

**A PROCESS OF DETERMINING NEEDS ASSOCIATED WITH ESTABLISHING AN
AGRICULTURE CURRICULUM AT MESSIAH THEOLOGICAL INSTITUTE IN
MBALE, UGANDA**

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Abstract

This paper presents needs assessment concerning the development of an agricultural science curriculum at Messiah Theological Institute in Uganda was performed. The long-term objective of this project was to analyze strategies and to establish courses that will improve perception of agriculture programs among schools and communities in Uganda. Agriculture is evolving considerably due to advent of technology. As a result of climate variability and other land use demands, there has been considerable concern compounded with poor methods of farming in Uganda. Understanding the needs and development of agriscience programs is a big challenge confronting agricultural production in Uganda. This paper reports major concerns and possible solutions of improving agricultural programs through effective establishment of agricultural science curriculum.

Introduction/Background

Uganda has substantial natural resources, including fertile soils, regular rainfall and sizable mineral deposits of copper and cobalt. Agriculture is the most important sector of the economy, employing more than 84 percent of the total labor force and generating over 42.5 percent of the gross national product (WRI, 2000). Agriculture is the only suitable business venture for many people in local areas. Agriculture continues to decline every day, partly from shortage of labor, poor technology use, urbanization, and farm sizes resulting from land use land use competition (New Vision, 2005). Agricultural products supply nearly all of Uganda's foreign exchange earnings, with coffee (Uganda is Africa's leading producer) accounting for about 19 percent and fish 17 percent of the country's exports in 2002 (World Bank 2002). Uganda also exports non-traditional products including apparel, hides, skins, vanilla, vegetables, fruits, and cut flowers.

Uganda's population is predominately rural; its population density is highest in the southern regions (Smit et al. 1994). Until 1972, Asians constituted the largest non indigenous ethnic group in Uganda. In that year, the Idi Amin regime expelled 50,000 Asians, who had been engaged in trade, industry, and various professions. In the years since Amin's overthrow in 1979, Asians have slowly returned and now number around 30,000. Other nonindigenous people in Uganda include Arabs, Western missionaries, NGO workers, diplomats and business people (Kyemba, 1977).

The single most important cause for the persistence of low productivity in African agriculture is probably the extremely low level of fertilizer, which contrasts sharply with all other parts of the developing world (World Bank 1993). A study by FAO (1998) revealed that per capita use of total fertilizer - nitrogen, phosphorus, and potassium - for sub-Saharan Africa and the other developing nations is extremely low. Farmers are resistant to fertilizer use due to cultural preferences and cost per unit. Because farmers need to be convinced concerning benefits of fertilizer use, there is a need for on-farm experiments (Gladwin et al. 1997).

This study was concentrated on areas surrounding Mbale district of Uganda. Mbale district has a population of about 690,000 people. Over 91 percent of the population is rural, and the density is approximately 284 person per sq km. Mbale has been relatively prosperous in comparison with other areas in Uganda. It has reasonably favorable agro-ecological conditions including volcanic soils in much of the district, and fairly good rainfall. Because it borders Kenya, it has had access to Kenyan input and output markets. The western, relatively lower altitude, part of the district is quite well connected to Kampala and other urban centers of central and southern Uganda. Mbale town, the district capital, is about 240 km from Kampala along fairly good paved roads. Mbale district is also a site of the USAID-supported Investment in Developing Export Agriculture Project (IDEA) to help develop export-oriented agriculture, including major food crops such as maize and beans, as well as a wide range of food and nonfood income crops.

Mbale is often seen as among the most agriculturally progressive areas in Uganda. There is an urgent need to target youth in agricultural development efforts. Ugandan youth currently have negative perceptions concerning agriculture. In view of this, the challenge is how institutions can effectively strengthen the livelihood and security of small-scale food producing communities. Small scale farmers are not focused on providing food for the world or contributing to the global economy, but rather on day-to-day subsistence and production of enough food to feed their families (Obbo, 1991). Therefore, incorporating agricultural sciences disciplines at the institute with Christian values will enhance agricultural production in Mbale and other parts of the country. MTI is a multi-level training program for Christians in Africa who want to develop Mbale community and Uganda in the long run through training. To ensure the success of a new curriculum at an institution, information about the educational needs of learners, available resources, and potential obstacles needs to be systematically collected and analyzed prior to the development and implementation of the actual curriculum (Mango, 1993)

Purpose and Objectives

The purpose of this study was to determine the needs associated with developing an agricultural science curriculum at MTI. As a result, agricultural production should be improved. The results of this needs assessment will assist MTI in implementing a full range of courses intended to introduce and to strengthen agriculture for rural Mbale. In order to begin this research, the following specific objectives were proposed:

1. To determine the demographic characteristics of agricultural producers.
2. To assess basic needs related to agricultural production.
3. To identify cultural barriers related to modern agricultural technology.
4. To identify means of disseminating agricultural information to rural agricultural communities.

