Rassmotrenы technical and Economic and sotsyalnыe predposыlky creation of funds for mechanization animal husbandry Using zhyvotnovodcheskyh on farm economy. Pryvedenы Features and direction of development of technical solutions and tehnolohycheskyh USED with the establishment of ukazannыh machines. Presented issue Chronology of major factories Ukraine Typical machines.

Zhyvotnovodcheskaya farm sector, kontsentryrovannыe feed. Preparation fodder, grinder mill, Grinders fodder, kombykormovыe installation, mixer, dozatorы.

There are considered technical-economic and social premises of creating of facilities of stock-breeding mechanizations for use in personal subsidiary facilities. There are broughted particularities and directions of development of technological and technical decisions, which are used when making the specified machines. There is presented chronology of issue of main types of machines for individual sector stock-breeding by Ukraine plants.

Personal agricultural farm, preparation of fodder plants, crusher machines, fodder shedder, mixed fodder hardware, steaming-plant.

UDC 631.363.21. + 621.929.3

PERSPECTIVE DIRECTIONS OF PREPARATION CONDITIONS KOMBIKORMIVV LIVESTOCK FARM ECONOMY

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Analyzes technological schemes of preparation of the mixed feed fermskymy feed units, designed for the use of grain produced and purchased

mikrodobavok macro and additives. The above discrepancy applied the mixed scheme of required homogeneity. The technological scheme based on conducting three-stage mixing.

Concentrated feed, balanced feed, flow diagrams, basic operations, preparatory and final operations phase mixing animal.

Formulation of the problem. In recent years there has been a significant increase in the cost of feed production to feed mills and feed

on plants that affects both increasing cost of grain components and additives, and significant costs of transportation of raw materials from farms and return shipping finished the mixed feed. The most effective use of concentrated feed grains in the composition of animal feed, where they make up 80-92% by volume. Therefore, it is important for farmers choose effective hardware processing of feed grain in feed quality in terms of livestock farms.

The development of livestock and improve its profitability possible only if there is a sufficient number of high-quality farm and, in addition, cheap feed. Since Ukraine is one of the leading producers of cereals, important question rational use of this potential and, in particular, the farms concentrated feed. If we take into account the market conditions prevailing (a large number of transient residual products, its low cost), and given the fact that the structure of grain grown because of their low quality, occupies a significant share of fodder, the issue becomes even more value.

Analysis of recent research. Issues of preparation of balanced animal feed in small farms of different ownership attracted the attention of many scientists [1-4].

The purpose of research an analysis of technological schemes and justification of direct feed production using cooked in the mixed economy using micro and mikrodobavok. To prove the use of machinery of various capacities for the production of concentrated feed livestock farms in terms of economy. Assess the feasibility of operating parameters mini feed units on the example of Ukraine VP NUBiP educational and research enterprises.

Results. A significant increase in the cost of feed production in specialized feed on plants that affects both increasing cost of grain components and additives, and significant costs of transportation of raw materials from farms and return shipping finished the mixed feed.

Analysis of modern trends of agricultural machinery show in Ukraine and western European companies produce small mill units intended for production of animal feed in places with growing grain. These units can be divided into two main groups: 1) stationary mill machines driven by an electric motor; 2) mobile mill installed on the chassis of mobile [5].

