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Farmers' experiences and perceptions of the NAADS Agricultural Extension System/Program in Kabale district, Uganda

John Musemakweri
Iowa State University

Farmers' experiences and perceptions of the NAADS Agricultural Extension System/Program in Kabale district, Uganda

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John Musemakweri

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Program of Study Committee:
Lynn Jones, Major Professor
Lorna Michael Butler
Lavon Esters
Frankie Santos Laanan
Wade Miller

Iowa State University

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ProQuest Information and Learning Company
300 North Zeeb Road
P.O. Box 1346
Ann Arbor, MI 48106-1346

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ABSTRACT

Agricultural knowledge and information play a major role in agricultural development, particularly in food production in Uganda. One of the influential extension approaches used for the past decades has been extension-centered approach which focused more on improving efficiency in agricultural production rather than the educational process. The new National Agricultural Advisory Services (NAADS) extension program has emphasized a farmer -centered approach. The purpose of the study was to explore the farmers' experiences and perceptions of the NAADS agricultural extension systems/program in Kabale district, Uganda. The study addressed two main research questions: (1) What are the perceptions of farmers regarding the NAADS information delivery approach; and (2) What is the level of farmers' comprehension and the extent to which they have applied the skills and new technologies learned from education extension programs.

Qualitative design through interviews from selected farmers was applied to gain information regarding farmers' experiences and perceptions of the NAADS Agricultural Extension Program in four sub-counties of Kabale district: Bukinda, Bubare, Kyanamira and Rubaya. An analysis of NAADS program documents was also carried out to gather data for the study.

Results from the study indicated that learning in small groups provided farmers an opportunity to brainstorm, analyze, and identify their farming needs and priorities. Although NAADS enabled farmers to participate in an enterprise (crop) selection, the process was perceived by the farmers as more of a popular participation rather than helping them articulate their actual needs and prioritize them. Recommendations were made to provide a

decentralized program that will engage all district-based development organizations such as NGO's, public and private service providers, and farmer groups to form a consortium in order to coordinate resources to give farmers power to negotiate and dialogue regarding issues that are central to improve their farming practices. This might enable farmers to articulate their own needs and priorities and encourage the implementation of their own ideas. Recommendations were made to shift from NAADS-centered teaching to create a culture of learning using adult education principles to provide farmers freedom to choose when and what to learn based on their actual needs and learning interests.

CHAPTER 1. INTRODUCTION

Background of the Study

Extension education in perspective

Agricultural knowledge and information continue to play a major role in agricultural development, particularly in food production in Uganda. However, the main challenge in transferring agricultural knowledge and information to farmers has been influenced by the environment in which farmers and the agricultural extension system have had to operate (Bembridge, 1993). One of the most influential elements in the extension environment has been governmental policies that have focused more on agricultural production, or improving efficiency in agricultural production, than the educational process (Lees, 1991). An extension system that has been extension/teacher-centered has been one of the major factors that led to a decline in food production in the agricultural sector. This decline has resulted in increased pressure on policymakers in the Ugandan Ministry of Agriculture Animal Industry and Fisheries (MAAIF) and its development partners to look for alternative approaches for implementation of agricultural extension programs in order to increase food production by farmers. Rivera and Zijp (2000) argued that the poor management of agricultural extension calls for changes in the traditional extension system which is seen as outdated, top-down, paternalistic, inflexible, subject to bureaucratic inefficiencies and, therefore, unable to cope with the dynamic demands of modern agriculture.

Worldwide, traditional agricultural extension has focused on theories of adoption behavior with the primary purpose of promoting diffusion of innovation (Rogers, 1983). Focusing primarily on the diffusion of innovations in extension science has been one of the

factors that has led to slow rates of adoption of new technologies by farmers, thus prompting Roling (1988, as cited in King, 2000, p. 3) to ask two key questions: “Why don’t farmers do as they are told?” and “Why don’t farmers adopt the new technologies?” The adoption of new agricultural technologies and efficient management practices were seen as approaches and opportunities for increased food production among farmers (Umali-Deininger, 1997). This view of extension by Rogers was described by Dart (2000) as a “science-push” where agricultural research findings are transferred from research stations to the farmers in a linear manner. This led Engel and Van den Bor (1995) to conclude that this paradigm of extension is merely an institution which transfers scientific knowledge to farmers without adding any other added value to suit individual farmers’ priorities and preferences. Coutts (1997) argued that the science-push model emphasizes transfer of scientific knowledge from scientists to farmers to bring about mass adoption in a short time to maximize agricultural production. Roling and Jiggins (1987) argued that this paradigm of extension is limited to only homogenous groups of farmers. The central argument by Chambers (1983) is that:

