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INDUSTRIAL SAFETY AND ENVIRONMENTAL COSTS Material and energy resources FOR AGRICULTURAL PRODUCTS

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The article discusses ways to improve the environmental safety of production and cost reduction of material and energy resources for agricultural products and equipment that it uses.

Animal, processing manure separation,solid and liquid fractions, Methods and technologies of manure.

Formulation of the problem. So far Ukraine's agriculture production concept prevails in open ecosystems that require constant increase in cost of resources. This approach typically used in households share their own primary production decreases and the proportion of energy and some other resources (electricity, fuel, feed, fertilizer, pesticides, etc.) increases. Open systems differ significantly from natural ecosystems unbalanced circle-circulation of matter and energy. For further uncontrolled constant increase in the cost of agricultural production resources can be economically unprofitable, and the processes of environmental degradation and environmental destruction structures - irreversible [1-3].

Domestic and foreign experience shows that to improve the environmental safety of production and cost reduction of material and energy resources for agricultural produce appropriate and necessary to develop and implement biokonversiyni technology and efficient use of waste of production, including manure [1, 4].

Analysis of recent research. Keeping pigs and cattle is associated with accumulation of pus that must be stored in a large capacity to export its agricultural fields. In areas with a large amount of livestock manure used as fertilizer, often limited, because the soil is already sufficiently rich in nutrients (eg, phosphorus). In addition, manure during storage must always be subjected to homogenization to avoid the formation of sedimentary deposits.

Similar problems are also faced by operators of biogas plants, which also have to save and export the waste to the fields FERMENTATIONsubstrate [5, 6].

The main requirements to technologies and tools for processing and use of manure by regulatory and technical documents for the design of such systems, as well as veterinary and sanitary and hygienic requirements for equipment production lines processing, decontamination and disposal of manure on livestock farms and complexes. In the design of cleaning, removal, handling and use of manure to consider advanced technologies to conditions that ensure:

- full use of all its parts and manure as fertilizer to agricultural land or raw materials for the production of complex organic fertilizers or for other industrial purposes;
- implementation of veterinary and sanitary requirements of livestock enterprises operating with minimal water requirements and legislation on environmental protection;
- raising the level of mechanization and automation of manufacturing processes.

Manure, depending on the species of animals and manure removal systems may have a different concentration. When applying manure hose systems unrequited maximum concentration of solids should be no more than 8 ... 9%. What is less manure is best. Therefore, experts' biocomplex "for manure hose systems recommend manure share since introducing the liquid fraction is economically expedient for the following reasons:

- the liquid fraction solids concentration is minimal (0.8 ... 1.7%), and therefore it can pump ceteris paribus over long distances (up to 70% on undivided compared with pus) or you can use a smaller pump stations and power to save on fuel consumption;
- for pumping liquid fraction thinner hoses are used, which reduces the cost of the system;
- content N - P - K in the liquid fraction more balanced, allowing it to make a greater volume - from 100 to 300 m3 per 1 hectare per year against 50 ... 90 m3 per 1 hectare per year unrequited manure. Volume introducing varies grown crops;
- separated solids can be reused as bedding for cattle or sell as high-quality compost;
- when transferring the liquid fraction, there is no solid friction components, causing wear of the inner wall of the hose and that slows the flow, moreover, ruled out the probability of the formation of clogged [6-8].

The purpose of research. Consider possible ways to improve the environmental safety of production and cost reduction of material and energy resources for agricultural products and equipment that it uses.

Results. Initial pig manure runoff and especially cattle used for making irrigation system is impossible because of the large amount of

solid components. The basic requirement to prepare manure effluent to be able to use self-propelled irrigation system for the distribution of manure is manure separators for solid and liquid fractions. Separators liquid manure removed from almost all solid components, and the resulting liquid fractions are only solutes that do not clog irrigation system and easily pumped by conventional pumps.Processing of liquid manure carried by his separation of the solid and liquid fractions, make compost, anaerobic digestion. Liquid manure separation into fractions is carried out by filtering (using arc sieves, inertial screens, Vibrofiltr, centrifuges, etc.) and flotation (due to settling solids). Separation of manure by using complex equipment in various configurations depending on the purpose of separation, the initial moisture content of manure, presence of long fibers litter. For mechanization of processes using appropriate equipment.Initial pig manure runoff and especially cattle used for making irrigation system is impossible because of the large amount of solid components. The basic requirement to prepare manure effluent to be able to use self-propelled irrigation system for the distribution of manure is manure separators for solid and liquid fractions. Separators liquid manure removed from almost all solid components, and the resulting liquid fractions are only solutes that do not clog irrigation system and easily pumped by conventional pumps.

