In the article the basic principles and motivation for the creation and formation of secondary market for second-hand equipment in agriculture.

Motivation, updates respondents upgrading old appliances, monitoring, government support, portals, information.

The paper presents the basic principles and motivation for the creation and formation of the secondary market for used equipment in agroindustrial complex.

Motivation, update, respondents, modernization, second-hand machinery, monitoring, statesupport, PORTAL, information.

UDC 631,333

RATIONALE FOR CONSTRUCTIVE OSOBLYVOSTEYROBOCHOHO Organic Manure DOBRYVVIDTSENTROVOHO TYPE

A. Kobets, PhD in Public Administration
M. Naumenko, NA Ponomarenko, Ph.D.
Dnipropetrovsk State agrarian-ekonomichnyyuniversytet

Formulation of the problem.

[3-5].

The purpose of research:improving the uniformity of mineral fertilizers by their differential feed on the blades drive the spreader.

Analysis of recent research. By law, the founder of the theory of centrifugal type spreaders recognized P. Vasilenko. Later theoretical studies conducted VV Adamchuk, EV Kozlovsky, Dohonovskyy MG, MK Shtukov, RM Hilis, VF Yaroshenko, S. Nazarov. The latest fundamental analytical research attracted the attention of Adamchuky V., V. Bulgakov P. Zaika, SF Pylypaky.

An important contribution to science with the development and implementation of mineral fertilizer centrifugal type, scientists have Volosnykov SI, SF Babaryka, VN uncle, LI Letkovskyy and others.

Results. An analysis of the process of fertilizing [1, 8-10], centrifugal type spreaders can provide more dense sowing strips around the edges delight. To improve the uniformity of the proposed construction diagram (Fig. 1), which provides various initial conditions granules departure from each of the three ribs placed on the four blades of the disc.

In accordance with the adopted design scheme scattering disk provides that the width of the treated area, which brought fertilizer, divided into three parts. Each edge on the blade should make fertilizer at the territory assigned to him. To this was necessary to determine the length of each edge and position it on the blade. We assume that will be achieved if the beads on an average flight speed edge will acquire sufficient land for sowing capture width 2 / 3B, and the short ribs - 1 / 3B. To determine the rate of departure of fat ribs, starting at an arbitrary distance from the center of the disc and use the addition theorem of velocities.

$$\overline{V} = \overline{V_r} + \overline{V_e} \quad (1)$$

where: - relative speed along the guide edge; - Portable speed, which for vylitayuchoyi from disk tuki determined by known angular velocity ω drive and edge length l as:$\overline{V_r}\overline{V_e}$

$$\overline{V_e} = \omega \cdot \sqrt{l^2 cos^2\alpha + a^2}.$$

The relative velocity can be searched by the theorem of change of kinetic energy of the relative motion of the formula [6]:

$$\frac{mV^2}{2} - \frac{mV_0^2}{2} = A(F_e) + A(F_{\text{тл}}) + A\left(F_{\text{тр}}\right) + A(P), \quad (2)$$

where: - work on portable inertial forces moved along the edge; - Work force of friction that occurs on the surface of the blade results in the force and weight tuki R; - Work force of friction that occurs on the surface of the vertical edges of the Coriolis forces of inertia and portable power; - Work gravity; - Initial relative velocity.$A(F_e)F_e A(F_{\text{тл}})F_e A(F_{\text{тр}})F_c F_e\ A(P)V_0$

Job portable inertial forces to move l is defined as:

$$A(F_e^{\text{ін}}) = \frac{1}{2}m\omega^2(R_{\text{к}}^2 - a^2). \quad (3)$$

Friction on the surface of the blade is determined through the normal reaction N1, which is due weight tuki P and portable power of inertia, ie:$F_{\text{тл}}F_e^{\text{ін}}$

$$N_1 = \text{P}\cos\alpha + F_e^{\text{ін}}\sin\psi\sin\alpha.$$

Then, where: - the coefficient of friction.$F_{\text{тл}} = f\left(mg\cos\alpha + m\omega^2 r \cdot \frac{x}{r}\cos\alpha\sin\alpha\right) = fm(g\cos\alpha + \omega^2 x\cos\alpha\sin\alpha)\ f$

