

DEFINITION FUEL CONSUMPTION PLOWING DISC SHREDDER

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The results and analysis of experimental determination of fuel when working with a disk plow chopper.

Disk shredder, plow, fuel consumption, the angle of the drive, the depth of installation disks.

No experimental studies can not objectively determine the parameters of working for cultivation. This is especially true combination of working groups tillage in one machine. Study the mutual influence of disk shredder for shredding stalks syderalnyh crops and plow on fuel consumption mechanized cultivation is one of the urgent problems that need solving.

Justification drive parameters for surface tillage and plow for plowing devoted many publications [1, 2, 3, 4, 5]. Considerable interest combined multioperationa units that allow 1.5-2 times to reduce the number of passes across the field of technology, retain moisture, reduce runtime processing methods in times of limited agronomic terms [5]. As for the combined units for plowing the soil, their market share of agricultural machinery Ukraine is still negligible. At the same time, they need to conduct research on the definition of quality indicators of soil as a combination plow disc chopper significant impact on these figures.

The purpose of research - experimental determination of structural and technological parameters of the plow disc chopper while earning vegetable residues and energy crops syderalnyh continuous planting.

Materials and methods research. While earning syderalnyh crops and plant residues of energy crops, disk working bodies crushed stems, loosen the soil and plant debris mixed with crushed soil. Plough provides the ultimate in making their soil.

Laboratory and field studies plow disc chopper (PLN conventional brand-3-35D) in the unit with tractors MTZ-82 (Fig. 1) were carried out on black soil with flat

terrain on soybean stubble in the number of plant residues 300 to 400 g / m² and the original surface hrebnystosti 4 to 5 cm in the fields of experimental farm Podolski Agricultural and Technical University of Khmelnytsky region between 15 and 19 September 2007.

Layout options plow disc chopper were as follows: width - 1050 mm; body width 350 mm, and the longitudinal vertical plane - 800 mm; distance from the disk shredder to toe rear housing - 1300 mm. The main design parameters of the working disk shredder, width 950 mm. (At the corner of the installation disks 32 °); boundary changes the angle of installation disks from 24 to 41 °, 450 mm diameter discs; step between the discs 140 mm.

Results. As a result of factorial experiment D-optimal plan for a second-order Box-Banking findings that characterize the dependence on fuel konstrukttsiyno technological parameters plow, disc harrow: angle of installation disks, disk installation depth and speed plow disc chopper. The resulting implementation plan of the experiment the average value of fuel, based on three repeatability.

Treatment of experimental data using standard machine software allowed to obtain a second-order mathematical models for each response functions.

Statistical analysis of the results of experiments conducted by well-known methods of assessment of homogeneity of variances by Cochran and evaluation criterion of adequacy regression equation using Fisher criterion [6].

The influence factors on fuel consumption when running plow disc chopper shown (Fig. 2, 3, 4) that the fuel consumption is partly influenced by the angle of the drive. Since the height of the installation disk battery towards the toe blade 50 cm, fuel consumption ranged from 20 to 24 kg / ha by changing the angle of installation disks from 24 to 41. The influence of altitude installation disks clearly affects fuel consumption, due to the increase the cost of energy to overcome the resistance of traction at deepening plowing components and vice versa. By increasing the height of the installation disk battery towards the toe blade 20 to 80 cm, fuel consumption increased from 16 to 29 kg / ha.

The velocity of the plow disc chopper ambiguous effect on fuel consumption, which is associated with fuel consumption at low speeds and increased energy consumption when driving at higher speeds.

If you change the speed of the chopper disc plow from 3 to 5 km / h. minimum fuel consumption and range from 19 to 24 kg / ha. In the same framework changes the speed of the chopper disc plow minimum fuel consumption ranging from 18 to 19 kg / ha at an altitude installation disk battery towards the toe blade 20 cm, 23 to 24 kg / ha at an altitude installation disk batteries in relation to toe blade 50 cm and 28 to 30 kg / ha at an altitude installation disk battery towards the toe blade 80 cm.

Conclusions

Thus, the impact angle of installation disks, disk installation depth and speed plow disc chopper on fuel consumption is ambiguous nature. When the speed of the plow disc chopper 4 to 5 km / h. fuel consumption is at its minimum value and range from 18 to 30 kg / ha.