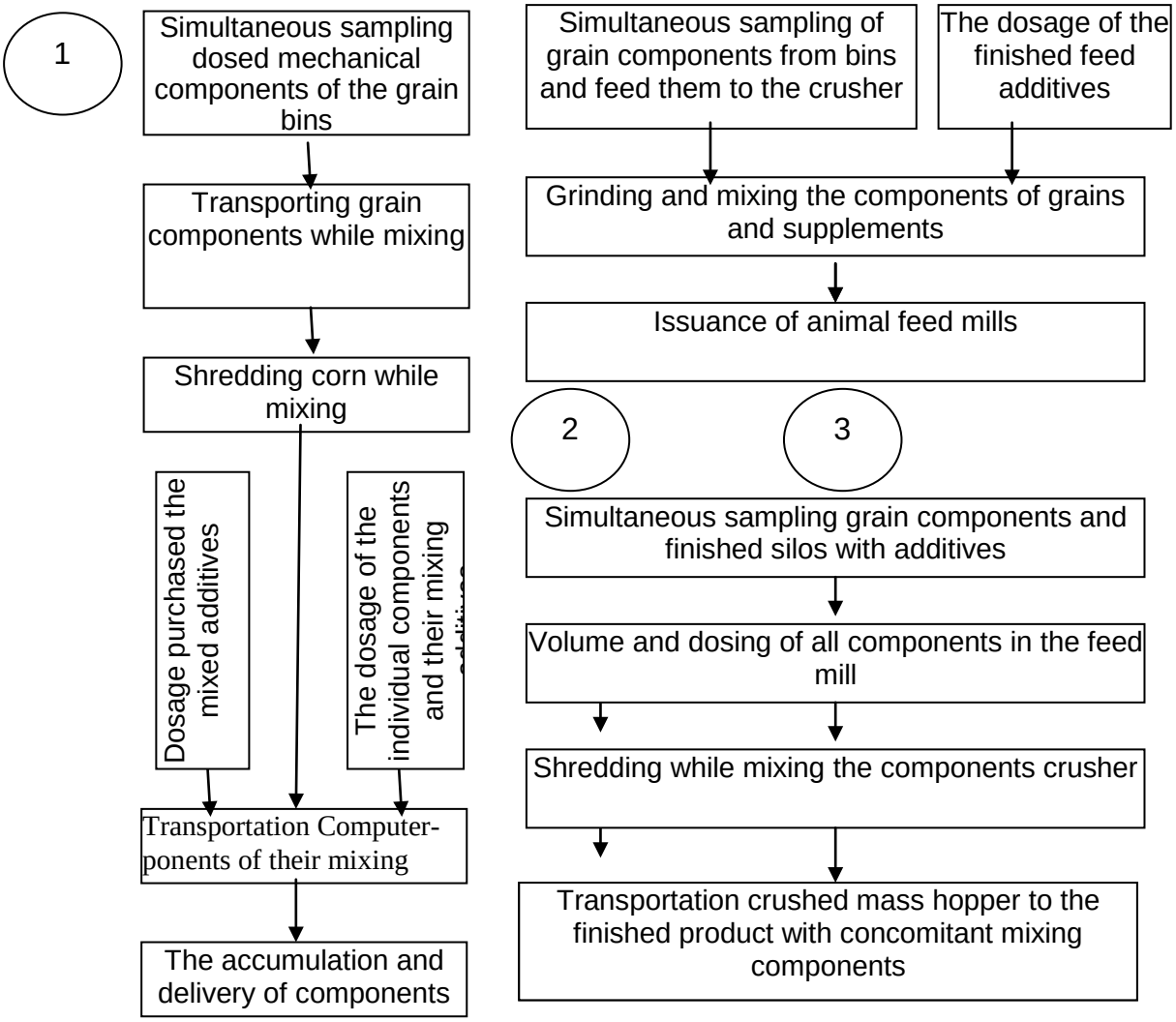
Kombikormovye installation - highly profitable, reliable, combined, the universal use of equipment for the production of feed for cattle, pigs, poultry, using macro and mikrodobavok. Expenses for production of fodder on the side of raw grain farms are often not covered by the additional growth of animal feed products from the mixed use of low quality and non-compliance with the requirements for maintenance of the components of the diet, especially for pigs and poultry. All this leads to a

decrease in demand for the purchase of products manufactured feed businesses. This situation promotes trends directly feed production in the farms of their own grain and purchased concentrates the protein and mineral supplements. The value of animal feed, with their same nutritional value, cost 15-25% lower.

