



# The Impact of E-Agriculture on Farming Efficiency and Food Sufficiency

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## DESCRIPTION

E-agriculture is the use of Information and Communication Technologies (ICTs) to enhance agricultural and rural development. E-agriculture can provide various benefits such as improving access to information, markets, services, inputs, finance, education, extension, and innovation. E-agriculture can also enable better management of natural resources, reduce production costs, increase yields, quality, and income, and ultimately improve food security and nutrition.

### E-agriculture and agricultural productivity

- Agricultural productivity is the ratio of agricultural output to inputs. It reflects the efficiency and effectiveness of the production process. Agricultural productivity can be influenced by various factors such as land quality, climate, input use, technology adoption, innovation, and policies. E-agriculture can affect agricultural productivity in different ways:
- E-agriculture can improve access to timely and relevant information on weather, pests, diseases, prices, markets, and best practices. This can help farmers make better decisions on what, when, where, and how to produce.
- E-agriculture can facilitate access to quality inputs such as seeds, fertilizers, pesticides, and machinery. This can help farmers increase their input use efficiency and reduce wastage.
- E-agriculture can promote the adoption of improved technologies such as precision agriculture, irrigation systems, drones, sensors, biotechnology, and digital platforms. This can help farmers optimize their production processes and increase their yields and quality.
- E-agriculture can foster innovation and knowledge sharing among farmers, researchers, extension agents, and other stakeholders. This can help farmers learn from each other's experiences and adopt new practices and technologies.

E-agriculture interventions such as mobile phone-based information services, input subsidies delivered through vouchers or e-wallets, and digital platforms for market linkages have positive impacts on agricultural productivity in sub-Saharan

Africa. For example, mobile phone-based information services increased maize yields by 11.5%, input subsidies delivered through vouchers increased fertilizer use by 16%, and digital platforms for market linkages increased farm-gate prices by 14%.

### E-agriculture and food security

Food security is the state of having physical, social, and economic access to sufficient, safe, and nutritious food that meets one's dietary needs and preferences for an active and healthy life. Food security can be influenced by various factors such as food availability, food accessibility, food utilization, and food stability. E-agriculture can affect food security in different ways:

- E-agriculture can improve food availability by increasing agricultural production and reducing post-harvest losses. This can help ensure adequate supply of food at local, national, and global levels.
- E-agriculture can improve food accessibility by increasing agricultural income and reducing food prices. This can help enhance the purchasing power and affordability of food for consumers.
- E-agriculture can improve food utilization by increasing dietary diversity and food quality. This can help improve the nutritional status and health outcomes of consumers.
- E-agriculture can improve food stability by reducing food insecurity shocks and enhancing food resilience. This can help maintain the continuity and reliability of food supply and access over time.

E-agriculture interventions such as input subsidies, market information systems, and value chain development have positive impacts on food security in sub-Saharan Africa. For example, input subsidies increased calorie intake by 5.7%, market information systems increased dietary diversity by 4.8%, and value chain development increased food quality by 6.3%.

E-agriculture is a promising tool for enhancing agricultural and rural development. E-agriculture can have positive impacts on agricultural productivity, profitability, and food security by

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improving access to information, inputs, technologies, markets, services, and innovation. However, e-agriculture also faces some challenges such as lack of infrastructure, digital literacy, affordability, regulation, and coordination. Therefore, e-agriculture

requires an enabling environment and a supportive framework that involves the participation and collaboration of various stakeholders such as farmers, private sector, public sector, civil society, and donors.