Abrasive wear, plow ploughshare, eutectic coverings, self-sharpening of an edge, hardening of surface.

UDC 662.767.3

COST STORING OILSEEDS

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Simulated cost of storing oilseeds. Depending installed cost of storing oil seeds of its humidity, pollution, yield (mass storage) and process equipment

Oilseeds, winter rapeseed, soybean, sunflower, oil, storage, cost, yield, moisture, debris

Formulation of the problem. As a result of the processing of oilseeds obtained 30-40% vegetable oil and 60-70% of cake or meal. Vegetable oil is a valuable food product that is exported from Ukraine in many countries. It is used for the production of margarine, mayonnaise, confectionery and so on. In addition, the oil can be recycled methyl ester, which is a substitute for petroleum diesel. Oil cake or meal - a valuable food for farm animals.

However, the seeds after harvest on immediately comes to recycling. Freshly grain weight uniform moisture and ripeness of individual grains has high physiological-biochemical and microbiological

activity, reduced vigor and germination, poor technological properties. To prove the seed to normal, it must go through the stage of post-harvest ripening, which can be up to several months. In addition, the facilities of oil, fat and complex installations for the production of biofuels can not recycle all the seeds immediately. So oilseeds to send them for processing to keep some time because of the loss of seeds and reduce the oil content in it depends on the cost of the final product.

Analysis of recent research. IN [1, 2] proved that the deposit oilseeds affect its debris and temperature environment. According to [3], the safety of oilseeds is greatly influenced by the high content collapsed and broken seeds. This is the first seeds exposed to mold, which damages primarily embryo. Oil from him quickly hirkne as air access to such seed facilitated by the absence of fetal membranes (hulls). Technology and hardware for storing oilseeds are given in [4]. However,

the impact of the above factors on the cost of storing oilseeds in the literature are not.

The purpose of our research is to establish a functional dependence of the cost of storing oil seeds from seed moisture, its pollution and the type of equipment that is used to prepare seeds for storage.

Results. Efficiency storage oilseeds (rapeseed, sunflower and soya) was determined using flow chart storage (Table. 1), developed according to the recommendations given in [4].

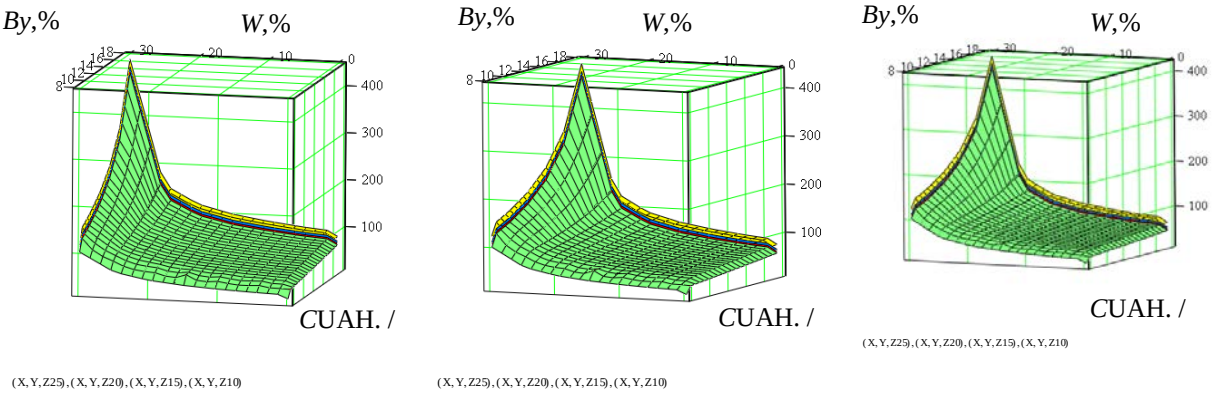
1. Process map storage oilseeds.