Fermski fodder units produced by industry Ukraine widely spread in households. There are new structures feed units, which used more advanced technology and technical solutions as the processes taking of raw materials and grinding and respect batching and mixing them [6-9]. The majority of mechanized technology provides ready to use (purchased) nyzkokontsentratnyh the mixed protein-vitamin-mineral supplements (BVMD), but in some cases, a simplified preparation of the mixed additives in place with the following introduction to their grain components. Percentage BVMD in animal diets is 10-20%. The specified number of the mixed BVMD and their physical and mechanical properties that are quite similar in performance and friction to the particle size of the crushed grain, can perform processes for obtaining final the mixed animal feed at the macro level using a one-step mixing all the ingredients together. Thus the mixing process can be organized operation one or several of serial technology and combined operations (using concomitant mixing the transport of mass, grinding grain components crushers, mixers and special application mixers bulk materials). Considering the technology of preparation of animal feed, which are incorporated in functional and structural schemes domestic feed units can be grouped by their typical solutions, the main of which are shown in Fig. 1.

For the first technological lines were created widespread in the sixties-seventies of last century mill shops like "OKTS." They predicted prior accumulation of grain components in the bunker, dosage delivery of a modular screw conveyor, crushing and preparation sumishky mineral and protein supplements with the introduction of feed to the conveyor feed hopper in the finished product.

The line involves the continuous mixing of a triple concurrent transactions at transportation and grinding. Under this scheme, it was not possible to achieve high uniformity of the mixed feed. Along with the mixed cooking simple supplementation could use purchased full supplement.


1
Simultaneous sampling dosed mechanical components of the grain bins
Transporting grain components while mixing
Shredding corn while mixing
Dosage purchased the mixed additives
The dosage of the individual components and their mixing
Transportation Computer-ponents of their mixing
The accumulation and delivery of components
Simultaneous sampling of grain components from bins and feed them to the crusher
The dosage of the finished feed additives
Grinding and mixing the components of grains and supplements
Issuance of animal feed mills
2
3
Simultaneous sampling grain components and finished silos with additives
Volume and dosing of all components in the feed mill
Shredding while mixing the components crusher
Transportation crushed mass hopper to the finished product with concomitant mixing components

