Five (5) Effective Strategies to Obtain Food Security in Africa.

Nicholas Oblitey Commey

Bachelor of Science, Software Development,

Brigham Young University - Idaho

English 150: Writing & Reasoning Foundation

Sister Tamara Copley

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"Africa is the second largest geographic area and second most populous continent in the world" (FAO, 2021). Due to the ever-growing population, there is a need to secure enough food to feed its members. Inspite all of Africa's endowments, The United Nations Food and Agriculture Organization (FAO) (2021) reported that Africa has the highest food insecurity in the world, with over 21% of the population, or 280 million Africans, suffering from hunger. Recent global events and indications for future hardships call for each concerned citizen, industrial player, and those enacted to governmental power to apply effective strategies for food security on the continent. The causes of food insecurities in Africa includs armed conflicts, lack of adequate data technologies, unfavorable weather conditions, and other unforeseen events such as COVID-19. Fortunately, there are remedies to these challenges the continent is faced with. Of the five strategies to obtain food security in Africa, individuals and families can practice home gardening and food storage, while industry players and policymakers adopt drones, climate-smart agriculture, and machine learning technologies.

Imagine you spend $1.00 for a meal, then two (2) years later, you spend $2 for half of what you bought before. That would be mind blowing right? Such was my recent experience in Ghana, a West African country. One of the root causes of high food inflation is food insecurity in Africa. The continent needs to obtain, grow, and strengthen its food security. Efforts have been made, so one may wonder what else needs done. It is time to walk the talk to break the generational nagging. Africa can achieve food security when more citizens engage in home gardening and food storage, businesses implement climate-smart farming and use drones to

monitor and obtain relevant farm data, as well as governments use machine learning to predict, avoid, and better manage future occurrences of food insecurity on the continent.

As the saying goes, charity begins at home, food security in Africa can be improved through home gardening. Home gardening is the practice of cultivating especially food crops at home. It can be established even on a small piece of land. What would be needed is a simple layout of some legumes, grains, fruits, and herbs on fertile soil. This may sound basic or less grand. In a recent study in South Africa, the researchers noted that "[How] food supply

has been organized has long been noted to decrease food sovereignty, creating a troubling

situation in which resilience to food shortage is strongly determined by financial standing."

(Carstens et al, 2021). This implies that over-reliance on purchased food staff can lead to a very troubling situation where the poor may struggle should there be a severe food shortage. Many people have felt the reality of this troubling situation during major earthquakes, famines, and in recent times the COVID-19 and the Russia-Ukraine conflict. Not only is there a need to grow food in the home to prevent hunger, but to ensure that there is a sufficient amount of nutrients to be consumed by each household. Even if it does not entirely replace the need to purchase food items, it would cut down the bill for food staff. The study concludes that home gardening has the potential to address security campaigns to promote food security.

In addition to home gardening, home food storage is another activity each citizen can practice at home to help Africa obtain food security. In this activity, less and highly processed food staff such as maize, sardines, and tomato tins are stored in a safe and healthy environment.

Storage containers and rooms are also ensured to have a suitable temperature for their contents. Imagine what would happen if each home on the continent is stocked with sufficient food to sustain them for at least one (1) year. Should there be unprecedented events, the continent would have a stronger resilience, and save funds from expensive food purchases during such times. For those familiar with Bible stories, each citizen can be a Joseph in Egypt. In a research involving 400 household heads in Accra- Ghana, the studies revealed that "household-level food storage promotes food safety, reduces food expenditure and waste, and contributes to enhancing food security by 43%". (Afriyie et al, 2022). This shows that such simple and applicable activities such as home food storage can go a long way to help Africa obtain food security.

Furthermore, Industry players can contribute significantly to food security on the continent by using climate-smart agriculture methods or technologies. Climate-smart agriculture refers to the choices or input in agricultural activities to withstand harsh environmental factors or diseases. Meaning that it stems from selecting resistant crop varieties for planting to using other irrigation means to have a constant supply of water, or employing tools to help farming activities take place despite the weather. In research involving scholars from two university food departments, It was observed that "combining [several climate-smart] practices leads to higher food security. Under the different combinations, the use of climate-smart groundnut varieties exhibits the strongest association with yields and food security."(Ojong et al, 2023). Therefore if for instance, artificial irrigation is coupled with a resistant crop variety, there is a far greater probability that there would be food across the year even should there be an outbreak of a disease. Although Climate-smart agriculture is capital intensive, this research concludes that they

“have the potential to increase productivity with ensuing implications on food security.”(Ojong et al, 2023).

Apart from implementing climate-smart agriculture methods or technology, industry players and policymakers such as farmers can as well employ drones to monitor their farms for productivity and obtain relevant data to make important decisions. These unmanned aerial vehicles can help monitor pests and weeds, map vegetation and irrigations, and manage soil erosion. According to research, "when smallholder farmers interact with drone data, they have a better understanding of their farm and can make more informed decisions that use fewer inputs and reduce production costs" (McCarthy et al., 2022). This research observation proves clearly that as a result of high-level farm monitoring, farmers would avoid more waste or unnecessary costs in their farming. Policymakers can boost the adoption of drones on farms through partnerships between public and private firms to build locally adapted and affordable drone technologies or programs to increase agricultural productivity and food security across the continent.

Last but not least, the government can adapt and develop machine learning to predict future occurrences of food insecurities and then work against them. Machine Learning is a field in computer science where computer systems are trained to perform complex tasks by the computer system learning on its own and making the right decision. This is a highly technical field and very useful. Future predictions of food security are made possible through the use and reliance of remote sensing data on geography, weather, and food prices. According to one African project report, they were able to "...develop an interpretable, technically accessible,

machine learning model that uses readily available data to forecast food insecure villages in three different sub-Saharan African countries 1 month ahead"(Zhou et al, 2022). Although their model needs improvement to prevent misclassification, it demonstrates a bright future in machine learning to predict crises. Further studies would be needed to modify these tools to predict distant, 1 to 10-year food security issues. Upon knowing about the lasting famine which was seven (7) years away, in the ancient Egyptian era, food and water were stored. This resulted in the temporal salvation and prosperity of Egypt. Through machine learning applications, another great deliverance can be done on this continent. Therefore, African leaders should quickly invest in these technologies.

In conclusion, individuals, agricultural industry players, policymakers, and governments can play significant roles in helping the continent attain a higher level of food security through home gardening and food storage practices, the use of climate-smart technologies or methods, data collection devices such as drones, as well as the use of advance technologies such as machine learning to predict and avoid future food insecurities. By implementing these measures, Africa would obtain and strengthen its food security to meet its potential.

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