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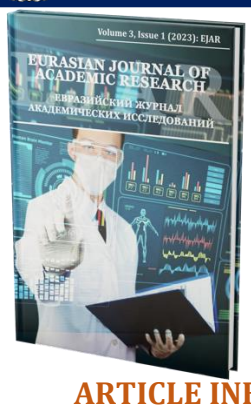

EXPERIMENTAL RESULTS OF GRAIN GRINDING DEVICE

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ABSTRACT

The article provides information on the scientific and technical solutions of providing grain feed grinding technologies and technical means in animal husbandry and the results obtained in the preparation of grain feed in animal husbandry. It is known that feeding livestock by grinding grains and mixing them with soft fodder is one of the main factors of increasing their productivity. Today, one of the urgent tasks is the development of a device for grinding and mixing feed intended for individual use by farmers, personal assistants and farmers.

Introduction. Livestock breeding is one of the main branches of agriculture in Uzbekistan. The rapid development of this industry is at the level of national importance, and it plays an important role in providing our people with cheap and high-quality meat, dairy products and other food products, especially in increasing the employment and income of citizens living in rural areas [1-2].

Today, animal husbandry in Uzbekistan is developed mainly in private assistants and peasant farms, where 8.5 million of the total number of cattle and 15 million of sheep in our republic are raised, and this is more than 85 percent of the total number of livestock [3]. Animal husbandry in personal assistant and peasant farms is characterized by a small number of livestock, high productivity despite the low consumption costs. But one of the main problems in these farms is the primitiveness of production and the high level of manual labor due to the lack of equipment suitable for their needs and requirements, including feed preparation devices.

Livestock on these farms are mainly fed with corn, alfalfa and dried stalks of wild grasses (gumai, etc.) and straw. However, feeding livestock by grinding coarse hay and mixing it with soft fodder leads to an increase in their productivity and good growth [4-7]. Today, hay is fed to livestock without being chopped due to the lack of small, compact feed preparation equipment used for small farms to grind hay and mix it with bulk feed. As a result, about 25-30 percent of the feed goes to the waste, its perishability is high and the efficiency of its use is low. In some cases, the hay is crushed with hand-powered grinders and mixed with highly concentrated feed. This leads to the lengthening of the work and the increase in labor costs.

The existing DKU-2, KDU-1 and other shredders for grinding dry hay are designed for large farms [8-10], and due to their extremely large metal and energy capacity and high price, they are in short supply today. it is ineffective when used in peasant and private auxiliary farms.

This situation, in turn, requires serious attention, and requires the development of mini-feed preparation units that are personal assistants that fully satisfy farmers and farms in terms of productivity and energy consumption, and that grind and mix feed that are not inferior to existing large-sized machines in terms of work quality.

The research shows that farmers and individual auxiliary farms strive to increase the amount of products obtained from livestock, as well as the individual use of technical means. Based on this, the development of a device for grinding and mixing feed intended for individual use by farmers, personal assistants and farms is one of the urgent tasks.

For this reason, at the same time, research is being carried out on the development of grain grinders-crushers used in grinding nutritious grains [11-13]. In the course of the research, prototypes of them were created and their experimental work was carried out.

Materials and methods. Conducting pilot-testing of crushers-crushers RD 10.23.6-90 "Ispytaniya selskohozyaystvennoy tehniki. Mashiny dlya uborki kormovykh kultur s izmelcheniem" and OST-70.19.2-83 "Ispytaniya selskohozyaystvennoy tekhniki. Machines and equipment for preparing feed. Programmy i metody issledovaniy» methodical manuals were relied upon.

The parameters and operating modes of the grain grinder-crusher were as follows: the diameter of the rotor at the end of the grinder blade and hammers - 220 mm, the diameter of the grinding chamber - 280 mm, the number of rotor revolutions - 3000 min-1; the number of blades - 2, the number of hammers - 2, the distance between the hammer and the grinding chamber - 3 mm.

Results and their analysis. During the tests, unique results were achieved in the grinder-crusher.

On the other hand, in the tests of the grain grinder-crusher with the specified parameters and working modes, the degree of grinding in the processing of corn grain when it is passed through the grain grinder-crusher for the first time is 22.9 percent of the grinding module up to 2 mm, between 2-3 mm is 46.4 percent, and from 3 mm older ones made up 30.7 percent.

When corn husks were also crushed in a grain grinder-crusher, the level of their crushing was somewhat different.

In particular, the modules with a size of up to 2 mm were 18.2 percent, the modules between 2-3 mm were 23.6 percent, and the modules larger than 3 mm were 58.2 percent. This crushed mass was thrown into the crusher-crusher for the second time and after processing, the amount of modules up to 2 mm in the obtained feed significantly increased to 74.4%. Moduli in the range of 2-3 mm showed a partial decrease of 19.8 percent, while modules larger than 3 mm decreased significantly to 5.8 percent.

Conclusions. According to the experimental results of the grinder-crusher, it can be said that the soft fodder obtained by the grain grinder-crusher is suitable for feeding dairy cows, one-year-old cattle and sheep, and it is softer to feed calves and lambs and to have more absorption of the soft fodder by livestock. It is necessary to reach the level of grinding. In

addition, if the desired level of crushing is achieved in one passage of grains through a crusher-crusher, energy and other costs are also reduced. Based on this, it is necessary to continue the research on the grain grinder-crusher and bring its work quality indicators to the specified level.

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