academic publishers

INTERNATIONAL JOURNAL OF ARTIFICIAL INTELLIGENCE (ISSN: 2692-5206)

Volume 04, Issue 06, 2024

Published Date: 11-08-2024

УДК: 631.3.14.4

IMPROVING THE EFFICIENCY OF TREATMENT OF IRRIGATED AREAS WITH DISC SOFTENERS

Shodiyev Shodiyor Shavkat ugli

Bukhara Institute of Natural Resources Management

Abstract: This article highlights the experiments on the study of the technological process of workman's softening disks, the shape of a drawing prism, changes in hardness, volumetric weight, soil aggregate composition, field surface alignment and change in traction resistance of the unit at different speeds of its movement. In our study, the spherical disc acts as a chopper tool in the soft state in the soil prepared for planting and penetrated to a depth of 5–7 cm. With a TTZ-80.10 tractor that handles, the traction resistance is not important as the load is not sufficient during planting.

Keywords: Grader, Spherical Disc, Speed, Tensile Strength, Soil Size, Fraction, Leveling Quality. Water Saving, Furrow Irrigation, Innovative Technologies, The Mechanic, Long-Base Scheduler.

Farmers make extensive use of gear and disc studs, chizel-cultivators, mola-rectifiers, and other rectifiers in preparing the land for spring cultivation. It is important to adjust the machines and correctly use the aggregates built on them in order to ensure that the land is prepared qualitatively at the level of agrotechnical requirements for planting. Today, it is an urgent issue to improve the level of flatness of the land, carry out its quality leveling work and create a high leveling aggregate of work productivity for these works. The modernization of the techniques used by farms for the current leveling of arable land is aimed at improving the quality of work of base rectifiers, studying the dependence of tractor – machine units on work productivity, reducing fuel consumption and improving the quality of work. The solution to such problems is determined by the working quality of the machines used in the preparation of land for planting, the depth of processing, the flatness of the field surface, the quality and density of soil abrasion, and the degree of weed loss. The average depth of processing into the soil in fields prepared at the level of demand for planting is ±1 cm from the indicator set by the agronomist. no more than a difference, the size in the seeding layer is 25 mm. the amount of pieces of soil smaller than is at least 80 percent, the size is 50 mm. from large incisions should not be at all, the density of the treated layer should be in the range of 1.1–1.2 cm3, as well as the complete loss of weeds.

In the transition of Agriculture to a market economy in Uzbekistan, farms or farmsteads that meet the demand of the times are formed in place of state and collective farms. To date, different techniques are used in land processing in agriculture. But the choice of the type, which is cost-effective in all respects in their use, directly requires the study of foreign techniques.

At the same time, 95% of the total arable land area in the United States is plowed using spherical discs, since this method can drive an area of three times a day more than in the traditional method, without loading excess voltage on the tractor and without additional spare parts consumption. In spherical disclosing, land plowing involves simultaneously preparing the land for both leveling and planting [1]. For deep loosening when soil density is a problem, it is possible to process the ground with a softener in a sediment more than the depth that can be plowed before the disking practice. It is impossible to drive away the lands where crop residues are left a lot, but this can be done with the help of a disc.

Minimum (low) ground handling and driving the ground using a disk are seen as better than previous

ground handling methods due to the growing fuel prices and maintenance-dependent costs and the large amount of fuel consumption of large horsepower tractors. Soil moisture is maintained by leaving crop residues on the surface of the soil during minimal (low) cultivation in the ground. Due to the additional cultivation of the ground, the soil does not give a high yield, and the excessive movement of tractors in the cultivated area also compresses the soil. If the soil does not turn over, the seed of the begolna grass will not be able to move to another fertile place. The creation of the seyalka, which is able to plant the crop on the harvested area (i.e. unprocessed land), quickly eliminates the reasons for plowing the Land [2]. In the practice of minimal cultivation of the ground, it can be used to loosen the compacted soil with a disc softener. It has a greater ground handling capacity per day, using more gravel and less horsepower than others.

The disc ground driving method is much more modest compared to all other methods of driving land. In the US, the cost of driving disc Land Is Us $ 18 per hectare. Other types of land driving, for example with omoch, cost from $ 50 per hectare. Costs increase again due to tractor wear and tear of the spine organs. With a disc drive device, more land can be prepared for planting in the short term. It does not matter whether the cultivated area is wet or dry. That is why the use of the disc is considered a customs for all practices in agriculture.

Disc-assisted treatment i.e. the application of softening spherical discs to the rectifier improves the physical mechanical properties of the soil while improving the reclamation condition. By means of a disc device mounted on a rectifier, additional work on all plants in the ground will provide an opportunity to grind without weapons and also feed the soil. The disc treatment method gives the plant the opportunity to penetrate deeper into the soil and absorb the necessary nutrients and moisture due to the good processing of the roots into the ground, and the yield in provardi is growing from 10 percent to 30 percent. The heavy movement of large tractors over the soil compresses it, and if the soil is moist, the compaction of the Earth will increase by 4 times. This has a huge negative effect on soil treatment and air exchange, as a result of which, under natural conditions, such a land area can be restored and improved in almost 10 years.

Demand for diesel fuel for selected agrotechnical activities (liters per hectare ҳисобида)

Agrotechnical event type	**low**	**Middle**	**High**
Deep loosening of the soil (35 см)	12.3	19.8	27.9
Land driving in omoch (10 cm)	10.9	17.5	24.6
Land driving on Tanden disc	4.7	5.2	5.7
Drawing (10 cm)	7.1	11.8	16.5
Driving with disc softener	5.7	9.0	12.8

Driving land on the disc as part of the practice of loosening the soil.

