

The Impact Of The Organization Of Operation And Maintenance Of Agricultural Equipment On The Quality Of Equipment

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Abstract

This article discusses the types of seasonally used agricultural machinery and the importance of proper organization of their storage and maintenance in increasing the service life of the equipment.

Separate storage requirements are established for each type of equipment. The degree to which storage requirements are met will lead to a decrease in the number of failures (breakdowns) of equipment during operation. As the number of failures increases, work efficiency decreases and operational performance decreases.

Keywords: Machine, Mechanism, Repair, Equipment, Storage, Tractor, Rust, Protection, Operation.

Agricultural machinery and mechanisms (repair facilities) operate in complex conditions and perform various tasks.

Agricultural machinery can be divided into three classes according to its function:

- Tractors;
- Agricultural machinery;
- Livestock and feed production, horticultural machinery.

This with Each class is divided into different groups of machines and equipment

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Class 1 agricultural machinery includes tractors, trailers , and self-propelled chassis.

Agricultural machinery in the second class is divided into 11 groups according to its function.

1. Soil tillage machines; stone pickers, pond and ditch diggers, levelers, stump grinders, harrows and levelers, plows, cultivators, harrows, root harvesters, etc.
2. Machinery for planting and transplanting; seed drills, transplanters, seedling transplanters, etc.
3. Fertilizer preparation and application machines; mixers, sprayers, spreaders, fertilizer trailers.
4. Plant protection machines; sprayers, aerosol devices, herbicide-ammonia machines, pollinators, seed treatment machines, etc.
5. Irrigation machines; sprinkler systems and various types of machines, pumping units, etc.
6. Combine harvesters; harvesters for grain, rice, and corn (this group also includes trailers for separating grain from grain crops and transporting various agricultural loads.
7. Machinery and equipment for harvesting oilseeds and pulses; hemp, tea, cotton, bix, etc.
8. Machines for cleaning and sorting grain and seeds; washers, seed cleaning machines, etc.
9. Drying devices; agricultural dryers, air heaters, etc.

10. Machines for harvesting and primary processing of vegetables.

11. Machinery used in horticulture; fruit harvesters, soft fruit and grape harvesters, sapling transplanters, cutters, fruit and soft fruit transport equipment.

Agricultural machinery in the third class includes machines and devices for livestock and fodder production. They are divided into 3 groups depending on the nature of their use.

1. Machines and devices that create a microclimate in livestock buildings.
2. Machines and equipment working under the influence of wet and semi-wet feeds.
3. Machinery and equipment that interacts with waste and manure.

In addition, agricultural machinery can be divided into permanent and seasonal machinery.

It is necessary to properly organize technical inspections of regular and seasonal equipment and maintain it in good condition for the new season. Because aggressive environment under the influence main working metal parts rusty will be deported. In Nazijada of the technique inside suitability indicators decreasing goes.

We take went Studies have investigated the organization of seasonal maintenance of machinery and the importance of maintenance in increasing the performance of machinery [1,2,3,4].

The experimental object of the study was taken as an example of equipment serving farms in the Kurgontepa and Izboskan districts of the Andijan region.

The condition of the equipment was studied based on the conditions for organizing the storage of seasonal equipment placed in storage for 90-120 days. The research was conducted on the basis of recommendations given in the scientific and methodological literature created on the basis of scientific and practical proposals proposed by an independent researcher from the Andijan Institute of Agriculture and Agrotechnology and the Andijan Institute of Mechanical Engineering.

The division of agricultural machinery into groups is very important. Because one group includes both simple and complex equipment. For example: Group 6 of Category 2 includes a grain harvester, which is complex in its structure, and trailers for transporting agricultural products, which are simple in structure. Therefore, the technology of obtaining protective coatings for the protection of these machines must be different. In many cases, it is required to use different types of coating materials, but a homogeneous coating is used. However, when used in these and other cases, different climatic conditions affect them, and they can operate in different atmospheric conditions. In this case, the choice of coating materials and their coating technology is based on technical and economic feasibility.