- technologies on controlled research stations do not diffuse to all farming situations;
- the emphasis on the supremacy of scientific knowledge overlooks the local or indigenous knowledge; and
- the emphasis on production overlooks the issues of environmental and social sustainability.

Despite the fact that “science-push” has still been common in extension in the previous decades, the farmer-first paradigm has led theorists to come up with new approaches that, among others, include: farmer systems research, farmer participatory research, participatory action research, participatory technology development, co-learning,

and experiential learning (Dart, 2000). Dart pointed out that these approaches have continued to emphasis farmer involvement with the aim of helping farmers to form “sound opinions and good decisions” thus promoting suitability, sustainability, and improving agricultural production. Dart also pointed out that the paradigm of good decisions leaves a lot to be desired. The assumption of the aforementioned extension approaches is that “good decisions constitute those decisions that lead to behavior change congruent with the current government policy” (Dart, p. 42). These persistent failures of extension have led extension theorists to focus more on how adults learn and how adult learning should be facilitated. Therefore, the success of agricultural extension lies not only with diffusion of innovations, but also in exploring strategies of adult learning that will increase and encourage farmers’ involvement in the extension process.

In response to the growing criticism of the extension/teacher-centered system that has failed to effectively provide farmers with the relevant knowledge and information to make informed choices about production processes, Uganda is currently experimenting with a new agricultural extension approach based on farmer demand-led agricultural extension (Sulaiman & Van Den Ban, 2003). The Ugandan government’s strategy for this transformation approach is detailed in the government’s Poverty Eradication Action Plan (PEAP), which was launched in 1997. PEAP is based on four pillars. The most important one that is relevant to the current study is to improve the relevancy and effectiveness of agricultural advisory services under the umbrella of the National Agricultural Advisory Services (NAADS). NAADS was created by a Parliament Act in 2001, with the mission of privatizing the agricultural extension system (Government of Uganda [GOU], 2002). According to this act, NAADS is a:

> …new program put in place to increase the efficiency and effectiveness of agricultural extension service. It is a semi-autonomous body formed under NAADS Act of June 2001 with a mandate to develop a demand-driven, farmer-led agricultural service delivery system targeting the poor subsistence farmers … Its development goal is to enhance rural livelihoods by increasing agricultural productivity and profitability in a sustainable manner. (MAAIF, 2000, p. 2)

To achieve the aforementioned pillar, NAADS provides financial and advisory services through contracting service providers to deliver agricultural advisory services to farmers based on their identified enterprises (MAAIF, 2002). These service providers could be individuals, a group of individuals, a private company, or a nongovernmental organization (NGO). Enterprises may be comprised of different crops and livestock activities. In order to receive NAADS advisory and/or financial support, farmers are encouraged to form organizations or groups in places where they do not already exist.

The learning process—a neglected dimension in extension

Agricultural extension has long been viewed as a process in which researchers develop new technologies; and then extensionists transfer the new knowledge and skills to farmers, who, if they are receptive, adopt the new skills to improve their farming practices (Engel & Van den Bor, 1995). Van den Ban and Hawkins (1996) defined extension as "the conscious use of communication of information to guide people in forming sound opinions and making good decisions" (p. 9). The goals of extension education programs have focused more on the dissemination of knowledge and technologies and less concerned with facilitating the learning process of farmers. According to Rivera et al. (1991), this has promoted inflexible, top-down, bureaucratic inefficiencies that are not able to cope with the new and increased

demands and priorities of farmers. The approach used by the agricultural extension program has been criticized for not being responsive to changing needs and priorities of recipients—farmers. The approach was characterized as teacher-centered learning, as opposed to learner-centered extension. More emphasis was placed on farmers' acquisition and application of knowledge.

