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New Technology of Soil Preparation for Planting Police Crops

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Abstract: The article describes the new technology of soil cultivation and its preparation, which provides for the joint implementation of such technological processes as tillage with and without a tiller, loosening the sub-layer along the seeding line and local application of fertilizers, preparing the soil for planting and opening an irrigation ditch. The structure, working principle and field test results of the combined unit implementing the new technology are presented.

Keywords: Poly crops, soil, housing, softener, fertilizer, irrigation ditch, planting, reel, yield, pulse, harrowing, drawing.

Introduction. One of the main issues of the economic sectors of our independent republic is to fully satisfy the population's demand for food products, including food products. One of the most urgent issues facing agriculture is to increase agricultural production and thereby further improve people's well-being. The weather and soil conditions of our country are very favorable for obtaining abundant harvests from polys crops. Therefore, it is appropriate to grow polize products on a large scale not only to satisfy the needs of the population of our republic, but also to sell them to other countries.

It is a very important issue to increase the productivity with the wide introduction of intensive technologies in policing, efficient use of land and low cost [1,2]. In the future, increasing the amount of products will be achieved only at the expense of increasing productivity.

In agriculture, the guarantee of a high yield from field crops is good tillage [3,4]. In order to achieve success in the cultivation of polys products, it is necessary to cultivate the land in a timely manner, which, in turn, depends on the methods of cultivation and the level of perfection of the machines. In recent years, the power of agricultural tractors and, in turn, their potential capabilities have increased significantly. But the methods of land cultivation remain largely the same. The traditional technology of preparing the land for planting includes such processes as fertilizing, plowing, smoothing out unevenness caused by plowing, drawing, harrowing, grinding and seeding (irrigation) extraction, and these processes are carried out separately - with the help of separate machines. It is recommended to plant polys crops only after these works are done.

In addition, the repeated passage of machines over the cultivated land leads to over-densification of the land, increased energy consumption and, ultimately, a decrease in productivity. Therefore, it is an urgent issue to develop a new technology of soil preparation and a combined aggregate that implements it, as well as its introduction into production.

Materials and methods. A new technology of tillage and preparation of soil for planting polys crops and a combined aggregate that implements this technology is the object of research. The study of combined aggregate technological work processes was carried out according to literature sources, patents and the results of testing the developed machine in laboratory and field conditions.

Performance indicators of the combined unit Tst 63.02.2001 «Испытания сельскохозяйственной техники. Машины и орудия для глубокой обработки почвы. Программа и методы испытаний» and Tst 63.02.2001 «Испытания сельскохозяйственной техники. Машины и орудия для поверхностной обработки почвы. Программа и методы испытаний» was determined.

A new technology of soil preparation for planting rice crops and a combined unit that implements it was developed at the Karshi Institute of Engineering and Economics [5-12]. This technology incorporates the following technological processes: imperceptibly moving the center of gravity to the side of the overturning side, turning the layer to the left and right, smoothing the surface of the soil from the right and left sides of the overturning layer, smoothing the bottom of the layer by slicing along the line of sowing seeds, spreading fertilizer in two layers locally giving, preparing the soil for planting seeds along the planting line and opening the irrigation ditch [8].

The proposed technology is implemented using a combined unit. The combined unit consists of left- and right-turning screw casings installed along the axis of symmetry, screw soil diverters (slugs), side softeners, deep softeners mounted on the handle of the casings, a fertilizer spreading device equipped with flaps, a softener-leveler roller, a ditch opener and support wheels. The reel is hinged to the frame.

The combined unit works as intended. First, the right- and left-turning hulls with zaplujniks turn the soil clods relative to each other at a depth of 20-25 cm to form the initial irrigation ditch, and with softeners, the right and left sides of the initially formed irrigation ditch, that is, the soil, are softened to a depth of 10-15 cm. In this case, the depth of softening should be sufficient to completely kill the weeds.

At the same time as the plows are turned over, the plowed soil is softened to a depth of 10-15 cm with deep softeners and local fertilizer is applied to both rows. A plate roller placed after the casings crushes the lumps, compacts the soil and forms a finely ground layer on its surface. In this way, during one pass of the combined aggregate through the field, the soil is softened and surfaced and made ready for planting.

Results and discussion. Field tests of the combined unit were conducted in gray soil fields of farms located in the territory of Oqrabot MMTP of Kamashi district of Kashkadarya region. The terrain is flat and consists of imperceptible ups and downs. Soil moisture and hardness is 10.2 in 0...10, 10...20, 20...30, 30...40 cm layers; 12.1; 13.7 % and 1.82; 2.51; It was 3.12, 4.23 MPa. The density of plant residues in the field is 420 units/m2. The height of the chest is 12 cm.

The combined unit was assembled with an Orion-630S tractor. The technical description of the combined unit and the main performance indicators are presented in Table 1.

The construction scheme of the combined unit has a number of principle advantages compared to the machines used in traditional technologies, in which the land is not completely plowed, only the deep plowing is done under the seed rows, and the land is prepared for planting, planting (irrigation) ditches are formed, and the paddy part is treated on the surface. The smooth movement of the unit increases its efficiency.

Table 1. Technical description and main performance indicators of the combined unit

The name of the indicators and the unit of measurement	Value
Aggregating tractor, kN	30;40
Machine type	Suspension
Coverage width, m	2,3-3,6
Working speed, km/h	5-8
Productivity, ha/h	1,1-1,6
Depth of irrigation ditches, cm	20-25
The width of the upper part of the irrigation ditch, cm	60-65

Burial completeness of plant residues in the planting zone,%	92
Aggregate composition of the soil in the planting zone, % greater than 100 mm 100-50 mm less than 50 mm	 6,40 12,24 81,36
Machine mass, kg	920

The results of the test showed that the combined aggregate covered 92 percent of the plant residues in the planting area. The amount of fractions smaller than 50 mm was 81.36 percent. The formation of the upper part of the irrigation ditch with a width of 60-65 cm makes it possible to plant the seeds of polys crops in the upper part of the ditch in two rows, with a distance of 60, 70 or 90 cm between the main rows. As can be seen from these data, the combined unit performed the technological process reliably.

Conclusion. The new technology of soil preparation for planting polys crops and the use of a combined aggregate that implements it ensures high-quality soil preparation for planting and planting of polys crops in short periods, protects the soil from erosion and over-densification, reduces the cost of labor and money, the efficiency of using mineral fertilizers and the productivity of polys crops 18. ..increases by 21 percent.

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