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Scientific Research On Improvement Of Base Earth Leveller

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***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.*

Keywords— grader, spherical disc, speed, tensile strength, soil size, fraction, leveling quality.

1. INTRODUCTION

One of the main factors in improving the meliorative condition of arable land in agriculture is leveling. In the leveled areas, the productivity of all agricultural crops will increase, water consumption for irrigation will decrease, and the productivity of the next agricultural machinery will increase, and working conditions will improve [1]. The main problem of agriculture today is low energy consumption and high yields. The growing demand for energy means that the problem needs to be addressed sooner. Therefore, it is advisable to use the power of the equipment efficiently, improve the quality of work and minimize the negative effects of the work performed.

2. MAIN PART

In the agricultural sector, the Head of State has focused on improving the reclamation of irrigated lands and the development of agricultural production, which is an honorable and responsible task. Because this is the direction of the economy of the Republic, which ensures the cultivation of basic foodstuffs of our people, the production of necessary products and their export to the international market.

Recognizing the importance of this task, it should be noted that the development of modern agro-industry in the Republic of Uzbekistan is based on all sectors of agriculture: leasing, farming, farmers' and peasant associations. The current development of agricultural production is planned on the basis of general mechanization, as well as the use of intensive and industrial methods of cultivation. The issues of production of low-capacity energy and mechanization of working machines for farms and lease contracts, import from abroad are being addressed [1].

One of the main factors in improving the reclamation of irrigated arable land in agriculture is its leveling. The productivity of agricultural lands on leveled lands will increase by 40-45% compared to uneven lands, water consumption for irrigation will be reduced by 2 times, working conditions will be improved and the impact on the environment will be reduced [2].

It is known that the current and operational leveling of lands in irrigated arable lands annually 35-40% of the total land area of farms in the short term before sowing in autumn and spring with long base P-2.8A, P-4, PA-3, PPA-3.1 and others operational leveling with type earth levelers [3]. Leveling of irrigated lands will increase the productivity of agricultural crops, prevent labor and water wastage during irrigation, high-quality tillage between rows and high-quality harvesting by machine.

As a result of repeated tillage and irrigation of the soil, various irregularities occur in the fields: long ridges and furrows are formed during the plowing process, highs and lows after irrigation, and residual irregularities of the previous year. In addition, in certain parts of the area, repeated watering can lead to sedimentation and subsidence of the soil. All such irregularities can be eliminated by applying the current (operational) leveling in the process of preparing the area for planting. The current (operational) leveling process should be carried out in a short agro-technical period. The current shortage of long-base leveling machines on existing farms and the change in the geometric shape of existing leveling smoothing machines make it difficult to carry out current leveling in a timely manner. This problem can be solved by improving the smoothing device of long-base leveling machines and increasing productivity.

Studies show that when the speed of movement is increased to 8.5 km / h, the smooth movement of the leveler and the uniform grinding of the lugs increase the level of leveling, ensuring the quality of the ground plane. If the speed of the leveler exceeds 8.5 km / h, the vibration of the machine frame will increase, which will negatively affect the quality of work of the leveler. This condition increases the resistance of the working body to falling and rising above the norm. This leads to a larger change in gravity resistance. This situation leads to a large change in the size of the bucket that drives the bucket. As a result, the plane quality of the area is degraded, resulting in unevenness [3]. Much research has been done in Central Asia to substantiate rational processing technology to improve the smoothing device of long straighteners. It has been found in these scientific studies that as a result of the passage of the levelers more than once, the top layer of the soil becomes more compacted and hardened, and the working productivity of the aggregate decreases. These deficiencies are common, especially in areas with small contours. Based on the above comments and a number of scientific studies, it can be said that the softening device needs to be improved to increase the working efficiency of the long base leveler and further improve the quality of its leveling and reduce the tensile strength.

This can be achieved by using a softening disk device. The main function of the disc device is to reduce the shear resistance of the leveling blade in areas that have not been previously softened and in large grooves, to create a field surface plane that meets agrotechnical requirements in 1-2 passes along the field surface. Quality leveling of areas and improvement of soil fraction is carried out by installing a softening disc device in front of the leveling bucket.

3. CONCLUSION

If a disk device mounted on a long ground leveler is used in practice, the ecological significance and physical properties of the natural structure of the soil will be improved, and soil fertility will be increased. It allows to reduce the cost of agricultural work and leveling processes and the cost of production by a certain percentage. In mechanized and improved agriculture, the quality of work performed on leveling irrigated lands will be improved, and the cost of irrigation will be reduced. Soil composition improves for plant development and increases productivity. It can be concluded that this is the result of the positive impact of the leveler on the soil ecology.

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