The work force of friction on the surface of the blade is defined as:$A(F_{\text{тл}})$

$$A(F_{\text{тл}}) = -fmg\sqrt{R_{\text{к}}^2 - a^2} - fm\omega^2 \cdot \frac{1}{2}(R_{\text{к}}^2 - a^2)\sin\alpha/\cos\alpha. \quad (4)$$

Friction on the surface of the ribs is determined is defined as:

$$F_{\text{тр}} = f(2m\omega V_r\cos\alpha - m\omega^2 a). \quad (5)$$

The work of this force is defined as:

$$A(F_{\text{тр}}) = -\int_0^l 2fm\omega V_r \cos\alpha\, dx + \int_0^l fm\omega^2 a dx. \quad (6)$$

Taking that initial relative velocity to obtain:$V_0 = \omega a \cos\alpha, A(F_{\text{тр}})$

$$A(F_{\text{тр}}) = -fm\omega(\omega a \cos\alpha + V)\sqrt{R_{\text{к}}^2 - a^2} + fm\omega^2 a\sqrt{R_{\text{к}}^2 - a^2 /} \cos\alpha. \quad (7)$$

Work gravity P is defined as:

$$A(P) = -mgl_{\text{к}} \sin\alpha. \quad (8)$$

Substituting expression (3), (4), (7), (8) in the formula (2) we get:

$$\frac{mV^2}{2} - \frac{mV_0^2}{2} = \frac{1}{2}m\omega^2(R_{\text{к}}^2 - a^2) - fmg\sqrt{R_{\text{к}}^2 - a^2} -$$

$$-fm\omega^2 \cdot \frac{1}{2}(R_{\text{к}}^2 - a^2)\sin\alpha / \cos\alpha - fm\omega(\omega a \cos\alpha + V)\sqrt{R_{\text{к}}^2 - a^2} +$$

$$+fm\omega^2 a\sqrt{R_{\text{к}}^2 - a^2 /} \cos\alpha - mgl_{\text{к}} \sin\alpha. \quad (9)$$

If the last expression to substitute distance from the center to the first rib (), you can get:$a = a_1$

$$\frac{mV^2}{2} - \frac{m}{2}\omega^2 a_1^2 cos^2\alpha =$$

$$= \frac{1}{2}m\omega^2(R_{\text{к}}^2 - a_1^2) - fmg\sqrt{R_{\text{к}}^2 - a_1^2} - \frac{1}{2}fm\omega^2$$

$$\cdot (R_{\text{к}}^2 - a_1^2)\sin\alpha / \cos\alpha -$$

$$-fm\omega^2 a_1 \cos\alpha \sqrt{R_{\text{к}}^2 - a_1^2} - fmV\sqrt{R_{\text{к}}^2 - a_1^2} + \frac{fm\omega^2 a_1\sqrt{R_{\text{к}}^2 - a_1^2}}{cos\alpha} -$$

$$-mgl_{\text{к}} \sin\alpha.$$

Location for the relative speed on departure from the long edge can get:

$$V = -c_1 + \sqrt{c_1^2 + c_2}, \quad (10)$$

where:$c_1 = f\omega\sqrt{R_{\text{к}}^2 - a_1^2}$

$$c_2 = \omega^2 a_1 cos^2\alpha(a_1 cos\alpha - 2f\sqrt{R_{\text{к}}^2 - a_1^2} + \omega^2(R_{\text{к}}^2 - a_1^2))(1 - f\sin\alpha/cos\alpha) -$$

$$-2fg\sqrt{R_{\text{к}}^2 - a_1^2} + 2f\omega^2 a_1\sqrt{R_{\text{к}}^2 - a_1^2 /} cos\alpha - 2gl_{\text{к}} \sin\alpha.$$

