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WAYAND IMPROVEMENT OF CROP seed treatment

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Statementbut the results of research seed treatment process farm-governmental cultures and methods of deficiencies.

Wipeyuvach, toinnker, oIB, PotIR, pivnomirnist, dispenser

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Resolutionska problem. SuchaEconomy dream reduce the intensity of production using high quality seeds, and hope that this strategy will mean lower quality crop, but it provides sufficient. So, prepare seeds for planting (cleaning, calibration and etching) economy is mainly carried out independently to reduce the cost of these processes.

AnaLease FinalnnihRezultaty dperssurvey findings. anaLease thatproces technological solutions and machines for applying liquid pesticides for crop seeds and theoretical research prerequisites implementing this process show [1] that the increase in seed treatment uniformity achieved by modifications to the modern dressers. They increased interaction zone flow and seed drops fluid, duty cycle seed flow to ensure better penetration of liquid droplets sprayed into the flow of the seed and the previous increase in free surface components. Optimizing flow parameters seeds and pesticides, the researchers gradually zmischuvalysya towards increasing scattering them or the terminology vichkovoyi model - upward phase interface. This pattern is seen as an example of rotary dressers (from dressers periodic action "Ideal" to dressers continuous action PZ-10 "Colossus") screw (from PU-1 to PSSH-5). Part of these conditions implemented in dressers chamber type. However, increasing the uniformity of seed treatment pesticide droplets sticking the working fluid with additives to seed in the chamber wall etching and injury seeds had been reached.

In addition, some ways to improve the uniformity of seed treatment pesticide application methods in its cross-flow and seed drops drug implemented modern chamber dressers, can not be the physical nature of the process, because in such a constructive-technological scheme camera etching phenomenon persists shade closer to spray seeds more remote and not the conditions for direct contact with pesticides every seed his entire surface.

Metand research - Identification of deficient workers procsat seed dressers and justification of methods to address them.

Rezultaty dossurvey findings. Workingandprocsi suchamennyh protruyuvachiv seeds continuous actions include continuous and uniform dispensing seeds and working fluid - the pesticide as they are a prerequisite uniform seed treatment drug, and thus achieve high performance etching. This operation is often combined with simultaneous formation of some form of seed flow and density by flow metering volume type, equipped with passive ("Mobitoks" PT-200) or active (PS-20, PS-10) Distributors seeds. Obviously, the performance and uniformity of seed flow, submitted the following dosing on your body, determined by the conditions of its leakage hopper capacity dosing hole braking action used by distributors and others.

Yes, Performance metering with passive distributor seed defined area of the living section of the annular hole filler hopper final design parameters and distributor of seeds. Performance dispensers with active distributor depends on the speed of the distributor and its design (disk or cone) and weigh dressers inertial friction-type [6] in which your body at the same time is an active distributor seeds - also on the side of the working parameters of the body.

According to studies [2-5] impact conditions leakage seed from the hopper to the uniformity of flow is determined couplemeters outlet, filling capacity and height of the seed, and physical and mechanical properties of the latter.

Himself procwith toumikannya Categoriesandseed alternationfrom fromvory to missCTEstyah researchers consider differently. Some of them believe that the rash of bulk materials through holes in capacity is due to the formation of a moving column of material over the hole after

chohat its upper flow to the moving column at an angle of natural slope.

Atsupporters of the theory of dynamic handling vault [2] believe that over the hole formed dynamic
Rosevantazhuvalne vault, loss of seeds which determines the flow rate through the dispensing opening. According to this theory the speed and flow of the rash does not depend on the height of filling capacity and depends on the height of the arch formed.

Tertand [3] believe that the process of rash occurs in three
phase. The first one begins with the opening hole, when it begins to move most of the loose material in the vessel, and its surface is lowered parallel to itself to a certain aspect ratio *H*bingevnennya capacity to diameter *D*. Then comes the second phase of the eruption column to form a moving material and therefore - funnel in the container, and then feed the material takes place by draining its natural angle of slope of the central column. This change in the nature of the process rashes due to the influence size, specific gravity, friction coefficient of the external particle diameter and bulk material capacity.

