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Improving the Implementation of Agricultural Research and Technology within Uganda

Background

Uganda, a landlocked country located in East-Africa with an area of 241,068 sq. kilometers, is divided into eighty districts¹; the more urban districts are located in the south near Lake Victoria. Uganda is bordered by Kenya on the east, The Democratic Republic of the Congo on the west, Rwanda on the southwest, South Sudan on the north and Tanzania on the south. Much of Lake Victoria lies in the southern portion of Uganda. Most of the major cities in Uganda are in the south near Lake Victoria. The capital of Uganda is Kampala, which is one of the southern urban cities.

Crop production was a major part of the Ugandan Gross Domestic Product (GDP), until about 2007. At that time, the service sector played an increasingly dominant role in Ugandan GDP. The breakdown of the Ugandan GDP¹ is now:

Agriculture	23.6%
Industry	24.5%
Services	51.9%

The labor force is still heavily employed in agriculture as it employs approximately 82% of the population¹.

Uganda has a population of about 34 million people. In the early 1990's, the population was devastated with the outbreak of HIV/AIDS. About one million people were said to be infected. Since the HIV/AIDS breakout in the early 90's, the percentage of people with HIV has significantly decreased from approximately 56% to about 32%. The current HIV prevalence in Uganda is an estimated 6.5 percent in adults and 0.7 percent in children⁴. The median age in Uganda for males is 15 years and for females 15.1 years¹.

Uganda became an independent country from Britain in 1962. The official languages in Uganda are English and Swahili, although other languages and dialects are spoken in the country as well.

Introduction

A "typical" subsistence farm family in Uganda contains about five persons. On average the household, headed by a woman, child, or widow, is impoverished because currently the business of agriculture is not thriving. 88% of the Ugandan population lives in the northern rural areas and grow crops that primarily consist of plantains, cassava, sweet potatoes, millet, sorghum, corn, beans, or groundnuts⁶. Each family owns on average about 1.3 hectares (3.2 acres). The average level of education for Ugandans is not high; the literacy rate in Uganda is 66.8%¹. Ugandans at most, make it to secondary school. This is incredible despite the financial setbacks that families suffer.

In Uganda, there are only 102 hospitals in the entire country⁸. The better equipped hospitals are in the southern capital city of Kampala. It is very typical for someone living in the northern rural areas of Uganda to travel to the south to receive medical attention. This is because the facilities in the south are much better equipped. The major problem in doing this is finding adequate transportation. Bikes and walking are the predominate mode of travel. However, for more serious injuries or orthopedic issues,

transportation and accessibility make the trek from the north to south quite onerous.

Plantain and maize are major crops of the agricultural market and in the nutritional diet in Uganda. They contain Vitamins A, C, calcium, phosphorus, and carbohydrates. Vitamin A is good for your vision and bones. Calcium is good for your bones because it helps to strengthen them. Cassava is a new (bred for disease resistance) and important crop that has been recently introduced to Uganda². Cassava is very important to Uganda's agriculture because it grows well in acidic soil and has a long shelf life³. The poor soil conditions and bad weather conditions make growing most other products very difficult. Cassava is the exception.

The major barriers which prevent Uganda from improving agricultural productivity are poverty, lack of education, limited resources, limited physical infrastructure, gender bias, and poor communication between agricultural researchers and farmers. Overcoming these barriers will require a substantial investment of capital, resources and time. However, incremental advances can have a major impact on agricultural productivity.

Agricultural Research and Technological Improvements

Investing in education and training for improved implementation of agricultural research and technology affects agricultural productivity, household income, food availability and quality in Uganda tremendously. Agricultural production through technology and education would allow farmers and other agricultural related workers access to information needed to make their crops grow more efficiently. Additional crops could also be introduced to supplement the diet and generate additional income for the farmer.

If the subsistence farm families were not suffering from a food shortage, they would be able to sell their crop surplus. This would generate an income, allowing them to purchase additional nutritional items necessary for their families. Presently, some of the current issues have been addressed and the necessary measures are being taken but, from my research, it is not clear as to the impact on the typical Ugandan farmer.

One of the issues to be resolved by the year 2015⁵ is the equal treatment of women. The women, the primary farmers of the country, are at a disadvantage. Although they are the main cultivators of the crops they are not directly included in the research and analysis. They have to wait for a farmer representative, typically male, to inform them of the latest research and testing. Women are shut out of direct research and analysis, thus preventing them from getting information directly. It would appear that the women, the farmers, are relegated to secondary roles in the care and cultivation of their land.

To address issues of gender inequality, lack of education and other aspects on the quality of life, a meeting was conducted at the United Nations in September 2000. From this meeting, an agreement was made on a set of eight goals. These eight goals, Millennium Development Goals or MDGs, were instituted to raise the quality of life among member nations. The goals are: Eradicate extreme hunger and poverty, achieve universal primary education, promote gender equality and empower women, reduce child mortality, improve maternal health, combat HIV/AIDS, malaria and other diseases, ensure environmental sustainability and develop a global partnership for development.

