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KARAKUL SHEEP ENERGY REQUIREMENTS AND UTILIZATION EFFICIENCY IN DIFFERENT PHYSIOLOGICAL CONDITIONS

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Abstract:

The article examines the amount of metabolic energy used by pasture feed and how it is transformed into body weight gain, wool growth, milk synthesis, and the development of conception products.

Keywords: Metabolic energy, transformation, grazing feed, protein, fat, deposition energy

RELEVANCE OF THE TOPIC – The most crucial criterion for improving animal output and long-term normal production is full satisfaction of the animal's energy requirements.

Knowledge of digestion and metabolic processes has been used to build the feeding system. The metabolic energy used in the body in the process of metabolism and energy to assure the various activities and production are the basis for determining the energy content of feed in the currently suggested rationed feeding of sheep. Energy nutrition becomes more important as livestock breeding grows more intensive and animal production rises.

PURPOSE AND OBJECTIVES OF THE RESEARCH. Determine how much metabolic energy from pasture fodder is used by sheep for body weight gain, wool growth, milk synthesis, and conception product development.

MATERIALS AND METHODS OF RESEARCH. The study took place in the ephemeral desert of the Samarkand region's State Processing Plant named after Jakhongirov. Sheep of producing age 3-5 years, black color, and jacket type were used in the experiment. Studies on the efficacy of converting the exchange energy of pasture forage into products were conducted in stages, with varied physiological states of the animals and pasture content. Six analogues were used in each period of the trial, including the last third of pregnancy (January-mid-March), lactating period (March-July), and blank (August-October). The chemical makeup of the meal was used to calculate gross and metabolizable energy. The amount of feed consumed on pasture was computed using energy equivalents and regression equations utilizing the fecal index approach [5] based on the results of exchange tests. The chemical content of feed, excrement, urine, milk, and wool was assessed using zootechnical analytical techniques [3.] Nitrogen and carbon were used to calculate the nutrition and energy balance in experimental animals [4]. Lambs' milk productivity measured in terms of live weight growth. Individual weighing of 25-30 animals per group determined the animals' life weight. Wool growth is measured with a ruler, fineness is measured using an eyepiece and a micrometer, and wool shearing is done by weighing the fleece of 15 heads individually. According to [6,] the experimental material was processed using the constant method.

The effectiveness of using and transforming the exchange energy of pasture forage for the development of products in sheep of various physiological states was studied, and it was discovered that the uterus had a different intensity of energy exchange and a varied efficiency of its use. So, in the third trimester, ewes in yean consumed 1095 g of dry matter feed with a gross energy of 4708.5 kcal, lactating ewes consumed 2410.0 g with a gross energy of 10329 kcal, and empty ewes consumed 1660 g with a gross energy of 6507.7 kcal.

Protein and fat are the most common sources of energy storage in animals' bodies. The amount of protein and fat deposited in the body, as determined by the nitrogen balance and carbon is entering and exiting the body.

The nitrogen and carbon balance research revealed that, depending on their physiological condition, ewes received various quantities of nitrogen and carbon with their daily diet; the balance was positive in all groups of animals.

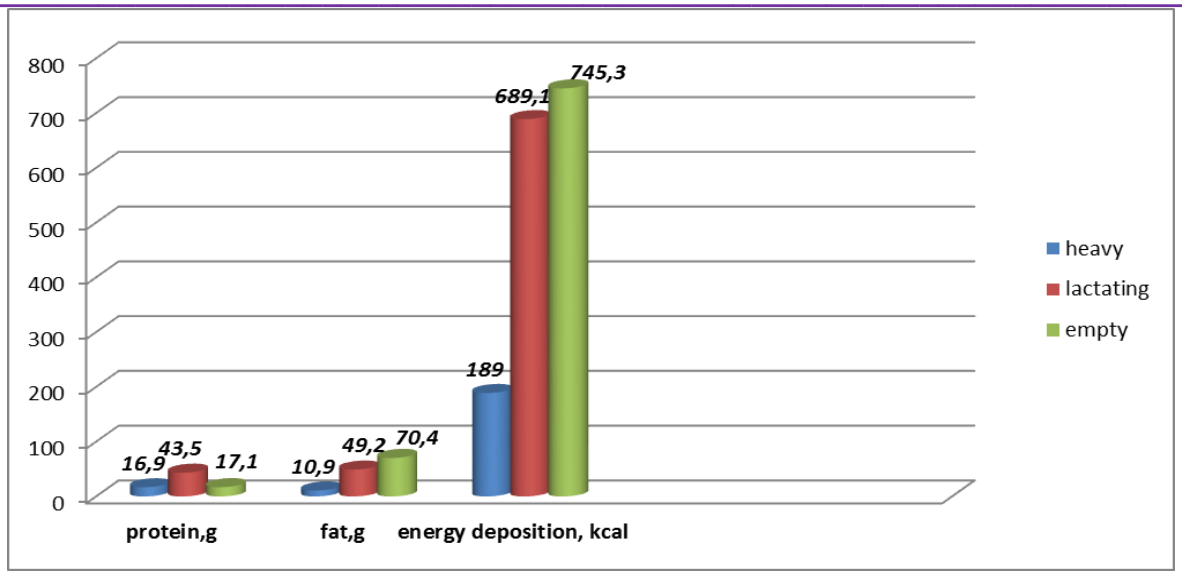

Fig. 1- **Daily protein, fat and energy deposition in the body of mothers of different physiological states**

