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## 2023: A Smart Year for Nigerian Farmers :Pioneering Agricultural Advancements for Nigerian Farmers

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SmartSoil Project Management Team at the Annual Implementation Forum of AGriDi Third Party Projects (TPPs) in Kumasi, Ghana 2022.

Azeez Sodeeq Oluwaseyi

### Revolutionizing Farming with Smart Technology

In the year 2023, Nigerian farmers will embark on a transformative journey toward sustainable agriculture, all thanks to the visionary SmartSoil project. This ambitious initiative, funded by the European Union, supervised by ICIPE, Kenya, and undertaken by the fabulous Federal University of Agriculture Abeokuta (FUNAAB), aims to create a reliable and accurate soil information system using cutting-edge artificial intelligence. The project's ultimate goal which is to empower farmers with vital insights and knowledge packaged within a user-friendly smartphone app will further get a boost this year. Throughout the year, the SmartSoil project has outlined several exciting activities that promises to usher in a smart and prosperous era for farmers across the Southwest region of Nigeria.

#### Primary Soil Sample Collection: Unveiling the Secrets Beneath the Earth

The foundation of any successful agricultural endeavor lies in understanding the unique characteristics of the soil. In 2023, the SmartSoil project will intensify on its mission by conducting primary soil sample collection across the Southwest region of Nigeria. Armed with state-of-the-art technology, a team of skilled soil scientists will venture into fields across Southwest, Nigeria to gather soil samples from diverse landscapes. These collected soil samples will undergo comprehensive analysis to unveil their inherent qualities, including

nutrient content, pH levels, and other important parameters. A powerful analytical tool , Atomic Adsorption Spectrophotometer (AAS) has earlier been acquired by the project to see to effective analyses of samples.. The resulting data will then form the backbone of the SmartSoil app, promising farmers real-time access to essential soil information. By understanding their soil's specific attributes, farmers could make informed decisions on crop selection, appropriate fertilization methods etc, thereby maximizing productivity and promoting sustainable land use.

#### SmartSoil App Design and Launch: Empowering Farmers with Precision Insights

The highlight of the SmartSoil project's endeavors in 2023 will be to complete the design and successful launch of the innovative SmartSoil app. Powered by advanced artificial intelligence algorithms, the app promises to be a game-changer in the agricultural landscape of Nigeria. Engineered to be intuitive and user-friendly, the SmartSoil app aims to bridge the gap between cutting-edge technology and farmers' everyday needs.

Upon installing the app on their smartphones, farmers will gain instant access to personalized soil data, tailored specifically to their land's unique characteristics. By inputting their geographical location and the type of crop they intend to cultivate, users will receive real-time

recommendations on soil health, optimal planting practices, and crop-specific care. The app's interactive interface may also provide weather forecasts, disease alerts, and precise guidelines for pest control, empowering farmers to proactively address challenges and enhance crop resilience, if not now but in the near future.

#### Capacity Building for Researchers, Farmers, and Extension Agents: Cultivating Knowledge, Cultivating Growth

Acknowledging the importance of knowledge dissemination, the SmartSoil project will prioritize capacity building for researchers, farmers, and extension agents in 2023. Workshops, training sessions, and seminars will be organized to equip stakeholders with the necessary skills to harness the full potential of the SmartSoil app and digital agriculture effectively.

Researchers will be engaged in specialized training, to hone their expertise in artificial intelligence and digital agriculture in general. Moreover, researchers will also gain valuable insights from farmers' experiences and this foster a collaborative approach to agricultural advancement.

Farmers, the backbone of the agricultural community, will be at the heart of the capacity-building efforts. Training sessions will familiarize them with the SmartSoil app's functionalities, enabling them to incorporate precision agriculture practices into their daily routines. When armed with valuable insights on soil health and crop-specific care, farmers could optimize resource usage, reduce environmental impact, and increase overall productivity.

Extension agents, acting as vital intermediaries, will undergo comprehensive training to facilitate effective knowledge transfer between researchers and farmers. Their role as information disseminators will play a pivotal role in ensuring that the benefits of the SmartSoil app reaches every corner of the Southwest region.

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### Dissemination of the SmartSoil App: Cultivating Prosperity Across Southwest Nigeria

The success of any transformative project lies in its widespread adoption, and the SmartSoil project will be unwavering in its commitment to disseminate the app across the Southwest region. Collaborating with agricultural cooperatives, NGOs, and government agencies, the project will ensure that the SmartSoil app reaches the hands of farmers throughout the region.

Awareness campaigns and farmer-centric demonstrations will showcase the app's capabilities, igniting interest and enthusi-

asm among potential users. As word spread about the SmartSoil app's effectiveness in improving crop yields and optimizing agricultural practices, its popularity will surge, and adoption rates will soar.

### Conclusion: Sowing the Seeds of Agricultural Progress

By the end of the year 2023, the SmartSoil project would have sowed the seeds of agricultural progress in Nigeria. By harnessing the potential of artificial intelligence and advanced technology, the project will bring reliable and accurate soil information to farmers' fingertips through the SmartSoil app. The capacity-building

efforts will fortify a collaborative ecosystem, uniting researchers, farmers, and extension agents in their pursuit of agricultural excellence.

Looking ahead, the SmartSoil project's legacy promises to flourish, fostering sustainable agricultural practices, enhancing food security, and elevating the livelihoods of Nigerian farmers. As technology and knowledge continue to converge, the prospects for the future of farming in Nigeria have never been smarter or more promising. With the SmartSoil project leading the way, Nigerian farmers are well-equipped to cultivate prosperity and growth for years to come.