The metrics for ascertaining the level of completion of the MDG's (Millennium Development Goals)⁵ are difficult to derive. This is due to the lack of updates or recorded information. As a result, it is difficult to quantify the level of completion for any of the goals.

Uganda is also undertaking a program entitled, “Plan for the Modernisation of Agriculture (PMA)⁷”. The program is designed to help eradicate poverty and is the center piece of Uganda’s poverty eradication strategy. The key to this process is to enable the rural population to improve their livelihood and to ensure food security. By incorporating subsistence agriculture and commercial agriculture into local farmers’ practices, a mechanism is generated that allows farmers to be food exporters instead of merely being food consumers.

The purpose of this plan, designed by the Government of Uganda, was to evolve subsistence agriculture into commercial agriculture, which is more financially beneficial to the citizens of the rural areas of Uganda. Not only would the farmers be able to produce products for their family to consume (subsistence agriculture) but, they could also produce surplus products to sell to others (commercial agriculture). With the profits from selling their crops, farmers might be able to purchase health care packages, school tuition, nutritional necessities, etc. By causing a demand for those products, more jobs are created in the rural areas of Uganda. Using the natural resources that are available to them, lifestyles can improve and food security can be more dependable.

The modernization of agriculture is greatly affected by government policies. The government is responsible for the development of the physical infrastructure. Good roads and other means of transport are vital to the development of a modern agricultural economy. The government can also foster development by using various tax strategies to help finance agricultural education, provide low interest loans to farmers, and promote sustainable resource management.

It is expected that all of the smaller organizations and local people assist in the promotion of Uganda’s PMA. With the help of Non Governmental Organizations (NGO) and Common Business Organizations (CBO), they can work together with the Ugandans and private sectors to make this plan successful. The objective to eradicate poverty in Uganda is also very high on the list to completing their Millennium Development Goals (MDG). They will be able to do this by using this strategy. This strategy will produce new jobs for farmers and for agricultural related positions and increase the share of agricultural marketing, and agricultural productivity.

The government of Uganda started the PMA plan in the year 2000, by drafting letters to send to all of the districts of Uganda to determine which ones were willing to participate in these agricultural and technological advancements. The lack of technological advancements in Uganda is partly due to the poor distribution and transmittal of information.

The National Agricultural Research Organization (NARO)³ is the top body for guidance and coordination for all agricultural research activities in the national agricultural research system in Uganda. NARO is a public organization that was created through an act of parliament. The National Agricultural Research Organization’s goal is: “To enhance the contribution of agricultural research to sustainable agricultural productivity, economic growth, food security and poverty eradication through generation and dissemination of appropriate technologies, knowledge and information.”

A part of the plan is to spread the information more efficiently. The Agricultural Research and Development Centers (ARDC) are a major part of the distribution of research through technology. ARDCs are research and technology centers developed by the National Agricultural Research Organization (NARO). They are used to distribute the information to the different areas of a country. Some of the functions of these technology centers are:

- maintain links with NARO institutes and provide a system for communication between the different researchers, centers, farmers and advisory services;
- assess need and research to develop research agendas accordingly;

- identify sample technologies and carry out trial to adapt technologies to local requirements.

There are ARDCs in each of the 12 agro-ecological zones of Uganda which are: Mukono, Ikulwe, Buginyanya, Serere, Kachwekano, Bulindi, Abi, Ngetta, Kitgum, Moroto (Nabuin), Mbarara and Kyembogo. In each of these centers, they are required to do several things that all evolve around communicating the research information and data to the local farmers and people who need it. Then once the research is communicated, they must then discuss ideas and plans that may improve the agricultural productivity and ensure food security.

Conclusions

Programs are in place for the education and implementation for improving agricultural research and technology. The United Nations has the Millennium Development Goals project. This is a set of eight goals that will not only improve education in agriculture but substantially raise the quality of life for all people. Notably, Uganda has the Plan for the Modernisation of Agriculture (PMA). This is an extraordinary program that wants to eradicate poverty through modernizing agriculture. Modernization of agriculture involves turning a subsistence economy into a commercial economy and the physical infrastructure needed to support this process.

There are also many NBO's, CBO's as well as the NARO working in conjunction for the modernization of agriculture through education. Rubrics and metrics need to be implemented to determine which techniques work best. An independent auditory agency also needs to be set up to monitor all activity and expenditures. The agency should consist of individuals that can offer an independent assessment of all activity in turning a subsistence economy into a commercial economy.

In doing my research, I established that there are five major things that need to be acknowledged and improved in order to better agriculture in Uganda.

- All farmers (especially women) need to have access to information about agriculture in their area.
- The distribution of research and information is critical to the improvement in any form of agricultural advancement.
- Research centers or sub-stations should be available for access by all.
- The physical infrastructure must be upgraded.
- The most important part of the plan is not organization but, it is EXECUTION.

All of these recommendations are feasible if workers are determined and willing to accomplish this goal. Sacrifices will have to be made in order to reach these goals. Though the process is long and involves hard work, the results will be worth the effort. The goal of agricultural development through education is attainable. The population will benefit greatly with a vastly improved standard of living.

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