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Study of the Dependence of the Chemical Composition and Nutritional Value of Sheep Feed Grown in the Western Zone of the Republic on Climatic Conditions

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Abstract. *The article studies the dependence of the chemical composition and nutritional value of sheep feeds grown in the western zone of the republic on climatic conditions. The research work was carried out in various farms located in Samukh and Shamkir regions, in the laboratory of the "General and Special Zootechnics" department of the "Zoo Engineering" faculty of the Azerbaijan State Agrarian University. From the research work we conducted, it became clear that the water content of the feeds supplied to the Shamkir region breeding sheep farm is 1.3% higher than the water content of the feeds supplied to the comparable farm. In addition, it is considered more expedient to keep and breed sheep breeds suitable for the area where the farms are located. For this, it is necessary to fully provide these farms with a solid feed base, as well as improve the breed composition of the sheep.*

Keywords: *feeding, water, dry matter, protein, fat, cellulose, ash, alfalfa, grass, corn silage, fodder beet, barley grain*

Introduction

In order to obtain high-quality products and maintain normal physiological activities in sheep, they must receive sufficient, balanced, and nutrient-rich feed throughout the year. Proper feeding affects growth, reproductive efficiency, milk and meat quality, and overall productivity (Abdullayev, 2014). Studies indicate that optimized feeding strategies, including the appropriate balance of energy, protein, vitamins, and minerals, significantly improve growth performance and reduce stress-related metabolic disorders in sheep (Safari et al., 2020; Li et al., 2021; Sousa et al., 2022). Moreover, integrating farm-produced feeds with purchased feed resources ensures cost-efficiency and supports sustainable farm management.

Of all the environmental factors, feeding has the greatest impact on animal productivity, as the animal receives structural material for building tissues, energy and substances that regulate metabolism from feed. A good feed base is the main condition for the successful development of livestock farming. If animals do not receive the necessary amount of feed, even the most specialized mechanization cannot have any effect.

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In livestock farming, not only the quantity of feed, but also its quality is of great importance. Quality is determined by the nutrients in the feed (Abdullayev, 2022; Abdullayev, 2012). In modern times, the most important problem is the production of food products. The livestock sector plays a key role in solving this problem. In many countries, livestock farming is intensively and dynamically developed on the basis of new technologies and its productivity is increased. However, the provision of animal-based foods to the world's growing population remains a challenge. Population growth leads to an increase in demand for livestock products (Abbasov, 2011).

In our republic, along with other livestock sectors, one of the important sources of resources in increasing food products and solving the meat problem is sheep farming. Sheep farming has been developed by the people in Azerbaijan since ancient times and has been used effectively. Sheep farming plays an important role in meeting the demand for wool, leather, meat, and milk. Since the demand for sheep meat is high, sheep meat accounts for 40 or more percent of the meat balance. Valuable fabrics, carpets, and palazzos, etc. are made from sheep wool. Since sheep milk is rich in fat and protein, cheese made from it is very tasty and nutritious (Zeynalova, 2008).

In order to develop scientific, cultural and highly productive livestock farming in the republic, first of all, a solid feed base must be created, for this purpose, abundant and high-quality feed rich in nutrients must be produced intensively, the material and technical base of feed production must be strengthened, the structure of an effective feed base must be created, and fertilizers must be applied to increase the productivity of meadows and pastures, and measures must be taken to improve them superficially and fundamentally. In order to meet the demand for high-quality feed in livestock farming, a multidisciplinary feed base based on the foundations of advanced science must be created. Currently, the pace of development of livestock farming lags far behind the development of life's needs. Although there are many real facts here, the main reason is that livestock farming is provided with a balanced feed rich in nutrients (Zeynalov, 2005).

Animals produce only when the energy content of the nutrients entering the body exceeds the internal needs. The need for nutrients is actually spent on live weight, milk, wool growth and fetal development. In this regard, the need for nutrients depends on the quantity and quality of the product received. On the other hand, since the composition received is not constant, significant errors related to the age and physiological state of the animal must be taken into account. In order to determine these norms, first of all, the digestibility of nutrients during metabolism and the amount in the products received must be known (Durst, 2005).

Science and experience prove that livestock breeding will develop rapidly when feed production is fully adapted to its needs and feeding is strictly followed based on zoo technical rules. For this, the structure of forage crop fields should correspond to the structure of the herd and the direction of livestock production. One of the main ways to increase production efficiency in livestock breeding is not only to produce more feed, but also to feed animals based on correct zoo technical feed rations. Because full consideration of the needs for the amount and quality of feed digestibility in feeding is one of the main factors ensuring the normal course of physiological processes in animals and the production of livestock products (Tahirova, 2018).

Our republic has fertile soil, healthy climate, rich vegetation and diverse fauna. However, despite the presence of so many sheep breeds, the keeping, feeding and breeding of sheep in the places is carried out spontaneously without following zoo-veterinary rules. This, in turn, leads to the loss of the breed composition of sheep, the reduction of meat, milk, wool and other livestock products (Balakishiyev, 2009).

The great potential of sheep to adapt to various conditions of keeping and feeding is their most important feature. That is why it can be said that sheep have spread all over the world. Since sheep

have variability and good adaptability, it has become possible to create new breeds and types and to breed them in different ecological zones. Despite the fact that domesticated sheep are exposed to sharp biological and physiological changes under the influence of various extreme ecological conditions, they have preserved and preserved their valuable species characteristics based on their ability to adapt to pasture conditions. They make good use of various pastures (Sadigov, 2022; Sadigov, 2024).