The most complete physical nature of the process rashes grain through the holes in capacity were studied VM Atomyanom [3] and
H.M. Buzenkovym and SA Ma [4], who managed rash picture seeds justify the direction and speed of seeds in each zone [3] and the relative position of the particle in the bulk material capacity and pressure forces loose material on the bottom and sides capacity [4]. Based on these studies, they are three characteristic zones in
procB eruptions: the first (upper), second (middle) and third
(lower) - peripheral at the bottom of the container (the so-called dead zone), and the reasons for changing the speed of bulk material, depending on the height nasypky *H*yoOn a capacity to explain the relation existing particle bulk material side $P_x$and axial (vertical) P_{in}forces its weight.

ReasonS arch formation of particles is jamming their own internal friction in the line of styling. The lower the coefficient of internal friction and the larger diameter of the hole, the less stable arch formation and therefore it can only rash bulk material through small diameter holes. The height of the hole with a constant diameter does not affect the consumption of bulk material [3]. A similar result is obtained with us.

Based on the data obtained VM Atomyan [3] and GM Buzenkov of SA Ma [4] in different ways came to this pattern: at
H / *D*> 1 speed rash particles remains constant up to
achievement level *H* / *D*= 1. This gap rash all segments

insih bulk material layers have the same speed and all layers dip parallel to themselves without the formation of a funnel, since all particles in all layers are the same forces $P_x$andP_{in}. After reaching a height nasypky $H = D$ (Youcell *Npcons* stabilization $P_x$and*Roux*)changing nature of the rash - horizontal layers of particles under different axial forces become different speeds, resulting in rashes speed slows down. Originally sleep wedges placed over the hole, forming a funnel, and peripheral upper lobes, which are rolled on top of her funnel to the central movable pole. If at the beginning of the rash height approximately equal to the diameter nasypky capacity ($H / D \approx 1$), then immediately rash is accompanied by the formation of a funnel.

Thus, the above process research results rash of bulk materials from containers show that the geometric characteristics of containers and dispensers holes and their relationship and the level of filling capacities significantly affect the uniformity of dosage flowing bulk materials dosing volume type. Analysis dosing device serial dressers shows that their designs these laws are not included. Batcher, combining dosing and distribution of seeds forming its desired flow density ("Mobitoks" PS-10, PC-20, CGP-10, etc.) As a result of the braking action of switching devices significantly reduce the potential performance dressers. Reducing the braking action of flow metering, and their potential impact on the performance of the dispenser (final hopper neck) may, as research has shown [5], by optimizing the parameters of the distributor and living section dosing hole.

In the case of active distributors (usually rotating disks, cones, etc.) braking resistance rash seed hopper with master's neck as a result of these distributors provide
accumulation in the neck area during graduation seed layer that is not evacuated from the zone active Distributors. In this case, the reason for the reduction potential productivity is inconsistent dosing dispenser design parameters and operating modes of the active master distributor and neck [5]. To speed up the evacuation zone east of the seeds of its distributor in
some dressers (eg CGP-4) apply additional design elements - activators.

In the Family, dressersx asand andnertsiyno-friction poyednuyut

dispensing, distribution and processing of liquid pesticide seed a working body performance dispenser define the same factors and other flow metering with active

devicdivisors, and even options lateral conical surface of the body [5, 6]. Reconciliation of action of these factors into account characteristics of the binding seeds, processed and dispensed ensure reliable operation of dressers as a whole, which obviously can occur when the seeds will be fast enough to move up the generators conical working body. The same condition and the condition is not braking seed that is on the authority seed that comes from the dispenser.