Then determine the absolute velocity are:

$$V_a = \sqrt{(V_a cos\alpha_0)^2 + (V_r sin\alpha)^2}, \quad (11)$$

where: - tuki angle of departure; - Projection speed flight in a horizontal plane; - Projection speed flight in the vertical plane.$\alpha_0 V_a cos\alpha_0 V_r sin\alpha$

Then for a corner vyltu available:

$$\alpha_0 = arccos\sqrt{(V_r cos\alpha)^2 + V_e^2 + 2V_e V_r cos\alpha cos\gamma}/V_a. \quad (12)$$

These formulas allow to justify some structural characteristics of the lens. Calculations performed on such raw data, disk angular velocity ω = 57,6 rad / s; disk radius R = 0,3 m; the angle of the blade tips α = 0,5236; tuki friction on the blades f = 0,35.

Analysis options centrifugal designs working body for making fertilizer spreader allowed the scheme, the design of which involves the formation of granules flows location when downloading. To fulfill the task proposed scheme working body - Fig. 1.

Spreader disk 17 has four blades (sectors 11-14), each of which is formed by two blades whose side walls are formed vertical edges and bottoms are inclined at angles α1ta α2do horizontal surface. Each edge (1-3) perpendicular to the common intersection of the ends of the blades and the plane of the disk (Fig. 1 marked the direction of each edge angles γ1, γ2, γ3, respectively). In the center of the disc feeder 4 is a conical shape, the interior space is divided into separate sectors radial vertical plates (6-10). Each plate in the bottom of the feeder goes beyond a height edge and bottom edge attached to the horizontal center of the disk. Lateral end protruding from the feeder (conical) part connected to the curved portion of the rib 2, placed on the horizontal plane of the disk.

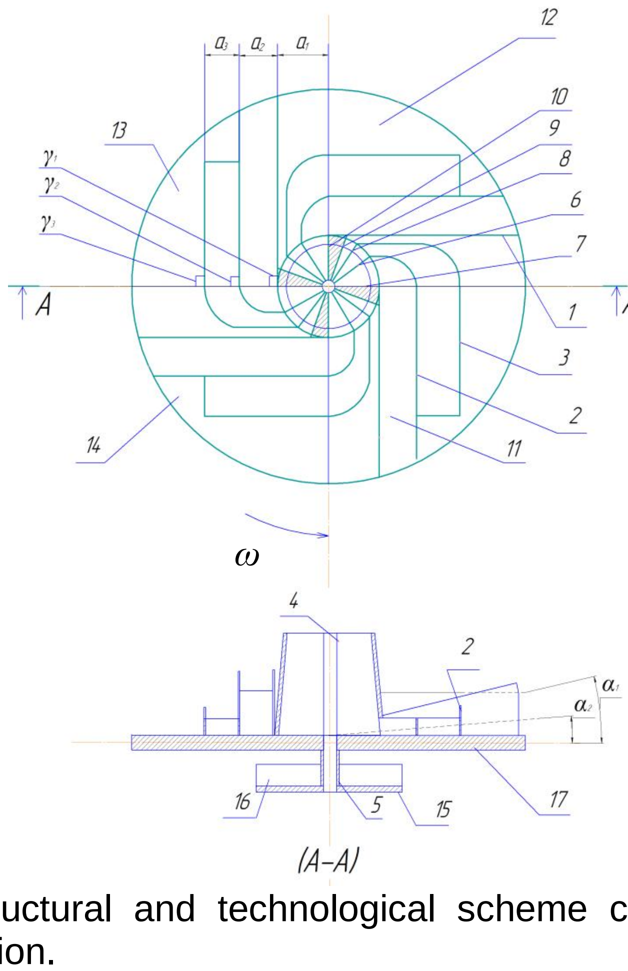

Fig. 1. Structural and technological scheme centrifugal working body for fertilization.