Farmers should pay attention to the rules of care, cleanliness, lighting and cleanliness of storage areas, heating in winter, and normal temperature in hot weather. All this leads to low and poor quality production. Mountain and foothill regions are of particular importance in the development of meat sheep in our republic. At the same time, farmers engaged in livestock breeding should keep animals adapted to local conditions at the expense of local opportunities (Tagiyev, 2023; Tagiyev, 2025).

Materials and Methods

Nutrition, along with heredity, is the most important condition for the formation of the animal organism. The animal organism is built up on the basis of the absorbed food, and it also performs its life functions with it. Therefore, the development of the animal depends on the quantity and quality of the food it receives throughout its life. It became clear from the research that the feed mixture, which consists of a mixture of raw materials, is more nutritious and increases productivity compared to the barley-wheat groats and bran that farmers usually use. By affecting productivity, more products can be obtained in a short period of time. The meat product produced in 8-9 months can be obtained in 3 months. If we compare the increase in the feeding of dairy and meat animals when using a mixture of enriched feeds, unlike feeding with ordinary feed, milk production increases starting from the 10th day of feeding, and fattening is intensified. From the research we conducted, it became clear that when fed with this feed, the animal becomes more eager (repeated eagerness is reduced to a minimum) and becomes healthier. It is less susceptible to parasitic diseases.

In order to organize the feeding of agricultural animals according to the norm, the chemical composition of the feeds used should be studied first of all. That is why the chemical composition of the feeds should be determined when compiling balanced feed rations. For this purpose, in order to conduct a research study, we studied the chemical composition of the feeds supplied in the private farms of the Samukh district and the private farms of the Samukh district, which are the leading sheep farms of the republic.

Results and Discussion

The chemical composition of the feeds supplied in the private farms of the Samukh district is given in Table 1 below (Table 1). As can be seen from Table 1, the content of alfalfa grass in the feed supplied to the Samukh district breeding sheep farms was 14.80% water, 85.20% dry matter, 78.33% organic matter, 14.35% water, 85.65% dry matter, 78.58% organic matter in meadow grass, 84.68% water, 15.31% dry matter, 14.21% organic matter in fodder beet, 13.25% water, 86.75% dry matter in barley grain.

Table 1.
Chemical composition of feed supplied to the Samukh district breeding sheep farms, %

Feeds	Water	Dry matter	Total	Organic substances				Ash
				protein	oil	cellulose	AEM	
Alfalfa grass	14.80	85.20	78.33	14.45	2.57	25.89	55.42	6.87
Meadow grass	14.35	85.65	78.58	8.36	2.13	26.19	60.26	8.71
Senazh	46.0	54.0	48.59	10.01	1.30	15.78	69.50	5.41
Corn silo	78.58	21.42	19.60	2.10	0.70	6.08	90.01	1.62
Fodder beet	84.68	15.31	14.21	1.49	0.11	1.01	97.00	1.11
Barley grain	13.25	86.75	83.67	10.49	1.88	4.31	82.7	3.06

Table 2 below shows the chemical composition of the feeds supplied to the Shamkir district breeding sheep farm.

Table 2.
Chemical composition of feeds supplied to the Shamkir district breeding sheep farms, %

Feeds	Water	Dry matter	Total	Organic substances				Ash
				protein	oil	cellulose	AEM	
Alfalfa grass	14.30	85.70	78.74	14.45	2.68	25.98	56.84	6.96
Meadow grass	13.85	86.15	77.05	8.5	2.16	26.45	62.89	9.0
Senazh	46.00	55.00	49.58	10.21	1.37	15.92	70.61	5.4
Corn silo	78.08	21.92	19.99	2.16	0.74	6.21	90.89	1.83
Fodder beet	84.08	15.92	14.35	1.56	0.14	1.08	97.28	1.16
Barley grain	13.04	86.96	88.81	10.69	1.92	4.48	82.93	3.15

As can be seen from Table 2, alfalfa grass, among the feeds supplied to the Shamkir district breeding sheep farm, contained 14.30% water, 85.70% dry matter, 78.74% organic matter, meadow grass contained 13.85% water, 86.15% dry matter, 77.05% organic matter, haylage contained 45.00% water, 55.00% dry matter, 49.58% organic matter, corn silage contained 78.08% water, 21.32% dry matter, 19.99% organic matter, fodder beet contained 64.08% water, 15.92% dry matter, 14.35% organic matter, barley grain contained 13.04% water, 86.96% dry matter, and 88.81% organic matter.

From the obtained indicators, it can be concluded that the water content of the feed supplied to the Shamkir district breeding sheep farm is 1.3% higher than the water content of the feed supplied to the comparable farm. Accordingly, the dry matter content of the feed supplied to the Shamkir district breeding sheep farm is 1.0% higher and the organic matter content is 2.4%.

Conclusion

As a result of our many years of scientific research, breeding selection work and experiments, it has been found that the diversity of the chemical composition of feeds is closely related to the natural and climatic conditions of the farms. In this regard, when conducting experiments on the feeding of farm animals in any zone, the chemical composition of the feeds supplied to that farm is first studied. It is necessary to avoid losses during the supply of feeds, as well as when feeding them to animals, and to use feeds efficiently. It is also advisable to use the capacity of existing feed shops and feed kitchens to the maximum extent.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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