Traffic conditions weevil up the cone generators working body can be determined from the balance of forces acting on the seed that is on the surface:

$$m\omega^2 r \sin\lambda > Mg\cos\lambda + fm(g\sin\lambda + \Omega^2 r\cos\lambda), \quad (1)$$

where m - mass of seed; ω - angular velocity of rotation of the body; r - radius of the lateral cone at the height of the seed; λ- Half angle at the top side tapered surface of the body; f- Friction coefficient seed on the surface of the body.

Where, after simple transformations we obtain:

$$\frac{\omega^2 r}{g} > \frac{1 + ftg\lambda}{tg\lambda - f}. \quad (2)$$

This condition (2) is necessary but insufficient to be no criterion braking seed moving cone seeds coming from the dispenser because it does not take into account the speed of the seed in your body that ensures the continuity of the process. Increase the speed of the seed side up the generating cone, and hence on the bottoms of working body at the expense of increasing the frequency of rotation of the body, increasing the evacuation and seeds from the feeder. Effect of uneven dosing components polydispersity of particles partial content of components in the mixture and sample size to control dispersion component in the mixture studied randomalniy K. Stange [8] S. and P. Shterbachek Tauska [9], and FP Smakovskoho [7].

According to these studies the variance of each component stream at the output of the mixer is a function of its dispersion flow at the outlet of the dispenser:

$$\sigma^2_{q'} = k_i \sigma^2_{qí\,i}, \quad (3)$$

w $\sigma^2_{q'}$- Flow dispersion component of the mixture to the mixer output; k_i -coefficientitsiyent relative uneven flow; the $\sigma_{qí\,i}$ – dyspersiya flow same component at the outlet of the dispenser.

DTo assess the impact of uneven batching and other factors on the quality of a binary mixture randomalnomu state Shterbachek S. and P. Tausk [9] suggest equation:

$$\sigma_R^2 = \frac{x \cdot y}{\frac{q_i}{yq_x(1+\upsilon_x^2) + xq_y(1+\upsilon_y^2)}}, \quad (4)$$

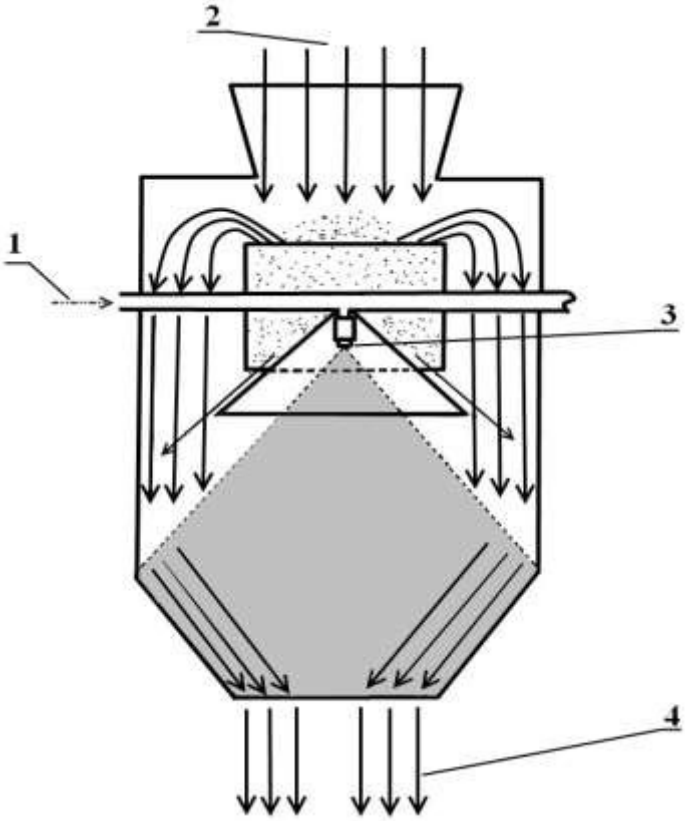
where σ_R^2 – variance control component content in binary mixtures randomalnomu in her condition; x and y - Weight particle components in the mixture (x=1-y); qx and qy - The effective average particle weight components xiy;

υ_x and υ_y – coefficientsiyent particle weight variation related components sumixtur – toarand tests.

e; $qï$

Calcsettlements in these equations have shown [10] that if the ratio of components characteristic seed treatment (y= 0.01; V_y= 10 ... 210%;x= 0.99; V_x= 306%) uniformity of seed treatment strongly depends on the specified process parameters and the smaller, the smaller the amount of drug applied to the seed, the more the average weight of its particles qy and the degree of polydispersity Vy.