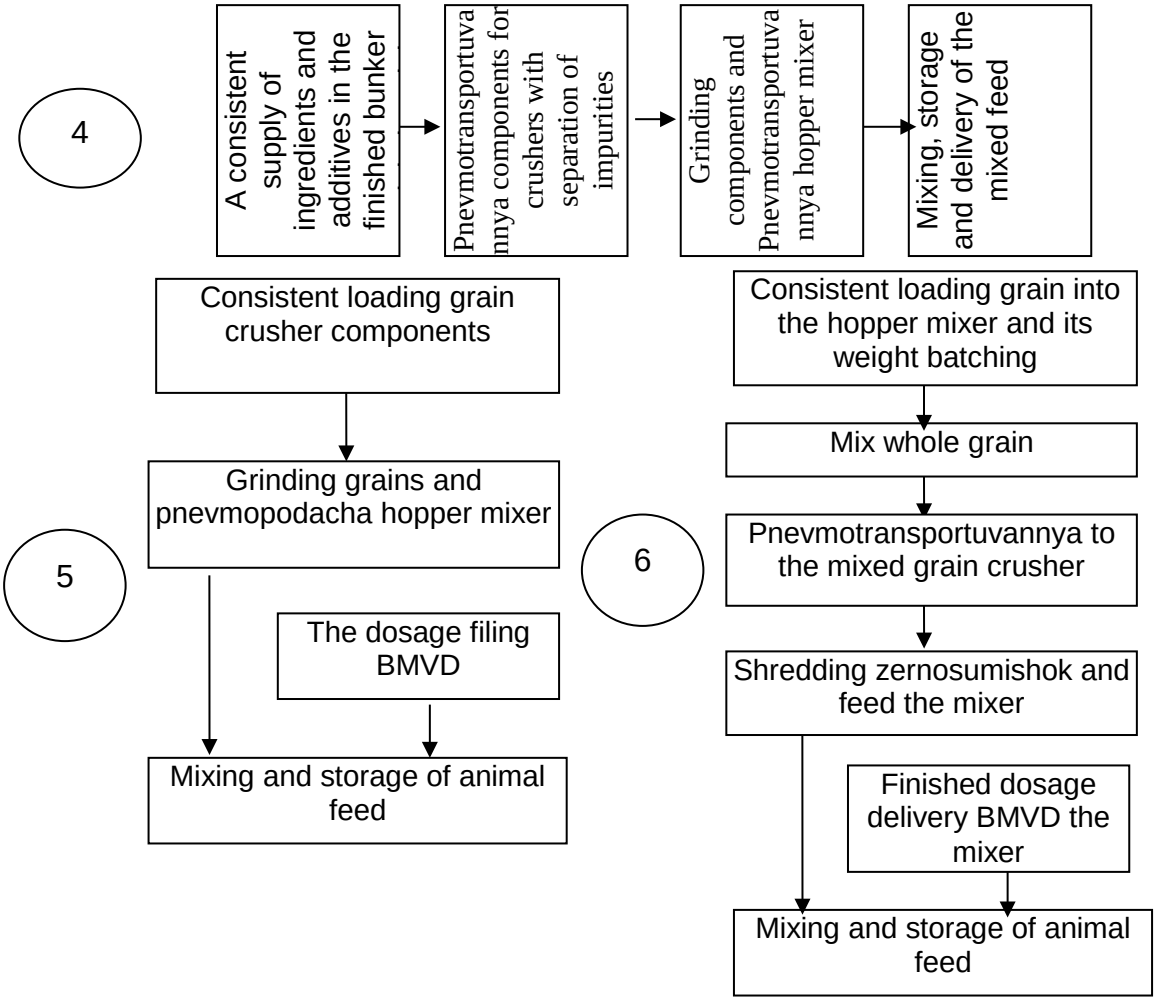


Fig.

The second scheme was designed to prepare simple production of animal feed, concentrates, ready-rich additives. Under this scheme has been developed several experimental models of units, such as KN-5. Since mixing happening only at grinding the components in the flow, the uniformity of the resulting product was low, with significant performance production line - 4-5 t / h.

The third structure transactions included the use BVMD purchased as a separate component with a volume sumishky dosage crusher, which also flows were made of different types of cereals and mixing them in a stream during the grinding and subsequent transport into the hopper of finished products. With the units operating on this principle were widespread in Ukraine should be called farms feed setting CMD-F-2 (JSC "Umanfermash"), a capacity of 2-2.5 tonnes / year. As for assessing the degree of mixing of the components, especially the distribution of the total mass of components mikrodobavok, we should point out the great heterogeneity of distribution and low uniformity obtained sumishky feed.

The fourth scheme preparation of animal feed is also based on the use of ready BVMD as a separate component sumishky, but unlike previous schemes planned to hold the weight dosage of each component in the receiving hopper from which they are transported by air flow to the crusher, and after crushing, using the same crusher submitted to a vertical auger mixer. A positive element is the complex implementation process feed material and a grinding means - crusher fan. Batch mixing method improves the uniformity sumishky compared to mixing in the stream, but does not exceed 87-91%, which is enough to feed quality, due to livestock requirements. Under this scheme work units SFG "Astra" (OOO "Marol Ukraine» m. Netishyn, Khmelnitsky region.), Zuptor (JSC "Success - East Ukraine»), Doza mech (LLC "Dozameh Ukraine", m. Odesa).

Somewhat similarly structured process of preparing the mixed feed on farms in terms of the fifth circuit, but unlike the previous BVMD ready to enter a vertical auger mixer at the final stage - after completing his grain components of the crusher. In some designs are separate units crusher for crushing lumpy or zlezhanyh components of mineral and protein supplements. According to this principle work units "Combi-Mix", "Avila-flare", JSC "Novograd Volynsksilmash" (set of equipment MKU-1 and BMK-1). In the latter unit also provided the weight batching introduced components. Based on the analysis of materials on the preparation of animal feed component for feeding, management of rations, scientific research and patent development trends feed technologies based on the use of grain materials produced and purchased the mixed BVMD and existing technical solutions machines used to feed the objects on the one hand and because of the inability to obtain proper feed mixing uniformity in the application before the scheme was justified sequence of manufacturing operations and the proposed scheme komponovochna fermskoho feed equipment set is represented by the position 6 (Fig. 1).