The long term goal of Messiah Theological Institute (MTI) is educate students for Christian services, leadership and to teach students for Christian stewardship of sustainable agriculture.

Research Methodology

The study was conducted in the summer of 2005 in Mbale, Uganda. The information was gathered using one-on-one interviews, a research designed survey instrument, focus groups, observation and farmer-to-farmer visits. To collect reliable data, information was gathered from local leaders, government officials, local farmers, and faculty members at Messiah Theological Institute. During the focus group workshop, over 95% (N=37) of the respondents attended and shared topics such as important courses that should be in the curriculum, future sustainability of the institute and the long term benefits of the curriculum development. In this study, the use of multiple procedures to collect information was to enhance the validity and reliability of the study (Caplan, 1990). The research questionnaire included both open and closed ended questions on the needs of establishing agriscience curriculum and future sustainability of the institute. Prior to the study, a list of potential participants was compiled with the help from the faculty members at the Messiah institute from different districts in Uganda. A Likert-type scale was used for the closed ended questions.

Participants

Participants of both focus groups and farmer-to-farmer visits from six districts included farmers and youth from these areas. Farmers were asked to indicate the need of establishing an agriscience curriculum and what courses would they be interesting having their children study. During rural visits questionnaires were distributed to participants and collected after meetings that were organized by rural leaders. There were 77 participants in the focus groups. Meghan Ede (1998) maintains that focus groups can be used as a way to get people to talk about long-term issues that would take too long to study otherwise. Focus groups often bring out spontaneous reactions and ideas and allow the researcher to observe some group dynamics and organizational issues (Krueger, 1988). This methodology was very productive in terms of outcome from the groups in regards to courses and future of MTI.

Instrumentation

Several instruments were used to ensure that useful and appropriate information was gathered from the respondents. The one-on-one interview instrument was employed using a convenience sample of students (N=90) enrolled in short courses. The respondents were asked questions concerning the needs of setting up an agricultural curriculum. This methodology was particularly useful for getting the story behind a participant's experiences and knowledge in areas of agriculture. Interview questions were developed beforehand and specific content was identified. This type of interview involves the implementation of a number of predetermined questions and special topics (Berg, 1998). Rural visits were carried out to ensure representative sample of the farmers in Uganda was obtained. The choice of the districts was based on climatic conditions and crops variability as well landscape differential. During the rural visits,

observation around and within the districts indicated that majority (>80%) of the farmers use poor methods of farming, limited use of fertilizer, poor transportation systems for their produce and lack marketing raw products such as mangoes. Observation also revealed that farmers lack extension professionals and economic resources to purchase improved seeds.

Procedure

An institutional survey was conducted to obtain the current resources and status of the institute from the faculty members (N=5) in charge of the Messiah Theological Institute (MTI). Information was gathered from them using both in depth interviews and Likert-type questionnaire. This survey was important for further research and selection of rural visits and key contact person in each district. Sections of questionnaire included farmer's demographics, farm ownership, cultural beliefs, future agriculture and literacy in agricultural education. The response rate was 100 % (n=90). During this time, a focus group workshop was set up and random participants were identified from several districts with the help of institute administrators and government officials were also invited. Rural visits and questionnaires were sent through the contact person in each district and some distributed during the visits. Identification of the domestic experts was achieved during the initial survey. This helps researcher keep clear focus on the intent of each question (Patton, 1990).

Multiple methods were employed for collection of the data as follows:

1. One-on-one in-depth interviews of the students from all over the districts and the administrators. This was very useful to obtain detailed information about the need for the curriculum development.
2. Rural visits or farmer to farmer was carried out in all six districts. Information was collected from opinion leaders, farmers and students. Information on curricula and agricultural courses were collected.
3. On-site observation of agricultural activities in rural areas and within the cities indicated that there is still big challenge in terms of agricultural production.

Results and Findings

Farmer's demographics information

The total number of the respondents was 90 that returned the survey questionnaires. The average age was 36 years of age with over 10 years of experience in farming. Over 24.4 % of the farmers indicated that their communities completely support the establishment of agricultural programs and 23.3% stated their communities support establishment of agricultural curriculum as shown in Table 1. The majority of the respondents (84 %) were male and the forms of communication they receive come from both radio and word of mouth. Majority of the participants (97 %) produce food for both local market and household consumption. Less than 1 % of the respondents had received any form of training either through vocational or extension agents. Over 90 % indicated that men own land and make development decisions. More than 90% indicated they plant several crops as well as keep livestock. A majority of the farmers were subsistence producers with acreage less than five acres.

Table 1. Support for Establishment of an Agricultural Program at MTI.