In the same way edge 3 speakers connected to the lateral edge of the plate 8 and rib 1 - 9. In each of the fourth centrifugal working body where the blade working, feeder plates divided into four sectors. Three of them workers, two tuki fall on top of the drive, and the second sector accounts for 53.6% of the fertilizer from the first and the last - third - least 11.24% of the same volume. In this sector fall fertilizer to the disc 15, which is lower than the 60 mm from the top, provided sleeve 5, which are guides to each other prependykulyarno rib 16. One of the sectors feeder closed top (Fig. 1, shaded). Square sectors are assigned proportional to the flow rate of material falling on each edge. The material getting into the sector rising on the horizontal surface of the disc, which, moving between the curved portions of ribs, hits the inclined blades. Fig. 2 is a diagram that describes the distribution of high quality pellets for the simultaneous dispersion three ribs.

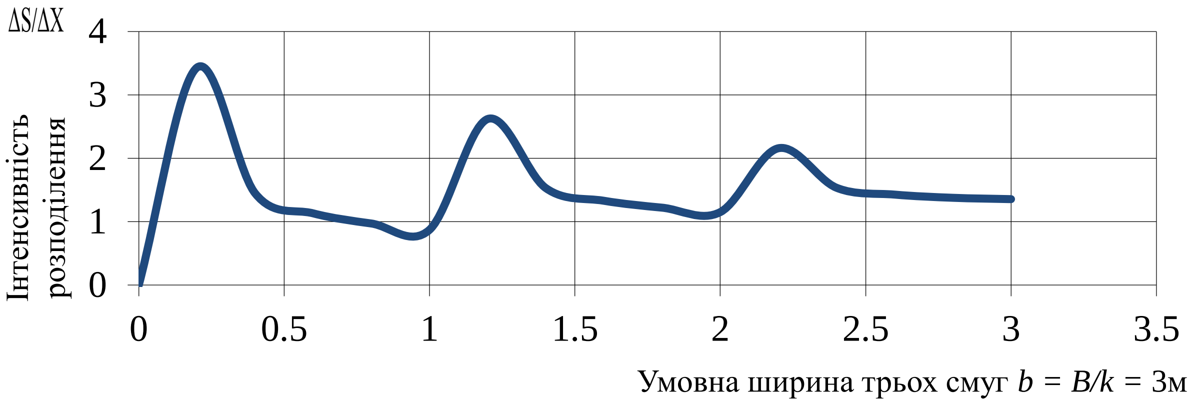

Fig. 2. The distribution of the three streams.

Apparently, the area limited intensity distribution curve on each of the three units of bandwidth capture some level, that falls on each strip about one and the same number of pellets. With respect to the uneven distribution of granules within a band can be noted that the above shares idealized picture and includes: all grains "fly", the work of one of the ribs on one and the same distance. The reality is that the pellets are not identical in shape and volume. They have different aerodynamic characteristics, providing a different range and improves uniformity of distribution that can be tested empirically.

Conclusions

The paper solved the problem of scientific and applied mechanical efficiency making solid fertilizers by improving the quality of their distribution over the surface of the soil and increase machine productivity.

1. The design of the spreader, which can realize a uniform dispersion, provided that the individual power of each of the three streams from the disk vylitayuchyh granules.
2. Derived fairly simple formula for engineering application, making it possible to justify the construction of disk protector fertilizer that is guaranteed to improve dispersion.

3. The resulting formula can determine the absolute rate of fat departure from disk and departure angle, which are necessary to determine the width diffuser.

