

## **DIRECTIONS OF REPRODUCTION OF THE TECHNICAL POTENTIAL OF AGRARIAN PRODUCTION**

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**Introduction.** The transformation of agricultural production into global integration processes has led to significant changes in agriculture. As world experience shows, progressive development of agriculture is possible on the basis of innovative and technological development under the influence of scientific and technological progress. It is innovation and technological development that determines the level of development of the agricultural sector of the economy. In modern conditions, the level of engineering and technical support of agriculture has significantly deteriorated. The structure of the market of agricultural machinery has changed, which requires new approaches to the formation of the system of engineering and technical support of agricultural production [1, 2].

**Main part.** The modern development of agricultural production is determined by the ability to timely and efficiently ensure the agronomic requirements for growing crops. The development of agriculture largely depends on the technical support, which is characterized by the number of technical means, their productivity and quality, compliance with environmental requirements, operational safety and technological excellence of production. Production of environmentally friendly products based on the introduction of new technologies with the use of structurally new high-performance machines. All over the world, revolutionary changes have taken place in the last decades in the production of agricultural products, especially in crop production. Their essence is to biologize technologies, save energy and resources to perform technological operations, protect the environment, increase environmental safety in the production process. Biologization is carried out in the directions of reducing the anthropogenic load on the soil, improving the vital activity of the biological mass of soil microorganisms, creating a balanced water-air and thermal regimes, which leads to more intensive assimilation of mineral elements by plants [3, 4].

Modern world strict biological requirements for agricultural products influence the tendency to create new machines and technologies. The creation of new machines and working bodies is in the direction of the ability to work on different types of soils, loosen or compact depending on the need at different depths, reducing anthropogenic pressure by ensuring biological development. technological preparatory period, introduction of modular units for performance of various technological operations, maintenance of accuracy of performance of technological operations. New resource-saving and ecological technologies of tillage combine the performance of separate technological operations, for example, soil preparation, loosening to the required depth, application of organic and mineral fertilizers, precise sowing, soil compaction, harrowing. The strategy of the innovative concept of development of agrotechnologies and their technical maintenance consists in optimization of terms of performance of all complex of operations and agrotechnical requirements for reception of the programmed crop with the set qualitative parameters [5, 6].

The growth of technological requirements for agricultural production is accompanied by the formation of a new set of technological machines. In the absence of working capital, most affected by the crisis, the domestic agricultural machinery is unable to ensure the development and production of high quality equipment. In the conditions of fierce international competition in the market of technical means the segment of imported new and used agricultural machinery is developing more and more. Such trends are caused by market requirements for the production of competitive agricultural products. The market of imported agricultural machinery is increasingly providing agricultural production with the necessary technical means for the introduction of advanced agricultural technologies. Domestic agricultural machinery is gradually losing its position in the market of technical means, and agricultural machinery in terms of technical characteristics and quality of manufacture is less and less able to compete with foreign ones [7]. As a result, the technical level of domestic machines is extremely unsatisfactory, and the implementation of new developments is slow in the absence of funds from enterprises. This state of engineering and technical support requires a comprehensive analysis of the state and trends of development, taking into account issues of scientific, engineering, organizational, economic, legal and social nature (Fig. 1).

At the beginning of the XXI century there are changes in the infrastructure of the market of technical means under the influence of agrarian reform, accompanied by land unbundling and changes in the size of land, the

emergence of new legal forms of management and landowners. According to the Ministry of Agrarian Policy at the beginning of 2019 about 65 % of agricultural land was owned by small and individual landowners who own land plots of 5–80 hectares [7, 8].