Name of technological operations	The name of the unit or line	quantity, items
Weighing seeds	ST-20000/9	1
Pre-cleaning seeds	Head 20	1
Drying seeds	Dryer mine	1
	Teplogenerator	1
Initial seed cleaning	Head 20	1
Transporting waste for the production of feed	KAMAZ-43253	1
Storing seeds as part of	Granaries hangar type	1
	The conveyor belt	4
	Norija refinery-40	2
	Balance grain D-100-3	1
	Installation of active ventilation IED-1 with fan VMЭ-6	1
Transportation seeds for processing	KAMAZ-43253	1

Efficiency storage oilseeds collected from the area 100 hectares, When it is determined dryer drying DSP-10 complete with heat generator TAUM-0.85, running on petroleum diesel, dryer DSP-10 complete with heat generator TAUM-0,85-01 that runs on natural gas, grain drying complex COP-8 as part of dryers HR-8000 and TGS-500 heat generator that runs on straw rolls. Performance and power consumption and fuel during cleaning and drying of seeds was determined [5]. Consumption of heat drying seeds calculated by the method given in [6].Norms and standards of performance fuel vehicle during transportation from defined [7, 8]. The hourly wage rate mechanics and workers in manual labor charges and their salary determined in accordance with [9]. The price of fuel and lubricants, tractors, cars, agricultural machinery, fertilizers, pesticides, etc. are adopted from Praca lists.In the calculations it was assumed that storing seeds in storage was 3 months. Standard humidity oilseeds to lay deposited assumed: sunflower - 7%, rape - 8%, soybeans - 12% [10].

The results determine the cost of storing oil seeds based on their yields (and hence the total weight), debris and moisture are shown in

Fig. 1 - Fig. 4.



1) 2) 3)

Fig. 1. Dependence of the cost of storage of rapeseed harvested from the area 100 hectaresFrom its pollution and humidity on drying on the dryer 1 - DSP-10 diesel fuel; 2 - DSP-10 natural gas; 3 - COP-8 on straw rolls; at productivity: – 25 kg / ha; – 20 kg / – 15 kg ha; – 10 kg / .

Of these, shows that the cost of storing oilseeds exercise significant influence infestation and grain moisture that comes to storage.

In wet storage admission to uncontaminated seed storage costs grow in 1,3-2,0 times (humidity, which slightly exceeds the recommended storage) by drying and expenses are:

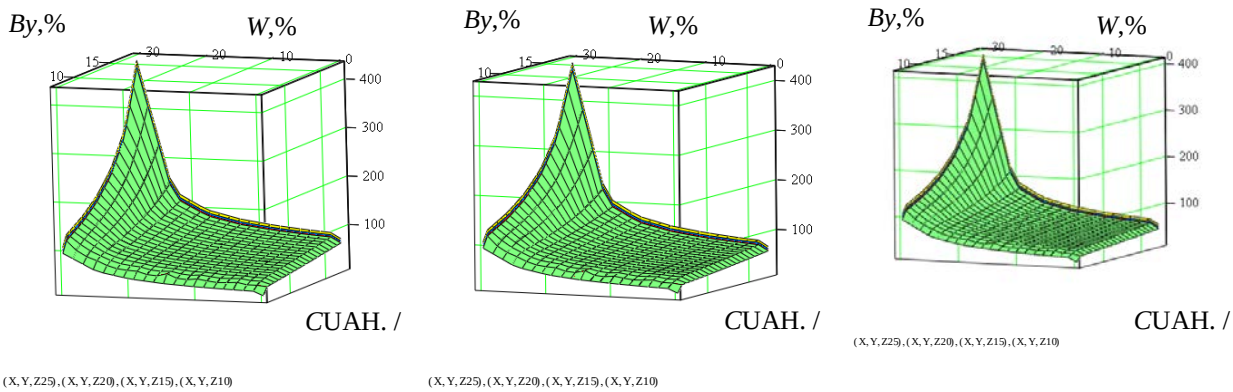


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Fig. 2.Dependence of the cost of storing oilseeds harvested from the area 100 hectaresFrom its pollution and humidity, drying in a dryer at 1 - DSP-10 diesel fuel; 2 - DSP-10 natural gas; 3 - COP-8 on straw rolls; at productivity: - 30 kg / ha; - 25 kg / ha; - 20 kg / ha; - 15 kg / ha.

