

MAIN DIRECTIONS OF DEVELOPMENT OF DIGITALIZATION OF AGRICULTURE

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The paper examines modern agricultural digital technologies used in the leading countries of the world and Russia, which bring the industry to a qualitatively new level. It is noted that for the digitalization of agriculture, first of all, it is necessary to collect and analyze big data, which is processed and analyzed for rapid response and predictive modeling in the production of agricultural products.

The author points to modern digital solutions that are widely used in agriculture:

- networks of sensors installed in fields and agricultural machinery;
- remote sensors (aerial and satellite);
- equipment for soil sampling and analysis;
- agricultural drones, agrobots and various unmanned vehicles;
- AIoT platforms and applications.

The analysis shows that the use of modern digital technologies is fundamental for the further development of the country's agriculture and the implementation of the planned tasks for the digital transformation of the industry. The relevance of the use of these technologies is especially increasing in those regions of the Russian Federation where there is a significant interest in investing in the industry. The Kabardino-Balkarian Republic and the entire south of Russia are among the regions with high demand for the implementation of modern investment projects in the field of agriculture.

Keywords: agriculture, digital technologies, smart technologies, innovative technologies, robots, drones, precision farming, smart farming.

REFERENCE

1. Gordeev A.V. et al. *Vedomstvennyy proyekt «Tsifrovoye sel'skoye khozyaystvo»* [Departmental project "Digital agriculture"]. M.: FSBSI "Rusinformagrotech", 2019. 48 p.
2. *Primeneniye tsifrovyykh tekhnologiy dlya povysheniya effektivnosti deyatel'nosti APK* [The use of digital technologies to improve the efficiency of the agro-industrial complex]. [Electronic resource]. URL: <https://www.pwc.ru/ru/agriculture/agro-tech-solutions-final.pdf>.
3. «*Umnoye fermerstvo*»: *Obzor vedushchikh proizvoditeley i tekhnologiy* [«Smart Farming»: An overview of leading manufacturers and technologies]. [Electronic resource]. URL: <https://www.geoline-tech.com>.
4. Aptekman A. et al. *Tsifrovaya Rossiya: novaya real'nost'* [Digital Russia: a new reality]. McKinsey Report, 2017. 133 p.
5. *Fokus na Industrii 4.0: kak v raznykh stranakh podderzhivayut integratsiyu innovatsiy v promyshlennyy sektor*. 07.08.2020 [Focus on Industry 4.0: how different countries support the integration of innovation in the industrial sector. 07.08.2020]. [Electronic resource]. URL: <https://www.rg.ru>.
6. *Bloomberg: Rossiya gospodstvuyet na mirovom rynke pshenitsy* [Bloomberg: Russia dominates the global wheat market]. [Electronic resource]. URL: https://kapital-rus.ru/news/379515-bloomberg_rossiya_gospodstvuet_na_mirovom_rynce_pshenicy.
7. Orlova N.V. et al. *Innovatsionnoye razvitiye agropromyshlennogo kompleksa v Rossii* [Innovative development of the agro-industrial complex in Russia]. Agriculture 4.0. M.: Publishing House of the Higher School of Economics. 2020. 128 p.

8. Gruppa «Cherkizovo» vnedrila sistemu tsifrovogo monitoringa na ptitsefabrike [“Cherkizovo” Group has implemented a digital monitoring system at the poultry farm]. [Electronic resource]. URL: <https://cherkizovo.com/press/#/press/company-news/15192>.
9. Khadzhieva M.I., Shalova S.Kh., Kanokova M.A. *Teoreticheskiye aspekty vnedreniya robotizatsii v agropromyshlenny kompleks regiona* [Theoretical aspects of the introduction of robotization in the agro-industrial complex of the region] // *Izvestiya Kabardino-Balkarskogo nauchnogo tsentra RAN* [News of the Kabardino-Balkarian Scientific Center of RAS]. 2019. No. 6 (92). Pp. 171-177.
10. Khamukov Kh.Yu., Zagazhev O.Z., Popov Yu.I. *Priznaki tselesoobraznosti i svoye-vremennosti robotizatsii sel'skokhozyaystvennoy otrazhi* [Signs of expediency and timeliness of robotization of the agricultural industry] // *Izvestiya Kabardino-Balkarskogo nauchnogo tsentra RAN* [News of the Kabardino-Balkarian Scientific Center of RAS]. 2019. No. 6 (92). Pp. 178-186.
11. Zagazhev O.Z., Khadzhieva M.I. *Perspektivy snizheniya ekologicheskoy nagruzki sel'skokhozyaystvennogo proizvodstva na osnove massovoy robotizatsii* [Prospects for reducing the environmental burden of agricultural production on the basis of mass robotization] // *Izvestiya Kabardino-Balkarskogo nauchnogo tsentra RAN* [News of the Kabardino-Balkarian Scientific Center of RAS]. 2020. No. 6 (98). Pp. 145-154.
12. Kray K.F., Khadzhieva M.I. *Ekonomicheskaya effektivnost' vnedreniya innovatsionnykh tekhnologiy v sel'skoye khozyaystvo v epokhu skvoznoy tsifrovizatsii* [Economic efficiency of the introduction of innovative technologies in agriculture in the era of end-to-end digitalization] // *Izvestiya Kabardino-Balkarskogo nauchnogo tsentra RAN* [News of the Kabardino-Balkarian Scientific Center of RAS]. 2020. No. 6 (98). Pp. 155-164.
13. Dashkovsky I. *High-tech na zemlyu. Pochemu sel'skoye khozyaystvo prodolzhayet ostavat'sya nezavisimym ot tsifrovizatsii* [High-tech on the ground. Why agriculture continues to remain independent of digitalization] // *Agrotehnika i tekhnologii* [Journal of Agrotechnics and Technologies]. July-August 2020. №4
14. *Obzor rynka sel'skogo khozyaystva* [Review of the agricultural market]. M.: Deloitte, 2019. 48 p.

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