



SELECTION OF THE COMBINED UNIT'S WORKING BODY FOR THE INLINE SOIL SOFTENER

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Annotation

In the article, all technological methods of leading and pre-sowing cultivation of land without land turnover and consecutively are taken into consideration in order to prevent compaction of the earth and destruction of the system, excessive compaction and destruction of the system, to reduce labor costs, energy costs, and fuel costs. The note describes the process and how it moves across the field one step at a time; machines and aggregates that create the processes are developed and widely used.

Keywords: combined unit, flat-cutting knives, spiral trowel, rotary softener, subtropical desert border, soil physical and mechanical properties. Our republic has recently worked to enhance the system of planting crops, boost the productivity of using earth and water resources, sustainably enrich the local market, and increase product supplies based on the soil and climatic zones, processing businesses, and attention is paid to modern, high-quality transmission.

We are aware that one of the energy-intensive steps in agricultural production is the main and pre-sowing cultivation of the land, which accounts for 40 to 50 percent of all the energy used to grow household crops in our Republic. Based on this, cutting energy costs for direct and indirect land cultivation enables you to produce more food with a smaller quantity of gasoline and lubricant, with reduced labor and other expenditures, and with equipment that is more durable and has better operating parts. By doing this, the price of the manufactured good can be brought down. Utilizing combined units is one of the most effective methodological approaches for ensuring energy and resource savings when cultivating the land in the conditions of our republic. A variety of technological processes, like preparing the ground for planting and planting, are carried out simultaneously with the aid of combined instruments. This improves the unit's quality and output while lowering its negative influence on the base. Additionally, moisture is saved, fuel expenses are decreased, and other expenditures associated with farming the soil are decreased [1].



Karakalpakstan is situated in a region of subtropical deserts. Here, flat, gray-brown, alluvial, alluvial, alluvial, and marsh alluvial areas with saline bases are common [2].

The cotton-growing districts of Karakalpakstan are among the most challenging locations in the Republic of Uzbekistan, as the aforementioned information shows. According to scientific research, combined aggregates have the capacity to do a number of tasks with a straight pass in a single pass. It is necessary to create and widely implement machines and units that carry out all technological operations in one pass in order to avoid excessive compaction and damage of the structure, as well as to reduce the consumption of labor, energy, and fuel.

The field agrobbackground and the physical and mechanical properties of the earth are crucial factors in establishing the features of these units. This information was used to determine the physical and mechanical characteristics of the soil in the fields that were plowed with a rotary plow in the fall, smoothed, irrigated to remove salts in the winter and spring, and when the soil ripened (when the earth rose to the surface). State Standard 20915-11 describes the physical and mechanical properties of soil. "Agricultural equipment testing. It was examined at based on how the test criteria were determined [3]. examined the earth's density, hardness, and dampness.

In Table 1, the results of the trials are shown in terms of soil moisture, density, and hardness

Table 1 Before processing, the field soil's humidity content, density and hardness

Soil layer, sm	soil		
	humidity %	density, gr/sm ³	hardness , MPa
0-5	16,8	1,19	0,56
5-10	17,7	1,23	0,68
10-15	19,1	1,29	0,78
15-20	19,8	1,34	1,11

As you can see from the data in Table. 1, humidity, density and hardness increased with the depth of the soil category before planting. Ground moisture in layers 0-5, 5-10, 10-15 and 15-20 cm 16, 8 in harmonic type; 17, 7; 19.1 and 19.8%, density 1.19; 1, 23; 1.29 and 1.34g/cm³, hardness 0.56; 0.68; Erects 0.78 and 1.11 MPa

The indicators listed below are in accordance with UzDST 3412:2019, "Testing Agricultural Machinery." equipment and tools for tillage. Program and testing techniques UzDST 3193:2017, "Testing Agricultural Machinery," and [4]. The technique for evaluating a machine's energy consumption has been chosen. [5].

Mutual comparative tests of the personnel bodies shown in Figure 1 were conducted in order to determine the best type of personnel bodies to employ in the processing of the combined unit based on the analysis of the literature and studies conducted:

Option I- flat-cutting knives;

Option II - flat cutting blades + spiral spatula;

Option III - flat cutting blades + rotary softening.

A special laboratory and field setup was created and readied to undertake comparison experiments. It is constructed from a piece of the KHU-4 universal cotton gin and a frame to



which hanging mechanisms and support rings have been added. Experiments were conducted using the parts of the aforementioned functioning bodies.

Comparative studies were conducted in the experimental farm of the Karakalpak Agricultural Research Institute when preparing the soil for sowing seeds in a field that was plowed with a rotary plow in the autumn, leveled, and washed with saline solutions during the winter and spring.

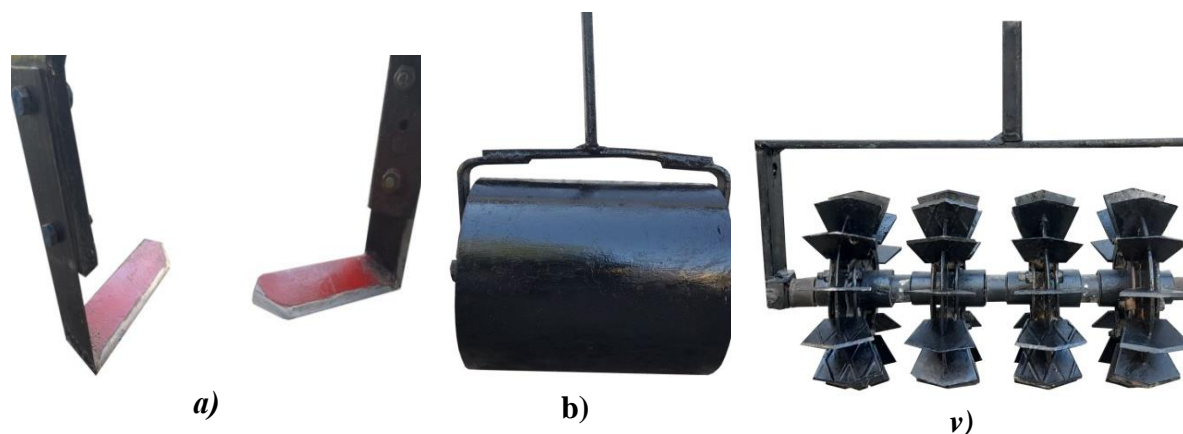


Figure 1. Various bodies at work

Right and left straight cutting knives, a coil trowel, and a V-rotation softener are all in position A.

The functioning parts of the combined unit must treat the soil in various ways in order to get it ready for seed planting.

The following metrics are used to compare the working bodies of various options:

- the degree of soil processing's crushing quality; - the density of the soil, in g/cm^3 ; - the working bodies' resistance to gravity, in kN.

All technological processes in land leading and pre-sowing cultivating without land turnover and near to the ways to minimize land cultivation with a combined unit, that is, to avoid its overconsolidation and destruction of the system, as well as to lower the expenses of labor, energy, and fuel Development and comprehensive implementation of time-passing devices and units are regarded as practical jobs.

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