals in the autumn, after 2.5-3 months of adaptation to new conditions of keeping and care.

Live weight of ewes has changed over years of study (Table 1).

Table 1 - Live weight of Romanov sheep by years of study, kg

Група	n	Years	$X \pm S x$	C_V, %	Limit
Rams	3	2017	68,5±4,85	17,85	65…71
	5	2018	70,3±5,38	15,06	68…72
	7	2019	72,8±6,86[*]	17,47	68…76
Ewes	74	2017	46,5±3,28	12,32	39…48
	120	2018	48,8±4,68	15,35	42…55
	174	2019	50,4±5,43*	14,21	44…57

Notes: [*] P<0,05;   [**] P<0,01;   [***] P<0,001

According to breed standard, rams in adulthood have a live weight of 70 to 100 kg, and ewes have 45-50 kg [1,3]. In the first year of farm live weight of lambs was less than standard by 1.5 kg, and in following years it met the requirements. Variability of indicator was above average (Cv>17,0%) due to origin of animals from different farms. Total number of rams has doubled due to young animals and imports of animals.

Live weight of ewes meets requirements, feature is consolidated. Number of flocks increased by 2 - 3 times, thanks to introduction of young animals into the flock. The average live weight of animals increased by 2.0 kg during study period. Variability of indicator confirms prospects of breeding work.

Animals met breed standard, but according to monthly weighing, they lost 2.5 -3 kg of live weight during the first four months of their stay at the farm, and then returned to normal according to annual appraisal for growing and live weight assessments. Such fluctuations were associated with a natural reaction to stress of transportation and adaptation to new farm conditions.

The number of ewes has increased due to introduction of lambs into the group born in 2017 and 2018, respectively, in conditions of farm. Weight of animals increased by 2.3 kg, while variation of traits also changed in direction of traits growth.

Thus, within two years of management imported sheep adapted to conditions of farm during first 4-5 months. Indicators of live weight increased with age confirming adaptation of animals to conditions of farm. Preservation of productivity indicators and their growth are confirmation of Romanov sheep adaptation to conditions of Kherson region.

A good level of animal adaptation is traditionally proved by maintenance of productive traits at level inherent in breed. The Romanov breed of sheep is characterized by unique indicators of reproductive ability [1-3], so we have evaluated adaptation based on these characteristics (table. 2).

Sheep mating was conducted in the autumn of 2017 and 2018, so lambing was held in the spring of 2018 and 2019.

Sheep were brought to the farm at the beginning of 2017, lambing took place in 2018 (Fig. 1). This breed differs of its polyestricity, so litter was obtained from almost all imported ewes. Multiplicity was 178%. At the same time, 32% of ewes gave birth to singles, others gave birth to twins and triples. Live weight of litter has biologically determined dependence on type of birth.

Lambs born in triplets had the smallest mass - less than 2.0 kg. The largest mass was characterized by lambs born as single - 2.07 kg (P <0.05). Difference in live weight of lambs of different types of birth is 9.18%.

Table 2 - Indicators of sheep reproduction in conditions of farm

Year, indicators	number of ewes	Received lambs			
		total	including		
			single	twins	triple
2018	74	132	25	72	35
$X \pm S x$	-	2,07±0,22	2,8±0,14	2,21±0,20	1,9±0,18
Number of lambs at weaning	-	123	23	70	30
Preservation, %	-	93,19	92,00	97,22	85,71
2019	120	244	24	154	66
$X \pm S x$	-	2,21±0,20	2,7±0,18	2,23±0,19	2,0±0,17
Number of lambs at weaning	-	235	22	150	63
Preservation	-	96,31	91,67	97,40	95,45

Notes: [*] P<0,05;   [**] P<0,01;   [***] P<0,001

Figure 1. Ewes with litter, 2018

Lambs born in multiple lambing were characterized not only by less live weight, but also by safety. Workers noted two cases of dead lambs in multiple lambing. Cases of lambing with more than three lambs were not observed.