The feature of the proposed scheme feed unit aimed at improving the uniformity of the product, is the presence of a triple blending components: the initial stage of mixing not broken grain components, at the stage of co-grinding hammer crusher and at the stage of final mixing crushed grain mass with ready BVMD a vertical screw mixers. The scheme provides for weight batching sumishky animal feed. This sequence of mixing the components when they are different friction properties will more evenly distribute the particles of each substance in the total volume of the feed mass. The problem in the production of animal feed sumishky farms, which has the highest potential feeding value, always in compliance upyralas obtained product specified standard diet for a certain age and species of animals, and the ability to

achieve the required uniformity sumishky. In terms of industrial feed businesses, where production is significant, it can be done by applying multi-stage technology and complex set of machines. In terms of facilities, such as the difficulty of the task is limited to the purchase and storage in appropriate conditions, large varieties of ready BVMD and imperfection simplified technical means to produce the mixed additives and blending components to obtain the required degree of homogeneity. One attempt to apply a simplified set of technology and equipment was to develop sets of BCC BCC-4 and-8, which consisted of separate blocks; grinding, mixing, cooking BVD, mineral supplements, liquid additives and granulation. But the difficulty chosen directly address this issue did not contribute to the wide application of the said equipment. The characteristic difficulty producing high-grade feed additives is the fact that the exact distribution requirements of each component in the overall sumishtsi feed value of their content is very different. So against the grain protein components or additives availability of mineral components in order smaller and smaller premix two or three orders of magnitude. It is therefore proposed to prepare feed stepwise with careful stirring.

One of these solutions is shown in Fig. 2. The production technology of feed preparation sumishky full of protein-vitamin-mineral supplements.

The first group of operations is to prepare grain components. It includes delivery to the processing of feed grains, which can be placed in granaries, or indoors kormotseha; accounting, collection and storage of grain cleaning components and raw materials from large foreign matter, ferromagnetic impurities sand. Refined grains each component viddozovaniy amount received by diet and scope of a single dose preparation sequentially or simultaneously fed to the shredding.

