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MODERN ARTIFICIAL INTELLIGENCE TECHNOLOGIES IN THE AGRICULTURAL SECTOR

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Problem statement. Until recently, the use of artificial intelligence technologies would have seemed a rather strange concept. Nowadays, the introduction of innovative ideas in the agro-industrial complex is a revolutionary method of doing business. The latest artificial intelligence technologies are becoming increasingly important as climate change and the irrational use of resources threaten the country's food security. The introduction of the latest technologies will minimize the disadvantages and threats of the traditional form of doing business in the agro-industrial complex.

Main research materials. Artificial intelligence technologies in the agricultural sector can help to study the composition and characteristics of the soil for each individual crop, collect information on changing weather conditions, track the timing of fertilizers and pesticides, monitor the entire supply chain and the harvesting process, and apply controlling methods to increase productivity and profitability. Today, scientists are engaged in the application of artificial intelligence technologies in the agricultural sector, namely, the use of applications, scanning systems, machine learning; research of the advantages and disadvantages of using modern information technologies [1, 2]. The process of activity in the agro-industrial complex is quite complex and time-consuming. Automation of agricultural production processes allows minimizing both material and technical [3] and labor resources. Thanks to modern innovative technologies (drones, software, unmanned agricultural machinery), the production process is being transformed, i.e., more efficient management methods are being introduced to maximize production and minimize production costs.

The United States is the biggest innovator in this area. According to MarketsandMarkets, the AI market is expected to grow every year. In 2023, the Center for Applied Artificial Intelligence in Rural Areas is being built in the United States, with a project cost of $20 million. Another example of the use of artificial intelligence technology is the startup MAMAY Technologies, which determines an objective assessment of the composition of food and beverages [1].

The most well-known areas of artificial intelligence application in the agricultural sector are: monitoring soil composition, tracking the growth stage of crops and their yield. Detecting the amount of nutrients in the soil and tracking its condition, which affects the process of crop growth and,

consequently, yield; detecting progressive diseases and pests of crops. Scanning technologies can identify the most important diseases (rot, mold - detection accuracy is over 80-90%) and pests that destroy crop yields, but to identify them quickly, it is necessary to have a database and information about diseases and pests; optimization of automated irrigation systems and irrigation systems. It provides autonomous management of crops and water resources saving, recognition of water leaks and losses, prevention of crop damage; monitoring the health of livestock in the agro-industrial complex. Observation of animal activity and analysis of atypical animal behavior.

Modern agribusinesses operate in a completely different way than they did a few decades ago. The application of the latest artificial intelligence technologies, primarily devices, robots, temperature and humidity sensors, equipment and GPS technology, will allow agribusinesses to become more efficient and safer. For example, the use of a robot, Robotnik, allows for the identification of almost 90% of the crop, the detection of the chemical composition of the crop, and the processing or spraying of the crop. Another example is the use of multi-rotor drones or quadcopters, which are commonly used for spraying fertilizers, sowing seeds, detecting pests, and preventing diseases.

The use of artificial intelligence is primarily useful in cases of automation of agricultural production processes, minimization of possible risks in the production process, analysis of soil conditions, forecasting the optimal combination of methods of combating diseases and pests, and increasing yields. However, despite the significant advantages, any entity in the agro-industrial complex faces problems associated with the process of implementing artificial intelligence technologies, primarily, lack of financial resources and limited information about possible programs/projects; lack of awareness of technologies and practical experience in their implementation; imperfect cybersecurity system (attacks, leakage of confidential information).

Conclusions. The analysis of scientific research has shown that modern artificial intelligence technologies in the agro-industrial complex are technologies that help maintain sustainability and increase the efficiency of ensuring production processes in the agro-industrial complex, and ensure control over production risks. AI technologies are a rational tool for solving problems related to climate change, irrational use of resources, soil pollution, and the growing demand for high-quality products. Despite the fact that the use of information technologies has a number of positive and negative aspects, their application to improve the efficiency of production processes in the agricultural sector requires not only their implementation, but also the ability to use them and adapt them to a specific task. Understanding the needs of artificial intelligence will require changes and revision of activities in general, as their use will be more useful than the use of traditional tools for solving applied problems in the agro-industrial complex.

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