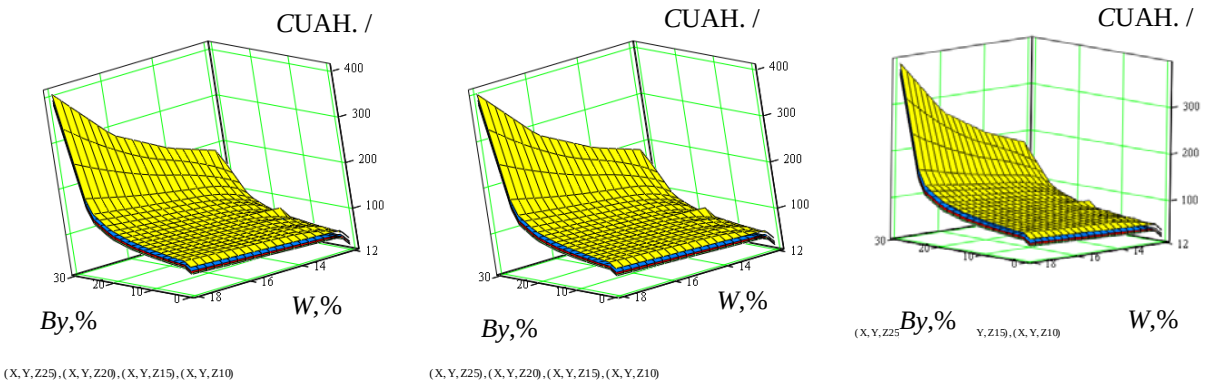

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Fig. 3. Dependence of the cost of storage of soybean seeds harvested from the area 100 hectaresFrom its pollution and humidity, drying in a dryer at 1 - DSP-10 diesel fuel; 2 - DSP-10 natural gas; 3 - COP-8 on straw rolls; at productivity: - 22 kg / ha; - 18 kg / ha; 14 kg / ha; 10 kg / ha

– for rape: 32-52 UAH / kg humidity, which is slightly more than 8%; with increasing humidity and rising costs at W = 18% are 46-63 USD / kg;

– for sunflower: 30-42 UAH / kg humidity, slightly more than 7%; with increasing humidity and rising costs at W = 18% are 45-72 USD / kg;

– soybean: 37-57 USD / kg with a moisture content that is somewhat higher than 12%; with increasing humidity and rising costs at W = 18% are 46-74 UAH / kg.

Rising cost of storage while increasing seed moisture is caused by a decrease in productivity of dryers and increase their work time and increased costs for fuel and drying and seed weight loss Woroch as a result of moisture removal.

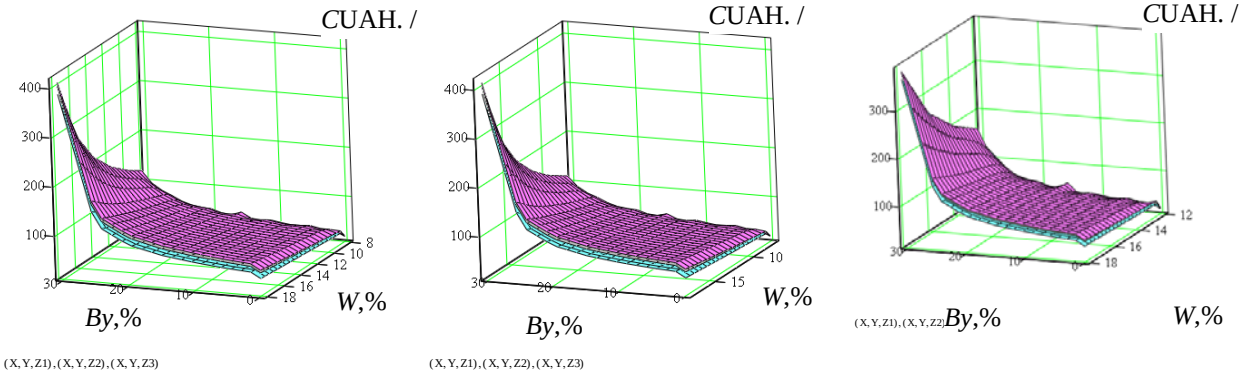

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Fig. 4.Dependence of the cost of storing oil seeds collected from the area 100 hectaresFrom its pollution and humidity 1 - canola yield 25 c / ha; 2 - sunflower yield of 25 c / ha; 3 - soybean yield 22 c / ha; drying

in: - DSP-10 diesel fuel; - DSP-10 natural gas; - COP-8 on straw rolls.

At admission to the storage of contaminated seeds dry storage costs are growing at 1.2-1.4 times (with little contamination) due to the cost of cleaning and are:

- For rape: 29-45 USD / kg at low contamination; with growth rising costs and contamination with Over = 30% are 100-110 UAH / kg;
- For sunflower: 28-36 USD / kg at low contamination; with growth rising costs and contamination with Over = 30% are 93-104 UAH / kg;
- Soybean: 31-45 USD / kg at low contamination; with growth rising costs and contamination with Over = 30% are 133-154 UAH / kg.