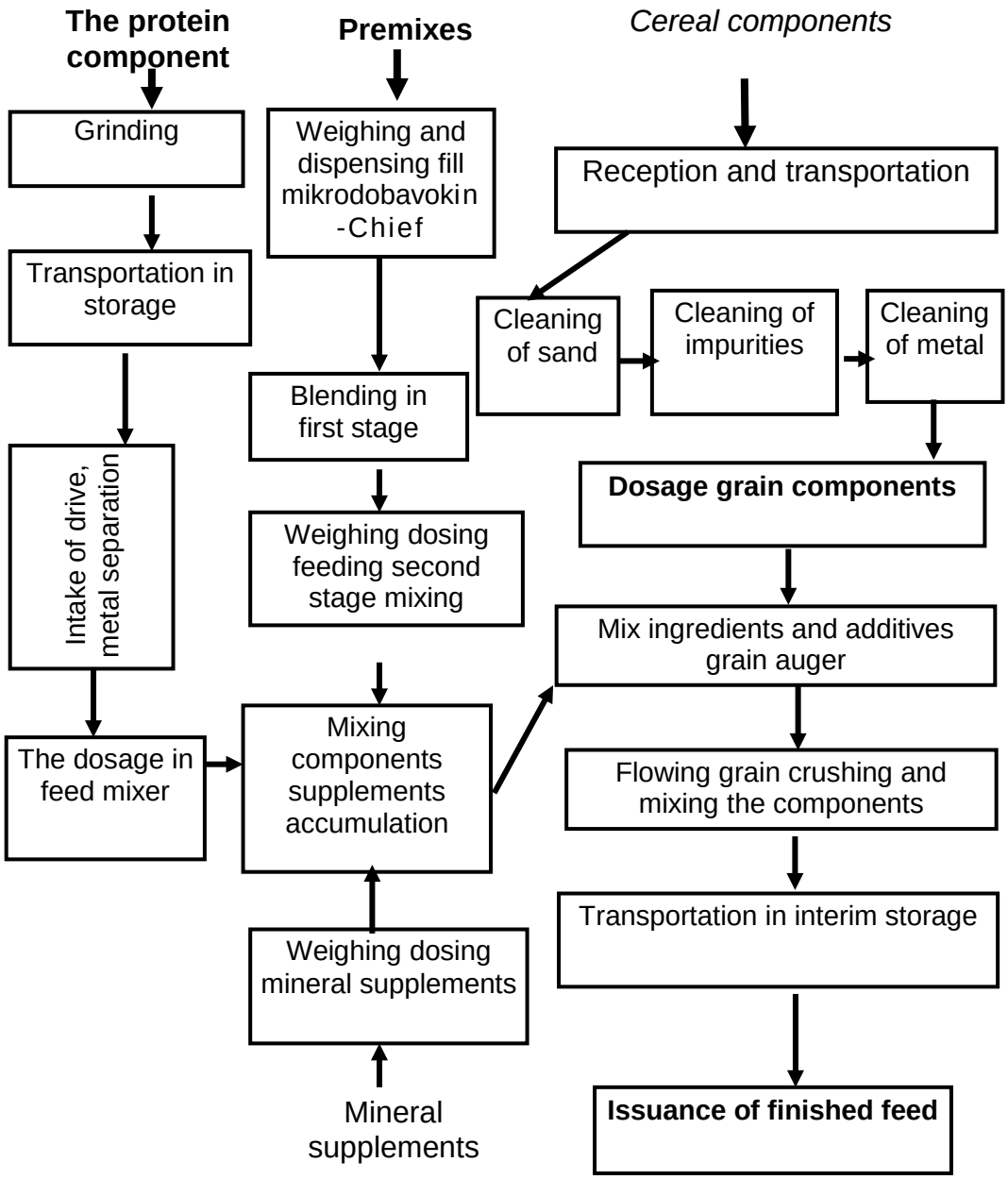


Fig. 2. Technological operations production of balanced feed.

With the simultaneous issuance of grain storage components of the crusher is advisable to transport the grain flow screw conveyor, which also can also dozmishuvaty grain components. At the same time as one of the components can be supplied in screw sumishka BVMD, prepared separate production lines. Roughly mixed raw ingredients screw published in grain crusher. During the grinding mill sumishky suputno performs subsequent mixing of the components within the mass portion, which is also located in the chamber shredding. Later on sumishka crusher feed is sent to interim storage, where may be issued in the required amount for animal feed.

Protein-vitamin and mineral supplements are prepared based on the protein components (bran. Zhmyh, meal, soybeans, peas), which

comes in a number of state and piecewise whose sumishtsi BVMD than all the other components - premixes, vitamins and mineral feed. The protein component initially crushed to a size of 1-3 mm, cleaned of metal impurities and fed into the drive. As the need for storage of the protein component is dosed, usually in volume and load capacity to prepare sumishky BVMD. Given the larger number of protein components, he served in the first chamber mixer. Premixes are introduced into the animal feed in small quantities and require careful mixing in the total mass of feed. Therefore, their dosage should apply weight batching and mixing two-stage, first in aggregate amount of premixes, then received sumishka dosed in a certain amount of weight is fed to the mixing of the protein component and mineral feed. For mineral supplements also applies weights dosage. The resulting sumishka BVMD introduced into the grain of the feed as a separate component.

Performance indicators feed units are shown in Table. 1. As shown in the technical characteristics of the units, they are able to fully meet the needs of livestock farm economy in compound feed produced, and the main indicator that characterizes the economic efficiency of units, there are direct operating cost of producing one unit of output and the quality of the preparation of balanced feed.