NAADS proposes that, within a new farmer-demand driven system, farmers will be well served if the contracted service providers understand how farmers learn. "Learning" is the acquisition of knowledge and knowledge is the sense learners make of information (Taylor et al., 2006). The authors argued that, for any social change to take place in learning, the learner matters most in the process of learning and teaching because the learner, in this case the farmer, is the "source, the vehicle and driver for social change" (p. 20). Schunk (2004) pointed out that "learning is an enduring change in behavior or in the capacity to behave in a given fashion, which results from practice or other forms of experience" (p. 2). Bandura (1986) posited that "learning is largely an information processing activity in which information about the structure of behavior and about environmental events is transformed into symbolic representations that serve as guides for action" (p. 52).

By paying more attention to the learner, the extension agent or facilitator is able to share learning and achieve greater congruence. An extension agent does not necessarily need to be an expert in his/her subject matter but, rather, needs the experience of working with farmers. Teaching should be based on what extensionists learn from the farmers in their fields. In other words, it should take place at the grassroots level.

According to Taylor et al. (2006), “learning is not complete without action,” (p. 22). Extensionists in developing countries, particularly in Uganda, rely more on technical skills associated with their disciplines as sufficient qualification for facilitating social change. They have limited consideration for what facilitates learning or inhibits the learning process. This argument is echoed by Martin Luther King Junior, who is cited in Taylor et al., (2006) as saying, “Our scientific power has outrun our spiritual power. We have guided missiles and misguided men” (p. 25). Schunk (2004) stated that “learning occurs either inactively through actual doing or vicariously by observing models performed (e.g., live, symbolic, portrayed electronically)” (p. 86). The previous author argued that learning occurs by way of observation and later practicing what is observed. Brockett (1987) stated that theory and knowledge acquisition, without application, leads to empty idealism.

The previous statements stress that we have invested in technology and technical expertise with little emphasis on how to facilitate change. This researcher argues that it is high time for extension professionals to start to recognize the crucial link between farmers and ways of initiating learning for social change.

NAADS implementation process

Administratively Uganda is divided into 56 districts. Each district is divided into a number of sub-counties. Each sub-county is divided into parishes and each parish is divided into villages. All the above sub-divisions form local government units (Mutimba et al., 2005). Implementation of the NAADS program started in 2001 in the six pilot districts of Arua, Kabale, Kibale, Mukono, Soroti, and Tororo. In each of the six districts, NAADS

selected four sub-counties. Since the completion of the pilot phase in 2002, NAADS has continued to expand to new districts and sub-counties. NAADS currently is being implemented in 37 districts and 344 sub-counties (NAADS, 2005).

In its attempt to shift from supply-driven (traditional/public) extension to the demand-driven private delivery approach, NAADS is managing the process through a small secretariat, headquartered in the city of Kampala. In its strategy to promote demand-driven approach, the program supports establishment of farmer groups at the village levels that will later form farmer groups at sub-county levels. NAADS expects amalgamation of farmers groups at sub-county level to national levels. However, this has yet to occur.

Initial activities at the sub-county level are to sensitize farmers to the NAADS program and the conditions required for farmers to participate (NAADS, 2001). This is followed by institutional development activities for all participating stakeholders. Institutional development entails mobilization and sensitization of farmers by contracted not-for-profit organizations and other suitable service providers to: (a) mobilize farmers to either form new farmer organizations where they do not exist or strengthen existing organizations to ensure compliance with the NAADS program, (b) form sub-county farmer forums, and (c) provide educational programs in agriculture. Educational programs entail group formation and group dynamics, resource mobilization, and modalities of enterprise selection and development, crop production, soil erosion and pest management. The major portion of the NAADS educational program is focused on facilitating the farmers' capacity to articulate their own needs. Training is followed by identification, selection, and prioritization of group enterprises. The aforementioned process is facilitated by Non Governmental Organizations (NGOs) or other suitable service providers. Enterprises are defined as crop or livestock

species whose production or post-harvest management may necessitate the farmers' need for advice. At a group level, farmers select three enterprises (e.g., maize, beans, and cattle rearing). The three enterprises are set by the NAADS secretariat. The criteria for identifying priorities are also determined by NAADS (Mutimba et al., 2005).

