

7. Dudarev I.I. Grain moisture / Dudarev I.I// Agrarian Herald of the Black Sea Region. Collection of scientific papers. Technical sciences. - Odesa: 2014 Issue. 74. - S. 129-132.
8. Kaminsky V.D., Babich M.B. Processing and storage of agricultural products. - Odesa: Aspect, 2000. - 459 p.
9. Cooksley J. Processing aid, productivity and efficiency of a feed mill. Feed Compounder (May 2010): 28 – 1
10. Lesyk B.V., Trisvyatskyi L.O. other. Preservation and technology of rural areas. products. - K.: Higher School, 1994.
11. Mankivskyi A.Ya. Technology of storage and processing of agricultural products. Nizhin: VKP "Aspect". 2002

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HOMOGENITY OF COMBINED FEEDS

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For practical calculations of the mixing process, the evaluation of the quality of the process of mixing feed ingredients in order to determine the optimal mode for obtaining homogeneous products of different formulations can be carried out on the basis of the law of diffusion. The main direction of the further development of the compound feed industry is to solve the urgent task of improving equipment and technology in order to further increase the level of use of feed ingredients, improve quality and expand the range of final products. When producing complete feed, it is important to thoroughly mix each ingredient before granulating or briquetting.

Key words: *supplements, corn, component, rod, combined fodder.*

Introduction. The most important technological operations in the production of compound feed are crushing, separation, mixing and compaction of feed mass fractions. Each of the previous operations must create sufficient conditions for the optimal execution of the next cycle of continuous batch processing. Pressed feed is less prone to oxidation due to a low active surface, which increases durability and reduces load and losses during transportation [2,3,4,7]. The stability of the quality indicators of compound feed is determined by several factors, the most important of which is the homogeneity of the mixing of components in a batch or continuous mixer [1,5.6].

Based on the principle of additivity, the final result can be significantly influenced by the stochastic combined effect of random parameters. Since the final result of the investigated process is a change in the proportions of the components in each analyzed base volume, it is assumed that the mixing process passes from a completely discrete state of mixing to a state of regular distribution [8,9]. The analysis of works based on methods for evaluating mixing processes can be divided into two groups: the first - analyzes of mixtures performed on the basis of theoretical approaches, based on the method of describing diffusion processes, refers to the elements of the design analysis of the selected mixer of periodic or continuous action, includes kinematics and the dynamics of working bodies and components of the mixture in the following order, the second group is based on mathematical and statistical methods and is used to process the results of experimental studies of mixing processes in laboratory and production conditions.

Research materials and methods. A practical problem in assessing mixing processes is the choice of reliable and legitimate indicators that determine their homogeneity selectively and with sufficient practical accuracy. The selected indicators (salts, oxides, etc.) often do not determine the completeness of the investigated process. This is due to the fact that the miscibility of the components of a loose mixture is an indirect rather than a direct indicator that reflects their ability to disperse uniformly. Choosing more than one indicator for the analyzed process would introduce spatial estimates that would distort the confidence intervals for the mean value of the homogeneity of the multicomponent structure. For the homogeneity of the structure, it is worth including a numerical indicator that reflects the degree of homogeneity obtained under the action of the mixer for a certain period of time in relation to the practice of the process of mixing a multicomponent system. The degree of contrast in size, shape, moisture, adhesive properties, etc. determines the potential for speeding up the mixing process in some cases. From the experience of mixing, it can be concluded that the optimal angle of inclination of the axis relative to the horizontal plane should not exceed the natural angle of inclination. Experiments have confirmed that mixtures consisting of identical particles have a higher resistance to segregation by particle size than other components of the mixture.

Conclusions. 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 degree of homogeneity of the mixture decreases in an inversely proportional relationship. This is due to the inhibition of the process of filling the working volume of the mixer with layers of material.

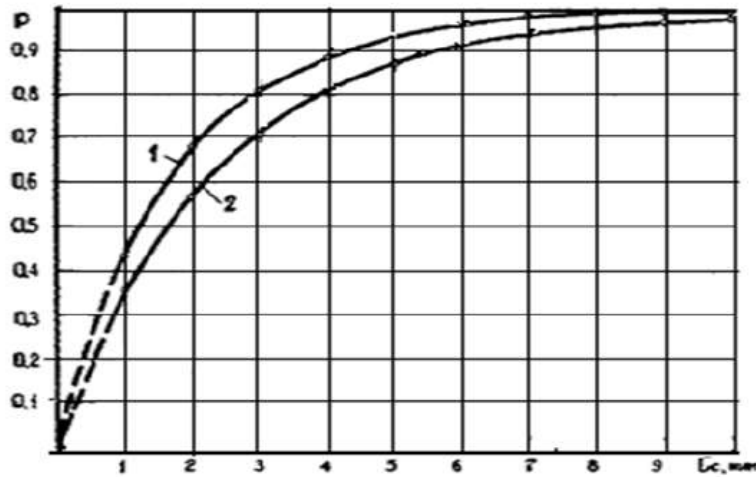


Fig. 1. Dependence of the homogeneity coefficient of the mixture P on the mixing time components.

References

1. Dudarev I.I. Fodder base and animal fattening/ Dudarev I.I. // Agrarian Bulletin of the Black Sea Coast. Collection of scientific papers. Technical sciences.-Odesa: 2012 Issue. 63.3.
2. Analysis of changes in the content of vitamins in compound feed during storage. Article Agrarian Bulletin of the Black Sea Littoral. Scientific journal. – Odesa: TPP. – 2020 - #97. – p. 6 Professional edition 6/4 I. Dudarev, S. Uminskyi, A. S. Zhitkov //
3. Dudarev I.I. Grinding corn cobs / I.I. Dudarev. // Agrarian Bulletin of the Black Sea Coast. Collection of scientific papers. Technical sciences.-2. Odessa: 2015 Issue. 78. -S. 164-169.
4. Dudarev I.I., Uminskyi S.M., Moskalyuk I.V., Moskalyuk A.Yu. Justification of the operational parameters of the disc feed chopper/ Monograph Odesa: "TES"., ISBN 978-617-77711-99-4, 2022
5. Dudarev I.I. V.M. Kiriya, Manufacturing technology and quality assessment of a mixture of compound feed components, Agrarian Herald of the Black Sea Region. Collection of scientific papers. Technical sciences, issue 68. Odesa, 2018
6. Dudarev I.I. Compound feed and its storage features / I.I. Dudarev. // Agrarian Bulletin of the Black Sea Coast. Collection of scientific papers. Technical sciences. - Odesa: 2014 Issue. 74. - S. 170-175.
7. Dudarev I.I. Grain moisture / Dudarev I.I// Agrarian Herald of the Black Sea Region. Collection of scientific papers. Technical sciences. - Odesa: 2014 Issue. 74. - S. 129-132.
8. Kaminsky V.D., Babich M.B. Processing and storage of agricultural products. - Odesa: Aspect, 2000. - 459 p.
9. Cooksley J. Processing aid, productivity and efficiency of a feed mill. Feed Compounder (May 2010): 28 – 1