In educational farms VP NUBiP Ukraine was established kormopryhotuvalni stationary units that operate on different technological schemes. SE NUBiP Ukraine "Velykosnitynske NDH them. OV MUZYCHENKO "works equipment H-119 Doza mech (LLC" Dozameh Ukraine », m. Odesa), capacity of 2 tons / hour. Equipment provides animal feed preparation using their own grain base and use makrodobavok (5-7% for diet component) and finished BMVD (containing the active ingredients of 3 to 5%). VP NUBiP Ukraine "Agronomic Research Station" works equipment MKU-1 / CTW-1 (JSC "Novograd Volynsksilmash") provides the preparation of animal feed using their own grain base and use makrodobavok (3-7% of the components for the diet) and concentrates on BMVD (containing active ingredients from 10 to 20%), use a mixer prior to Bland 8-12 l will use blends with higher concentration of active substance in sumishkah.

1. Characteristic features fermskyh feed units produced in Ukraine.

Indexes	Combi Mix	AWF-1	MKU-1 / CTW 1	H-119/3 Doza mech	CMD-F-2

Productivity, t / h.	0.5	1.0	1-1,2	1.5 -2.0	2.5
How to prepare the mixed	separate grinding mix	separate grinding and mixing grain	pneumatic loading, grinding grain, mixing	pneumatic loading, grinding grain, mixing	supply of all components in a mixing mill
The method of batching	a la carte weight	a la carte weight	gravimetric	gravimetric	volumetric streaming
Working dispenser body	balance	balance	pnemo-system	pnemo-system	screws
Type mixer	one phasic, Portion vertical auger	one phasic, Portion vertical auger	two-stage Portion vertical auger	one phasic, a la carte, vertical screw	one phasic, screw vertically, streaming
Capacity mixer m3	0.27	1.0	1.0	3.0	
Total capacity, kW	7.0	9.7	13.2	20.7	25
Overall dimensions					
length	1800	2500	-	-	12000
width	1600	2250	1100	1650	5800
height	1000	1500	2100	2750	7600
Total weight, kg	250	750	545	-	3800

Kormopryhotuvalnyy unit located on the territory of animal farm. Distance to the consumer feed 100 to 300 m. The scheme placement of equipment and general view of the unit shown in Fig. 3.

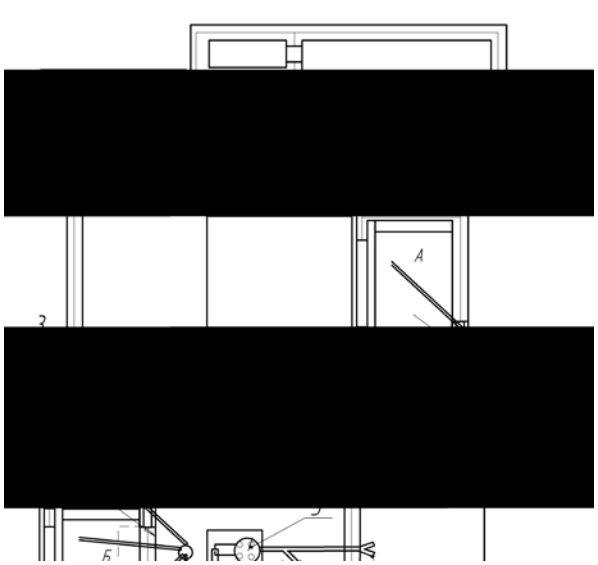


Fig. 3. Situation Placing equipment feed unit and its general form: 1 - access platform; 2 - grain storage components (3-5 m3); 3 - the main mixer (1.2 m3); 4 - Mixer supplements (0.2 m3); 5 - Mixer Blends (0.01 m3); Drives additives; 7 - ready to feed.

Evaluation of technical and economic parameters feed units [10, 11] in terms of livestock farm on the example of Ukraine VP NUBiP educational and research enterprises showed an increase in milk production 25-28% saving labor costs by 10-12%, reduce production costs for 3- 5%.

Conclusion. For this technology to feed mill equipment can be prepared as feed for cattle and for svynopoholiv'ya. Use BMVD additives (macro and mikrodobavok) provide Forage mixture balanced feed for animal feeding various technological groups, using modern technologies. Svizhepryhotovlenyh quality animal feed reduces the cost of storage of prepared feed and improves their zhodovanist animals.