The priority lists of all the groups in a parish are then submitted to the parish level where they are subjected to further selection and prioritization. At the parish level, a single priority list is produced and submitted to the sub-county farmers' forum. The same process is repeated and a sub-county priority list is produced. Once the priority list has been established, each sub-county works out a budget for providing advisory services and submits it to the NAADS executive. NAADS then allocates funds to the districts based on the consolidated sub-county plans and budgets. From the funds allocated to them, the sub-counties identify suitable advisory service providers and award them contracts to organize appropriate extension activities (Mutimba et al, 2005).

Nevertheless, NAADS has little prior experience and lacks the capacity to self-evaluate the new extension program in Uganda. The majority of previous studies have been based on assessing the achievements of the agricultural extension institutional system. The purpose of the current study was to gain the farmers' perspectives regarding their perceptions and experiences with the NAADS extension program and how the program has influenced their farming practices. The intent was to gain an understanding of whether there has been a change in farming practices as a result of the NAADS extension education program. Impact stories from farmer organizations and the NAADS program staff provided evidence regarding how the program is making a difference in farming practices. The findings of the study will enable NAADS staff and other development partners to pay greater attention to

farmers' ways of learning and how they apply their acquired knowledge. Ideally this will help NAADS to improve their delivery strategy as they expand into new sub-counties and districts.

Statement of the Problem

Agriculture continues to play a major role in Uganda's economy. The agricultural sector alone contributes 42% of the country's gross domestic product (GDP) (Oryokot, 2003). Ngomane and Flanagan (2002) argued that agricultural extension plays a significant role in developing and sustaining agricultural production that can contribute to self-reliance and rural poverty alleviation. Kroma (2003) posited that research and extension should address more than focusing on technologies (products) for crops and animals but consider the interactive, interpersonal relationships among farmers, institutions, and rural communities.

Griffith (1984) pointed out that research findings are essential in agricultural extension but are not sufficient for successful extension education programs. Griffith argued that the "effectiveness and efficiency of extension programs are influenced by extension workers' knowledge and understanding of how adults learn" (p. 11). According to Griffith, understanding how adults learn requires an examination of the term "theory of learning." According to Hill (1977, as cited in Griffith, 1984), a theory of learning is approached in three ways:

> First, it is an approach of conducting research on learning. It reveals what variables the theorist considers to be most important to study and so provides direction to research. Second, a theory of learning may be thought of as an effort to condense a great deal of information of specific laws of learning into a parsimonious explanation…Third, a learning theory constitutes a systematic explanation of learning and how it takes place. (p. 12)

Leeuwis (2003) argued that “decision making” in agricultural extension was the main concern among extension agents in the early years of extension research. With the persistent failure of farmers to make good decisions, there has been a shift in extension education from planning and decision making to learning approaches. The author argued that it is more reasonable to view “decision making” as the final outcome of a long-lasting process with varying degrees of deliberateness and consciousness, involving what Giddens (1984, as cited in Leeuwis, 2003, p. 152) has also called reflective monitoring of action. In Uganda, little research has been conducted to assess farmers’ perceptions, situations, and the experiences they have gained from extension programs. This may be one of the main contributing factors underlying farmers’ poor comprehension of new technologies. Therefore, it is important to gain farmers perspectives regarding their experiences or situations, as expressed in their own words, on how the NAADS extension program is delivered, and whether they have comprehended and applied what they have learned from the contractual extension program to solve their farming problems.

Purpose of the Study

The extension program being implemented by NAADS is a historically new approach for farmers and policymakers in Uganda. This 25-year program was initiated in 2001 in six districts. Its mission was intended to spread nationwide. By 2005, the program had grown to include over 30 districts (NAADS Annual Report, 2004). As a relatively new entity, Ugandan agricultural extension has little prior experience to use in evaluating this program. The overall purpose of the study was to gain farmers’ perspectives on their experiences and

perceptions regarding their learning processes and the application of the knowledge acquired from these processes.

The primary purpose of the study was to gain from farmer's perspective as to whether there has been a change in behavior and action by farmers as a result of the NAADS extension program. Impact stories from farmer organizations were used to help understand the successes and failures of the new approach and to explain why NAADS has been successful or less successful—what worked well and how, and what might be improved. The study also drew upon successful performance-related recommendations and implications for strengthening the future of the NAADS agricultural program in Uganda and elsewhere.