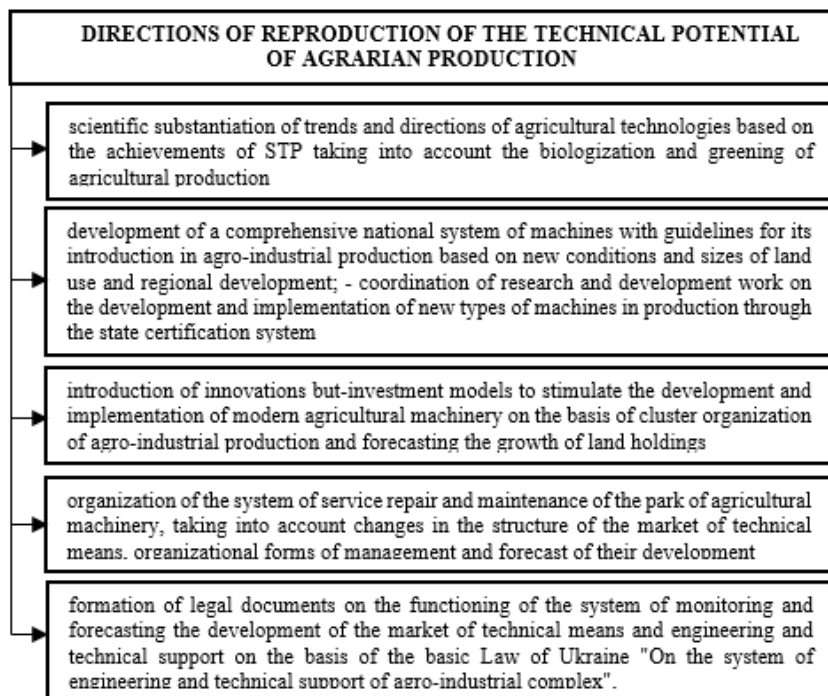


Fig. 1. Directions of reproduction of the technical potential of the agrarian production

The change in demand for agricultural machinery has significantly changed the structure of the market for technical equipment and led to the intensive import of new and used imported agricultural machinery. The growing trend of imports of agricultural machinery continues, for example, only in Ivano-Frankivsk region over the past decade, imports of machinery increased 8.5 times. At the beginning of 2019 about 40 % of the operational fleet of machines is imported agricultural machinery. In connection with the creation of the market infrastructure of the agricultural sector, there is a revival in the establishment of a system of logistics through agro-trading

houses, agro-leasing companies, branded technical centers, service stations, logistics companies, etc.

In recent years, the system of technical service and repair and restoration works has been destroyed. Many agro-service enterprises have changed their profile. In Ivano-Frankivsk region, out of 22 repair and technical and service enterprises, only 3 have retained their business profile. With the changes in the market structure, the market of technical service is gradually restored, this is due to the operational complexity of machines, the need for highly qualified maintenance and service personnel and the gradual replenishment of the fleet of machines with imported equipment.

The market of technical and technological services is being introduced more and more widely. Agricultural maintenance should be considered in a market environment in close connection with the production and use of machinery. Associations of manufacturers and consumers of equipment, suppliers of technical equipment and service and technical stations operate in many countries around the world, for example, a dealer network of engineering and technical support of farms in the US, regional engineering stations in Poland, service centers in the Czech Republic and others. Worth noting is the foreign experience of using agricultural machinery, where various structural forms of agricultural production operate successfully in the agricultural market: cooperatives, peasant unions, firms, joint-stock companies, corporations, etc. Considering the structure of the market of agricultural machinery and spare parts, the following segments can be distinguished: the market of new domestic machinery supplied by manufacturers, branded centers, dealers, trade and commercial centers; the market of refurbished domestic equipment coming from repair enterprises, supplied by repair enterprises, branded centers, trade intermediaries; the market of new imported equipment supplied by importing companies, commercial and service companies, dealers, representative offices; the market of refurbished imported equipment imported by foreign companies, representative offices of companies, dealers; the market of used foreign equipment sold at residual value without restoration work, as a rule, the degree of wear is insignificant. The sale is carried out by firms and representative offices of foreign companies, dealers, agents.

Reforms of the agricultural supply system led to the creation, along with general wholesale markets, of local markets for tillage, sowing, grain harvesting, meat and dairy, baking and other types of machinery. This segmentation of hardware markets is conditional because joint-stock companies, companies, firms sell all types of equipment and provide comprehensive

services for pre-sale, after-sales service, warranty service, supply of spare parts, training and other operational services.

**Conclusion.** Thus, in order to carry out technical re-equipment of agricultural producers, it is necessary to ensure coordination of the activities of state administrative structures and to form appropriate engineering and technical support services. In such conditions, a purposeful state technical policy is needed aimed at technical renewal of the material and technical base of agriculture, production of modern agricultural machinery and appropriate engineering and technical support.

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*Аннотация:* Исследовано состояние и перспективы инженерно-технического обеспечения аграрного производства на основе инновационно-инвестиционных процессов, происходящих в агропромышленном комплексе под влиянием изменений рынка сельскохозяйственной техники. Учтены региональные особенности и определены направления и принципы воспроизводства технического потенциала сельского хозяйства.

*Ключевые слова:* агропромышленный комплекс, технический потенциал, направления воспроизводства.