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Improvement of Technology of Seeding and Sowing Section

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ABSTRACT: The article describes the theoretical improvements in planting technology and soil movement, as well as the size of the planting section.

KEYWORDS: Technical crops, sowing seeds, seeding technology, seeders, dampers, shovels, seeding depth, coil, improved coating, intensity coefficient, soil pressure, seeding background

I. INTRODUCTION

Increasing the yield of raw cotton depends on the quality of the seeds and the method of sowing. To select the optimal seeding method, the following tasks are required:
1. Ensuring the required seeding rate.
2. Ensuring a uniform arrangement of seeds in the field.
3. Providing the necessary depth of incorporation given agricultural requirements.
Sowing method means ordering the seeds evenly in the field. According to agricultural requirements, the seeds are mainly sown by the seeder in a row, strip, nesting and dotted ways. Distinguish these methods from each other located in the same row is the distance between the seeds and the row spacing are different.

II. LITERATURE SURVEY

Nesting, especially square-nesting and dotted seeding is progressive. With dashed seeding, the row spacing is 45 ... 140 cm, the standing between the seeds is 5 .... 20 cm. In this method of sowing, the cost of sowing material and manual labor is reduced. Cotton productivity will increase. Despite this, due to the insufficient design of cotton seeders, they were not widely used in farms. For planting cotton seeds into the soil in modern cotton seeders, a sowing section is used that performs various technological operations.The sowing section consists of a crawler opener 1 (Fig. 1, a) with a compactor 2 and a runner 3, shorting 4, press roller 5 and reel 6

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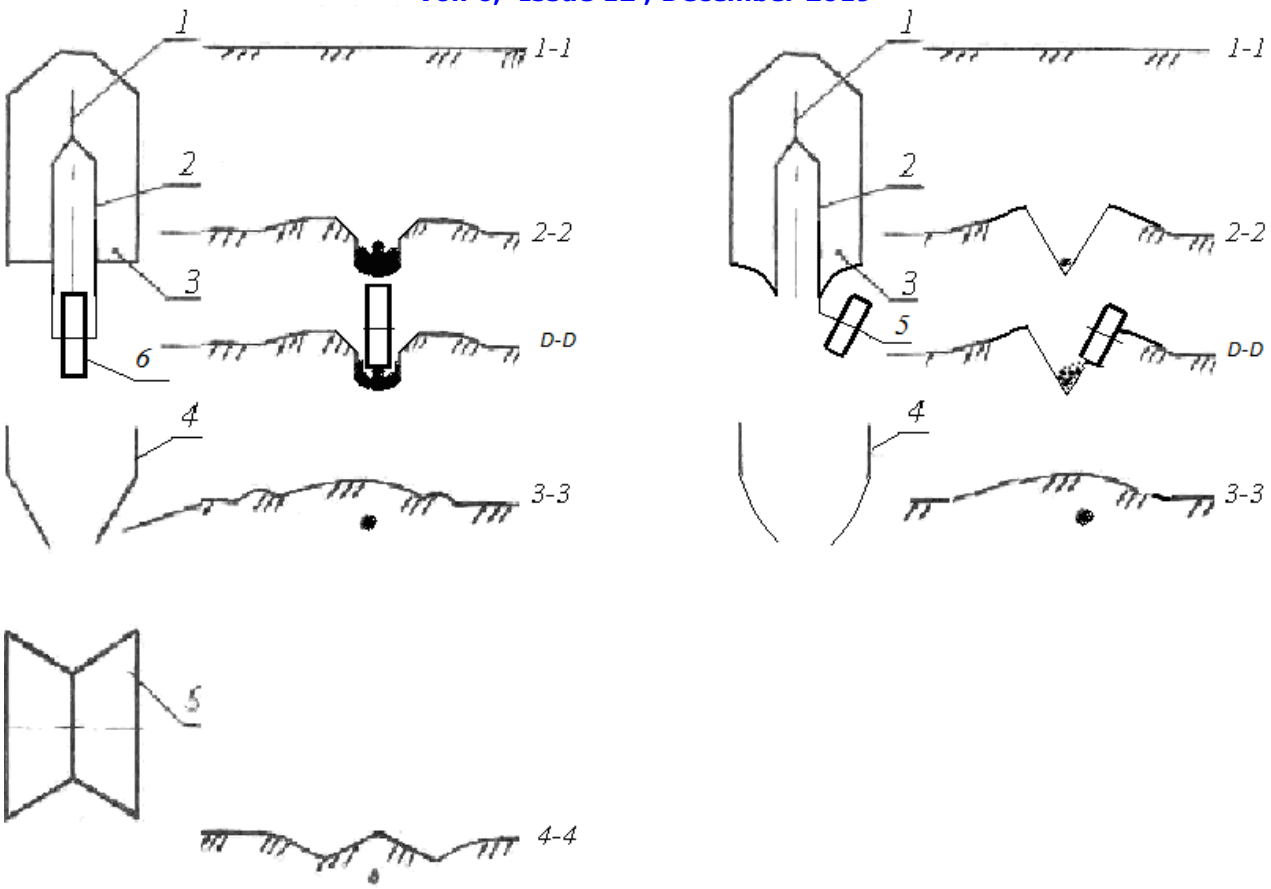