Degree of support	Frequency	Percent
No Response	1	1.1
Complete	22	24.4
Good	21	23.3
Moderate	9	10.0
Little	18	20.0
No	19	21.1
Total	90	100.0

Basic needs related to agricultural production

This was the second objective of the study. The participants of the study from six districts lack basic agricultural tools, credit issuance and transport of their produce. Bata in Lira district did not have a reliable transportation system and basic tools such as hoes. Over 90 % did not have farm tools and housing due to political instability in the region. The roads were difficult to navigate and some people still live in refugee camps. In Tororo district, farmers lack resources to acquire improved seeds and fertilizers. Farmers in every district needed basic knowledge in agricultural production. The majority of farmers experience

Figure 1. Map of Uganda showing districts visited for this research



the issues of soil erosion and depletion of fertile soil as well as poor farming practices. According to the respondents, young people have negative perceptions towards agriculture. Young generations see agriculture as being meant for desperate people who have no future in any other academic profession.

Figure 1 shows the districts the researcher visited. Each district experiences different basic needs related to agricultural production due climatic differences, literacy rate, and topography. The findings indicated that districts grow different crops and that there was production variation per acreage. Table 2 shows characteristics of each district visited by the researcher. The respondents felt that fertilizer use was too expensive. The size of farm production is small-scale due to land competition from other uses and fragmentation as a result of cultural inheritance over the years. Most of the crops grown in all the districts such as maize are because many rural people use it as a staple food.

Table 2. Characteristics of each district and main crops grown.

District	characteristics	crops
Kumi	limited use of fertilizer	sunflower
	Women's group existed called Popular Women Initiative	groundnuts
	manual oil processing by the women's group	maize
	Micro-financing available	
	Teso people and gender roles exists	
Pallisa	manure use dominates agricultural production	Rice
	limited use of extension agents	mangoes
	roads are accessible	cotton
	small scale production for subsistence	maize
	no fertilizer use, "God provides fertile soil"	
	limited use of farm equipments	
Lira (Bata)	multicropping common and organic farming	
	no use of fertilizer	millet
	peasant farmers	simsim
	small scale production for subsistence	cassava
	road are not accessible	maize
Tororo	lack of basic farming tools	beans
	no use of fertilizer	
	small scale production for subsistence	cabbages
	men own the land	cassava
	no extension agents	maize
Mbale	farmers group existed	
	small scale production for subsistence	maize
	roads are accessible	cotton
	few extension agents exists	sorghum
Kapchorwa	NGO's exist to help farmers	vanilla
	land highly fragmented	maize
	use of oxen for food production	wheat
	lots of hills and valleys	beans
	agents exist in urban areas	

Cultural issues related to agricultural production and technology

Gender disparity is common particularly in developing nations such as Uganda. Ninety-five of the participants indicated that women did not have land ownership rights and are not allowed to make decisions in regard to land development. One female participant stated that, “women have to consult men since they own land.” During focus group discussion 100 % of the women mentioned that farm operations and decisions should be shared equally. Gender disparity has jeopardized farm production since decisions are always delayed and food production is always low. Over 95 % of the food production according to the participants was carried out by women.

Participants, according to the survey instrument, indicated that income from agricultural production is always managed by men. During rural visit in Kapchorwa, 100% of the participants were men since women are not allowed to attend meetings. Women, according to the respondents, are required to prepare food, take care of livestock and till the land. Therefore, in most Ugandan cultures, women are required to stay home. This practice adversely affects agricultural production. The educational level among women was low (14%) due to cultural barriers. Rural women, the majority of whom are farmers, are crucial partners in the fight against hunger, malnutrition and poverty. Nevertheless, their work still remains underappreciated and local traditions can often increase discrimination against them. Without equal access to information, they are at a disadvantage in making informed choices about what to produce and when to sell their products. Lack of information also limits their influence in their communities and their ability to participate in decision-making. On the other hand, if women gain access to information technologies, they will benefit from increased educational opportunities and channels for better networking. Throughout the world, schools and universities have difficulties attracting women to science and technology studies (COL 2001).

In rural areas such as Uganda, women are three times less likely than men and boys to have formal education (UNIFEM, 2002). These constraints negatively affect agricultural production in the visited districts in Uganda. Modernizing agriculture will aid in the reduction of poverty through increased production thus ensuring that there is enough food for all the people at all times. The Plan for Management of Agriculture (PMA) – a central element of Uganda's poverty eradication strategy - is key to enabling the rural population to improve their livelihood and ensure food security through changing subsistence agriculture to practicing farming as a business. Rural women farmers are not able to benefit from this program as a result of gender issues. Farmers expect the local government to deliver agricultural services and financing.

