

Africa's food security challenges driving technological innovation

Climate change, severe drought, water scarcity and the invasion of Fall armyworm sees Africa's food security under threat, but technology tools are available to help solve the continent's food security problems. Lawrence Kandaswami, Managing Director, SAP South Africa says: "Smart farming solutions will become the cornerstone of global food production over the next decade. By using cloud-based computing, big data, analytics, and IoT devices, and bringing together key industry players, we are able to deliver new innovations across the entire agricultural ecosystem to boost food production in a sustainable manner."



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Africa faces enormous challenges to food security

In 1950 Africa's population of 229 million people accounted for just 9% of the world's population. In 2015, less than three generations later, Africa's 1.16 billion people account for 16% of the globe's 7.3 billion people. By 2050, Africa's population will have more than doubled to 2.4 billion people. In addition, two-thirds of Africa is arid or semi-arid, and 38% of people in sub-Saharan Africa live in a water-scarce environment.

"This creates enormous challenges in terms of food security. In fact, the Africa Union Commission recently highlighted the fact that, at current growth rates, by 2050 Africa will only be able to feed 13% of its population with its own resources. There is an urgent need for a radical overhaul of agriculture and food production on the continent."

Battling a plague of Fall armyworms

African farmers are currently battling a plague of Fall armyworms, a type of caterpillar that eats crops before turning into a moth. The Fall armyworm outbreak could not have come at a worse time for Southern Africa, as the region has also recorded two years of record drought that has already affected more than 40 million people and reduced food supply by 15%.

"The sheer speed and scale of the infestation are likely unprecedented. According to the United Nations Food and Agricultural Organisation, it took only eight weeks for the pest to spread to six African countries where there are suspected infestations, namely South Africa, Zimbabwe, Malawi, Zambia, Namibia, and Mozambique. And since it targets maize - a primary food staple in many of the affected areas - the region's food security has been put at tremendous risk."



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Adapting modern tech to rural Africa

According to Kandaswami, crop production in Africa is greatly dependent on a large number of small-scale or subsistence farmers, for whom access to technology can be problematic. "However, we have shown how modern tech can be adapted to the rural African farming context with great success. Ghana's StarShea scheme, for example, connected over 3,000 women farmers to the global Shea nut supply chain using software combined with simple feature phones. This enabled buyers to procure directly from small-scale farmers in economic quantities while the farmers saw their incomes increase by as much as 60% in six months."

SAP's Smart Farming solutions are built on a number of key technologies, including the S/4HANA Cloud Platform, big data analytics, IoT (especially mobility and telematics) and applications that provide the capabilities required to drive more efficient and effective agriculture. "There is a huge volume of data across the agricultural value chain. Collecting and processing this data in our in-memory platform and making the key insights available in a cloud-based model makes it possible to deliver greater value, increase production, reduce risks and lower costs.

This opens the door to a wide range of software applications: for example, we are able to calculate the optimal fertiliser quantities for an area based on soil type, moisture content, humidity data, seed type, hours of sunshine and forecast weather. The ability to store and process this amount of historic data and to build complex models that optimise the relationships between these factors helps to improve yields while minimising input costs."

Precision farming the cornerstone of sustainable agriculture

For Kandaswami, precision farming will be the cornerstone of sustainable agriculture. "Precision Farming is the only lasting

and effective way to feed an African population that will require food production to increase by 200% in 2050. With Zero Hunger being the second goal of the 17 United Nations Sustainable Development Goals that were adopted at the UN Sustainable Development Summit 2015, the responsibility rests on all of us to ensure Africa is able to feed its growing population in the years and decades to come. Through the use of technology driven by a digital transformation imperative, we are confident that the continent's food security can be secured for the generation to come."

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