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New Technology and Unit for Preparing the Soil for Sowing

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Abstract: *This article presents the features of the new technology of tillage and preparation of the field for sowing crops on the ridges. A design scheme was developed and a prototype of the combined unit and its device was prepared, as well as the details of the technological operations performed: simultaneous formation of the ridge, deep loosening of the soil along the line of the pre-formed ridge, local fertilization and the final formation of the ridge and irrigation furrows. The efficiency of application of the proposed new energy-resource-saving technology of soil preparation for sowing and combined aggregate is proved.*

Keywords: *Aggregate, Ridge Formation, Soil, Preparation, Technology, Seeding, Screw Body, Ploughshare, Deep Reamer, Inclined Rack, Agroclimatic, Combined, Agrotechnical Terms, Minimum Processing, Efficiency, Labor Costs.*

INTRODUCTION

A comprehensive program for the cultivation and production of agricultural crops and increasing their yield is being implemented in the Republic.

This program is a system of organizational, technological, economic, technical and other measures, the implementation of which will allow the gross harvest of agricultural crops to be maximized. The increased requirements for the quality of agricultural operations cause the need for new machines, improved taking into account the zonal agro-climatic and soil conditions of the republic. In addition, a new technology of tillage and preparation of the field for sowing crops on the ridges is being introduced (Mamatov *et al.*, 2021; & Toshtemirov *et al.*, 2021).

The use of the new technology will make it possible to fully use the advantage of energy-saving, soil-protective tillage technologies and combined aggregates that perform several technological operations in one pass in agrotechnical terms.

THE MAIN FINDINGS AND RESULTS

Currently, in the Republic, as well as in other countries, in order to increase efficiency in agriculture, much attention is paid to improving farming systems and creating new technologies for minimal tillage and technical means that contribute to increasing effective soil fertility with minimal energy and labor costs, as well as to increase the service life of machines and mechanisms and their effective use.

At the same time, the main problem is high-quality soil preparation and sowing of cotton, as well as agricultural crops on the ridges in optimal agrotechnical terms (Toshtemirov *et al.*, 2021).

Despite this, traditional technology is still used to prepare the soil for sowing cotton and agricultural crops on the ridges.

The traditional technology of preparing the soil for sowing crops provides for the implementation of technological operations in stages, that is, fertilizing, plowing, preparing the soil for sowing (clearing fields, disking, harrowing, threshing and sowing) (Toshtemirov *et al.*, 2018).

This technology is not soil-protective and does not meet modern requirements for farming or for preparing the soil for sowing agricultural crops on ridges. In addition, traditional technology is agronomically and economically unjustified, since labor productivity decreases, labor and money costs increase, soil compaction and destruction of soil structure occur due to repeated passage of machines, soil preparation time is delayed, the soil is intensively dried, which entails a decrease in the yield of agricultural crops (Toshtemirov *et al.*, 2021; & Toshtemirov *et al.*, 2018).

The main important factor in the system of measures to ensure high yields of agricultural crops is

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the early and high-quality preparation of the soil for sowing on the ridges.

The peculiarity of early and high-quality soil preparation and the formation of gravel in autumn is that under the influence of rains under the ridges, the soil is sufficiently moistened, after which in early spring it is treated with a harrow over the ridge, and sows cotton and other agricultural crops (Toshtemirov *et al.*, 2021; & Toshtemirov *et al.*, 2018).

Based on the above, as well as on the results of many years of research, a new energy-resource-saving technology has been developed to prepare the soil for sowing. A design scheme has been developed and a prototype of a combined unit has been prepared.

The proposed combined unit simultaneously in one pass carries out the processing and preparation of the soil for sowing cotton and agricultural crops on the ridges (Toshtemirov *et al.*, 2021).

