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THE MAIN DIRECTIONS OF CREATING MODELS OF AGRICULTURAL PRODUCTS PRODUCING SUBJECTS

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Abstract

It is known that in the science of increasing the level of use of the machine-tractor park, the creation of land area models of agricultural production entities (for example, agroclusters, farmers' and peasant farms, cooperatives, holdings), substantiation of the content and quantities of technical means required for their production and optimization, analytically analyzing the scientific research carried out in the directions of the organization of machine maintenance facilities and choosing new research topics on this basis is an important methodological issue.

In the monograph of M. Toshboltaev [1], the definitions of the concepts of model and model farm are given: model is derived from the Latin word modulus - measure, norm, and in a broad sense represents the image or sample of an object or a system of objects. For example, the model of the earth is a globe; model of the sky and its stars - planetarium; a model of a crop field - a phytotron (a building designed for growing plants in artificially controlled conditions).

A model is a conceptualized or materialized system that, together with reflecting or copying the object of research, replaces it in such a way that the study of such a system gives us new information about this object.

The characteristic feature of models is that they are incomplete and private, they only represent the object in a simple, approximate way; no model can fully represent all properties and relationships of the object being modeled.

A model farm is a theoretical farm in which a group of farms located in a certain area of the republic (province, district) reflects the soil, climatic conditions, levels of material and technical means of supply, production and other characteristics relatively fully.

The described model can be considered general, because it represents the general characteristics of real objects–farms [2].

It should be mentioned that, although clusters and farms are the main subject of agricultural production in Uzbekistan, their soil, climatic conditions, the size of land areas, directions of product production (cotton, grain, rice, vegetable, horticulture, etc.), practical technological operations models that fully reflect the composition (models, types of machines), quantities and other characteristics of the equipment park that ensures full mechanization have not yet been created.

In the article of Yu.I.Bershitsky and O.V.Kuzmenko [3], a farm with a land area of 2,400 ha was taken as a model farm and it was noted that the optimal seasonal loading of mechanization means in the balance of this subject is ensured in such a size area. But this claim has not been proven in practice. In this work, taking the minimum operating expenses spent on the production of agricultural products as a criterion, an attempt was made to determine the efficiency limits of the formation of a private machine park of a model farm. With the result of optimization, it was concluded that when the cultivated area is in the range of 250-260 hectares, the farm can establish its own private machine park and it will bring a net benefit to the farm. However, the types and quantities of the types of crops grown in these areas and the machinery that must be maintained in the balance of the machine park have not been determined; studies on these issues have not been conducted.

[4] literary authors V.R.Gubko, E.A.Finn called farms with 2, 2.5 and 4 thousand hectares of land as model farms without any proof. Based on a special algorithm, the optimal amount of energy resources was found. The minimum number of energy tools and aggregates used during the period of production of agricultural products (season of measures) was accepted as optimization criteria. Load graphs of tractor units and self-propelled machines were constructed for all three farms, and it was determined that the T-125 wheeled tractor was superior to the tracked tractor in terms of productivity and required quantity.

Iskakov-Plyukhin B.I., Tyulenev A.V., Kutkov G.M., Mininzon V.I. [5] have developed a mathematical model for determining the optimal system of agricultural tractors and machines for a set of model farms in a whole country. It is assumed that technological operations of a specific volume are performed in agrotechnical terms with the help of machine-tractor aggregates consisting of a tractor of a certain type, traction class and power, and a machine of a certain scope, throughput or load capacity. As an optimization criterion, the minimum annual costs of aggregates were taken. Unfortunately, parameters and characteristics of model farms are not presented in this work.

Researcher A.V. Belyavtsev's article [6] describes the results of choosing the number and power of tractors in accordance with the size of farm land. According to this literature, English farmers with 100-200 hectares of land choose 3-4 tractors with a power of 59-74 kW (80-100 hp); It uses 6-7 tractors with a power of 110 kW (150 hp) on fields of 300-400 hectares. German farmers of 10-50 hectares use 1-2 22-44 kW (30-60 hp) tractors and 1 11-15 kW (15-20 hp) small tractor. French economists believe that it is efficient to use tractors with power between 59-88 kW (80-120 hp) for farmers with a cultivated area of more than 80 hectares. However, this study lacks data on the rationality of cultivated areas and the types and models of tractors used.
The author of the [7] literature E.N. Borodina determined that as the size of the land area of farms increases, the volume of orders given by them to service organizations for the performance of mechanized work decreases from 42 percent to 12 percent. However, issues such as what type, model and number of tractors and machines the farmers' private vehicle fleet consists of, which agrotechnical activities they can perform independently, and which service organizations they turn to for the performance of mechanized work, remain open.

According to N.A. Kirillov, the majority of agricultural products in the United States of America (USA) are grown on farms. Due to the industrialization of agricultural production, the use of high-performance machines, and the desire of farmers to make a large profit, farms in the United States are becoming larger every year [8]. Here we are talking about land areas, not farm models.
It is known that one of the important parameters of farm production is its land area, the optimal value of this area. [9] the following definition of the optimal land area by D. Tojiboeva is given in the literature: "optimal land area is the area of the size that provides the opportunity to achieve the maximum level of efficiency due to the rational use of resources in the conditions of existing specialization." In recent years, the scope of research on determining the optimal land area of a farmer has expanded. In particular, Kh. Karimova in her article [10] showed that the optimal area for the Tashkent region should be more than 100 hectares. But this proposal is not supported by the types of crops grown in these areas, the composition and number of technical means required for their maintenance.
In the monograph of M.Toshboltaev and M.Dzhiyanov [11], the theoretical and methodological principles and normative methods of determining the rational composition of the machine-tractor park of cotton-textile clusters operating in Uzbekistan, the composition and quantity of agricultural machinery required for 1000 hectares of cotton area, the duration of the agrotechnical season and the method of determining the average seasonal productivity of machines, the methods of creating

the main and regional models of cotton-textile clusters in the cross-section of land areas are given.

Despite the increasing number and effectiveness of cotton-textile, grain, fruit-vegetable and rice-growing clusters in the Republic of Karakalpakstan engaged in cotton, grain, fruit-vegetable, rice cultivation and full processing of raw materials, territorial and general models of such clusters by land area have not been created yet. We believe that it is necessary to take into account the following parameters when creating such models: direction of production; soil and climate conditions; field sizes; the size of the cultivated area; crop productivity; types and number of applied technological operations; condition of the existing machine-tractor park; the composition of the repair and service base; degree of idolatry with mechanizers.

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