

## MODERNIZING THE OPERATION OF THE PLANT UNIT

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### Abstract

Modernization of the work of the planting unit, in addition to technological work, consists in improving and quality treatment of soils with low moisture and plant residues. The main directions of research on the modernization of the work of the planting unit and the development of technical means, as well as the main results of some studies conducted in these directions and their effectiveness are described.

**Keywords.** soil moisture; weed removal; mixing the topsoil to bury seeds and fertilizers; includes removing moisture from the lower part of the soil to the upper layer, leveling the surface of the soil to fix lawns and young seedlings, leveling the upper part of the soil (after plowing), deep softening of the soil without turning it over.

### Introduction

It is of great importance to teach students materials related to the mechanization of agricultural production in the preparation of highly qualified personnel for agriculture. Students and professionals studying in this field have theoretical knowledge and practical skills about the basics of electrification and automation of tractors, cars, various agricultural machines, machine-tractor units and technological processes used in agriculture. creates. In order to reduce the cost of the product, it is advisable to use less energy-consuming technologies that do not harm the productivity of the land used for its cultivation, and allow saving its resources. Planting seeds is one of the most labor- and energy-intensive processes in agricultural production technology. In order to plant the seeds of agricultural crops, the soil in the field should be prepared to the extent that it meets agrotechnical requirements. Shallow tillage machines have their own characteristics. Before planting, tillage of the surface layer of the soil to a depth of 12-16 cm, i.e. maintaining moisture in the soil; weed removal; formation of a uniform layer of the required density on the surface of the soil; mixing the topsoil to bury seeds and fertilizers; includes removing moisture from the lower part of the soil to the upper layer, leveling the surface of the soil to fix lawns and young seedlings, leveling the upper part of the soil (after plowing), deep softening of the soil without turning it over.

### Literature analysis and methods

Today, hairy and hairless seeds are planted by mechanical SCHX-4B, SXU-4, SMX-4, foreign pneumatic, PPAS-4, "Keys-1200" models, grain seeds by foreign Sapfir 7/8, Lemken, SZ-3,6 ;

SZN-3.6 and local DEM - 3.6, "California" (2 and 4 rows), Bomet S 239, and KYAU-100 machines are used for planting vegetable seeds.

Cotton is one of the most widely grown products in the republic. For growing cotton crop, hairy and dehaired seed is planted. Currently, farm-cluster farms and the agricultural sector in general are fully supported by our state, and all necessary conditions and opportunities are created for them. In the Strategy of Actions for the further development of Uzbekistan in 2017-2021, we have clearly defined the most important tasks for the modernization of agriculture as well as all other sectors, and our consistent implementation of them serves as the basis for great success in the field. High productivity in agriculture largely depends on the level of providing the industry with modern techniques and their effective use.



**Figure 1. Soil loosening and seeding unit combined with Claas Xerion model tractor.**

This model allows the tractor operator to see the field in front of him while driving the tractor and makes it convenient for one person to install and remove additional equipment from the tractor. These attachment holders are universal mechanization devices that allow full control by one tractor operator and do not require any additional assistants.

One of the most important measures in increasing the productivity of agricultural crops is planting seeds and planting seedlings in the specified time and at the appropriate depth.

**Table 1 Technical specifications of seed sowing machines**

Indicators	Model of cars			
	SChX-4A	SXU-4	SMX-4	"Keys-1200"
Type	Suspension	Suspension	Suspension	Suspension
Tractor model	MTZ-80X; TTZ-80.11	MTZ-80X TTZ- 80.11	MTZ-80X; TTZ-80.11	MX-135 Magnum
Row spacing, cm	90	60, 70, 90	60, 90	60, 76, 90
Coverage width, m	3,6	2,4; 2,8; 3,6	2,4; 3,6	4,8; 6,08; 7,2
Working speed, km/h	6,1	7,5	7,5	7,8
Productivity, ha/h:				
in prime time	2,2	1,8-2,7	1,8-2,7	5,6
during operation	1,6	1,3-2,0	1,3-2,0	4,1
Required power, kW	18,2	27,31	27,31	70,0
Seed burial depth, cm	3-8	3-8	3-8	3-10
Between cells, cm	3-30	3-30	3-30	3-50
The smallest turning radius, m	6	6	6	12
The maximum number of seeds planted per meter, pcs	40-50	40-50	40-50	30
Total capacity of seed containers, m <sup>3</sup>	0,36	0,164	0,186	1,32
Mass, kg	560	825	650	2079

Checking the quality of sowing. During the shift, the quality of sowing is checked: the depth of planting (planting) seeds, the straightness of the rows, the norm of sowing seeds, the widths between adjacent rows and between the main rows are checked.

Seed planting technology. Seedlings are sown with 15-20 cm between nests and 60 or 90 cm between rows. TTZ-80.11 for the construction of seed planting unit; MTZ-80X or TTZ-100LS tractors can be equipped with SChX-4, SXU-4 and SMX-4 seeders.

Depilated and hairy seeds are used for planting. Usually, seeds are centrally treated with chemicals in cotton factories and given to farmers' associations. At the Farmers Union, hairy seeds are soaked and heated in the sun before planting. In order to collect the seed evenly and quickly, it is necessary to first treat it with substances that promote germination. Depilated seed is not moistened because the seed swells when wet and cannot be planted in precise amounts with disc machines. It is good to spray the field with one-year herbicides before planting the seed.

The amount of seed used per hectare should not exceed 25-30 kg if depilated, and 60 kg of feathered seed. When planting seeds, it is necessary to pay special attention to the fact that the seeds fall to the same depth, and that the rows come out correctly.

Seeds are planted in 8-10 working days. Estimated planting dates: in southern regions from March 25 to April 10; in the central regions from April 1 to April 15; in the northern regions, it lasts from April 5 to April 30. These periods may change by 3-5 days depending on meteorological conditions. When planting seeds, mineral fertilizer is added to each row with the help of the KMX-65 fertilizer device used in the KXU-4 cultivator, the fertilizer conveyor and the fertilizer brush, and the soil is watered to moisten it. For sowing, inter-row irrigation is taken, and liquid herbicides are sprinkled on top of the crop row (soil) to eliminate weeds. A PGS or PXG device is used for herbicide spraying. This device is mounted on the planting unit. Seedlings 4-5 cm. planted in depth. By the growing season, the thickness of cotton should be 100-120 thousand pieces per hectare on average.



Figure 2. SChX-4 thresher equipped with the proposed device.

The observed positive results show that better results can be achieved by theoretically and practically justifying the main parameters and operating mode of the proposed device.

A number of operational parameters of the seed sowing machine were studied during the operation of tractor aggregates in the farm.

The machine-tractor unit must be built in such a way that it can meet the demands of agrotechnics and ensure high-quality performance of work. In cotton farming, more agricultural implements are attached to the tractor and have a certain scope of operation. That is why aggregates are optimally loaded, and speeds in the allowed range are used in compliance with agrotechnical requirements.

## Conclusion

Analyzing the materials obtained as a result of the conducted research, the following conclusions can be made. In order to reduce the cost of the products grown in agricultural production, it is necessary to modernize the tractor units used in the production process and to improve the quality of the work as much as possible. As a result of the analysis of the working process of the seed planting unit, a device that mixes the herbicide substance sprayed on the soil surface with the soil and buries it is recommended in order to increase the effect of the herbicide substance sprayed with the help of the herbicide spraying triad installed on the seed drill. Continuing scientific research, it will be necessary to determine the optimal values of some parameters of the device in the future.

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