STABILIZATION OF THE TILLAGE DEPTH OF SOIL-CULTIVATING WORKING BODIES"

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Abstract

We know that research is being conducted in the world aimed at developing technologies that ensure the quality of soil cultivation processes and technical means for i ix implementation , increasing ix efficiency. Increasing the efficiency of agricultural machinery in Russia in this direction is one of the urgent tasks that require solutions before the agricultural sector. mechanical engineering. In particular, the insufficient unreliability of the working bodies of the saz increases in the increase in the costs of their operation and maintenance, agrotechnical and current indicators of soil-cultivating machines. In the state order, an analysis was conducted to improve the quality and productivity of agricultural crops associated with the irregularity of the depth of soil processing by the working bodies of agricultural machines.

Key words: frame, body, base wheel, suspension, support wheel, soil, plowshare, wheelbarrow, stand.

Enter. It is known that research and development work is being carried out in the world aimed at developing technologies that ensure high-quality implementation of soil cultivation processes and technical means that implement them, and increasing their efficiency. In this direction, increasing the resource of working bodies of agricultural machines is one of the urgent tasks that require solutions in agricultural engineering. In particular, insufficient reliability of working bodies negatively affects the increase in costs for their operation and repair, agrotechnical and energy indicators of soil-cultivating machines. [1]

Extensive measures are being taken to conserve resources, reduce labor and energy costs in agricultural production in our republic, grow agricultural crops using advanced technologies, produce high-performance machines used in their implementation, and increase the efficiency of agricultural production using existing ones. [1]

Research method. In the conditions of Uzbekistan, land cultivation consists of agrotechnical measures such as periodic deep loosening, plowing, leveling of unevenness caused by plowing, harrowing, chiselling, leveling and grinding of the field surface, and the rest are carried out in early spring and during the daytime. the period of soil cultivation before planting.

It is known that the optimal method of primary soil cultivation should increase its productivity, ensure a consistently high yield of agricultural crops with low labor costs and

capital investments. [2]

Almost 40-45% of all energy spent on growing cotton, grain and other agricultural crops is spent on primary tillage. [3] At the same time, primary tillage occupies a key place among agricultural measures aimed at obtaining high yields of agricultural crops. Only with high-quality tillage at optimal times are favorable conditions created for uniform sowing and harvesting of seeds and obtaining a high yield at low cost. [4]

A number of scientists have conducted research on improving the design of working bodies of tillage machines and increasing their service life. [5] Based on their research, various designs of working bodies have been created and existing ones have been improved, as a result of which the performance and service life of quickly wearing working bodies have increased significantly. However, most of these studies are not focused on the irrigated lands of Central Asia. [6]

As a result of fundamental reforms and deep structural changes in the agriculture of our republic, significant work is being carried out to create promising agricultural technologies for obtaining abundant and high-quality harvests of agricultural crops, their modernization, saving resources, and introducing technical means that preserve soil fertility and increase productivity. [7]

Blednykh, B.V. Mushkatina, P.N. abroad on the creation and use of machines used in soil cultivation, the substantiation of their rational parameters and increasing productivity, as well as ensuring stable operation of plows in terms of plowing depth. Burchenko, M.L. Gusyatsky, E.V. Dolmatov, L.Kh. Kim, A.B. Lyubimov, P.E. Makarov, I.F. [8]

In this direction, research work in our republic was carried out by A. Tokhtakoziev, F.M. Mamatov, V. N. Zhidovinov, K. Isaev, N. Murodov, Kh. A. Ravshanov, A. Khamrakulov, I. G. Khaidarov, M. T. Mansurov, B. Sh. Gaibullaev, R. Makhmudov, A. Rasulzhanov and other scientists. [9]

The results of these studies are used to a certain extent in practice. However, they have not sufficiently studied the issues of lowering the working bodies to a given depth and reducing the negative impact of the variability of the physical and mechanical properties of the soil and the speed of movement of the units on stable movement at this depth.

The depth of cultivation of the working bodies of agricultural machines and its stability are the main indicators of the productivity of all soil-cultivating machines. If the depth of soil cultivation is at the required level and its stability is ensured, i.e. uniform, uniform development and ripening of crops and high productivity are achieved, otherwise crops develop and ripen unevenly, and productivity decreases. Therefore, stabilization of the depth of cultivation of working bodies is an urgent problem. Until now, in our republic and in foreign countries, issues of ensuring the immersion of working bodies to a given depth and ensuring their stable movement at this depth, as well as reducing the negative impact of the physical and mechanical properties of the soil are being resolved. and the speed of the combined movement according to these indicators have not been sufficiently studied. [10] It is known that for the soil and climatic conditions of our Republic it is desirable to ensure the working bodies of agricultural machines and their stability, to reduce the negative impact of the physical and mechanical properties of the soil and the speed of movement of units on their .