In addition, with the help of this unit, the technology carried out provides for the following technological operations: simultaneous formation of the ridge, deep loosening of the soil along the line of the pre-formed ridge, local fertilization and final formation of the ridge and irrigation furrows (Toshtemirov, *et al.*, 2021; & Toshtemirov *et al.*, 2018).

The combined unit (Fig-1) consists of a frame 1; a support wheel 2; a hinged device 3; right and left-turning screw housings 4, 5; right and left hoods 6; right and left deep-diggers 7, 8 and devices for fertilizing and hoeing 9 (Toshtemirov, *et al.*, 2021).

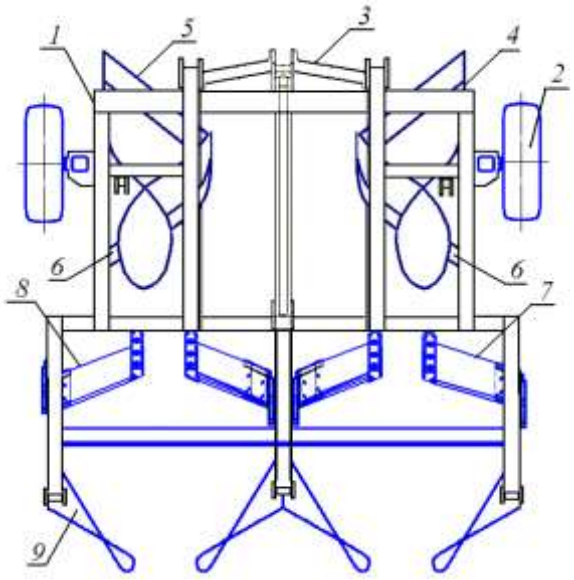

Fig. 1. The Design Schemi of the Combined Unit

The proposed technology provides for the implementation of two technologies: firstly, the preparation of fields from under cotton, and secondly, the preparation of flat fields for sowing agricultural crops on ridges.

The peculiarity of the proposed technology is that, at the same time, the preparation of fields for sowing cotton on the ridges is carried out by forming new ridges instead of existing old ridges. At the same time, the upper layer of the ridge of each row is first processed by turning the soil of the ridge 180 degrees into its places, then the lower layer of the ridge is deeply loosened and fertilizers are locally applied along the line of the middle of each ridge without destroying its shape by a special working body with an inclined rack equipped with loosening plates and elements for fertilizing, after which ridges and irrigation furrows are formed (Mamatov *et al.*, 2021; & Toshtemirov *et al.*, 2021).

When the soil of the ridge is rotated 180 °, weeds and plant residues are sealed in their places.

CONCLUSION

The use of the proposed technology and the combined unit will allow for soil preparation in a short time and sowing of agricultural crops on ridges, reduce the number of machines used in processing fields and preparing the soil for sowing, prevent the destruction of the structure and compaction of the soil and preserve its moisture, allow the effective use of mineral fertilizers, reduces operating costs and saves materials and fuel, as well as to increase labor productivity (Mamatov *et al.*, 2021; & Toshtemirov *et al.*, 2021).

REFERENCES

1. Mamatov, F., Mirzayev, B., Toshtemirov, S., Hamroyev, O., Razzoqov, T., & Avazov, I. (2021). Study on the development of a machine to prepare the soil for cotton soWing on ridges. *IOP Conference Series: Earth and Environmental Science, CONMECHYDRO*. Tashkent.
2. Toshtemirov, S., Mustafayev, S., Xo'jayev, A., Mamatkulov, I., & Boboev, F. (2021). Technology and machine parameters for preparing the soil for sowing cotton. *International scientific conference, Construction mechanics, hydraulics and water resources engineering» CONMECHYDRO*. Tashkent.
3. Toshtemirov, S.J., Mamatov, F.M., Batirov, Z.L., Chuyanov, D.Sh., Ergashov, G'.Kh., & Badalov, S.M. (2018). Energy-resource-saving technologies and machine for preparing soil for sowing. *European science revive*, 3-4, 284-286
4.

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