The statistics demonstrate that empty ewes have the most productive energy stored in their bodies, and that in ewes in yean, protein synthesis takes precedence over fat synthesis, in contrast to other animal species. Obviously, this is attributable to the characteristics of reproductive tissue synthesis; in no other type of animal productivity did protein synthesis outnumber fat synthesis. (N. Graham, 1964, A. Genzler etc.1973).

We computed the nutrition and energy expenditures for wool growth based on the chemical composition and wool growth. A daily increase of 4,0 g for pregnant ewes, 4,1 g for lactating ewes, and 6,08 g for empty ewes has been established. Wool had 3,62 g, 4,02 g, and 5,58 g of protein, respectively.

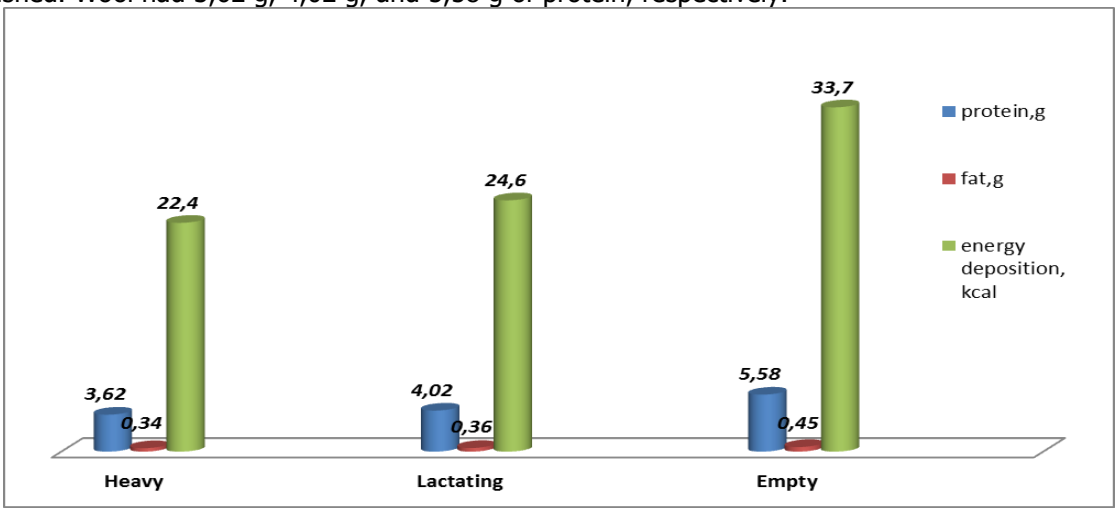

Fig. 2- **Daily protein, fat and energy deposition in wool in mothers of different physiological condition**

When the average daily increase of wool was taken into account, empty ewes had the most protein and fat deposition, whereas ewes in yean had the lowest. The investigation of metabolic energy in adult sheep at different physiological states revealed that the ewes on pasture absorbed varied quantities of gross energy from feed and that it was distributed differently on metabolic processes.

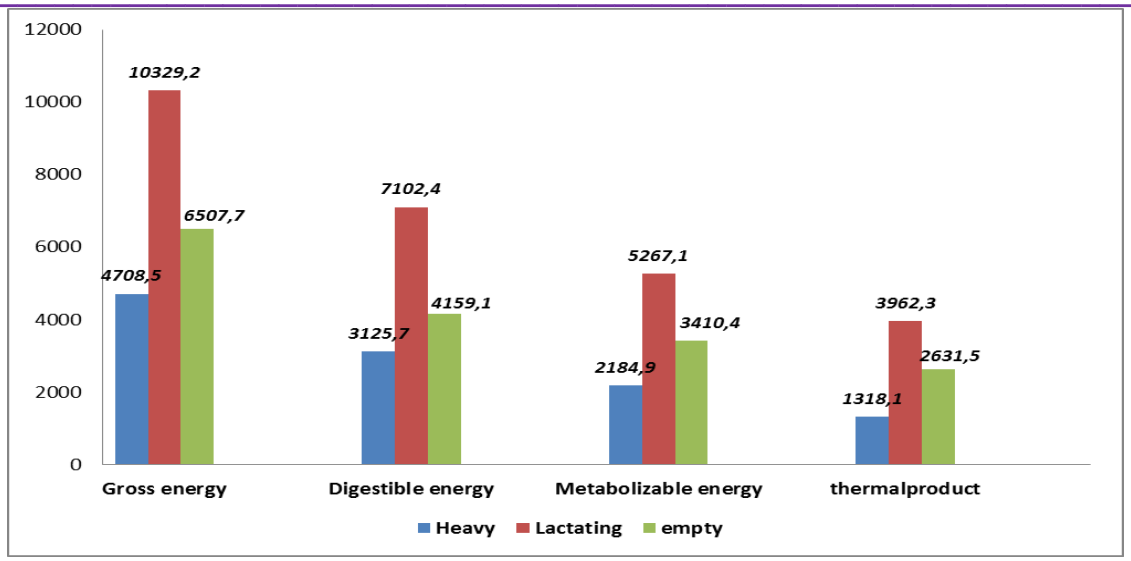

Fig. 3- **Total energy metabolism in mothers of different physiological states, kcal/day**

