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THE DEPENDENCY OF THE DISTANCE OF THROWING SOIL TO THE SIZE OF THE WORKING BODY

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Abstract: *It is important for each fruit tree to sprout from the root system and to place it in a fixed amount of liquid organic fertilizers and to remove the trunk. Based on the results of the calculations, it is determined that the start of the technological process with the starting n_0 = 1.2-1.4 m/s and the hole height h = 0.07-0.09 m.*
On the process of doing technological work the aggregation which pours locally liquid organic and mineral fertilizers to a tree root system moves in the direction of a piece of cut claw working part and falls to the furrow that it itself formed [1, 2]. In the first picture it was given the scheme of determining the distance from the bottom to the bottom of the furrow where the working part is thrown off with an initial velocity.

Key Words: *dependency, distance, throwing soil, size, working body.*

1. INTRODUCTION:

The relevance of the problem. During the period of agricultural reform, against the background of deepening market relations and the transition to self-financing, problems of the efficient use of production resources, including land, as well as increasing its fertility, reducing the cost of production, providing the countryside with equipment, and the ecology of the environment are aggravating as never before.

Of course, when cultivating crops, of course, is the tillage. With its help, a set of tasks related to plant nutrition, the effectiveness of the use of fertilizers, the growth and development of crops, and the increase in their productivity is solved. There was a need for alternating tillage with and without turnover. More acute questions arose of improving the physical and agro technical properties of the sowing and root habitat layers of the soil, optimizing moisture supply and humus content, protecting soils from erosion, and reducing energy and labor costs.

2. LITERATURE REVIEW:

A review and critical analysis of existing surface treatment tools is given.

The basis for solving the problems of mechanization of soil cultivation was laid by V.V. Dokuchaev, the founder of agricultural mechanics V.P. Goryachkin and the successors of his ideas A.A. Izmail, V.R. Williams, V.A. Zheligovsky, P.M. Vasilenko and others. A large group of scientists fruitfully worked on the problems of mechanization of tillage: P.N. Burchenko, N.K. Mazitov, M.N. Nagorny, I.M. Panov, L.V. Burnt and others. A significant contribution to the study of the processes of mechanization of tillage, the interaction of working bodies with the soil was made by R.K. Abdrakhmanov, A.P. Gribanovsky, A.F. Zhuk, A.P. Inshakov, A.S. Kirichenko, B.M. Kozyrev, A.D. Kormshchikov, N.V. Krasnoshchekoe, A.S. Kushnarev, V.A. Lavrukhin, A.B. Lurie, N.D. Luchinsky, A.I. Lyubimov, P.I. Makarov, I.I. Maksimov, P.V. Mishin, E.P. Ogryzkov, G.N. Sineokov, A.I. Timofeev, V.V. Trufanov and others.

The experiments (A.I. Puponin, V.Z. Mukhametdinov, 1980) showed that the most effective treatment system for winter wheat on sod-podzolic soil of medium loamy composition was surface treatment, including peeling, pre-sowing milling to a depth of 6 ... 8 cm and sowing seeds with a combined unit.

In our country, the development of surface tillage began in Western Siberia and Northern Kazakhstan simultaneously with the development of soil-protective agriculture. For the first time in the country, its principles are most fully embodied in the soil-protective soil cultivation technology developed at the All-Russian Research Institute of Grain Management under the direction of Academician A.I. Barayev. In this case, plane-cultivators, deep-rippers, rotary harrows, disk cultivators and other implements were used.

Shallow surface tillage creates a greater supply of productive moisture in the meter layer. Mulch of the surface layer provides a more complete accumulation of autumn and winter precipitation, reducing water runoff and soil erosion. This processing method has a lower specific energy consumption, so the tools are more productive by 20 ... 40%

compared to ploskorez-deep-rippers. This is especially valuable for short periods of soil preparation for sowing winter crops after unpaired predecessors.

3. MATERIALSAND METHODS:

Object of study. The object of research is the design and parameters of the soil omelet with combined working bodies.

Subject of study. The subject of the study is the mutual arrangement of disk and milling working bodies, the interaction of the cutter with the soil, taking into account the preliminary processing of the soil.

Methodological, theoretical and empirical basis of the study. Theoretical studies were carried out on the basis of modeling the interaction of working bodies with the soil during the operation of the soil thrower. When solving mathematical dependencies, the finite element method was used. Laboratory studies were performed using planning theory. The experimental results were processed using the MathCad 14 program.

