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

V.I. Kostenko, Doctor of Agricultural Sciences O.O. Zabolotko, V.S. Hmelovskyy, Ph.D.

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.

Currently, in countries with developed cattle breeding main method is Loose cows (more than 95% of farms). For this method you can use naysuchasni methods of preparation and distribution of feed and milking modern high-performance equipment that will reduce labor costs for production of 1 kg. Milk 0.6-2.0 people / year.

In Ukraine, still prevails attachable way maintenance. However, in recent years the situation began to change slightly. A number of farms is reconstructing or building new barns Loose introducing an effective system maintenance. However, on many farms there attachable system and its varieties combined. Reducing the number of cows in the farms, the change in output feed led to failures using a series of fixed kormotseha Cork because of high energy costs.

Simplified scheme of feeding and feed distribution feeders CTS-10 does not ensure high performance as feeding the cows that require investigation and resolution of the issue.

Analysis of recent research. The issue of determining the effectiveness of the implementation technology of preparation and distribution of feed on farms and cattle fodder technical level distributor-recently paid much attention. Kormosumishok preparation problems for cows in farms with different livestock animals attracted the attention of many scientists [1-4].

The purpose of research an analysis of technological schemes and study direction kormosumishok technical means of production based on the example KTTZ fixed and mobile performance. Assess operational efficiency on the example of Ukraine VP NUBiP educational and research enterprises.

Results. Mechanization and kormopryhotuvannya normalized distribution of feed is too important. Reducing unit cost of feed and increased productivity provided only on the basis of balanced preparing homogeneous mixtures and their posing normalized on the basis of performance animals. This should ensure the effectiveness of production - reducing labor costs, resources and energy to cook and feed mixtures normalized issuing a trough. Reducing unit cost of feed and increased productivity provided only on the basis of balanced preparing homogeneous mixtures.

In Western Europe KTTZ is the main group of machines for the preparation and distribution of feed. They are widely used due both Feeding Forage mixture advantages and improved design machines that provide load operation, grinding, mixing and distribution of feed with minimal labor costs. In Ukraine, the machines still produce insufficient quantities, but the market has a wide selection of foreign KTTZ. This technique is represented by such leading companies as: Kuhn (France),

Trioliet (Netherlands branch in Russia), DeLaval (Sweden), Seko and Storti (Italy), Roto-mix (USA) and others. This technique over the past five or six years increasingly adopting farms Ukraine. Today the farm is more than 150 cattle fodder-distributor. Using this technique, compared with conventional technology, allows significantly reduce labor costs and specific metal and energy of one ton of prepared and distributed at the farm animal feed. KTTZ serve as the "kormotseha on Wheels" (fodder-distributor) differ large variety of types and models. KTTZ produce trailed and self-propelled, with devices for Self and without. Their mixing working bodies can be horizontal and vertical, boot - milling or grab. Capacity of different models of fodder-distributor - from 5 to 45 m3, capacity - from 48 to 275 hp Each type of machines for use in various environments, has its advantages and disadvantages. Type of work (dopodribnyuyucho-mixing augers). Location of the screw axis - horizontal or vertical - has a significant impact on the quality of cooked Forage mixture and the lifetime of the faucet. Evaluating the effectiveness of their use of the technical characteristics:

1. shredders with two horizontal augers ensure the simultaneous distribution of food to the two sides as opposed to vertical, can distribute feed mixture or to one or the other side in turn. Therefore, the use of horizontal distribution of feeding on two sides simultaneously provides lower cost process time and fuel.

2. The degree of long-feed grinding in vertical mixers limited by the design of the distributor and does not depend on the duration of grinding, which can not meet the length requirements zootechnical fraction feed mixture. Number of screws in the vertical design of the mixer-distributor does not affect the degree dopodribnennya.

3. The principle of mixing "volcano" in the mixer-distributor vertical screw design determines the need to comply with the order of loading of bulk components. Otherwise, the chances of settling of loose components on the bottom and the surface of the screw, which leads to uneven mixing of feed and overspending in the distribution.

4. The presence of additional hydraulic, ball-grinders with vertical auger mixer requires the use of high power tractors, which leads to higher feeding process, compared to the distributor with horizontal augers that can be aggregated with tractors class 1.4 (MTZ-80/82). This disadvantage is eliminated by installing additional step-down gear, which inevitably leads to higher efficiency and reduced KTTZ product.

