Data-driven agriculture can solve the challenge of food security in Africa

By Amrote Abdella   21 Oct 2020

One of most the prominent challenges facing Africa is providing food security for its citizens. While many farmers still rely on traditional techniques to coax a living from the land, there are opportunities to use cutting-edge technology to drive Africa towards a food-secure future.

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The Food and Agriculture Organisation of the United Nations (FAO) reports that over 2 billion people do not have access to safe, nutritious and sufficient food. A steady increase in hunger since 2014 together with rising obesity, clearly indicates the need to accelerate and scale up actions to strengthen food systems and protect people's livelihoods. It seems only fitting then, that in 2020, the theme for World Food Day is *Our Actions are Our Future*.

Accelerating innovation in agri-tech will enable data-driven farming that can optimise yields, boost farm productivity and increase profitability – all while feeding a nation.

Cutting-edge tech for ancient traditions

AI in agriculture uses cutting-edge data, advanced analytics and machine learning to bring centuries-old farming knowledge into the modern age, giving farmers the tools to optimise crop yields and mitigate the effects of climate change through tools like smart irrigation.

With agriculture sustaining 70% of Africa's livelihoods, Microsoft is committed to ensuring that all farming communities are equipped with the latest tools including AI, IoT and edge computing to improve productivity and sustainability across the sector, leveraging our extensive partnerships and initiatives network in the process.

AI as an enabler of farming

There has been reference in the recent past of AI replacing people in jobs, but what happens when AI and IoT devices enables people to spend less time on menial manual labour and more time boosting productivity and crop yields? AI and cloud technology can be used to monitor soil, climate changes and more to make better decisions on when, where, and how much to plant on farms. Precision farming, brought about by the adoption of advanced technologies into the agricultural sector, will revolutionise food production.

In Kenya, SunCulture helps farmers improve their crop yields through solar-powered irrigation systems. Using IoT technology, SunCulture customers are generating 10x more annual income, experiencing a 300% increase in crop yields, and saving 17 hours of manually moving water per week. And by leveraging TV white spaces (TVWS) technology that expands high-speed internet access to underserved areas, SunCulture is bringing precision farming to more smallholder farmers.

Partnerships in times of crisis

Amrote Abdella 27 May 2020

The Nigeria Incentive-based Risk Sharing System for Agricultural Lending (NIRSAL) recently entered into a Memorandum of Understanding with Microsoft to collaborate in helping Nigerian farmers become more productive, reduce costs, practice sustainable agriculture and achieve better agricultural outcomes through the deployment of the FarmBeats platform, which harnesses sensors, drones and cameras for seamless data collection, helping farmers improve crop yields as well as increase income.

As many as 8 million farmers and 4 million hectares will be positively affected.

Information is power

Particularly for smallholder farmers, it's a challenge to get reliable weather and market information in real time that can help with agricultural decision-making. But almost every farmer has a phone in their back pocket.

A mobile platform has recently been built by our team of developers to democratise access to information using a feature or a smart phone. Farmers can access information on pest and soil diagnosis, market prices, agricultural news, success stories from neighbouring farmers, weather, soil testing and personalised recommendations for maximising yields based on their soil tests, with an intended initial impact of 100,000 farmers.

Other agri-tech social entrepreneurs are effecting real changes for farmers and their supply chains. Twiga Foods is a mobile-based business-to-business food supply platform that links smallholder farmers in rural Kenya to informal retail vendors in cities.

N-Frnds brings the power of digital via mobile to subsistence and smallholder farmers in Africa and other emerging markets, and has nurtured a community of farmers who can communicate with each other without the need for an internet connection or mobile data. It also provides access to financial services for market segments that are traditionally underserved by formal banking and insurance.

The power of collaborative effort

We believes in increasing access to agricultural knowledge through collaboration. It takes an entire ecosystem to initiate change, and that includes companies, government departments and agencies, and a network of startups and entrepreneurs, all with a common goal of solving food insecurity.

Through the 4Afrika initiative, we have collaborated with the Alliance for a Green Revolution in Africa (AGRA) to co-create technology solutions in Africa as it works to improve food security for 30 million farming households across 11 countries by 2021.

The impact of Microsoft's 4Afrika Initiative
9 Oct 2019

The partnership stands alongside investments such as our support of the World Bank's 1 Million Farmers Platform, which aims to bring one million farmers onto a digital platform over the next three years.

We are also working with ministries across Kenya, Nigeria, South Africa and Egypt to drive impact in agriculture. In Egypt, in partnership with the Ministry of Communications and Information Technology and the Ministry of Agriculture, the engagement includes intelligent crop detection and water demand forecasting.

Key focus being on a successful farmer engagement to promote good agricultural practices, secure data sharing between agricultural entities, and connected farms that enable data collection through agricultural IoT sensors. Additionally, in South Africa, Microsoft commissioned Research ICT Africa, in partnership with the University of Pretoria, to help identify opportunities within the industry to make farming more efficient and cost-effective, and highlight key regulatory and policy issues to address.

The Kenyan National Agriculture Platform is a key initiative to drive digitalisation in agriculture. Earlier this year, we started engaging with the Ministry of Agriculture, Livestock, Fisheries and Cooperatives (MoALFC) to collaborate in accelerating digital transformation in the agricultural sector in Kenya.

Agri-tech will change the future

Across the continent, from South Africa to Kenya, Ghana, Egypt and beyond, we are working hard to enable agri-tech through various channels and partnerships. Technology has the potential to change the face of farming, using smart tools and platforms for precision farming, predicting weather patterns, and maximising the use of scarce water resources.

Investing in digital infrastructure can make the difference to Africa's economic recovery
Amrote Abdella 28 Aug 2020

By harnessing agri-tech, we can help solve the pressing issues around food security to meet the United Nations Sustainable Development Goal #2 of Zero Hunger, and enhance economic development in the process.

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