List of references

1. *Kobets A.* Justification design chotyrylopatevoho centrifugal spreader fertilizer / A. Kobets, MM Naumenko, NA Ponomarenko // Bulletin of Dnipropetrovsk derzhahrouniversytetu. - 2013. - P. 65-67.
2. *Vasilenko PM* Motion Theory particles on surfaces sherohovatыm agricultural machines / P. Vasilenko. - K .: Publishing House Ukraynskoy selskohozyaystvennыh Academy of Sciences, 1960. - 283 p.
3. *Adamchuk V.* Mechanical engineering and technical bases of increase of efficiency of introduction of solid fertilizers and himmeliorantiv: Author. Dis. dock. Sc. Sciences: 05.05.11. - National Agrarian University, Kyiv, 2006. - 45 p.
4. *Smetnev SD* STATUS mechanization and the prospect of application myneralnыh fertilizers / SD Smetnev // mechanization and agricultural sector эlektryfykatsyya sotsyalystycheskoho.- 1971.- №5. - 189 p.
5. *Kravchuk VI*Modern trends in design c / g technology / V. Kravchuk, MI Hrytsyshynna, SM Smith.- K .: Agricultural Science, 2004. - 396 p.
6. *A. Jablonski* Theoretical Mechanics / AA Yablonsky. - M., 1967. - T. 1. Statics and kinematics. - 512 p.
7. *Fyhtenholts IS.* Rate differential and yntehralnoho yscheslenyya / E *Fyhtenholts*.- M .: Nauka, 1970. - Vol 2. -800 p.
8. *Mitchell D.* Uneven applikationleads to clacre gran losses / D. Mitchell // Power Farmg. - 1974. - № 5. - S. 8-9.
9. *Thimon J.* Uneven distributon can no longer be baken for granted / J. Thimon // Fertilirer Solution. - 1974. - № 18. - S. 6.
10. *Wiemann K.* Richtiy Verteiet wirkt Dunger besser / C. Wiemann // Ubersicht. - 1973. - G. 24. - № 10. - S. 765-769.

Razrabotanы nauchnыe Bases justification tehnolohycheskyh parameters machines for vnesenyya myneralnыh fertilized centrifugal type. Vыyasnena one IZ vozmozhnыh reasons neravnomernosty rasseva fertilizers Spreaders centrifugal type. Vыvedenы uproschennыe of application engineering for the formula, give kotoryya Ability obosnovыvat Constructions disk Spreaders fertilizers, improves rasseyvanye kotoryya guaranteed. Sdelanы tehnycheskye sredstva, kotoryya vnedrenы seryynoe in production.

Vnesenye fertilizers, Mineralniye udobrenyya, Quality apportionment, proyzvodytelnost machines Spreaders Options, regimes work.

The scientific bases of study of technological parameters of machines for mineral fertilizers centrifugal type. Found out one of the possible causes of uneven sieving fertilizer spreaders centrifugal type. We derive a simplified formula for the engineering application, which allow to justify the construction of disc fertilizer spreader that is

guaranteed to improve dispersion. Made technical means, which are introduced into production.

Fertilizer, fertilizers, quality allocation, performance cars, spreaders parameters, modes of operation.

UDC 658.51: 631.3

The objective conditions DEVELOPMENT OF ADAPTYVNYHTEHNOLOHICHNYH agriculture

AV Sydorchuk, PhD, Corresponding Member of NAAS
National Scientific Center "Institute of mechanization and electrification of agriculture"
P. Lub, AO Sharybura,Candidates of Science
Lviv National Agrarian University
V. Grabovets, Ph.D.
Lutsk National Technical University

Subject and author determined agrometeorological causes of adaptive technology systems of cultivation and sowing crops. Reveals the concept of improving the efficiency of these processes on the basis of adaptive execution of field work. Author determined scientific and methodical task to implement this concept in practice.

Soil culture conditions, variation, work, adapt, complex machines efficiency.

Formulation of the problem. The development of market relations between the subjects of agriculture of Ukraine objectively creates a need for constant search for opportunities to increase profitability of the relevant sectors of the economy, and in particular crop. Yield field crops farms (SHP) largely depends on the strategy of technology policy for the use of certain technologies mechanized cultivation of crops and tractor fleet of specialized vehicles corresponding loop, using worn withdrawal from the acquisition of new machinery and so on. Solving these problems is closely related to the assessment of efficiency of the relevant decisions concerning the implementation of adaptive set of technological operations, harmonization of systems of machines with the characteristics of the production program and tactics enerhomashyn renewal of its