5. Grinders-distributor vertical auger can not provide the necessary uniform distribution of feed at the individual content, so more suitable for feeding cattle herd in the Loose hold.

Particular attention was paid to the reconstruction of housing for the cows. This includes the size zayiznyh gate height of the room, such as feeding, feed passage, the structure of the front of the stall.

The dimensions of the mobile unit determine the overall size of the room, the question is to optimize the cost of construction work on the reconstruction (if outdated design and technological solutions) or KTTZ choice with regard to design and technology solutions space barn. In the event of significant construction work in the reconstruction of premises barn (low ceiling, floor beams) are used as a means fixed only for the preparation of a further Forage mixture of unloading food in portable feeding type CTS-10A. This technology significantly reduces the efficiency of the technology.

One of the conditions for application maintenance is Loose refusal to use zholobkovyh feeders, which requires more maintenance labor costs and overall height parameters for distribution elevator feed KTTZ (less than 0.5 m.). The best option to place bulky feed feeding fodder is the use of tables.

Stern table - specially equipped along the lines feeding cattle placing equal coverage to the width of 3.6 meters from the front limiting border for accommodation and feeding of feed. These dimensions allow the feed table accumulate it daily rate for semi kormosumishok feeding livestock. The second condition is that the fodder fed to the cattle in a semi or napivvolohyh kormosumishok.

Kormosumishky is, firstly, feeding on forage conditions Loose Pet "senior" are not able to eat only the best feed; secondly, feed received by the organs of digestion as kormosumishky better digested and have a higher rate of return; Thirdly, it allows the use of supplementary feed mixtures as high and slightly inferior quality.

Depending on the layout KTTZ can perform load operations, grinding, mixing and distribution of feed and can be trailer or self-propelled. Carefully analyzing circuit cooking fodder mixtures such KTTZ for their optimum performance it is necessary to:

- Storage of feed components were relatively close to each other and the whole of the livestock buildings;
- All roads in the territory of a livestock farm level and should be paved (due to low base units);
- Depending on the configuration should involve additional loading facilities;
- Served under the stock should coordinate capacity hopper unit (based on the condition that 1 m3 17-29 mixture can feed cows, depending on the multiplicity of feeding).

Flowsheet cooking kormosumishok trailed and stationary tools is the very means for loading components used Forage mixture universal

loader type of sleep-0,5, 0,5-PF, PE-1 "Karpatets" PF-0.8 "Yevroboreks" for transportation and distribution of fodder and feed mixtures distributor RMM-5, CLI-10 or prytsepnyy KTTZ and mobile means.

So for MTTZ hopper capacity of 8-10 m3 can provide 400 -500 cows under zootechnical requirements when the feed length distribution of not more than 1.5-2.0 hours.

Using the technology permanently placed "mixer» - "Trioliet" (+ electric stationary use - 30 kW) put into practice in teaching and research farm "Velykosnitynske" them. OV Muzichenki VP NUBiP Ukraine (Fig. 1).

Fig. 1. flowsheet kormopryhotuvalnoho item.

Load handling equipment for tractors: MTZ-80/82/892 forklift used PKU-0,8B with shvydkoznimacha bucket and a set of equipment (up 0.8, 0.92 or 1.5 m3), a device for loading silo like "Alligator "; MTZ-1221 loader to use PBM-1200 and the relevant working bodies to him.

Flowsheet cooking kormosumishok KTTZ trailer and mobile means MTZ 922.3 used in EP NUBiP Ukraine "Agronomic Research Station", shown in Fig. 2. We analyzed the industrial use of the abovementioned MTTZ defined quality process implementation, ergonomic characteristics machinery, operational and technological and economic indicators. The definition of direct operating costs for the production of one ton of production conducted in accordance with GOST 4397: 2005. The initial data for this indicator is the cost of the machine, its productivity, wages operator costs for electricity, renovation, maintenance and repair, as well

as the level of annual load machine. The data of economic evaluation is somewhat arbitrary, because they can be different in different households depending on the intensity of the attendants, convenience and obladnannosti workplace, ie the productivity variable time. The results verify production shown in the graphic dependence Fig. 3.

Fig. 2. A general view of the unit MTTZ "Storti" and mobile means - MTZ 922.3.