4. RESULTS AND DISCUSSION:

The M gravity center of the claw is thrown away in the angle β in comparison to the horizontal with v_0 primary speed. We construct a trajectory of the motion of M claw gravity center in the $УO_3Z$ stationary coordinate system. In this case the resistance of the air was ignored and we assume that the coordinator of the center of gravity is constant. We accept $O_3У$ arrow is horizontal and O_3Z arrow is directed down vertically. Only the force gravity G effects to the moving point M. The projection of force in the coordinate axes,

$$\begin{cases} F_x = 0 \\ F_z = mg. \end{cases} \quad (1)$$

The differensial equation of the point curve motion in the system of rectangual cordinates

$$\begin{cases} m\dfrac{d^2X}{dt^2} = 0 \\ m\dfrac{d^2Z}{dt^2} = mg. \end{cases} \quad (2)$$

(2) having reduced *m* both sides of the equation and having expressed by a speed

$$\frac{d^2X}{dt^2} = \frac{d\vartheta_x}{dt} = 0, \qquad \frac{d^2Z}{dt^2} = \frac{d\vartheta_z}{dt} = g. \quad (3)$$

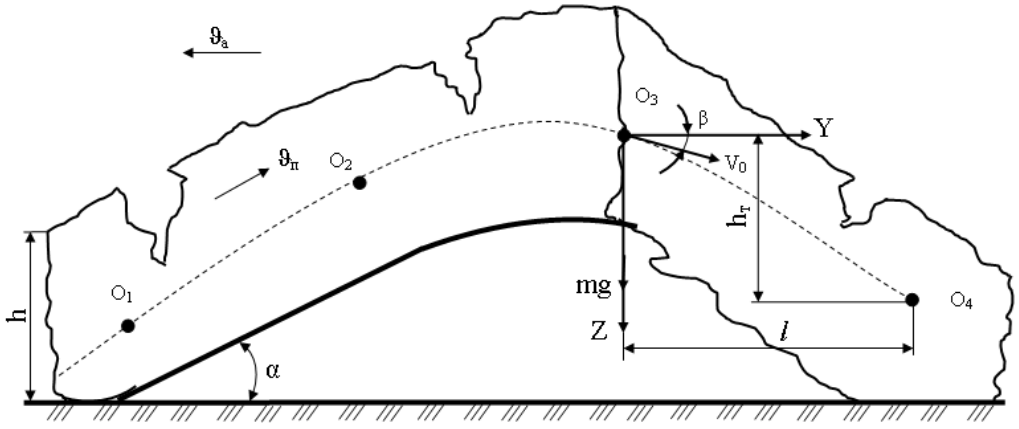

Fig.1. The scheme of determining of the trajectory of a claw gravity center.

Having multiplied *dt* each both sides of the equation and having integrated,

$$\begin{cases} \vartheta_x = C_1 \\ \vartheta_z = gt + C_2. \end{cases} \quad (4)$$

Time is *t=0* the coordinators of *M* point $x=0_3$; $z=0_3$ is, velocities are,

$$\begin{cases} \vartheta_x = \vartheta_0 \cos\beta \\ \vartheta_z = \vartheta_0 \sin\beta. \end{cases}$$

The initial conditions are satisfied,

$$\begin{cases} C_1 = \vartheta_0 \cos\beta \\ C_2 = \vartheta_0 \sin\beta + gt. \end{cases} \quad (5)$$

Putting the initial conditions in place and $\vartheta_x = \frac{dx}{dt};\ \vartheta_z = \frac{dz}{dt}$ is taking into account,

$$\begin{cases} \frac{dx}{dt} = \vartheta_0 \cos\beta \\ \frac{d\vartheta_z}{dt} = \vartheta_0 \sin\beta + gt. \end{cases} \quad (6)$$

By integrating these (6) equations,

$$\begin{cases} x = \vartheta_0 t \cos\beta + C_3 \\ z = \vartheta_0 t \sin\beta + \frac{gt^2}{2} + C_4. \end{cases} \quad (7)$$

t=0 is $C_3=0$ and $C_4=0$

The equation of motion of *M* point,

$$\begin{cases} x = \vartheta_0 t \cos\beta \\ z = \vartheta_0 t \sin\beta + \frac{gt^2}{2}. \end{cases} \quad (8)$$

(8) тенгламаларнинг биринчисини *t* га нисбатан ечиб, It may be noticed *M* point is moving on a $УO_3Z$ flatness. (8) The first of the equations is solved in comparison to *t*

$$t = \frac{x}{\vartheta_0 \cos\beta}. \quad (9)$$

(9) having put to the second,

$$z = xtg\beta + \frac{gx^2}{2\vartheta_0^2 \cos^2\beta}. \quad (10)$$

$z=h_z$; $x=l$ is,

$$h_T = ltg\beta + \frac{gl^2}{2\vartheta_0^2 \cos^2\beta}. \quad (11)$$

Having done math operations, we will have following secondary square equation,

$$gl^2 + \vartheta_0^2 \sin 2\beta l - h_T 2\vartheta_0^2 \cos\beta = 0. \quad (12)$$

(12) the roots of the equation

$$l_{1,2} = \frac{\vartheta_0 \cos\beta\left(\vartheta_0 \sin\beta \pm \sqrt{\sin^2\beta + 2gh_T}\right)}{g} \quad (13)$$

(13) equation *β=30°; v₀=1,2 м/с; h=0,08 м ва g=9,8 м/с²* is *l* =0,20 м was determined.

(13) analysis of the equation, distance of a claw from the workpiece to the workpiece is showing , its primary vo speed depends on throwing away height *h*.

5. CONCLUSION:

The cut claw is moving along the working part, and again landing on the furrow that it itself created shows that it was performed well the technological process. The process primary v_0 =1, 2-1, 4 м/с speed and throwing height h =0,07 - 0,09 м is done in values fully.

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