a) b)

Fig. 1 Technological schemes for planting cotton seeds

*a)*existing, 1-opener; 2-sealant; 3-snake; 4-zagortach; 5-pack.; 6-roll.	*b) Advanced 1-opener; 2-sealant; 3-snake; 4-zagortach; 5-reel.*

III. MATERIAL AND METHODS

When moving in the soil, the coulter cuts the soil with a knife (1-1) and pushes it open with cheeks diverging at an angle, opening the groove for seeds (2-2). At the same time, the bottom is formed and compacted with its wedge-shaped compactor in order to create a capillary inflow of moisture to the seeds from the underlying soil layers. An installed (perpendicular to the cheek) on the coulter runner (straight) limits the depth of the coulter, which contributes to a uniform depth of seed placement. Following the coulter, zagortachki in the form of obliquely set shoulder blades move the soil from the sides of the groove to the middle, closing the groove (3-3). The packer roller, consisting of two truncated cones folded by the upper bases, forms a soil roller above the planted seeds, giving it a convex shape (4-4) and at the same time compacts the soil above the seeds [1]. In seeders of the STX-4 type behind the opener, a skimmer with a hollow rubber rim is pressed in, pushing the seeds provides an increase in seed germination (by 35%) of the blogging along with better contact of the seeds with the soil [2]. The disadvantages of this technology is that after opening the groove for seeds due to shedding of the upper part of the groove wall, the depth of seed placement changes. In addition, an angle of 900 is made between the walls of the cheek and the runner. Due to moisture, some parts of the soil are covered in the lower part of the runner. As a result, the runner with the coulter rises to a certain height, and this factor negatively affects the embedment depth. A packer roller consisting of two truncated cones does not sufficiently compact the soil above the seeds. During operation, the soil is unloading the soil and sticking to it. As a result, the plant is not thick enough. Analysis of the design of a foreign seeder, for example:

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Tru-vi (Hatzenbichler)