Total number of lambs is 132 heads, and at the time of weaning is 123 heads. Preservation level of lambs at the farm is 93%, with the lowest preservation level in multiple lambing of 85%.

In 2019, number of ewes increased by 40%, and multiplicity increased by 25% and reached up to 203% (Fig.2), which corresponds to characteristic of the Romanov breed. The number of ewes has increased due to replenishment of group with their own young.

The number of ewes that gave birth to one lamb decreased to 20%, compared to 32% in 2018. The number of ewes that gave birth to two or more lambs increased proportionally. The number of lambs born in twins is the largest, more than 64% of total number litter. Average live weight of lambs in the second year of observation also increased: an average of 0.14kg by 6.7%. There is no significant difference in live weight between lambs of different birth types.

Preservation of lambs has increased by more than 96% and by 10% for lambs born in triplets in the farm. Birth *sex ratio* (table 3) is natural. At the time of birth, number of representatives of different sexes does not make a significant difference

However, birth *sex ratio* in different types of birth is peculiar, in 2018, there were more male lambs than female lambs in multiple lambing, but difference is not significant.

This year the number of male lambs was born more often in singles and in twins. Satisfactory and good acclimatization of sheep to climatic conditions of Southern Ukraine is confirmed by birth of numerous healthy and viable offspring. In 2019 there is another dependency, total number of female lambs is higher.

Figure 2. Ewes with litter on the paddock 2019.

Table 3 - Birth *sex ratio*

Year, indicators	number of ewes	Received lambs			
		total	including		
			single	twins	triple
2018	74	132	25	72	35
Male lambs	-	69	11	40	18
Female lambs	-	63	14	32	17
Ratio	-	1,09:1,00	1,00:0,78	1,00:1,25	1,06:1,00
2019	120	244	24	154	66
Male lambs	-	121	13	78	30
Female lambs	-	123	11	76	36
Ratio	-	1,00:0,98	1,00:1,18	1,00:1,03	1,00:0,83

Conclusions. Sheep of the Romanov breed brought to Kherson region in 2017-2019 research period acclimatized successfully and gave offspring. Indicators of live weight of adult livestock increased with age of animals by

1.5 kg and a number of sheep in a flock by 2 -3 times. Preservation of productivity indicators and their growth are confirmation of sheep adaptation to conditions of the farm. In the second year, available livestock confirmed high ability to adapt to reproductive performance: multiplicity over 178%, and the following year 203%. Preservation of lambs is not lower than 85%, while proportion of multiple lambing increased by more than 15% and maintaining natural birth *sex ratio* of lambs.

Thus, indicators of multiplicity of Romanov sheep increased in conditions of the farm and confirmed ability of imported sheep population to adapt to conditions of Southern Ukraine.

Prospects for further research. Further research will provide assessment of physiological indicators of adult livestock adaptation and young animals to extremely high air temperatures.

References:

1. Вівчарство України за ред. В.М.Іовенка. Вид. друге, доп. і перероблене. К.:Аграрна наука, 2017. 488с.

2. Підпала Т.В. Селекція сільськогосподарських тварин: Навчальний посібник. - Миколаїв: Видавничий відділ МДАУ, 2006. – 277 с.

3. Сухарльов В.О., Дерев'янко О.П. Вівчарство / Навчальний посібник - Харків: Еспада, 2003. - 256 с

4. Мирось В.В., Ткачов А.Ф., Хватов А.І. та ін. Проблеми збереження породного генофонду свиней України // Розведення і генетика тварин. Київ: Аграрна наука. – 2001.- №34. – С.149-150.,

5. Созинов А.А. Молекулярно-генетические маркеры у сельскохозяйственных животных // Тезисы док. II Междунар. конф.»Молекулярно-генетические маркеры животных» - Киев, 1996. – С.3-4

6. Інтернет ресурс http://www.runo.ks.ua/, Гийом Руэ Президент, WORLD SHEEP MEAT MARKET TO 2025 // www.meat-ims.org, Mohamed Fatah Ullah Khan* and Faisal Ashfaq Meat Production Potential of Small Ruminants Under

the Arid and Semi--arid Conditions of Pakistan // *Agricultural and Marine Sciences*, 15:33--39 (2010)

7. *Я. Aytekin †, A. Öztürk* Turkey's sheep and sheep management - Archiva Zootechnica 15:3, 39-47, 2012. С.39-45.