Means of disseminating information in rural areas

Uganda lacks ways of disseminating information to farmers. Ninety percent of participants indicated that they had not seen any extension agents in their rural communities. According to the survey conducted, farmers hear about them but extensionists are never available for consultation. Extension agents should play a role in disseminating research findings and field extension workers should teach community members modern principles and practices essential for increasing agricultural production (Mango, 1994). Field extension workers also could play an important role in educating the public about HIV/AIDS, improved nutrition, and poverty reduction techniques.

During, focus group forum, one participant commented that “I think the word extension is rhetoric and something of the past, never there”. A government official in attendance

indicated that the government trains extension agents but they lack resources to reach farmers. Transportation to isolated rural villages presents problems and pay was not commensurate with the nature of the work.

The Ugandan government supports National Agricultural Advisory Services (NAADS) program to increase the efficiency and effectiveness of agricultural extension. This program is designed to disseminate information to farmers in regard to adoption and diffusion of technology in order to boost food production. Also, the main goal of this organization is to enhance rural livelihoods by increasing agricultural productivity and profitability in a sustainable manner. Three of five participants felt that the agents involved in the program concentrates only in the urban areas and do not reach rural areas and or even assist farmers with information. One of the participants in a one-on-one interview stated that, "extension agents are not available. That is why we had no choice but to form agric-groups to share information."

The findings on fertilizer use shows that 88% of the farmers are willing to use fertilizer and improved seeds but the costs of inputs according to the study were too high. Some rural farmers have the perception that fertilizer use affects agricultural production (Stephens, 1970). They believe the application of fertilizer to crops results to diseases and other side effects. Rural farmers prefer the use of manure instead. Farmers lack the basic information in regard to adoption and use of modern technologies and improved seeds.

Recommendations

The development of agricultural programs is crucial for the future of farmers and food security in Uganda. Farming communities can increase production by establishing and operating lean, efficient and cost effective mechanisms and an enabling environment for agricultural research and sustained agricultural development. The establishment of agricultural curriculum at MTI will facilitate the training of producers and will be geared toward improving food production and poverty reduction. In order to improve the livelihood and offer appropriate courses, key constraints such as infrastructure, cultural issues, courses, education content, and financial constraints needs to be addressed.

Access to infrastructure

Telecommunication connectivity in developing nation such as Uganda is available in cities such as Mbale. To enhance technology use, government with the help of NGOs should set up infrastructure in rural areas since majority of the farmers live in rural, isolated areas. MTI can offer short courses in rural areas if telecommunication is in place. According to gender demographics, more women live in the countryside than men. Women make up a large workforce in agricultural production and therefore providing equal opportunities will improve agricultural production.

Social issues

Gender biases may prevent women and young girls from attending courses at MTI. Women have more problems with availability of time to study short courses due to their multiple roles and responsibilities at home. To encourage access for women and equity MTI should formulate course schedules that will facilitate or accommodate women's hours. Women's group activities succeed since they make schedules using cultural norms to make collective activity (UN 2000).

Education and courses contents

Women are always left behind in their access to education by illiteracy, gender roles and language barriers. Courses should be designed to allow women to learn language skills before pursuing agricultural programs (Adupa, 1994). Women have limited access to schooling especially those living in isolated rural areas such as Lira and Tororo districts. These women are much less likely to attend course than men. To enhance women education these factors needs to be considered. Short course such as soil conservation, land preparation pasture management, zero grazing technique, fertilizer use and poultry should be offered during the initial stage of curricula development. Farmers indicated that they prefer demonstration plots to be set up in every districts to promote food production.

Financial constraints

This study shows that women have no control over money and therefore less likely to have disposable income to buy farm inputs. Small scale farmers are hesitant to use money for education therefore small scholarships should be established and tuition to be affordable. Small loans and grants to favor rapid mobilization of resources at the local level to encourage farmers to accept new production methodologies should be established.

Conclusions

Uganda's population is essentially rural and poor thus its ability to cultivate food enough for the household is threatened. Therefore, even in normal times, a large proportion of Uganda's population encounters inadequate diet, and the per capita calorie intake for a majority of Ugandans is below the minimum nutritional standards (MFED, 1998). Therefore, there is no easy solution to the problems facing farmers in Mbale and other parts of Uganda. The needs assessment for establishing agricultural curriculum is crucial for food security. Offering farmers substantial training and knowledge will promote efficient use of resources, better adoption of new technology and improve food productivity as well as reducing poverty level. Offering agricultural courses and opening doors to both men and women at MTI will bring about positive entire communities in Uganda. Farmers will have a better understanding of the farming practices and modern methodologies.

This study clearly shows that there is limited use of fertilizer and improved seeds. Therefore, on-farm demonstrations on various soil management technologies are recommended to convince both men and women farmers of the benefits of modern farming technologies. Setting up demonstration plots in various districts will result to easy delivery to rural farmers on time. MTI can probably negotiate with rural farmers the use of there land for demonstration by extension professionals in areas like soil conservation, organic farming and organic source options.

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