When preparing seasonal equipment for storage, it is also important to pay attention to contamination on the metal surface, as residues on the metal surface create conditions for rust and cause the metal to deteriorate over time.

The classification of pollution by the nature of its formation is shown in Figure 1. All listed pollutants contain complex mixtures of liquid and solid forms with different granulometric compositions, which ensure the adhesion of pollutant particles to the surface of agricultural machinery.

Save of the term exceed The process of decay strengthens, metals to rust activity to increase take Agricultural machinery work efficiency and service metal parts and to the details protection the coating application through from rust protection will be done.

This because of the technique far for a period of time to keep to put, to protect coatings improvement and new types to create demand [5,6,7].

Below pollution types cited is , that technique work ability negative impact shows .

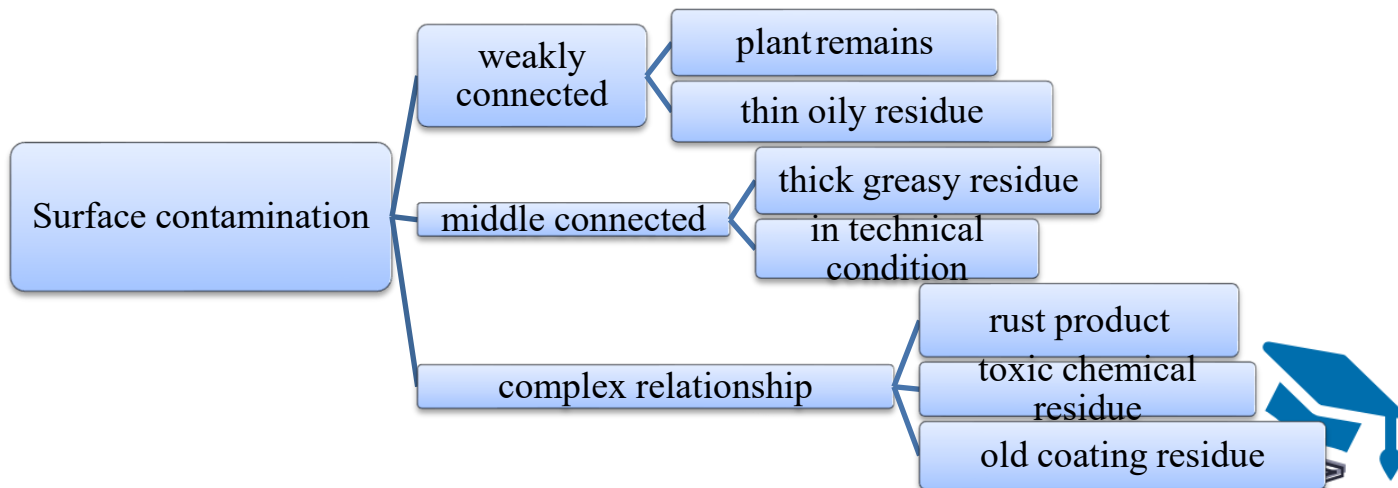


Figure 1. Classification of pollution by the nature of formation

The types of storage of agricultural machinery are determined by their storage period and operating conditions. For example, short-term storage machinery is stored in open areas, while long-term and complex machinery is stored in closed conditions. Storage preparation of the technique type connection metal and rubber and composite parts different methods with is stored [8,9,10].

Despite the creation of combines that perform several agricultural tasks, most of the machines, equipment and devices are used for a very short time. For example, grain, beet, cotton harvesters are used for a year They work 30-40 days, which is 7% of the calendar time; seeders, reapers, potato planters, etc. - about 15 days, 2-3% of the calendar time). Tractors work the longest, but this does not exceed 220 days a year.