OptiPress system designed for the separation of liquid livestock waste water, waste FERMENTATION substrate from biogas plants and other substrates to be separated, such as waste water after washing transport livestock.

Plants produced in two versions, which are used depending on the homogeneity of primary raw materials and the fate of the content in the dry matter. Installation OptiPress I have a filter press with a screw conveyor and is ideal for separation of manure dry matter content of 2% to 10%. Installation OptiPress II is a screw press designed primarily for waste separation FERMENTATION substrate from biogas plants, which are characterized by high content of dry matter (5 ... 15%) and often coarser structure of the original material (long-fiber components).

If you use both options in the fate of solids separated solids is from 25% to 30%.

It has a less intense odor and can be used as a granular organic fertilizer. Dry matter content in the filtrate reduced by almost 50% over the original feedstock.

Because the organic phosphorus binds primarily with solids, it is separated more than nitrogen and potassium, which usually remain in the filtrate.

The filtrate can be effectively used as a liquid fertilizer, spray it with a sprinkler installations. In his possession no need for homogenization, since virtually no separation into fractions.

As for nutrients, the phosphorus in the solid fraction is approximately 35 ... 60% (depending on initial raw materials).

Thus, the final product can be low cost to supply the regions with a high demand for phosphate fertilizers.

Value liquid and solid fractions shown in Fig. 1, the distribution of nutrients in the percentage of primary raw materials - Fig. 2.

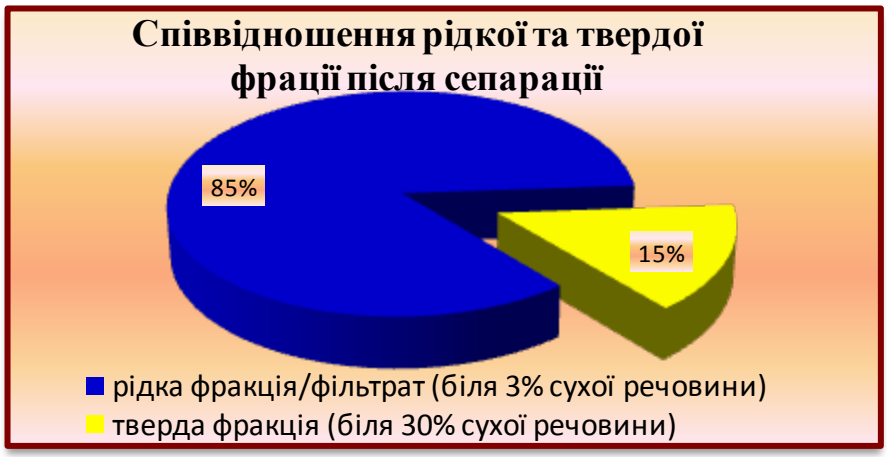

Fig. 1. Value liquid and solid fractions after separation.

Fig. 2. The distribution of nutrients in the percentage of primary raw materials.

The principle of the filter press for substrates with a homogeneous structure and low dry matter content shown in Fig. 3.

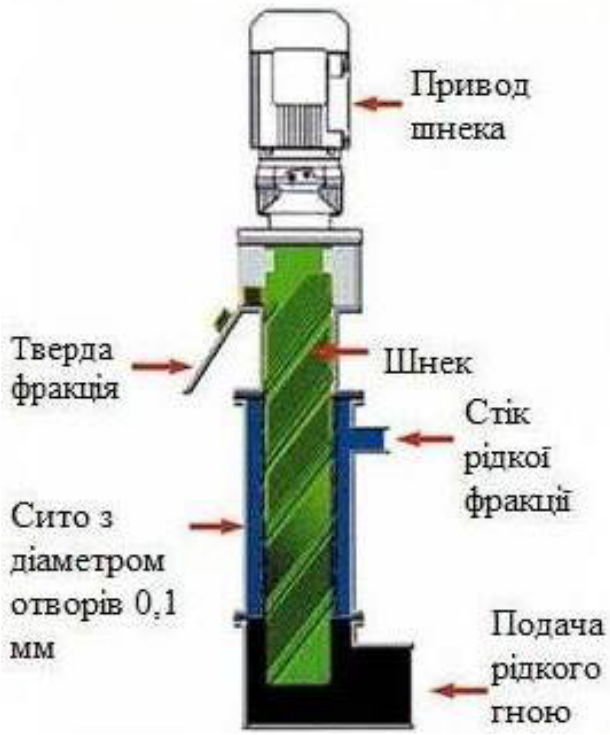

Fig. 3. The principle of the filter press for substrates with a homogeneous structure and low in dry matter.

