UDC 634.0.863

THE FEASIBILITY OF USING A ROTARY - PULSATION APPARATUS FOR PREPARING LIQUID FEEDS

VG Gorobec, PhD

DV Heskin, a graduate student *

Enhanced cooking liquid feed from grain that by combining a rotary-pulsation device processes grinding, mixing and heating the mixture can increase nutrient digestibility and feed, reduce power inputs for its preparation. The analysis of the size distribution of liquid feed.

Grinding, rotary - pulse machine, feed.

Now the process of preparation of feed mixtures is of great importance because the required degree of grinding feed can dramatically increase their digestibility, reduce their consumption in growing and fattening animals.

In animal breeding performance affects not only the choice of feed components, but their preparation for feeding. The finer the grind, the more general area of the surface and better interaction with digestive enzymes. But fine grinding and disadvantages are: increased power consumption for processing, grinding too fine results in a loss of food. Many of means for making liquid feeds mainly worn out, and power consumption of these machines does not satisfy the requirements.

Therefore, the question of cooking liquid feed is very important. There was a need to increase the intensity, improving quality indicators machines, developing new productive and high-tech equipment.

One of the most promising ways to improve the efficiency of the liquid is the continuous use of equipment - machines feeding.

Based on the above studies aimed at strengthening the cooking liquid feed.

The purpose of the study - to improve the process of preparation and a liquid feed mixture in rotary-pulsation devices in the application of the principles of discrete input pulse energy, grain size analysis of liquid feed.

Materials and methods research. The analysis of the problem of obtaining feed mixes and analysis methods used feed and grain grinding material. The result set:

1) feed efficiency depends on their fitness. Significantly affects their quality of percentage of moisture and particle size distribution. Each type has its own feed technology training and preparation;

2) the complexity of the process and feeding it directly depends on the quality of the equipment (crushers, grinders, mixers, dispensers);

3) most important operation process is grinding;

4) existing device for making liquid feed similar in design and implementation of the principle of action and have significant drawbacks:

- Low productivity units;
- Long cycle of feed preparation;
- High metal structures;
- Additional heating elements.

Today, virtually no production of small equipment for the preparation of liquid feeds that have low energy and suitability for use in private households and farms.

Therefore, there is a need to create new types of shredders, simpler to manufacture, which is dominated available qualitative and economic indicators, with a fundamentally different way to process and mechanical effects on the product that is crushed.

Market situation promotes structural and technological schemes machines that can simultaneously grind, mix, feed for a short time at low energy consumption, combining all necessary operations. Rotary-switching devices have high rates during the grinding of bulk materials. They, and group settings for the preparation of the liquid, which use discrete input pulse energy when processing

mixtures represent a new type of grinding equipment. However, the process of grinding grain baking them liquid feed researched enough. Results. For a more detailed study of the process of feeding a study of the process of grinding grains and cooking liquid feed to the rotor-pulsation device type DFT. The experiment was conducted in recirculation mode (components studied repeatedly passed through the working bodies RPA). In experiments alternately using different grains - namely rye, corn and oats, which are pre-mixed with water in a ratio of 1: 1 by volume. The rate of shear flow in all experiments was the same and equal to 3 • 103 s-1. The processing time was 6 minutes for oats and 8 minutes for rye and corn. During the experiment, the temperature of the feed mixture increased and at the end was 50 - 60 ° C. During testing samples were taken from the mixture to determine the particle size distribution. The analysis was conducted in a laboratory setting, which includes a microscope "Axio Zeiss Imager Z1" and computer with the necessary interface for data processing and software "Axio Vision".

Data processing results of the allocation of shares fodder mixture characteristic geometric dimensions and appearance of increased liquid feed samples under the microscope are shown in Fig.

Thus the use of rotary-pulsating settings for cooking liquid feed enables to achieve a sufficient level of shredding of its components, thus increasing the level of digestibility of animal feed.

Conclusions

1) animal feed digestibility significantly affect its size distribution. In turn, the machines that are used to produce feed mixes, can not fully provide the required particle size and have a number of significant drawbacks - low productivity, long cycle of preparation, high metal structures, the presence of additional heating elements. All this makes the cooking process is quite difficult and time consuming.

2) Application of discrete input pulse energy is possible using rotary-pulsating device, in the preparation of the liquid makes it possible to achieve a sufficient level grinding and homogenization. This in turn results in improving the digestibility of animal feed and as a result, reduce the cost of cultivation 1 kg live weight of animals and reduce specific energy cooking process liquid feed mixes, because this technology involves several stages in one device (grinding mixing, disinfection, heating, pasteurization)

References

1. Dolynskyy AA Using the principle of discrete ympulsnoho Input energy for creation эffektyvnыh эnerhosberehayuschyh technology / AA Dolynskyy / YFZH. - 1996. - Vol 69, №6. - S.45-50.

2. Investigation process yzmelchenyya particles in rotary-pulsatsyonnom apparate / OS Ivanov, MS Vasylyshyn. VU Egorov AG Karpov // Technologies and equipment hymycheskoy, byolohycheskoy and pyschevoy industry: materials vserossyyskoy nauch. and practical. Conf. studentov, and aspyrantov of Young scientists - Biysk: BTI AltHTU, 2008. - 36 S.ZZ.

3. Nezhlukchenko TI Technology of production of a homogeneous suspension and feed efficiency of its use in animal / TI Nezhlukchenko, NB Solyanik // Bulletin of Agricultural Science Academy of Agrarian Sciences. - 2007.-№3.-S.52-53.

4. Promtov MA Mashiny and Apparatuses with power machinery ympulsnыmy Impact on obrabatыvaemыe substance / MA Promtov. - Moscow: Mashinostroenie, 2004. - 93 p.

5. Sitnikov, AA Investigation process razrushenyya leguminous crops and Definition optymalnыh parameters hydrodynamycheskoho centrifugal rotary grinder AA Sitnikov, JN Kamышov, SV Pochter // Modern Technology and Technologies: Problems, and Prospects STATUS: Materials I Vseros. nauch.-technical. Conf. 23-25 November 2011 h.- Rubtsovsk, 2011 :, - S. 497 - 501.