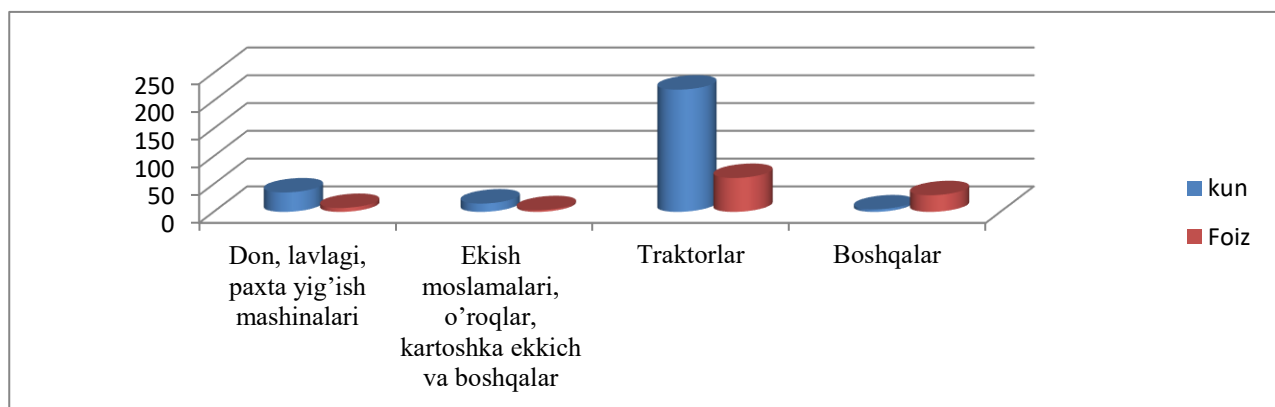
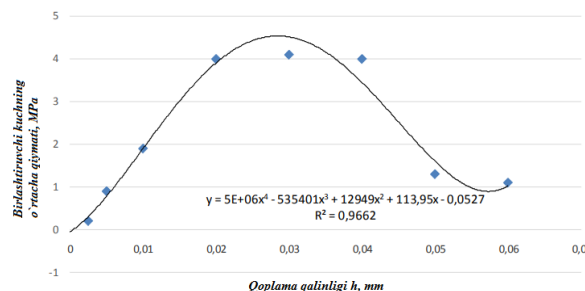


Figure 2. Graph of seasonal equipment operating times in time and percentage

Since the working parts are mainly made of metal and almost 85-90% of the equipment is made of metal, the machines are covered with protective coatings. In this case, mainly the working bodies, frames, tanks, box bodies, and the external parts of

the tractor are covered with varnishes and oil coatings. As a result, the metal surface external protection coating with covered is considered .

Figure 3.
of strength to
dependency .



Coatings merger
the thickness

But on a metal surface old rust residue , various salty bricks , the rest if internal rust continue to cover devoured The coating adygea and has low elasticity and is resistant to metal surfaces migrate goes .

We research our results metal surface based on protection for peat content the coating offer to the metal surface varnish the coating from rubbing before to the surface this coating is applied and then varnish The initial coating is applied to the metal surface . tight covered , special film harvest If the paint migrate rust modifier on the surface even when it is gone move It won't go away .

This from the coating open and closed storage in methods wide use possible . On a metal surface tight stuck film harvest On a metal surface harvest possible salty to inert the layer cause , rust process slows down . This because of of metal work activity far for a period of time extends , validity increases .

Impact doer main from parameters one protection of the coating quality , thickness is the applied coating layer .

Crack probability determination for (adhesion) and studied (elasticity) coating cleaning , research artificial climate under the circumstances was held , later every kind thick covered samples also voltage and viscosity determination for from the test was held . (every one thickness 20 samples for) .

According to the results obtained, the storage of seasonal agricultural machinery is organized in open and closed ways. O output and closed storage area of the technique number and type looking at marked . Shaqlash conditions metal parts according to to keep preparation traditional varnish paint in the coatings and modern promising rust modifiers support saved .

According to the results obtained, it was found that the corrosion resistance of working parts of agricultural machinery increased by 65÷75% compared to conventional storage methods. It was found that a film layer formed on metal surfaces, reducing the corrosion process.

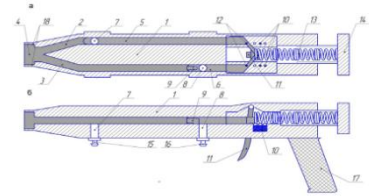
Based on the analysis of the dependence of the adhesion strength of coatings on the thickness, it can be seen that the rational thickness of the sample layer should be in the range from 0.02 to 0.04 mm, since a further increase or decrease in the layer thickness will lead to cracking of the coating.

