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IMPROVING THE EFFICIENCY OF SHEEP PRODUCTION. PROCESSING OF WOOL FOR BIOFERTILIZATION.

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Abstract

In Kyrgyzstan, the rural population's life support strategy is sensitive to environmental and climatic changes, and it needs to be considered in the context of climate change. Kyrgyzstan is a mountainous country, traditionally engaged in breeding animals, mainly sheep and cattle. As is known, ruminants emit 5.5% of the total anthropogenic greenhouse gas emissions. The impact on the ecology is not processed wool of coarse-haired sheep and the accumulation of manure. More than 90% of the wool produced in Kyrgyzstan, due to the lack of appropriate processing infrastructure, have no commercial value, after shearing sheep, farmers throw them away or burn them. There is evidence in scientific publications that fine particles of wool in the air lead to allergic rhinitis in humans (Wang.2005), this confirms the need to solve the problem of protecting the population from diseases and environmental pollution by developing an effective wool recycling system. Wool fibers decompose into biomass 4 weeks after application to the soil (Arshad, Mujahid. 2014), acts as a moisture-saving medium, since it is able to retain a large amount of moisture, up to 33% of its own weight (Kagam.2013. Karimet.2009). The latest reports are very important in Kyrgyzstan, where dry summers and lack of irrigation water are very common. In this regard, in Kyrgyzstan there is a need to discuss the bioeconomical goals of sheep breeding, in this area little research has been done on the quantity, type, quality and chemical composition of sheep wool. According to the results of foreign scientists, sheep wool contains (mg/ kg): nitrogen -131,167; sulfur- 78,143; phosphorus-184; potassium-1,144; calcium-1,217; zinc-334; iron-114; copper-6.5.

Aim

The purpose of this study is to develop a technology for processing sheep wool in the Kyrgyz Republic for farmers to receive additional products from sheep farming in the form of biofertilizer (wool + manure), and to have additional financial sources from sheep breeding, to reduce environmental and atmospheric air pollution from unused wool and manure.

Tasks

- mitigation of the negative impact of animal husbandry on the environment and climate,
- increasing the potential of farmers and households in the use of resource-saving technologies in production;
- promotion and assistance in increasing farmers' knowledge about resource-saving technologies and environmental strategy.

Materials and methods

The material for research is sheep wool obtained from sheep bred in the Kyrgyz Republic.

Grinding, mixing with manure, subsequent granulation and packaging.

Results

More than 7 million sheep are bred in Kyrgyzstan, 13 145,7 tons of wool were produced in 2021, If such an amount of wool is processed for the production of organic fertilizer (with an average nitrogen content of 13% in wool), then 1769 tons of nitrogen can be obtained (with 100% extraction), which could replace 581 tons (3.7% of the total needs) ammonium nitrate by country. From processing coarse wool for organic fertilizer, households would have additional financial resources from sheep breeding, which would increase their well-being, while at the same time not polluting the environment. Wool fertilizer is homogeneous, wool decomposes more slowly than manure, so it nourishes the plant longer, wool retains moisture perfectly and the soil remains moist longer, granules in the soil swell and thereby loosen the earth. The addition of manure increases the supply of nutrients to plants at the beginning of the growing season. Biofertilizer will be used to grow various vegetables and fruits in private farms (it is introduced into the soil manually), thereby providing your family with vitamins. The proposed technology (grinding - mixing with manure-granulation-packaging) is simple, does not require a large financial investment, the equipment can be located on the territory of the aiyl aimag, where farmers can donate wool for processing.

Table 1

Quantity of sheep and wool production in the Kyrgyz Republic

indicators	2017	2018	2019	2020	2021
Quantity of sheep, thousand	6 007 775	6 167 949	6 266 739	6 278 736	6 277 800
wool produced, tons	12 619	12 798	12 942,6	13 110	13 145,7

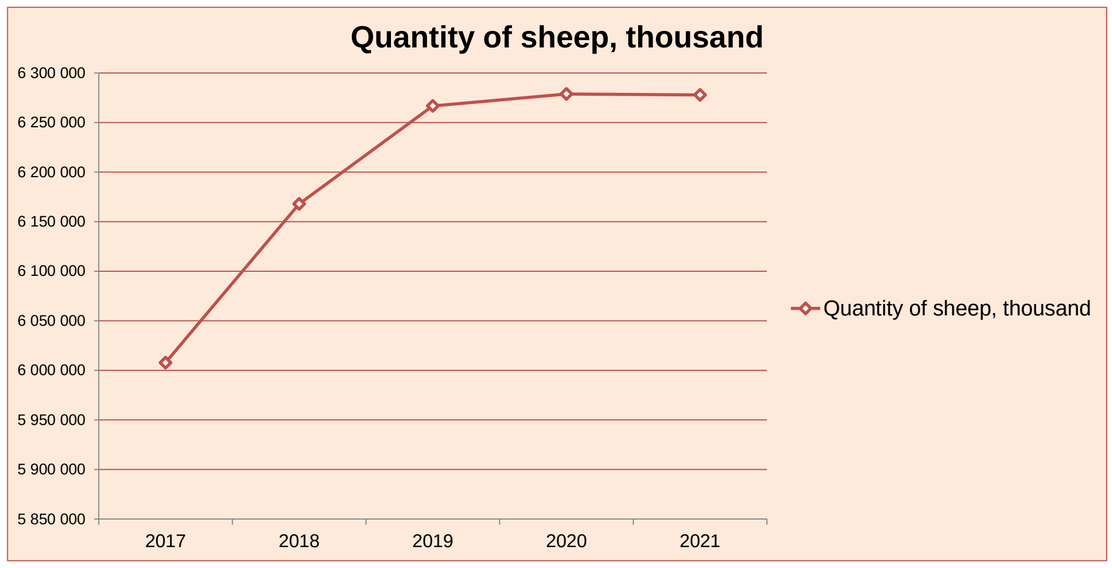

Fig. 1. **Dynamics of increasing the number of sheep and wool production in the Kyrgyz Republic**

Conclusion

1.Sheep breeding in the Kyrgyz Republic is a traditional branch of animal husbandry, the number of livestock is growing annually, but the economic benefit from wool production is zero.

2.It is necessary to develop a technology adapted to local conditions for the disposal of unused wool and manure, thereby reducing their negative impact on the environment.

3.To increase the welfare of farmers from wool processing, using them as a biofertilizer for subsidiary farms for growing fruits and vegetables

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