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DIGITAL AGRICULTURE: THE FUTURE OF INDIAN AGRICULTURE

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INTRODUCTION:

In Indian agriculture recently, the emphasis has been on increasing farmer income. After the Indian Prime Minister's aim to double farmer incomes and the following budget statement in favor of it, it became official government policy. Digital agriculture is the use of new and advanced technologies, integrated into one system, to enable farmers and other stakeholders within the agriculture value chain to improve food production. Digital technologies such as artificial intelligence (AI) and machine learning, remote sensing technologies, big data, the Internet of Things (IoT), etc. are transforming agriculture value chains and playing a key role in modernizing agricultural activities. There are differences in how different entities define digital agriculture or digital farming, precision agriculture or smart agriculture or smart farming, and AI in agriculture.

In contrast, a digital agriculture system gathers data more frequently and accurately, often combining it with information from external sources (such as weather information). The resulting combined data is analyzed and interpreted so the farmer can make more informed and appropriate decisions. These decisions can then be quickly implemented with greater accuracy through robotics and advanced machinery, and farmers can get

real-time feedback on the impact of their actions.

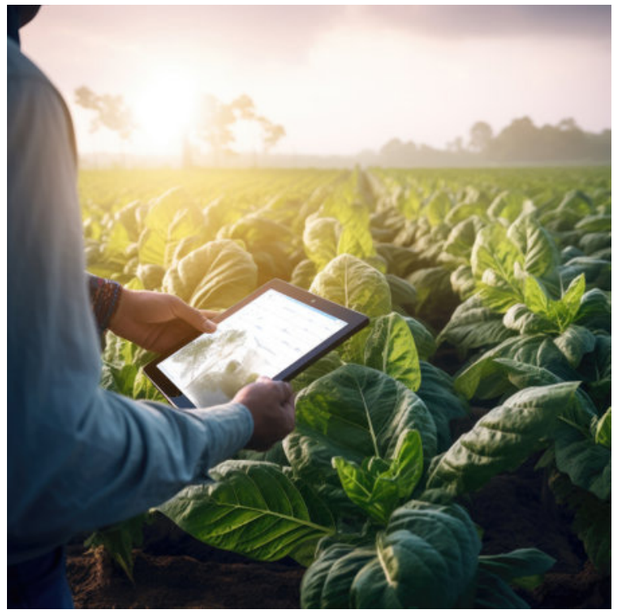
The use of digital technologies could change traditional farming practices. The latest shift that could ensure agriculture meets the needs of the earth's population in the future is "a digital agricultural revolution," as per the United Nations organization of food and agriculture (FAO). Other sources refer to the transformation as "Agriculture 4.0," the fourth major agricultural revolution. The "fourth agricultural revolution," a term that describes the situation as a period of rising farm productivity and technological advancement, is relatively new. While previous agricultural revolutions increased productivity, many problems remained. For example, the green revolution produced inequalities and ecological damage. The first outcome of the green revolution was to increase local and agricultural disparities, with large farmers who could afford to invest in new technologies benefiting greatly.

Second, critics maintain that its policies encouraged excessive input use and reliance on agrochemicals, which had negative effects on the environment, such as land degradation and chemical runoff. Digital agriculture technologies have the potential to mitigate the negative side effects of the green revolution.

Digital farming methods include internal and external farm networking, the use of web-based data platforms in conjunction with big data analyses, and the use of precision

farming and smart farming methods. Agricultural tools that collect, store, analyses, and share data and information digitally have been used in digital farming, also known as smart farming or e-agriculture.

The entire agri-food value chain before, during, and after on-farm manufacturing is impacted by digital agriculture, as opposed to precision agriculture. Hence, precision agriculture and digital agriculture are categories for on-farm technologies such as yield mapping, GPS guidance systems, and variable rate applications. As opposed to precision agriculture, digital agriculture comprises technologies used in e-commerce platforms, e-extension services, warehouse receipt systems, block chain-enabled food traceability systems, tractor rental apps, and other applications.



KEY CHALLENGES IN DIGITAL FARMING, (SAHOO, 2020)

- ✓ Connectivity in rural areas.
- ✓ Non-awareness of the varying farm production functions.
- ✓ Size of individual management zones.
- ✓ Barriers to entry for new firms.
- ✓ Lack of scalability and configuration problems.
- ✓ Benefits not immediately apparent.

BENEFITS OF DIGITAL AGRICULTURE:

- ✓ Increases agriculture productivity and lowers production costs.
- ✓ Used to supply water to the crops, Efficient use of water resources.
- ✓ Application of synthetic fertilizers, furthermore, improves the fertility of the soil.
- ✓ Better marketing and exposure for the price.
- ✓ Decrease the use of water and fertilizers, which keeps the prices down.
- ✓ Reduces environmental and ecological impacts
- ✓ Prevents soil degradation.
- ✓ Reduces chemical application in crop production.
- ✓ Disseminates modern farm practices to improve the quality, quantity, and reduced cost of production.
- ✓ Changes the socio-economic status of farmers.

DISADVANTAGES OF DIGITAL AGRICULTURE:

- ✓ The excessive use of chemicals with the help of machines reduces the fertility of the land.
- ✓ Overuse of machines may lead to environmental damage.
- ✓ It is efficient but has many side effects and drawbacks.
- ✓ Furthermore, driverless agriculture machine is a liability to access the technology.
- ✓ Improve the scouting programmes.
- ✓ The robotic machine could not change their culture we have to set their programme manually.
- ✓ Most of the farmers are illiterates so they are unable to use the modern machines.

CONCLUSION:

Digital agriculture is growing rapidly thanks to advancements in robotics, artificial intelligence, and remote sensing. These technologies give farmers the ability to maximize performance and quality, minimize negative environmental effects, and produce complete, accurate, and transparent crop and livestock products on a national and regional scale. To effectively use these technologies and achieve widespread digital transformation of agriculture, accuracy, interoperability, data storage, computing power, and farmers' introduction to new technologies must be overcome. The availability of technology that is truly cost-effective, consumer-friendly, quickly solves problems, and is aided by supportive policies will be entirely dependent on the availability of digital agriculture.