For the rational use of filter press installation and accumulative capacity must be installed between livestock buildings and storage waste. In this case, you can immediately carry out separation of liquid manure while in storage for liquid manure postupatyme only filtrate. Compensation capacity, equipped with sensors filling level, provides continuous and uniform supply of feedstock pump filter press with a screw conveyor. Raw material is fed into a vertically oriented filter a column by a screw conveyor. As the transport screw filtrate produced its dehydration using a sieve. Depending on the volume of material that is separated, given that the performance of a filter column 1,5 m3 / hr., It is possible to modular expansion to 4 columns. Each filter column is driven by the individual motor. Release of solids is at the top of the screw conveyor. Screw conveyor with adjustable speed ensures a uniform supply of primary raw materials. Management is carried out by distribution cabinets. Primary raw materials should not contain any impurities (eg, ear birok Animal), otherwise you need to install an additional module for cleaning materials from impurities.

The principle of the screw press for substrates with a homogeneous structure and high dry matter content shown in Fig. 4.

Fig. 4. The principle of the screw press for substrates with a homogeneous structure and high content of dry matter.

The original substrate is supplied with a memory capacity of a compensation drive screw press with a pump. Compensation drive provides permanent filling separating section. Sieve ensures the quality of the initial separation of the substrate. An outlet for solids is revealed only at a certain back pressure created by the separated solids. The electric power of 5.5 kW ensures maximum capacity of 30 m3 / h.

Scheme of processing manure press screw separator shown in Fig. 5. Runoff from manure production buildings heading the receiving tank for storage and mixing of this process before separation. To ensure the mixing process is used mixer, homogenizer, which creates a uniform consistency material input. Pump with crushing pumping mechanism in a homogeneous mass separator.

