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## THEORETICAL JUSTIFICATION OF THE DIMENSIONS OF THE PIECES FORMED BY THE VEGETABLE THREADER PUMP STRAIGHTENER

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*Abstract:* This article presents the results of the research on the theoretical justification of the size of the seeds formed by the leveler of the seeder, which takes one seed and sows the seeds of vegetable crops in multiple rows.

*Key words:* Seed, plant, vegetable, machine, texnology, crop, diagram, method, row.

Since there is no special seeder for planting vegetable seeds in our republic, planting of vegetable seeds is carried out with row seeders imported from abroad and various artificial planting machines, which are not adapted to local conditions. These machines cannot sow vegetable seeds in multiple rows and at the same depth. In addition, in the fields prepared for planting, the technological operations of picking and planting cotton are carried out in separate units. This leads to a longer planting period, an increase in the consumption of seeds, labor, and fuel and lubricants.

In the fields prepared for planting at the Agricultural Mechanization Institute, it is possible to determine the main parameters of the seed leveler as a result of the theoretical justification of the size of the fields, which are formed by the leveler of the seeder, which is planted in a row on top of them in a strip method.

Its main dimensions are the depth of the pit, the width of the top, and the angle of deviation of the slopes relative to the horizon.

The height of the boxes used for planting vegetable seeds should be between 10-15 cm, the width of the top part should be at least 35 cm, and the top part of the box should be leveled

Considering that the walking depths of the pushers are the same, we get the following from the diagram in Fig. 1

$$S_1 = S_2; \quad (1)$$

$$S_3 = S_1 + S_2 = 2S_1; \quad (2)$$

- the surface of the cross-section of the piled soil.

Assuming that the accepted distance between the piles, the angles of tilting and spilling of the soil and the height of the pile are given, we get the following from Figure 1

$$S_1 = \frac{1}{2} h_0^2 \operatorname{ctg} \varphi_{0\delta}; \quad (3)$$

$$b_1 = b - 2h_0 \operatorname{ctg} \varphi_{0\delta}; \quad (4)$$

$$b_2 = b - 2h_0 \operatorname{ctg} \varphi_{0\delta} - 2(h_2 - h_0) \operatorname{ctg} \varphi_H; \quad (5)$$

$$S_3 = \frac{(b_1 + b_2)(h_2 - h_0)}{2}. \quad (6)$$

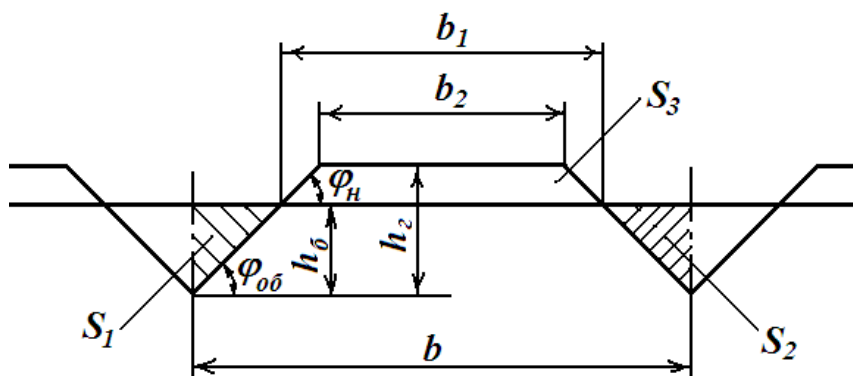


Figure 1. Geometric dimensions of the push

where

$h_b$  is the walking depth of the pusher;

$h_g$  is the height of the pile;

$b_1$  - the width of the upper (top) part of the breast;

$b$  the distance between the edges of the bush;

$b_2$  - the width of the field at the level of the field surface, m.

The slope angle of the soil is not significantly different from the slope angle and they are considered equal to each other, i.e. Taking this into account, the expression (5) will have the following form

$$b_2 = b - 2h_z \operatorname{ctg} \varphi. \quad (7)$$

Taking this and expression (4) into account, expression (6) takes the following form

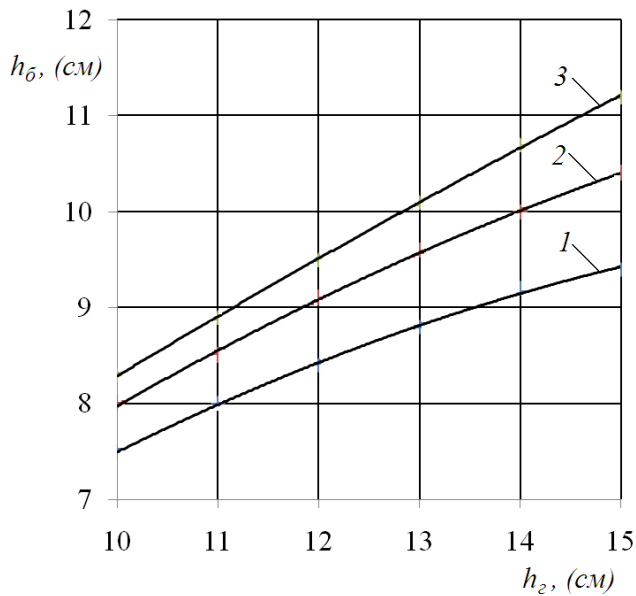
$$S_3 = b(h_z - h_o) - (h_z^2 - h_o^2) \operatorname{ctg} \varphi. \quad (8)$$

Taking expressions (2) and (3) into account, we get the following from expression (8).

$$h_o = \frac{h_z(b - h_z \operatorname{ctg} \varphi)}{b}. \quad (9)$$

According to this expression, in Figure 2, a graph of the change of the walking depth of the pusher as a function of the height of the pusher at different values of  $h_o$  is constructed.

Figure 2. Dependence of the walking depth of the pusher on the height of the pusher at different values of  $\varphi$



1-  $\varphi = 30^\circ$ ; 2-  $\varphi = 35^\circ$ ; 3-  $\varphi = 40^\circ$

Figure-2

As can be seen from the graphs presented in Figure 2, the walking depth of the picker increased with the increase in the height and angle of the pick.

So, the results of calculations of the depth of the plow, the width of the top part, the angle of deviation of the slopes with respect to the horizon = 70 cm, =  $38^\circ$  and  $h_0 = 10-15$  cm are accepted, and the walking depth of the plow should be in the range of 8.17-10.88 cm.

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