

RESULTS OF EXPERIMENTAL RESEARCH OF A PLANER EQUIPPED WITH MILLING SOFTENERS

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Annotation: The article provides information on the role and importance of the basic land leveler in leveling areas, the work carried out in this area in our Republic and the attention given to it, as well as the working process of the field laboratory device of the developed basic land leveler.

Key words: soil, agrotechnical measures, milling cutter, economic efficiency, aggregate speed, hydromotor, energy, techniques and technologies, mechanical structure.

Introduction: Resolution of the President of the Republic of Uzbekistan No. PQ-103 “On additional measures to stimulate the provision of the agrarian sector with modern agricultural machinery” was adopted [1]. The resolution aims to improve the system of incentives for the timely and high-quality implementation of necessary agrotechnical measures in the cultivation of agricultural products, to meet the demand for agricultural machinery in the agricultural sector, and to provide agricultural enterprises with modern and resource-saving equipment instead of morally and physically obsolete equipment. In accordance with this resolution, a total of 2.6 trillion soums will be allocated to finance the purchase of agricultural machinery in 2023-2024 [1, 2].

The existence of various sizes of irregularities in the existing cultivated areas in our country's irrigated agriculture and their negative impact on mechanized technological processes in irrigation and maintenance of crops indicate the need to improve leveling units for leveling existing cultivated areas[3, 4].

Solution method: As a result of studying the existing problems, scientists of the Bukhara Institute of Natural Resources Management "TIAME" NRU developed a structural diagram of a laboratory-field device that determines the agrotechnical and energy performance indicators of a basic land leveler (1-picture). During the experiments, the laboratory-field device was used at speeds of 4-5 km/h. The device is aggregated with TTZ-80.11, TTZ-80 tractors. [5, 6].



a)



b)

1-picture. Laboratory-field device equipped with milling cutters

a) side view b) front view

Results and samples: The soil of the experimental fields is a gray soil of medium-heavy mechanical composition, groundwater is located at a depth of 10-12 m. Before conducting experimental studies, the soil moisture, density and hardness in the 0-10, 10-15, 15-20 cm layers were determined. Their results are presented in Table 3.1 [7, 8].

3.1 - table**Description of experimental conditions**

Indicator name	Indicator values
Soil moisture by layer, (%); 0 - 10 10 - 15 15-20	15,4 17,2 18,2
Soil hardness by layer, (MPa); 0 - 10 10 - 15 15-20	1,58 3,18 3,41
Soil density by layer, g/sm ³ ; 0 - 10 10 - 15 15-20	1,29 1,41 1,53

The milling machine was developed and the resistance of the leveling shovel blade to soil shearing, crushing of large clods, roots and residual stems was studied (3.3-picture).



3.3–picture. Soil-softening milling machine

Conclusion: Based on the conducted experiments, the relative resistance of the milling cutter of the laboratory-field device equipped with milling cutters during cutting and processing of the soil depends on the mechanical composition and condition of the soil and the cutting speed. At the same time, a large gear ratio causes much less soil crushing than a small gear ratio. Conducted laboratory studies have shown that in order for the milling cutter to provide the required quality of work with low energy consumption, its rotation speed should be 100-120 r/min and the aggregate speed should be from 5 to 6 km/h [10, 11, 12]. The use of an INM7 series hydromotor to ensure the movement of the milling cutter on a long-base leveler provides high quality of work with low energy consumption.

LIST OF USED LITERATURE

1. 10.07.2020 y “O‘zbekiston respublikasi suv xo‘jaligini rivojlantirishning 2020 - 2030-yillarga mo‘ljallangan konsepsiyasini tasdiqlash” Decree of the President of the Republic of Uzbekistan on
2. 29.03.2023 y “Agrar sektorni zamonaviy qishloq xo‘jaligi texnikalari bilan ta‘minlashni rag‘batlantirishning qo‘shimcha chora-tadbirlari” Resolution of the President of the Republic of Uzbekistan on
3. Кўчқоров Ж.Ж., Олимов Х.Х. The role of innovative technologies in the improvement of meliorative conditions of irrigating lands// International journal of advanced research in science, engineering and technology (IJARSET). Vol. 6, Issue 5. May. 2019. 9233-9235-p.
4. Кўчқоров Ж.Ж., Ҳасанов И.С., Ҳасанов У.И., Муродон М.М. Экин майдонларини текислашда текислаш агрегатларининг унумли ишлашга таъсирини ўрганиш // O‘zbekiston qishloq xo‘jaligi журналі. Тошкент, 2019. Махсус сон - Б. 55-56.
5. Ахметов А.А., Повышение уплотняющего воздействия на почву катка комбинированной машины для предпосевной обработки почвы // Тракторы и сельхозмашины. – Москва, 1987. – №9. – С. 30-31.
6. Испытания сельскохозяйственной техники. Методы энергетической оценки машин. Тст 63.03.2001//Издание официальное. – Ташкент, 2001–59с
7. Вагин А.Т. Механизация защиты почвы от эрозии.–Ленинград: Колос, 1977. – 272 с.
8. Mamatov F.M. Temirov I.G‘., Qishloq xo‘jalik mashinalari nazariyasi va hisobi / Darslik.- Toshkent: “Voriz-Nashriyot”, 2021.- 404 b.5
9. <https://www.ini-hydraulic.com/uz/hydraulic-motor-inm7-series.html>
10. <https://www.fcyhydraulics.com/uz/competitive-hydraulic-wheel-motor-chinese-factory-bm6-wheel-motor-products/>

11. <https://www.fcyhydraulics.com/uz/competitive-hydraulic-wheel-motor-chinese>
12. <https://srcyrl.arabhputlk.com/mixer-truck-hydraulic-motor/t90m75-mixer-truck-hydraulic-motor.html>