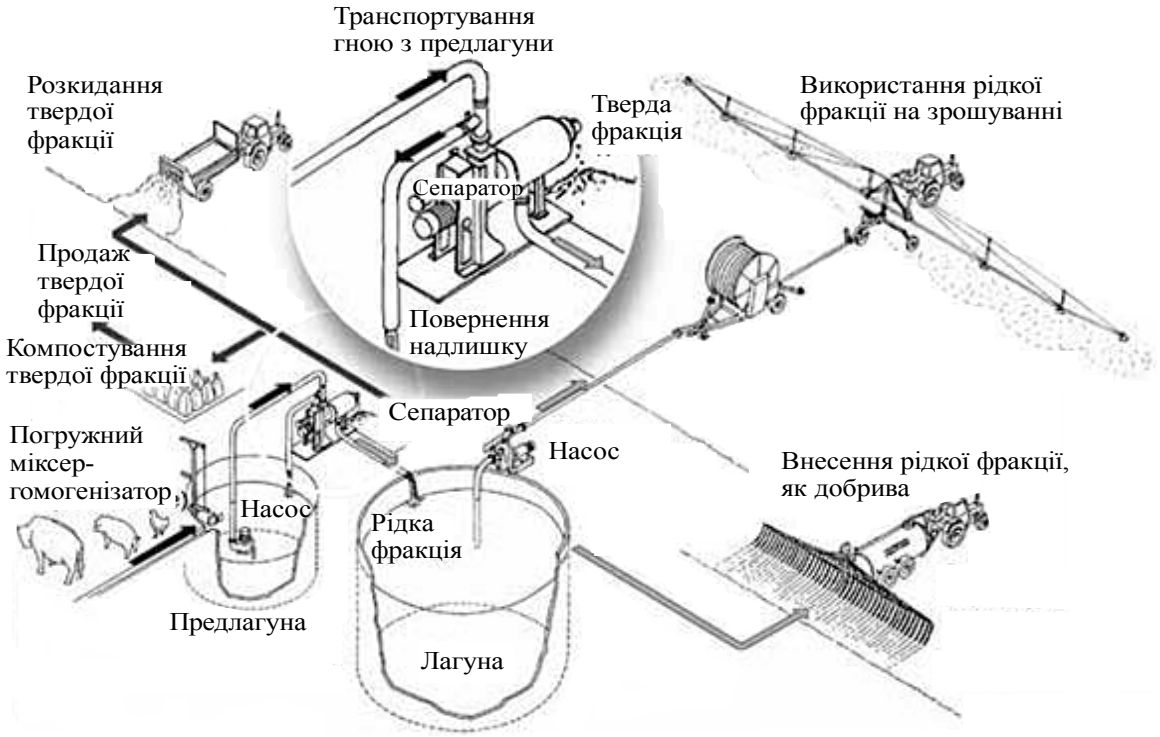

Fig. 5. Scheme of processing manure press screw separator.

With the integrated wastegate excess drains back into the tank by gravity. Stocks got into the auger chamber initially processed vibration device, it promotes efficient dehydration at a later stage separation. In the first phase of free water separated by gravity through a sieve, separated water goes through the separator outlet. The water bound to the solid components separated in the extrusion mass, which occurs on the last two coils of the screw. After separation of the solid material can be felled in a heap or shipped by conventional mechanical means, such as a tractor-trailer. Separated liquid can be used again to flush manure or placed in storage tank as liquid fertilizer. The power adjustable pressing counterweights that determine the back pressure created at the outlet of the separator. Productivity is affected by various factors: the initial effluent concentration, temperature, type of feed, manure storage life, position balances governing the degree of extraction.

Typically, equipment and technology for manure bought last. The calculation of the required number of the same techniques and equipment for storing, processing and making annual volume of manure isat random, do not take into account periods of inability making and downtime - the number and volume hnoyenakopychuvachiv, work shifts, the probability of rainy weather, possible polamok, winter and the growing season. Errors in calculations can lead to the most serious consequences when hnoyenakopychuvachi remain filled before the winter period because they did not have time to make all the necessary volume of manure.

Conclusions

Inattentive relation to the disposal and processing of manure could lead to diversion of resources from primary production to correct errors of design and operation of manure removal, due to the possible downtime in the main economic activity of reducing the environmental safety of production and increasing costs of material and energy resources for agricultural products. Error handling design can cost twice as much. Design all systems of manure removal and processing must be carried out organizations that specialize in this subject who can provide all the nuances of the system and minimize the cost of construction and operation.

When choosing an organization that will carry out the design, supply and installation of equipment, should be familiar with its experience in implementing similar projects. Equipment supplied by this company has to be adapted to operate in our country. Also, the organization must provide warranty and service within a reasonable time, as production of manure on pig farms has not stopped for a minute.

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In Article rassmotrenы WAYS Increase эkolohycheskoy production safety, as well as expenditure Reduction materyalnыh power machinery and resources for obtaining selskohozyaystvennoy products and equipment, kotoroe To do this yspolzuetsya.

Animal husbandry, REFINING hnoya, separatsyya, tverdaya and zhydkaya fraction, Methods and Technologies Remove hnoya.

In paper the ways of increase of ecological safety of production, and also diminishing of charges of material and power resources, are considered for the receipt of agricultural produce and equipment which for this purpose is used.

Animal husbandry, pus processing, separation, firm and liquid fractions, ways and technologies of removal of pus.

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PROFESSIONAL subjective didactic conditions SELF-DEVELOPMENT OF FUTURE PROFESSIONALS With the mechanization of agriculture

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The article studies the issues related to the creation of conditions for professional self-development of future professionals of engineering areas of agroindustrial production by means of developing personal and educational technology. Grounded subjective didactic conditions of professional self-development of future specialists in agricultural mechanization during

studying general engineering disciplines. This organization forming a continuous external motivation mastery of knowledge of general engineering disciplines with its gradual transformation into internal motivation; providing of professional and cognitive interests of students in the learning process; creating a positive emotional background lecturer based learning situations conducive to the emergence of future specialists in agricultural mechanization stheniac positive emotions.

Personality-developing education, professional self-development, didactic subjective conditions, training and educational activities, educational learning environment.

Formulation of the problem. Sustainable development of agriculture of Ukraine is largely dependent on the level of training of engineering areas engaged in agricultural production. In connection with which, in Higher Agricultural School there is an urgent need for in-depth analysis of the theoretical nature of teaching developmental education, substantiating its goals, objectives and structure, the selection of pedagogically expedient method of forming conditions for professional self-development of future engineers. The current agrarian expert should