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PROSPECTS FOR USING COMBINED UNITS IN AGRICULTURE

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Abstract
It is known that tillage is one of the main activities in the cultivation of agricultural crops. Cultivated soil differs from ordinary soil in its composition, hardness, content of humus content, i.e. fertility [1]. Agricultural machines work only on fertile soil.

Introduction

Globally, the development and use of energy-resource-efficient and high-performance tillage machines for the cultivation of agricultural crops, while maintaining soil fertility, is taking a leading place. "In the world, the area to be tilled before planting is 1.6 billion. hectare", development of combined machines and devices for high work quality and productivity and energy-resource-efficient soil cultivation is considered one of the important tasks. In particular, great attention is being paid to the development and use of combined machines for minimal tillage, which, along with the main tillage, perform all the technological processes of preparing the soil for planting in one pass through the field [2].

In the world, along with the main processing of fields before planting agricultural crops, research and development activities are being conducted aimed at developing new scientific and technical bases of resource-saving technologies of preparing the soil for planting and the technical means that implement them. In this direction, the development of combined machines that prepare the soil for planting crops in one pass by tilling it with and without turning it, and justifying the technological work processes of their main work bodies, conducting targeted scientific research on ensuring resource efficiency in the process of interaction of work bodies with the soil are considered urgent problems [2].

Agricultural production is developed on the basis of its complex mechanization program. Complex mechanization means ensuring that the main auxiliary processes in all branches of production are carried out by machines.

With the help of these machines, all technological and auxiliary processes are carried out with the lowest labor and material costs, as well as ensuring the highest levels of productivity and quality.

Complex mechanization relies on the use of scientific and technical development for the purpose of creating and implementing a complex of machines with high technical and economic indicators and continuous flow methods of technological processes, as well as the wide use of electric power, automation and telemechanics.

The machine system is considered the material and technical basis of complex mechanization. This list consists of a complex (complex) of various machines and vehicles that can ensure the complex mechanization of all production processes of a single technological cycle and are interconnected in terms of technological processes and performance.

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Taking into account different production conditions and technological requirements, the following system of machines is used.

1. System of machines for cultivation of certain agricultural crops;
2. Machine system for complex mechanization of certain branches of agricultural production:
3. System of machines to mechanize a production process:
4. System of machines for complex mechanization of production processes in separate agricultural enterprises:
5. System of regional machines for complex mechanization of production processes in existing agricultural regions:

The main requirements for the machinery system are strict adherence to technology, the execution of all work with the least amount of manpower and money, the best agricultural technology, the improvement of working conditions, the extension of machines and weapons in the system, the efficiency of the system with the general dimensions and other indicators, compatibility with natural production such as the possibility of efficient mechanization of all work in farms with different production conditions.

Machine systems are constantly being improved based on scientific and technical achievements, as well as advanced experiences.

In order for agricultural production to develop continuously, agricultural machinery and its use must be improved in the following directions:

1. Creating machines that are combined in one unit, which allows several operations to be performed in one go;
2. Creation of multi-row, wide-chamber seeding units, cultivators, harvesting machines, production and introduction of high-powered hoe tractors that allow to dramatically increase the productivity of the units by using the existing machines at high speeds;
3. Reducing the types of machines in existing systems and increasing the adaptability of the same type of machines to use in different conditions and growing different crops, i.e. universalization;
4. To create durable vehicles with lightweight, compact and economical, unified parts and details.
5. Creation of machines and their systems used in the production of agricultural products based on new, improved technologies;
6. To reduce the number of workers servicing the unit, to improve the working conditions of mechanics due to the use of installation machines, hydraulic and automatic control of unit mechanisms, air-conditioned, soft-seated, hermetic cabins.

Agricultural production processes are carried out under conditions characterized by the following features:

1. Agricultural techniques carry out technological processes in constantly changing atmospheric and climatic conditions. For this reason, it is necessary to set certain agrotechnical requirements for their work technology and organization.
2. During technological processes, agricultural techniques interact with the living environment, whose condition is constantly changing under the influence of biological processes and soil-climatic conditions.

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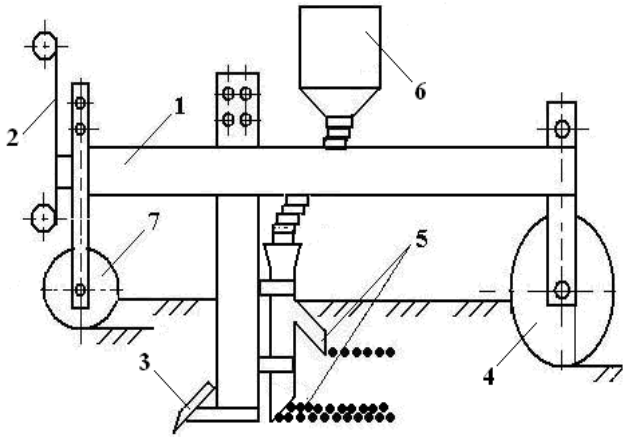
3. Agricultural technological processes require that they be carried out in strictly defined periods depending on the phases of plant growth and soil climatic conditions.
4. Agricultural technological processes are carried out in an abrasive environment that greatly affects the long-term operation of agricultural machinery.

All the conditions described above must be taken into account in the creation and improvement of agricultural machinery.

Today, in soil cultivation, combined aggregates are being developed that prepare the land for planting in one go. This will reduce the consumption of alcohol and fuel. As an example of this, we can take the example of combined aggregates developed by the scientists of our Republic.

The experimental combined unit consists of a tractor-mounted implement, a softener, a fertilizer spreader, a stubble pick-up and support wheels. , i.e., instead of last season's egates, softened undergrowths are formed, and egates are formed instead of egates [4].



1- flock; 2-installer; 3-deep softening work body; 4-back picker; 5 - educational cooperation; 6- training bunker; 7- support wheel

Fig. 1. Aggregated combination

When processed with this aggregate, it softens the soil without overturning it, fertilizes it in a certain layer, and brings the soil to a state ready for planting. With this, it can be seen that the consumption of alcohol and fuel is reduced compared to those processes performed separately.

The next combined machine (Fig. 2) for plowing plowed land consists of rollers equipped with discs with a pone-shaped working surface, a leveler and a plate roller [4].

The use of this machine in pre-sowing treatment on newly plowed land will increase productivity, improve the quality of tillage and prevent moisture loss, and reduce the number of trips of aggregates through the field due to the addition of technological processes and the reduction of the number of aggregates passing through the field. allows you to plant and collect kigos.

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Figure 2. Produced by the Kverneland concern combined unit

Summary

In the existing technologies of soil preparation for planting in agriculture, in order to prevent soil densification, loss of moisture, and an increase in labor and fuel consumption as a result of technological operations such as leveling, harrowing, and grinding in separate and consecutive fields free from crops and newly plowed fields, several it is advisable to use combined aggregates that perform technological processes. With this, the number of passes in the field is reduced, the productivity of the cocktail is increased, and the time for preparing the land for planting is reduced. As a result, the productivity of agricultural crops increases significantly.

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