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UDC 631.3 (575.1)

PRINCIPLES OF JUSTIFYING THE MACHINE COMPOSITION AND REGIONAL TECHNICAL SERVICE SYSTEM FOR AGRICULTURAL CLUSTERS OF THE REPUBLIC OF KARAKALPAKSTAN

https://doi.org/10.5281/zenodo.17695660

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In world practice, agricultural clusters and farms are among the main producers of agricultural products. Most of these entities have their own machine and tractor fleet, repair and maintenance points, and mobile workshops. Sudden malfunctions in the machines of agro-clusters working in the field are eliminated independently with the help of these points and workshops, and shift service is provided. Orders are placed at central service enterprises to perform complex malfunctions and maintenance work.

In many countries of the world, scientific, practical, and innovative research is being conducted on the problems of ensuring the effective use of mechanization resources on the balance sheet of agricultural producers throughout the year. In this direction, conducting targeted scientific research on the substantiation of the structural and quantitative indicators of the machine and tractor fleet and the maintenance (maintenance) base necessary for the production of these entities is one of the urgent tasks. In this regard, in the cotton-textile, grain, fruit and vegetable, and rice-growing clusters operating in the Republic of Karakalpakstan, there is a need to create rational fleets of machines and points for their maintenance, corresponding to their production areas.

Cabinet of Ministers of the Republic of Uzbekistan. The “Program for the Study of Priority Areas of Agriculture, Scientific Solutions to Global Regional and Territorial Problems for 2022-2026”, approved on April 24, defines the tasks of “Development of calculation models and calculation programs for substantiating the rational composition and quantity of agricultural machinery and repair and maintenance facilities, ensuring high production indicators of cotton-textile, grain, fruit and vegetable, and rice-growing model clusters”. An important factor in the implementation of these tasks, in particular, in the “Wide use of high-performance agricultural machinery”, is the creation of general models of cotton-textile, grain, fruit and vegetable, and rice-growing clusters operating in the Republic of Karakalpakstan, the formation of a private machine and tractor fleet of model clusters based on the criteria of the

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duration of the agrotechnical season and the average productivity of units, the selection of maintenance points and equipping them with the necessary technological equipment.

This dissertation research was carried out in accordance with the Decree of the President of the Republic of Uzbekistan No. UP-4947 “On the Development Strategy of New Uzbekistan for 2017-2021”. Decrees of the President of the Republic of Uzbekistan dated December 14, 2019 No. UP-5285 and dated March 29, 2019 No. UP-5388, Resolution of the President of the Republic of Uzbekistan dated July 31, 2019 No. PP-4410 “On Measures for the Accelerated Development of Agricultural Machinery, State Support for the Provision of the Agricultural Sector with Agricultural Machinery”, Resolutions of the President of the Republic of Uzbekistan No. 806 dated September 24, 2019 and No. 986 dated December 12, 2019, as well as other regulatory legal acts related to this topic, serve to a certain extent the implementation of the tasks defined in them.

Research on the creation of models of farms, agrofirms, and agroholdings producing agricultural products, determining the composition and size of the machine and tractor fleet, creating a technical maintenance base for such a fleet, and increasing its efficiency was conducted abroad by Y.I. Bershitskiy, A.V. Belyavtsev, A.Y. Polyak, R.V. Zharikov, S. Kozlova, O.S. Marchenko, A.N. Repetov, S.M. Babusenko, V.I. Chernoivanov, P.V. Privalov, M.I. Yudin, V.M. Livshits, and others [1-10].

In Uzbekistan, such scientists as M.Toshboltayev, Y.I.Naumov, E.T.Farmonov, R.Rustamov, M.Kabulov, Z.Seytimbetova, M.Djiyanov, B.A.Chernov, S.Shamshetov, D.Zhuravlev, A.Sungatulin, V.Zatsepin, and others conducted research in these areas [11-16].

The ideas, proposals, and recommendations formulated during these studies have been applied in the maintenance system for tractors and agricultural machinery, with certain positive results achieved. However, they did not study the issues of creating territorial and general models by land areas of cotton-textile, grain, fruit and vegetable, and rice-growing clusters operating in Uzbekistan, in particular in the Republic of Karakalpakstan, substantiating the rational composition and number of machines necessary for the production of model clusters, and organizing maintenance points that ensure the operability of machines during the agrotechnical season.

The purpose of the research is to develop general models of cotton-textile, grain, fruit and vegetable, and rice-growing clusters located in the northern, central, and southern regions of the Republic of Karakalpakstan, to substantiate the rational composition and quantity of required machines by areas of activity, and to increase the level of mechanization in agro-clusters by

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organizing maintenance points that ensure their serviceability.

The objectives of the study were:

- cotton-textile and grain production, operating in the northern, central and southern regions of the Republic of Karakalpakstan, Analysis of fruit and vegetable and rice clusters by land area and location;

- creation of general and territorial models of cotton-textile, grain, fruit and vegetable, and rice-growing clusters by land area, substantiation of the composition and quantity of technical means required for the production of the corresponding agricultural products;

- organization of maintenance points for the machine and tractor fleet on the balance sheet of the main model, selection of the necessary composition of technological devices and equipment, and evaluation of their effectiveness.

Object of the research:

- cotton-textile, grain, fruit and vegetable and rice clusters operating in the Republic of Karakalpakstan, their balance sheet crop areas and agricultural machinery, main and regional models of clusters, repair and maintenance bases were taken.

Subject of research:

- cotton-textile, grain, Parameters and indicators of the main models of fruit and vegetable and rice clusters, such as rational sown areas and the types and quantity of technical means required for these areas, standard designs of maintenance points and their location by region.

Research methods. In the research process, monographic observation, information synthesis and analysis, rules of comparative analysis, mathematical methods, as well as methods of the science of operation, restoration and repair of agricultural machinery are used.

Expected scientific novelty of the research:

- general models of cotton-textile, grain, fruit and vegetable, and rice-growing clusters by land area are developed in the context of northern, central, and southern regions;

- the rational location of the main models of cotton-textile, grain, fruit and vegetable, and rice clusters by region is determined;

- the main models of cotton-textile, grain, fruit and vegetable, and rice-growing clusters are based on the composition, types, and quantities of technical means required for growing crops on land plots;

- sample designs of machine maintenance points of the main model clusters in the cotton-textile, grain, fruit and vegetable, and rice sectors, as well as the composition of the necessary technological equipment and devices, are selected.

The practical significance of the work is explained by the creation of opportunities to increase the level of mechanization in agricultural sectors by substantiating the composition and number of machines for agro-clusters of the Republic of Karakalpakstan, creating a regional technical service system.

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Thus, the solution of such an urgent scientific and technical problem as substantiating the composition of machines and the territorial system of technical service for agro-clusters of the Republic of Karakalpakstan will ensure an increase in the efficiency of agro-cluster production.

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