To ensure high-quality preparation of the metal surface of machines and the preservation of their components, it is necessary to provide a set of special equipment and implement an appropriate process sequence mechanism.

To solve this problem, the following equipment simplifies the workflow when performing the specified tasks.

Figure 4. Universal sprayer (with core) liquid the material formation for device .

1 – core base , 2,3 – directional channel , 4 - mixing chamber , 5,6 - valve needles , 8,7 - holes , 9 - valve G -shaped on the needle tube , 10 – spring fixator , 11 – click button , 12 - distributor needles fastening gasket , 13 - spring , 14 - adjustment bolt , 15,16 - rods , 17 - handle .



Coating preservative as use agricultural machinery to keep from putting before the material surface to rust activity to reduce opportunity gives , this and his/her service deadline extends . This with together , offer being done coating as (Inventions . Official newsletter , No. 4 30.04.2014 **13 B (21)** IAP 2012 0424 (**22**) **19.10.2012 (51)** 8 C 23 F 11/00 Zangni loss for modifier Modifier for deletion from corrosion) use possible .

Conclusion . Based on the results of the analysis, it is necessary to pay great attention to the storage conditions when storing seasonal agricultural machinery. At the same time, it is advisable to clean the metal surface, apply a protective coating and treat it with modern rust modifiers. Because an additional protective coating is formed on the metal surface, which reduces the level of rust. In order to prevent this, we offer the following:

metal surface, we propose a peat-based coating, in which this coating is applied to the metal surface before applying a paint and varnish coating, and then the paint is applied. The initial coating adheres tightly to the metal surface, forming a special film. Even if the paint and varnish are removed, the rust modifier on the surface does not move.

This from the coating open and closed storage in methods wide use possible . On a metal surface tight stuck film harvest On a metal surface harvest possible salty to inert the layer cause , rust process slows down . This because of of metal work activity far for a period of time extends , validity increases .

Used literature list

1. Asomiddinovich, XA (2025). Agriculture machines worker details rust classification . *Best intellectual Iceland* , 39 (3), 156-170.
2. Khojimatov, AA (2024). Agriculture techniques storage methods and problems . *Global sciences according to education research* , 3 (13), 136-144.
3. Khojimatov, AA, & Oripov, G. (2020). Agricultural cluster in systems used of equipment metal parts aggressive from the environment protection to do *Uchenyy XXI veka* , (12-1 (71)), 3-7.
4. Khozhimatov , A. (2023). Analysis of destruction and protection of details of agricultural machinery. In *E3S Web of Conferences* (Vol . 383, p. 04064). EDP Sciences .
5. Khojimatov, AA (2023). Agriculture techniques on metal surfaces aggressive of the environment effect *Oriental renaissance: Innovative, educational, natural and social sciences* , 3 (1), 259-268.
6. Khajimatov A. A. , Alibekov R. K. Call active in environments construction of steel to decay resilience //innovative developments and research in education. - 2022. - S. 21.
7. Khojimatov AA, Oripov G. Agricultural cluster in systems used of equipment metal parts aggressive from the environment protection to do // *Uchenyy XXI veka* . 2020. No. 12-1 (71). URL: <https://cyberleninka.ru/article/n/protection-of-metal-parts-of-equipment-used-in-agricultural-cluster-systems-from-aggressive-environment> (data obrashcheniya: 10.01.2023).

8. Khojimatov AA, Mamajonov ZA Seasonal agriculture techniques use and storage of the conditions technique to the quality impact //Educational Research in Universal Sciences. - 2023. - T. 2. – no. 1. - S. 40-45.
9. Khojimatov AA Livestock in clusters aggressive in the environment working to techniques service show prospects //Science and Education. - 2022. - T. 3. – no. 11. - S. 599-603.
10. Khozhimatov, A. A. (2021). Animal husbandry in their cars corrosion the environment appearance to be reasons and them analytical . *Academic research in educational sciences* , 2 (6), 572-577.