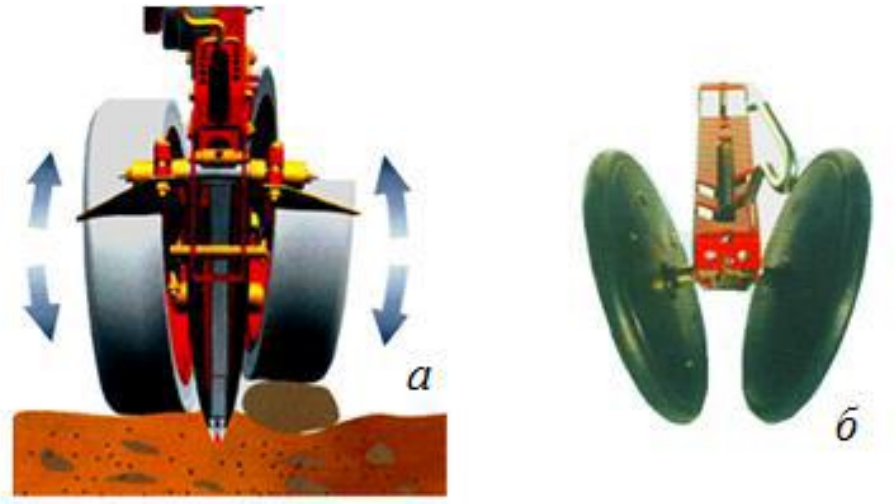

Fig. 2. Close-up working bodies

a– rubberized double disc coulter	*b* – V-shaped roller rollers

Sowing sections consists of furrow-forming and furrow-closing organs.

IV. SIMULATION &RESULTS

"JohnDeere" proposed the design of the closing working bodies, which was called "Tru-vi" [3]. The design includes a double disc opener equipped with rubberize drollers located on both sides. The coulter forms a wedge-shaped (V-shaped) furrow in the soil with compacted walls, between which the falling seed is pinched. To eliminate the above drawbacks and the courteous designs of foreign countries, we propose a new technology for sowing cotton seeds that is carried out with improved sowing sections. The improved section consists of a skid-shaped opener 1 (Fig. 1, b) with a sealant (V-shapedtype) 2 and a boat-typeskid 3 of curved shape, shorting (special surfaces) 4. A “boat”-type skid mounted on the coulter, limiting the depth of the coulter, at the same time compacts the upper parts of the groove wall, which limits the penetration of the groove into the soil before the seeds are planted (2-2). A recessis placed behind the coulter, pressing in on the side of the groove into severallayersat the same time compacts the soil (D-D)

V. EXPERIMENTAL RESULTS

After embedding, zagotachki in the form of obliquely set shoulder blades are shifted from the sides of the soil groove to the middle, closing the groove, forming a soil roller above the planted seeds, giving it a loose convex shape (3-3).

To determine the parameters of the roller, we use the need to ensure that the soil lump is jammed between the rim of the roller and the bottom of the track (Fig. 3).

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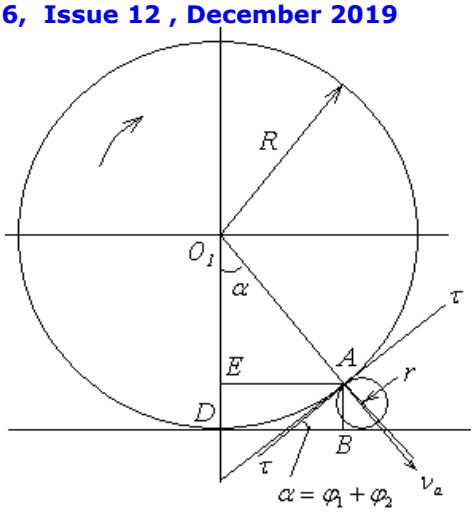

Fig. 3. Determination of the radius of the roller

VI.CONCLUSION

The jamming condition is $\alpha \le (\varphi_1 + \varphi_2)$, where α - the angle between the tangent to the rim of the roller and the horizon; φ_1 and φ_2 - angles of friction, respectively, of soil on steel and soil on soil. Based on the data in Fig. 3 we can write:

$$AB = r\left[1 + \cos(\varphi_1 + \varphi_2)\right] = 2r\cos^2\left(\frac{\varphi_1 + \varphi_2}{2}\right)$$

$$AB = ED = R\left[1 - \cos(\varphi_1 + \varphi_2)\right] = 2R\sin^2\left(\frac{\varphi_1 + \varphi_2}{2}\right)$$

Where, is it easy to obtain get, $R \ge rctg^2\left(\frac{\varphi_1 + \varphi_2}{2}\right)$.

Taking the largest lump on a seed background r=*8 см*, $\varphi_1 = 30^0$ (dry soil) and $\varphi_2 = 60^0$ [2], find the radius and diameter, rink $R \ge 80$ or $D \ge 160$ *мм*.

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