Therefore, Basedand from Categoriesandled Data, mozhna ccazhaty, uabout conclusions FP Smakovskoho [7] of the need to obtain a homogenous mixture to ensure the supply of components in uniform flow mixer, and the mixer must create a velocity gradient in the flow of components and stretch each portion of this material by smoothing uneven flow components coming from the dispenser, and is appropriate for the process causing droplets of drugs on the seeds. However, the experience of using chamber dressers, cutting working fluids pesticides do not provide uniform seed treatment chamber protruyution as to not create a level playing each seed contact with the drug, and further complicates reaching goals - uniform seed treatment - the addition of polymer dispersion drops to poly-drug dispersion of seeds. This requires additional mixing auger seed that leads to the rest of his injury. Therefore, given that the increase in the relative proportion $V_y$the workingth liquid over 0.01% in order to improve the uniformity of seed processing it is limited to possible excessive moistening it and cut it increase dispersion leads to an increase in the range of small particle aerosol spray and cause contamination of the air of the working area, this way improving workflow dressers can be considered unpromising.



Ric. 1. Functional diagram dressers G40: 1 - supply of liquid pesticide; 2 - Submission of untreated seeds; 3 - liquid pesticide sprayer; 4 - treated seeds.

DA full implementation of the conclusion of the need for a mixer presence in each sample mixture at its outlet particle components submitted dosing at different times stretching alone is not enough flow.

DFor this it is necessary to ensure a certain period of negative gradient of the velocity of the particles came from the dispenser before, and getting into their flow all the way in his movement and mixing, particle components received in mixer

Sectioniznishe. Workflow application of liquid preparations for seed, it takes into account the requirements for it adequately implemented in dressers friction type [6] and can be used in other types of dressers and modifications.

Notwithstanding the foregoing, the Company Graham (Canada) [11] provides the market as a new development, dressers Chamber of G40

Workingof the body in which the seed is distributed samoply-tion (Fig. 1) with all known deficiencies. Lack bunker adversely affect the uniformity of coulter (screw) In addition, the use of conventional pesticide spray, resulting in large uneven treatment only partially offset

vygruznogo using long screw (Fig. 2).

Ric. 2. Using dressers G40.

Conclusion. MentWleń imperfections workflows seed dressers and reasonable ways to address them - parameters optimization of dosing systems and software engineering activities to maintain a constant level in the hopper seed dressers.

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Andzlozhenы Dzultatы IPsledovanyy procCCA etching with acid semyan Blskohozyaystvennыh forultur predlozhenы methods Elimination drawbacks.

Mordentlyvatel, tank, process, flow, ravnomernost, dispenser.

The results of researches of process of seed treatment of agricultural cultures are expounded and the methods of removal of defects are offered.

Treater, Bunker, method, stream, evenness, metering device.

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TENDENTSIYI DEVELOPMENT UNIT FOR band preplant tillage

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Proanalizovano and classified units for band cultivation by type of accommodation and impact on the ground working bodies.

The unit, strip, tillage, working body.

Resolutionska problem. Andntensyfikatsiya microbiological processes and restore soil fertility is an important task for farmers. In Ukraine, the demand for a new technology of cultivation band (Strip Till), but lack of experience and accurate information complicates the choice of units for production needs of the economy. A wide variety of climatic zones ґruntovo- and diverse agricultural activities creates the conditions for finding ways to reduce the cost

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