## Harnessing Digital Agricultural Innovations for Food Security in Africa

By Damilola Akingbade and Ade Adebayo

Africa is a continent with a young and growing population, and the demand for food is expected to increase significantly in the coming decades. In order to meet this demand, African countries need to find ways to increase agricultural productivity.

Digital agricultural innovations offer a promising way to do this. These innovations can help farmers to improve their yields, reduce their costs, and become more resilient to climate change.

There are a number of different digital agricultural innovations that are being used in Africa. These include:

**Precision agriculture:** This uses satellite imagery, soil sensors, and other data to help farmers to make more informed decisions about their crops. For example, precision agriculture can be used to identify areas of a field that are not getting enough water, and to target fertilizer applications more precisely.

**Mobile phones:** Mobile phones are being used to provide farmers with access to information, markets, and financial services. For example, farmers can use mobile phones to get weather forecasts, to buy and sell produce, and to access loans.

**Drones:** Drones can be used to survey



Source: Google

fields, to apply pesticides, and to harvest crops. Drones are becoming increasingly affordable, and they are a promising way to improve the efficiency of agricultural production.

**Big data:** Big data is being used to analyze large datasets of agricultural data. This data can be used to identify patterns and trends, and to develop new insights that can help farmers to improve their productivity.

Digital agricultural innovations have the potential to revolutionize the agricultural sector in Africa and tackle food insecurity. According to the United Nations, digital tools can transform Africa and tackle food insecurity. The effective integration of ICT in the agriculture sector in developed countries has led to tremendous improve-

ment in agriculture value chain efficiency and productivity. These innovations also have the potential to transform African agriculture, and to help to improve food security on the continent.

However, there are a number of challenges that need to be addressed in order to fully harness the potential of digital agricultural innovations in Africa. These challenges include:

**The cost of technology:** Digital agricultural innovations can be expensive, and this can be a barrier for smallholder farmers.

**The lack of infrastructure:** In many parts of Africa, the infrastructure for digital agriculture is not yet in place. This includes things like reliable internet access and electricity.

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**The lack of skills:** Many African farmers do not have the skills to use digital agricultural innovations. This needs to be addressed through training and education programs.

Despite these challenges, there is a growing momentum behind the use of digital agricultural innovations in Africa. One of such laudable projects is the 'Accelerating inclusive green growth through agri-based digital innovation in West Africa (AGriDI). The AGriDI project aims at strengthening innovation systems and fostering adoption of agri-based digital technologies in West Africa. Governments, businesses, and non-governmental organizations are also working to promote the adoption of these innovations. With continued investment and support, digital agricultural innovations have the potential to make a significant contribution to food security in Africa.

In addition to the challenges mentioned above, there are a number of other factors that need to be considered in order to harness the potential of digital agricultural innovations for food security in Africa. These factors include:

## Quotes about Digital Agriculture

"The combination of digital technology and human creativity in deploying it will revolutionize life for Africa's farmers by overcoming isolation, speeding up change, and taking success to scale." — **Kofi Annan, Sir Gordon Conway and Sam Dryden**

"It is time to change the way we think. Farmers are not the cause of Africa's poverty; they are a potential solution. They are key to creating the future envisioned by the SDGs." — **Kofi Annan, former UN Secretary General**

"If Africa's evolving food system leaves its smallholder farmers behind, the continent will not reach its immense potential." — **Sir Gordon Conway and Sam Dryden**

"Agriculture is not a way of life... Agriculture is a business." — **Akin Adesina, President of the African**

**The need for a supportive policy environment:** Governments need to create a policy environment that is supportive of the adoption of digital agricultural innovations. This includes things like providing financial incentives for farmers to adopt these innovations, and ensuring that the necessary infrastructure is in place.

**The need for a focus on gender equality:** Women play a critical role in agriculture in Africa. However, they often lack access to the same resources as men, including access to digital agricultural innovations. It is important to ensure that women are able to benefit from these innovations.

**The need to address the ethical implications of digital agriculture:** The use of digital agricultural innovations raises a number of ethical issues, such as the ownership of data and the potential for discrimination. It is important to address these issues in a way that respects the rights of farmers and other stakeholders.

**Development Bank and former Minister of Agriculture, Nigeria**

"If we empower smallholder farmers to achieve their aspirations, they will do the heavy lifting of development themselves." — **Agnes Kalibata, President of the Alliance for a Green Revolution and former Minister of Agriculture, Rwanda**

"Digital technology's promise is not one-size-fits-all. Designing and implementing sustainable technology solutions requires an understanding of local mores and unique community hurdles, in particular a sensitivity to gender-related issues." — **Ertharin Cousin, Executive Director of the World Food Programme.**

"Sub-Saharan Africa's agricultural transformation will be shaped by sustainable intensification, adaptation to climate change, and the rise of digital technology." — **Sir Gordon Conway, Professor of International De-**



Source: Google

By addressing these challenges and factors, Africa can harness the potential of digital agricultural innovations to improve food security on the continent. This will require a concerted effort from governments, businesses, non-governmental organizations, and farmers themselves. However, the potential rewards are significant. With digital agricultural innovations, Africa can achieve food security for its growing population and become a major player in the global food economy.



**development, Imperial College London and Director of Agriculture for Impact**

"Ultimately, it's the way human beings, with our vast stores of ingenuity, deploy the power of the technology and tools that makes the biggest difference." — **Bill Gates, Co-chair, Bill and Melinda Gates Foundation**

"The soil is the great connector of lives, the source and destination of all. It is the healer and restorer and resurrector, by which disease passes into health, age into youth, death into life." — **Wendell Berry**

"The farmer is the only man in our economy who buys everything at retail, sells everything at wholesale, and pays the freight both ways." — **John F. Kennedy**

Source: google

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