The yield of agricultural crops can be increased by basing the parameters and materials of the working bodies of agricultural machines on the physical and mechanical properties of the soil and optimizing the immersion of the working bodies into the soil. As a result, the

production of working bodies of agricultural machines will begin taking into account the parameters and materials of the working bodies, as well as the physical and mechanical properties of the soil.

One of the most important requirements in soil cultivation is to ensure that the working elements are immersed to a given depth. We can see this in the example of a fork.

The further the rotation center is, the further the plug must go to be completely immersed, the less it is under-plowed. If the column height is chosen correctly, the plug will go down to the full depth of *2...3 m.*

The adjustment of the fork begins with its installation at the designated plowing depth. The tractor, installed on the fork, drives in reverse along a level asphalt area and stops at the edge of a specially prepared concrete pit. The recommended depth is $h_{chuk} = a_{max} + 10\ cm$. A support is installed at the base of the support wheel at a height equal to $h_T = h_{chuk} + 1\ cm$, *and* the fork is lowered until the support wheel fully rests on it. Using the support wheel mechanism, the plough frame is lowered until the body closest to it is lowered to a specified depth *a below the level of the concrete floor* . The length of the central drawbar is changed, the plough frame is positioned horizontally in the longitudinal plane, the length of the forks is changed and brought to a horizontal position in the transverse plane. [11]

If the plough is combined with a wheeled tractor, then often one of its wheels moves along the bottom of the plough, i.e. the tractor tilts towards the plough in a horizontal plane. But the fork frame must be brought to a horizontal position using clamps. This situation is monitored directly on site.

Soil moisture, hardness and density are its main physical and mechanical properties and have a great influence on the quality, productivity and energy consumption of the plow during primary soil cultivation.

Soil moisture affects the amount of energy spent on its processing and the quality of the work performed. If the moisture is high, the soil sticks to the working parts, energy costs increase, and it is not fertilized enough. In addition, as a result of soil accumulation in front of the working parts, the machine's work process is disrupted. At low moisture, large clods increase during plowing, and the traction resistance of the unit increases.

The soil moisture content in irrigated sierozems is considered to be 16-18%, in meadow-marsh soils - 18-20%, the plowed soil is well compacted and shows low resistance. The physical and mechanical properties of the soil in the fields have changed within wide limits.[12] This can be explained by the difference in the mechanical and chemical composition of the soil, uneven irrigation, and the presence of various irregularities on the field surface. That is, during the plowing of fields free from wheat, cotton and repeated sowing, the soil moisture content in the 0-10 cm layer is 6.91-16.81%, the hardness is 0.73-1.86 MPa, the density is 0.97-1.41 g / cm3. The soil moisture content in the 10-20 cm layer is 8.71-17.79%, hardness. 1.27-2.86 MPa and density 1.09-1.52 g/cm3 · soil moisture in the 20-30 cm layer 10.49-19.37%, hardness 2.11-3.95 MPa and density 1.17-1.65 g/cm3 · soil moisture in the 30-40 cm layer 11.73-22.49%, hardness fluctuates within 2.35-4.63 MPa, and density 1.21-1.75 g/cm3 · These dimensions significantly affect the agrotechnical performance of tillage machines.[12]

These changes have a negative impact on the driving depth and its stability, which requires urgent scientific research in this regard.

Uniformity of the driving depth is an important indicator of the fork's performance. When the level of specified requirements is reached, the same conditions for plant development, harvesting and ripening are created throughout the field at the same time. In addition, adjusting the depth of processing of other working bodies allows for a sharp increase in productivity.

Conclusions.

1. The depth of processing of working bodies of agricultural machines and its stability are the main indicators of the productivity of all soil-cultivating machines. If the depth of soil processing is at the required level and its stability is ensured, i.e. uniform, uniform development and ripening of crops and high productivity are achieved, otherwise crops develop and ripen unevenly, productivity decreases. Therefore, stabilization of the depth of processing of these bodies is an urgent task.

2. Until now, in our republic and in foreign countries, issues of ensuring the immersion of bodies to a given depth and ensuring their stable movement at this depth, reducing the negative impact of the physical and mechanical properties of the soil and ground are being resolved. The speed of the combined movement according to these indicators has not been sufficiently studied.

3. It is known that for the soil and climatic conditions of our Republic it is desirable to ensure the working bodies of agricultural machines and their stability, to reduce the negative impact of the physical and mechanical properties of the soil and the speed of the units. movement on them.

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