List of references

1. *Lobanovsky GA*. Technology of production of animal feed / GA Lobanovsky. - K .: Harvest, 1973. - 136 p.
2. *Revenko II* Comprehensive assessment of options for the preparation of the combined feed / II Revenko, Yu Revenko // APC Technology. - 2000. - № 11-12. - P. 25-27.
3. *Sorokin VM*. Analysis of basic circuits preparation of animal feed in terms of economy and promising areas of improvement / VM Sorokin // Bulletin of Lviv State Agrarian University: Ag Engineering studies. - Lviv, 2008. - №12. - S. 228-234.
4. *V. Kostenko* Prospects for the combined unit kormopryhotuvalnoho for cattle / VI Kostenko, Zabolotko OO Hmelovskyy VS // Bulletin of Lviv State Agrarian University: Ag Engineering studies. - Lviv, 2008. - №12. - S. 235-238.
5. *Kalendruz I.* The use of mobile feed units abroad - effective, practical, modern / Kalendruz IV, LP Filonenko // Technical and technological aspects of the development and testing of new techniques and technologies for agriculture Ukraine. - Research: UkrNDIPVT them. L. Pogorelogo, 2009. - Vol. 13. - P. 277-283.
6. *Karpenko M.* Minikompleks kormopryhotuvalnoyi equipment / Mikhail Karpenko // Agribusiness in Ukraine. - 2004. - №6. - P. 34-36.
7. *Fiyalka MD* The study of the kinetics of redistribution of feed particles in the transition zone mixer-crusher sieve rotary / MD Fiyalka // Mechanization and electrification of agriculture. - Glevaha: NSC "IMESH", 2006. - Vol. 90. - P. 344-349.
8. *MF Rozhkivskyy* Development of scientific bases of creation and introduction of advanced technologies and complex new generation of machines / MF Rozhkivskyy // Mechanization and electrification of agriculture. - Glevaha: NSC "IMESH", 2006. - Vol. 90. - P. 324-338.
9. *Ivanychko A.* The use of domestically produced cars in the production of concentrated feed in small farms / O. Ivanychko // Technical and technological aspects of the development and testing of new techniques and technologies for agriculture Ukraine. - Research: UkrNDIPVT them. L. Pogorelogo, 2009. - Vol. 13. - P. 291-297.

10. *GOST 24055-88.* Technique selskohozyaystvennaya. Methods эkspluatatsyonno and technological otsenki. Sharing situation. - Enter. 01/01/1989. - Moscow: Publishing standartov, 1988. - 47 p.
11. *Rules* organization and management of the process of production of animal feed products: approved. M-tion agriculture Ukraine 03.20.98: valid from 01/07/98. - K .: VIPOL, 1998. - 220 p.

*Analyzyruyutsya Technological scheme pryhotovlenyya kombykormovыh mixture fermskyh kombykormovыmy units, rasschytannыmy on Using Actually grain production and zakuplennыh macro mykrodobavok supplements. Ukazannaya nesootvetstvye schemes prymenyaemыh Getting mixture neobhodymoy odnorodnosty. Predlozhennaya technological scheme for conducting osnovannaya trehstadyynom smeshyvanyya***.**

Kontsentryrovannыe stern, sbalansyrovannыe kombykorma, Technological scheme, Basic operations, podhotovytelno-FINAL operations, Stage smeshyvanyya, animals.

There are analyzed technological schemes analyzed the mixed feed preparation fermskymy feed units, designed for use grains of own production and purchased macro- and microfodder supplements. The above discrepancy used the mixed scheme of required homogeneity. The technological scheme based on conducting three-stage mixing.

***Concentrated feed, balanced fodder, technological scheme, basic operations, preparatory and final operations, phase mixing, animal*.**

UDC 636.064.74 / 2

EFFICIENCY KOMBINOVANITRANSPORTNO TECHNOLOGICAL MEANS FOR FEEDING CATTLE

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Analyzes technological schemes means for preparing the mixed feed combined transport and technological means (KTTZ or "mixer"), designed for use of feeds produced. Determined efficiency KTTZ marks "Trioliet" (stationary usage + motor - 30 kW) and "Storti" (prytsepnyy KTTZ + MTZ).

Formulation of the problem.