8. Штомпель М.В. Нова популяційна система оцінки і відбору мериносів Міжвід. наук. зб. Розведення і генетика тварин. Вип.36. Київ:Науковий світ. 2002. С.201-202.

9. Генофонд свійських тварин України: Навчальний посібник Барановський Д. І., Герасимов В. І., Нагаєвич В. М., Хохлов А. М. та ін. За ред. проф. Барановського Д. І. та Герасимова В. І.. Харків: Еспада, 2005. 400 с.

10. Арсеньев Д.Д., Лобков В.Ю. Технология романовского овцеводства: монография. Ярославль: ФГБОУ ВПО «Ярославская ГСХА», 2011. 268 с.

11. Gladyr' E.A. Characteristica romanovskoj porodi ovec po genu proteina [Characteristics of Romanov breed sheep for the gene protein]. Dostigjenija nauki i tehniki APK, 2012. No. 8, pp. 52-54.

12. Аветисян Г.Б. Создание Мартунинского типа овец Армянской полугрубошерстной породы и пути его дальнейшего совершенствования. Дисс.д.с.х. наук, Ереван, с. 165-166, 2009

13. Нежлукченко Т.І., Нежлукченко Н.В., Папакіна Н.С., Качур І.А. Спосіб зниження впливу високих температур на продуктивність тварин ІІ Міжнародна науково-практична конференція «Вплив кліматичних змін на просторовий розвиток територій землі: наслідки та шляхи вирішення» . Зб. Матеріалів Херсон, 2019. С.130-135.

14. Нежлукченко Н.В. <u>Відтворювальні якості та адаптаційна здатність ліній овець таврійського типу асканійської тонкорунної породи</u> Автореф.дис. ступеня канд. с.-г. наук: 06.02. 01 "Розведення та селекція тварин"/НВ Нежлукченко.–Миколаїв, 2013.–20с.

15.	Коваленко В.П., Халак В.І., Нежлукченко Т.І,, Папакіна Н.С. Біометричний аналіз мінливості ознак сільськогосподарських тварин і птиці / навчальний посібник з генетики сільськогосподарських тварин. – Херсон: РВЦ «Колос», 2009. – 160с.

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ОСОБЛИВОСТІ ПОКАЗНИКІВ ПРОДУКТИВНОСТІ СВИНЕЙ РІЗНИХ ГЕНОТИПІВ В УМОВАХ ОКРЕМОГО ГОСПОДАРСТВА

Бакаєва К.З. - здобувач вищої освіти, магістр з ТВППТ,

Пелих Н.Л. – к. с.г. н., доцент,

ДВНЗ «Херсонський державний аграрний університет»

Для свиней характерні скороспілість та багатоплідність, які дають можливість за короткий період отримати від них значно більше м'яса, ніж від інших видів сільськогосподарських тварин. В умовах промислового комплексу, за даними багатьох досліджень, неефективно використовувати чистопородних тварин, а значно ефективніше було б впроваджувати схрещування та гібридизацію.

З цією метою нами проведенні дослідження з порівняльної оцінки відтворювальних якостей свиноматок у чистопородному розведенні та промисловому схрещуванні.

Результати досліджень свідчать, що найвищий показник багатоплідності отримали від свиноматок у схрещуванні ВБ×ЛН – 12,75 голів. У варіанті схрещування ЛН×ВБ даний показник був меншим на 0,33 голови.

Найбільш великоплідними були також помісні поросята ВБ×ЛН – 1,37 кг, а чистопородні поросята породи ландрас були меншими на