Depending on the condition of the moms and the mix of pasture forage, digestible energy was 66.3 %, 68.7%, and 63.9% of gross energy. Heat production was 60.3 percent in women in the latter third of pregnancy, which is related with insufficient energy supply in the final stage of pregnancy, 75.1 % in breastfeeding moms, and 77.1 % in singles.

The live weight of the ewes varied depending on the physiological state: 33.8+0.42 kg for ewes in yean in the third trimester, 37.+0.51 kg for nursing ewes, and 40.5+0.49 kg for empty ewes.

Wool productivity was 1.69 kg of physical weight per year. The animals preserved varying quantities of productive energy in the presence of these productive factors. (Table 1.)

Table 1 - **Energy utilization of the productive part of the diet in kcal/day.**

№	**group of animals**			
	Indicators.	**heavy**	**Lactating**	**empty**
1	**Deposition energy: in body protein**	89,5	230,5	90,69
2	**In body fat**	99,5	457,6	654,7
3	**The protein in wool**	19,1	21,3	29,5
4	**In wool fat**	3,13	3,30	4,20
5	**In milk**	-	592,4	-
6	**in the development of products of conception**	655,4	-	-
7	**Total energy retention**	866,8	1304,8	778,9

Ewes in yean retained 21.4 % of their deposited energy for body increase, with the remaining 76.5 % going to the development of conception products and the establishment of the mammary gland. The average daily milk production in breastfeeding mothers was 726 g with calories, 529.4 kcal, which accounted for 45.5 % of total retention and 52.8 % of the energy, was deposited in body growth. Empty ewes spent 96.3 % of their energy on body gain, which was synthesized 89.0 % of the time as fat. The amount of energy deposited for wool growth differed by physiological condition, with 2.29 % in pregnant ewes, 1.20 % in lactating ewes, and 4.32 % in empty ewes.

As a result, it's crucial to highlight that during the study period, the coefficients of total productive use of metabolizable energy in ewes in yean were 39.6%, 24.7 % in lactation sheep, and 23.4 % in empty ewes.

Table 2- **Efficiency of energy use of pasture forage for product formation, kcal/d, MJ /d.**

№	**Indicators**	**heavy**	**Lactating**	**emty**
1	Eaten dry matter	1095	2410	1660
2	Exchangeable energy: in kcal in MJ	2184,9 9,14	5267,1 22,0	3410,44 14,2
3	Deposition of energy: in body growth	189,0 22,4	688,1 24,6	745,3 33,7

	on wool growth on the development of products of conception and mammary gland formation in milk	655,4 -	- -	- -
4	Total energy deposition: in kcal in MJ	866,6 3,62	1304,8 5,46	778,9 3,26
5	Heat production: in kcal in MJ	1318,1 5,51	3962,3 16,58	2631,5 11,0
6	Exchange energy ratio in %: in body gain for wool growth for dairy products on development of products of conception and mammary gland formation	8,65 1,01 - 30	13,1 0,46 11,2 -	21,8 0,98 - -

CONCLUSION. The degree of utilization of exchange energy of pasture forage for production in sheep of diverse physiological conditions: ewes in yean, nursing ewes, and empty ewes was established based on the findings of investigations done in the Artemisia-Ephemera desert.

- Ewes in yean used 2184.9 kcal (9.14 MJ) of metabolic energy, produced 1381.1 kcal (5.51 MJ) of heat, and expended 866.6 kcal (3.62 MJ) on production. The productive usage of exchange energy coefficient is 39.6 %.

- Lactating ewes used 5267.1 kcal (22.0 MJ) of metabolic energy for heat generation and 3962.3 kcal (16.5 MJ) for production. The productive usage of exchange energy coefficient is 24.7 %.

- During the fall wool growth season, empty ewes consumed 3410.4 kcal (14.2 MJ), heat generation consumed 2631.5 kcal (11.0 MJ), and product production consumed 778.9 kcal (3.26 MJ).

The productive use coefficient is 22.8 %.

The efficiency of Karakul sheep's utilization of exchange energy of grazing fodder and its transformation for body weight gain, wool growth, milk synthesis, development of conception products, and mammary gland formation in the wormwood-ephemera desert was determined as a consequence of the research's findings.

The information acquired can be utilized to fine-tune the feeding of pregnant, lactating, and empty ewes in order to maximize the genetic potential of animal productivity and make efficient use of feed resources.

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