Rising cost of storage while increasing contamination of seeds is due to a decrease in productivity of grain cleaning systems and increase their work time, and seed weight loss as a result of the removal of impurities.

Estimated cost of storage significantly increases with the contamination of seeds and humidity:

- For the rape of 40-60,5 UAH / kg with low humidity and contamination of seeds to 387-438 UAH / kg seed humidity 18% and 30% contamination;
- For sunflower seeds with 38-50 UAH / kg with low humidity and contamination of seeds to 388-425 UAH / kg seed humidity 18% and 30% contamination;
- For soybeans from 46-66 USD / kg with low humidity and contamination of seeds to 365-406 UAH / kg seed humidity 18% and 30% contamination.

Large storage costs, high initial seed moisture and seed debris caused significant weight loss with seeds removed impurities and moisture, low productivity of dryers and grain cleaning systems, increasing their working time and increases depreciation expense and maintenance.

The use of energy as natural gas dryers instead of diesel fuel reduces the cost of storing seed at 1-2%. When using grain drying complex COP-8, which is used as fuel in rolls of straw, seed storage costs are reduced by 7-10% compared with the use of dryers DSP-10, which runs on diesel fuel.

Conclusions

1. In the absence of pollution and regulatory cost of storing seed moisture rapeseed for 3 months is 21-37 UAH / kg sunflower seeds - 20,3-28,2 UAH / kg, soya - 22,3-36,8 UAH / kg.

2. When admission to store contaminated dry seeds (with little contamination) costs of storage increases in 1,2-1,4 times due to the

reduction of productivity of grain cleaning systems and increase their work time, and seed mass loss resulting from removal of impurities .

3. Costs of deposit increase significantly with increasing humidity and contamination of seeds and rape up to 387-438 UAH / kg for sunflower - 388-425 UAH / kg, soybean - 365-406 UAH / kg seed humidity 18% and 30% contamination. The high cost of storing seed at large initial seed moisture and debris caused significant weight loss with seeds removed impurities and moisture, low productivity of dryers and grain cleaning systems, increasing their working time and increases depreciation expense and maintenance.

4. The use of energy as natural gas dryers instead of diesel fuel reduces the cost of storing seed at 1-2%. When using grain drying complex COP-8, which is used as fuel in rolls of straw, seed storage costs are reduced by 7-10% compared with the use of dryers DSP-10, which runs on diesel fuel.

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Smodelyrovana sebestoymost storage semyan maslychnыh cultures. Ustanovlenы dependence sebestoymosty storage semyan maslychnыh cultures from ego humidity, zasorennosty, yield (Fire-proof compounds storage) and production equipment.

Maslychnыe culture, ozymыy rapeseed, soybean, sunflower, oil, storage, sebestoymost, yield, humidity, zasorennost.

Modeled cost of storage of oilseeds. The dependences of the cost of storage of oilseeds from its moisture, debris, yield (mass storage) and production equipment.

Oilseeds, winter rapeseed, soybean, sunflower, malayer storage, cost, yield, moisture, clogging of attorney.

UDC 693,546

RYVKOVOHO OPTIMIZATION MODE REVERSAL ROLLER MOLDING INSTALLATION

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KI Kidneys, Ph.D.

The design roller molding installation with cam drive mechanism and built the cam profile for the combined treatment reciprocating forming trolley with ryvkovym reversal.

Roller Forming setting mode motion cam, drive.

Formulation of the problem. In installations roller forming concrete products during their work there are significant dynamic loads in elements of the drive mechanism and the elements forming carts [1-6]. Despite the rather extensive study of the process of forming concrete products bezvibratsiynym roller method [13]So far not been investigated dynamics of forming the trolley and its impact on the development. Few paid attention to driving mode and molding cart efforts arising in the elements of the drive mechanism.

Analysis of recent research. The existing theoretical and experimental research machines roller forming concrete products proved their design parameters and performance [1-3]. However, not enough attention is paid to study acting dynamic loads and modes movement, which largely affects the operation of the installation and the quality of the finished product. During the regular puskohalmivnyh modes of movement there are significant dynamic loads in elements of the drive mechanism and the elements forming the trolley, which can lead to