PROBLEMS OF INDUSTRIALIZATION OF THE AGRICULTURAL SECTOR WITH MACHINERY AND FULL USE OF THEIR RESOURCES

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In recent years, major problems have accumulated in the agricultural sector in terms of mechanization, land reclamation, electrification, etc. Therefore, in the shortest possible time, it is planned to create and implement completely new, modern methods and technologies for using equipment, maintenance, increasing efficiency, full use of resources, their proper storage, as well as the functioning of the diagnostic system of machines in rural and water management.

Currently, there are 146,295 agricultural machinery units in Uzbekistan's agricultural farms, 38% of which have already reached the end of their service life, i.e., require repair. In particular, only 34% of machinery intended for processing, servicing and harvesting cotton, grain and secondary crops has been repaired, which reduces labor productivity in farms, increases the volume of manual labor, and uses a lot of material resources.

Currently, the country lacks 16,495 agricultural machines and water pumps. As a result, it is not possible to implement the required agricultural measures in a timely and high-quality manner, which means that the final result and the expected effect are not achieved.

The structure of the research is based on the study of the equipment of the agricultural sector with agricultural, melioration equipment and water pumps over the past five years, the Resolutions and Decrees of the President of the Republic on improving equipment, manufacturing and providing equipment to farms in the agricultural sector and materials collected from the Internet were studied, and the materials were processed using mathematical methods and an analysis was made based on the theory and practice of the disciplines: machine reliability, tribonics and qualimetry [1, 2].

The methodological aspects are that it has studied, collected and analyzed the Resolutions and Decrees of the President of the Republic for the last five years on improving, increasing the technical level of equipment, delivery to farms and repair enterprises, compensation for travel expenses, studied the "Road Maps" and appendices. In addition, the experience of foreign countries (Germany, the Czech Republic, Great Britain, the USA, Russia, Belarus, Ukraine, Kazakhstan, etc.) in

providing farms with equipment, in restoring the resource of worn-out parts and in organizing "Repair and Technical Enterprises) (RTE) was studied.

Effective use of equipment in the agricultural sector of the Republic - increasing productivity, restoring the resource of worn parts, performing technological processes of current and aggregate repair of melioration and agricultural machines is necessary - since the performance of machines for the entire period of consumption, it is not possible to keep them as new, friction occurs between rubbing pairs, wear out, corrode, rust, warp, break, get damaged, and also under the influence of a number of negative factors (air, water, force, rust, dust, friction and dust), it becomes unusable and requires repair. Therefore, our engineers-bachelors of mechanics, farmers and private landowners have high requirements for machines (manufacturer), machine design, their adaptability to maintenance, improving maintainability indicators.

The level of reliability indicators of agricultural machinery in farms is low. 2/3 of the existing machines and tractors are outdated and require repair. In 2017-2030, the number of machines and tractors that will appear in farms (by 2030, more than 32.7 thousand agricultural machines will be produced per year) will sharply increase the volume of work on technical maintenance, repair and conservation work. However, as a result of changes in the economy of the republic - the reform of the repair and operational technical base has been reduced to a certain extent. All this does not allow the effective use of equipment and resources for many years (15-25 years) in agricultural farms, the culture of mechanization is declining [2]. Fig. 1 shows the state of the service life of equipment used in farms of the agricultural sector of the Republic of Uzbekistan.

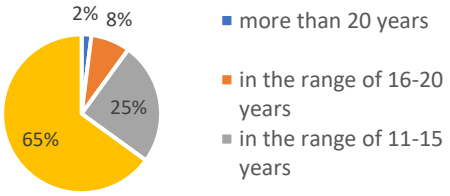

Fig. 1. Diagram of the service life of equipment used in farms of the agricultural sector of the Republic of Uzbekistan

The analysis shows that the share of equipment with a service life of more than 10 years used in farms is 35%, which requires significant costs for maintenance and repair. Restoration of worn parts can significantly reduce the cost of repair of machines and equipment, increase its reliability. The experience of leading enterprises shows that the restoration of worn parts with modern progressive technologies can significantly reduce the downtime of machines and

equipment, increase the service life between repairs, and reduce the consumption of spare parts. The share of restored parts in developed foreign countries reaches 30-35% of the total volume of consumption of spare parts [3].

Restoration of worn parts allows to significantly reduce the costs of equipment repair and therefore is a priority issue in the development of the system of technical maintenance and repair of machines [4 – 11].

It is desirable to create a modern system of development of the private sector in the field of agricultural machinery maintenance, since the analysis showed that 63% of services are provided by the private sector [12].

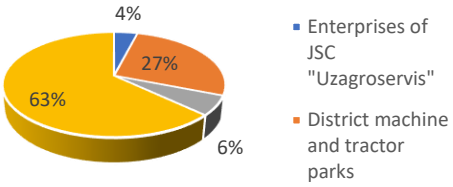

Fig. 2. The share of enterprises providing technical services to farms in the agricultural sector of the Republic of Uzbekistan

The following recommendations and proposals are given for the creation of mini-workshops (training of equipment, preparation for the season, maintenance, troubleshooting, long-term storage and diagnostics of technological processes) depending on the quantity, model, area of the land plot and types of agricultural crops on farms.

1) "Mini-workshop" for farmers, designed for testing new equipment, adjusting parameters according to seasonal agrotechnical requirements and technical training.

2) "Micro-workshop" for jointly organized (associations) of 3-5 farms and dehkan farms - capable of performing technical maintenance, troubleshooting and routine repairs of technological processes.

3) "General technical workshop" capable of performing periodic technical maintenance, troubleshooting, technical maintenance of the improved "Scheduled Preventive Maintenance System", with a periodic element of repair and technological processes in district centers.

4) "Mobile repair and welding" workshops are necessary for disassembling, repairing and diagnostic work in the field.

An important part of the new recommendations is the creation of stations with a modern material and technical base in the machine and tractor parks of districts and regions or by forming associations of 3-5 farms. These bases will be able to carry out repair work independently or directly in the field (using mobile workshops).

This, in turn, allows the farmer to reduce the cost of restoring the machine's resource and increase the productivity of work in the field. Today, repair and troubleshooting of equipment in the field remains an objective necessity, since during the period of its operation, not a single unit, assembly, rubbing part or detail in the machine is designed for constant operation without breaking or bending in the hands of the machine operator, the consumer. It rubs, bends, warps, breaks and rusts.

People can be calm when they are healthy and cheerful. Our farmers and dehkans are "in good condition" only if the machines, mechanisms, units and equipment they use are ready for work, adjusted and suitable for operation. Then, with the help of machines, it is possible to fully and with high quality fulfill agrotechnical requirements and achieve the planned yield plans. Therefore, it is advisable to create material and technical centers in districts and regions, consisting of departments for technical maintenance, repair, storage, diagnostics and restoration of the resource of parts.

In conclusion, it should be noted that the repair of agricultural machinery by current and aggregate methods, high-quality technical maintenance in the field and at stations, restoration of the resource of useful parts using modern technologies in workshops, proper organization of long-term storage of equipment, specialized scientific research of higher educational institutions is desirable to be carried out in departments and laboratories, based on the results to create innovative ideas and technologies.

The main direction is to increase the productivity of machines, provide sensors for technologies used in the working parts of machines, increase the productivity of machines, increase the level of equipment provision, maintain interest rates on subsidies and loans, adapt the range of machines and simplify maintenance, repair, storage and diagnostics, improve reliability indicators, create a cheap and small-sized type of machine.

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