The need for deep ground driving is significantly reduced due to the use of rixlitel and disk. Omoch is not able to sufficiently plow and soften the compacted land after heavy tractor operation. First of all, the disc cannot drive and soften the ground. First the disc is used to plow the land and mix the crop residue with the soil, and then the richlitel will walk over the crop residues and work on the compacted land. Rixlitel can be used as a first practice if crop residues are scarce. After that, a disc is used to level the ground and prepare it for planting. The disc is necessary to be used after deep softening, since the rixlitel leaves large – large incisions in the area [2]. In solving this problem, a leveling equipment resembling a mole can be hung on the back of the rixlitel. As soon as the Earth softens, the soil must be treated sparingly before planting. Soften the Earth before you. Then it is processed into the ground 3-4 times before planting, but on the contrary, the soil compresses again.

Mutual comparative description of plowing land on the spine and disk

Land driving with Omoch	**Driving the earth with a disc**

Acceptable	Unacceptable	Acceptable	Unacceptable
Weed control is available (in the absence of herbicides)	Works very slowly	Works very quickly	Plowing land many times with a disc can cause the soil to become as small as sand and quickly get wind erosion
It is not necessary to loosen the ground	Requires high labor force and fuel cost	Drives the Earth 3-4 times faster than omoch	Ground plant stems on the ground make processing difficult
Elin buries the remains	High horsepower technique requirement makes	High horsepower technique no need for tools	Ground in wet soil conditions stings
Egats are prepared satisfactorily	The soil hardens	The lower the soil, the less soil erosion	
Suitable for all soil except rocky soil	High levels of soil erosion occur	Soil moisture is retained.	
	High levels of soil moisture disappear	No need to level the ground	

Much scientific research has been carried out in Central Asia in order to substantiate the technology of rational operation of the application and improvement of softening discs of longitudinal rectifiers. It is found in scientific research that as a result of many passes of rectifiers from one place, the upper fold of the Earth becomes much denser and larger, the aggregate is reduced by the productivity of work. These disadvantages, especially on land with small contours, are common in this process.

Based on the above opinions and considerations and a number of scientific research works, it can be said that in order to increase the working efficiency of the long-base rectifier and further improve the quality of its ground leveling, and reduce its drag, we recommend applying a softener to the long-length rectifier, depending on the above disc windings.

The main function of the disc device is to reduce the resistance of the rectifier blade to shearing in pre-softened and large cross-sectional areas, to form the area surface plane corresponding to the agrotechnical requirement in 1 pass over the area surface. Qualitative leveling of areas and improvement of the soil fraction is carried out with the installation of a device with a softening disc in front of the leveler bucket. Provides the opportunity to reduce the cost of work and leveling processes carried out in agriculture by a certain percentage, as well as the cost of products. The cost of watering is reduced. For plant development, the composition of the soil improves, increasing yields. It can be concluded that this is the result of the positive effect of the rectifier on soil ecology.

List of literature used.

1. И.Ҳасанов., Ж.Қўчқоров., У.Ҳасанов A useful model" device with a softening disc on a longitudinal rectifier". Application № FAP 2013 00 85.
2. Characteristic features of plowing land on the spine and disk. Newsletter No. 12 (2005 . Dec.
3. 18. Egamberdiyev, M. S., Oripov, I. U., Hakimov, S., Akmalov, M. G., Gadoyev, A. U., & Asadov, H. B. (2022). Hydrolysis during hydration of anhydrous calcium sulfosilicate. Eurasian Journal of Engineering and Technology, 4, 76-81.

4. 19. Egamberdiev, M. S., Oripov, I. U., & Sh, T. S. (2022). Development of a Method for Measuring the Layered Moisture State of Concrete and Various Bases. Eurasian Journal of Engineering and Technology, 4, 82-84.
5. 20. Z.Z.Qodirov, I.A.Oripov, A.Tagiyev, G.Shomurodova, & M.Bobirova. (2022). WATER-SAVING IRRIGATION TECHNOLOGIES IN SOYBEAN IRRIGATION, EFFECT OF SOYBEAN ON GROWTH AND DEVELOPMENT. European Journal of Interdisciplinary Research and Development, 3, 79–84. Retrieved from https://www.ejird.journalspark.org/index.php/ejird/article/view/33
6. 21. Isayev S. X., Qodirov Z. Z., Oripov I. O., & Bobirova M. B. (2022). EFFECTS OF RESOURCE-EFFICIENT IRRIGATION TECHNOLOGIES IN IRRIGATION OF SUNFLOWERS ON LAND HYDROGEOLOGICAL CONDITIONS. British Journal of Global Ecology and Sustainable Development, 4, 95–100. Retrieved from https://journalzone.org/index.php/bjgesd/article/view/55
7. 22. Qodirov Z.Z, Oripov I.O, & Avezov Sh. (2022). Effect of Drip Irrigation of Sunflower Crop on Soil Meliorative Status. Texas Journal of Agriculture and Biological Sciences, 8, 107–111. Retrieved from https://www.zienjournals.com/index.php/tjabs/article/view/2382
8. 23. Khodirov Z, Jumaev J, & Oripov I. (2023). Application of water-saving irrigation technologies in the irrigation of fodder beets grown as the main crop. Texas Journal of Agriculture and Biological Sciences, 17, 34–39. Retrieved from https://zienjournals.com/index.php/tjabs/article/view/4137