

Analysis of the composition of animal husbandry waste: raw pig and cattle manure, bird droppings showed that these types of waste are a valuable source of organic and mineral substances and, with appropriate processing, it is possible to obtain valuable products - fertilizers and additional energy - biogas.

References

1. Baader, V. Biogas: theory and practice / V. Baader, E. Dene, M. Benniderfer. - : Kolos, 2005;
2. Uminskyi S.M., Chuchui V.P., Inyutin S.V. Alternative biofuels for agro-industrial complex energy. (Study manual for students of higher educational institutions) "TES" publishing house and printing house, ISBN 978-617-7337-44-6, 2016, 232 p.
3. Operating manual. PF "Fluid", "Bioenergy modules for anaerobic fermentation of manure of the BEMS type with reactors with a volume of 5.0; 25.0; 50.0; 100.0 m³", 2004.

UDC 636.085.55.4

HOMOGENITY OF COMBINED FEEDS

Dudarev I.I., Ph.D., Associate Professor, 247531@ukr. Net
Uminskyi S.M., Ph.D., Associate Professor, ymoshi@ukr.net
Dyachenko Y.B. getter., hsf_dyachenko@ukr.net

Odessa State Agrarian University, Odessa, Ukraine

It is known that the main process of manufacturing high-quality compound feed, which corresponds to the compound feed recipe, is the operation of dosing the components and making a homogeneous mixture. The issue of assessing the performance of the mixer for mixing components and the formation of a uniform distribution of feed components in the final product is an urgent task for producers and consumers of compound feed.

Key words: *quality, mixture, compound feed, assessment, homogeneity.*

Problem. Feed formulation is a method of selecting and mixing different feed ingredients in appropriate quantities to obtain a balanced diet that meets the specific nutritional needs of the animal. At the same time, the age, weight, production goals and other physiological needs of the animal are taken into account. The primary goal of feed production is to provide economical, palatable and nutritious feed to promote optimal animal growth and health. The goal of feed development is the production of economical, palatable and suitable feed. This means that the feed must be nutritious, tasty and contain all the elements in sufficient quantities. If these goals are met, the livestock will regularly consume the feed necessary for optimal growth and development. When producing a complete feed, it is important to ensure that each component is thoroughly mixed in accordance with the formulation of the feed.

Analysis of research and publications. For research, loose compound feed for fattening pigs was chosen. According to the recipe of the ration, the constituent elements were weighed on scales, and then mixed in a laboratory double-roller blade mixer [1,3]. The time required for the formation of compound feed with the predicted homogeneity coefficient was determined using the tare dependence of the homogeneity coefficient on the mixing time of the components units, and with a different mixing angle. The change in the homogeneity coefficient was tested by determining the concentration of salt in the selected samples and by analyzing the change in the coefficient of variation. Unlike loose products, pressed products have a smaller active surface area, and this ensures more stable quality indicators during transportation and storage, they are less prone to the development of microorganisms that spoil the compound feed. Feed quality indicators depend on many factors, but the most important and important is the homogeneity of the prepared mixture [2]. Feed composition is of great importance in livestock nutrition. Firstly, it leads to increased productivity of livestock. A

properly prepared ration provides all the necessary nutrients for optimum development and milk and egg production for different animal groups and purposes. Properly fed animals have strong bones, muscles and tissues and well-functioning immune systems, leading to increased productivity. Homogeneity tests should assess the homogeneous distribution of feed ingredients and demonstrate that the active substances in the feed can be homogeneously distributed in the intended matrix under the intended conditions of use. [1]. For nutritive feed ingredients, this is to ensure uniform exposure of the feed ingredient to the animal and to prevent nutrient deficiencies and overexposure [2]. For feed ingredients with other intended effects in feed, it is to ensure that the expected effects are achieved uniformly. The homogeneity test should demonstrate that the feed ingredients evaluated can be homogeneously distributed in the intended matrix using mixing equipment at the disposal of the feed manufacturer. The homogeneity testing of feed ingredients should be performed in a specific matrix for the proposed feed ingredient blending level. If there is a range of expected formulation levels of feed ingredients in a given feed matrix, homogeneity tests should be performed using the minimum expected formulation level [1]. If a feed ingredient contains several active ingredients, the need for homogeneity testing of all active ingredients depends on their properties. If it is sufficient to identify and quantify all active substances and their concentrations, the activity of each active substance must be guaranteed.

Research results. According to the results of the mixing process, it can be stated that the optimal angle of inclination of the working body of the mixer relative to the horizontal should not exceed the value of the natural angle of inclination of the components of the mixture. Studies prove that compound feed, which in terms of content has the same particles, is less susceptible to the effect of segregation than those characterized by differences in size. Studies have shown that with an increase in the total volume of material in the working volume of the mixer, the filling of the working volume increases and the homogeneity of the mixture decreases inversely proportionally. This is explained by the inhibition of the process of pouring layers of material into the working volume of the mixer.

Conclusions: On the basis of the conducted research and analysis of the mixing quality, it can be noted that the necessary homogeneity of the mixing of components can be achieved by reducing the time of unproductive component cycles that ensure the operation of the mixer, which is achieved by the simultaneous introduction of components into the mixer, and the reduction of the volume of the mixing mass allows to reduce the specific costs of the formation mixture

References

1. Dudarev I.I., Fodder base and animal fattening, Agrarian Bulletin of the Black Sea Region. Collection of scientific papers. Technical sciences, issue 63. Odesa, 2012.
2. Dudarev I.I., Bondar S.N., Kudashev S.M. Analysis of the mixing process in continuous devices Agrarian Herald of the Black Sea. Collection of scientific papers. Technical sciences, issue 34. Odesa, 2006.
3. Müller-Harvey I. Modern methods of feed analysis. In: Assessment of quality and safety of animal feed. Rome: FAO; 2004. P. 1-34.

УДК 631.372.629.02

ОДНІ З НАЙПРИВАБЛИВІШИХ ТРАКТОРІВ ІНОЗЕМНИХ ФІРМ В УКРАЇНІ

Яковенко А.М., професор, академік інженерної академії України,
yakovenkoa@osau.edu.ua