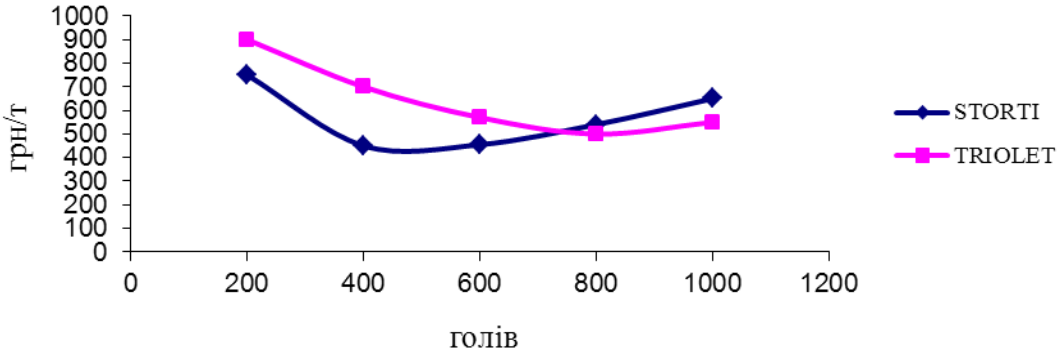

Fig. Figure 3. Direct operating costs for the production of one ton kormosumishok for cows.

Conclusion. Therefore, as the image dependencies for 400-600 heads of livestock service recommended as part MTTZ "mixer" 8 m3 and mobile product. For livestock 600-1000 heads can apply a fixed version MTTZ and recruitment tools.

List of references

1. *Babich AA* Energosberegaiushchie resource and technology production, storage and Using Stern / AA Babich, DC Motornыy; ed. MV Teeth. - K .: Harvest, 1986. - 104 p.

2. *Mylev AD* Universal sredstva for preparation and razdachy fodder for cattle farms / AD Mylev // ɜlektryfykatsyya mechanization and agricultural sector. - 1999. - №4. - P. 11-13.
3. *Palkin G.* Modern mobile Mixer Feeder for feeding livestock Forage mixture / AG // Palkin offer. - 2000. - № 4. - P. 88-91.
4. *Pogorily L.* Modern technology for the preparation and distribution of feed for cattle farms / Pogorily L. Yasenetsky V., M. Linnik // APC Technology. - 1999. - №4. - P. 31-33.
5. *Revenko II* Resource principles livestock production / II Revenko // Bulletin of Agricultural Science. - 1998. - № 4. - C. 71-73.
6. *Yasenetsky VA* Reducing energy consumption in livestock fodder and / Yasenetsky VA, Ermolenko VA, Harkavyy A. - K .: Harvest, 1989. - 136 p.
7. *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. - 2008. - №12. - S. 235-238.
8. *Revenko II* Combined transport and technological means in cattle national project "Baturyn recovered cattle" / II Revenko, VV Tymkiv. - K .: Dia, 2011. - 44 p.
9. *Smolar V.* National project "Baturyn recovered cattle" and leverage its implementation, specific board decisions Agrarian Policy of Ukraine / V. Smolar // Engineering and Technology APC. - 2011. - № 10. - P. 4-5.
10. *Smolar V.* Fermskyy harvester - universal technical tool / V. Smolar, Postelha S., L. Kirichenko, Yu Technology Kalitynskyy // APC. - 2007. - № 10. - P. 34-35.
11. *Hermezov D.*Application kormorazdatchykov-mixer - Increase productivity pledge horned cattle / Hermezov D., W. Sheychenko // Technique APC. - 2006. - №4. - P. 16-18.

Analyzyruyutsya Technological scheme funds for pryhotovlenyya kormovыh mixture kombynyrovannыmy transport and technological assets (KTTZ Or "Mixer") to rasschytannыmy Using Actually fodder production. Opredelena Efficiency Using KTTZ marks "Trioliet" (stationary + Using electric motors - 30 kW) and "STORTI" (prytsepnыe KTTZ + DOLE).

Pryhotovlenye kormosmesey, sbalansyrovannыe stern, Technological scheme, Basic operations, podhotovytelno-FINAL operations, Stage image, smeshyvanyya, korovы, effectiveness.

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

Preparation of feed mixes, balanced feed, flow diagrams, basic operations, preparatory and concluding operations, transactions under loading, mixing, cow, efficiency.

UDC 631.3.02: 621.791.92