Significance of the Study

Agricultural education extension is seen as a mechanism for facilitating farmers to solve their problems and, with this view, farmers' perceptions were used as a tool to provide evidence for how they learned, comprehended, and applied the new information. The farmers' feedback evaluation will help improve the extension delivery system to the farmers. The study is significant because it will add value regarding issues such as how to measure behavioral change among Uganda farmers. This will be useful for Ugandan extension education facilitators and practitioners to better understand how farmers learn and apply what they have learned.

The findings of the research will provide a good learning experience, not only for NAADS, but also other organizations that are involved in agricultural extension, education, and development in the country. Measuring change in knowledge levels and farmers' behaviors will help the new extension program to become more critical in program planning

and implementation of the learning process. This is important, as there is little point in monitoring the process of learning if what the extension intends to impart is not applied by extension clients. In their position paper for the standards 2000 Technology Conference on Intelligent Cognitive Tutors as Modeling Tool and Institutional (NCTM) Model, Osborne and Gaebler (as cited in Koedinger, 1998) posited that:

> What gets measured gets done.
> If you don't measure results, you can't tell success from failure.
> If you can't recognize failure, you can't correct it.
> If you can't see success, you can't reward it.
> If you can't see success, you can't learn from it. (p. 1)

The feedback based on farmers' experiences and perceptions regarding the NAADS extension education program, therefore, should provide an incentive to review how the program has been implemented, and reveal not only the implementation success but also challenges which might help NAADS avoid repeating past mistakes in the new sub-counties and districts delegated for expansion.

Research Questions

The study was guided by the following research questions:

1. What extension strategies are used by the NAADS program to disseminate agriculture technologies in Kabale district, Uganda?
2. What are the perceptions of farmers regarding the NAADS information delivery approach?
3. What is the level of farmers' comprehension and the extent to which they have applied the skills and new technologies learned from education extension programs?

Limitations of the Study

The study was conducted with the following limitations:

The NAADS extension program has been implanted in 37 districts and over 140 sub-counties nationwide. All the districts were different in terms of natural environment, ethnicity and culture, social economic activities, farming practices, and the level of development varied from one district to another. This study was carried out in one district and, therefore, the findings of the study cannot be generalized to all farmers in the districts where NAADS has been implemented. However, since the majority of the population was comprised of farmers who lived in rural areas, the learning process might help to understand farmers in the entire nation.

Since the research was conducted to gain an understanding of farmers' perceptions and experiences about the learning process, the research did not incorporate the competence of the facilitators in the learning process. The facilitators included NAADS-contracted service providers who were not included in this study.

Although farmers were selected by a farmer fora and leaders' consensus, there might have been bias in the selection process. The selected participants had at least a high school education and considered themselves to be progressive farmers; therefore, knowledge of who the struggling farmers were could have been limited or biased.

The research study did not incorporate quantitative data collection tools such as surveys. Since the study only had 16 participants, use of surveys might have given the researcher opportunity to solicit information from a larger number of farmers. Well-constructed surveys can generate rapid information in a very short period of time from a

larger group of participants, but the trade-off for doing this is the limited opportunity to build a trusting relationship with respondents.

The research attempted to understand farmers' experiences and perceptions regarding the NAADS learning process, however, behavioral change due to a new intervention takes a long time, and studies geared towards understanding behavioral change should be conducted over a long period of time. This research study was conducted in a 2-month period of time which the researcher considered might be too short an amount of time to fully access experiences and perceptions of the participants.

The study was conducted using the local language. Thus, some of the words, sayings and phases that local people used might have been lost during translation into English.

The researcher had prior knowledge of the study area which might have influenced some of the findings. On the other hand, prior knowledge of study area and its people might be an added advantage to the researchers understanding of farmers' situations; nevertheless, it might have caused the researcher to unduly question some farmers' of the answers.

Operational Definitions

The following terms were defined for use in this study:

Enterprises selection and development: Broadly defined as the identification, development and promotion of farming initiatives that can generate income to farmers and make production profitable.

Farmer's forum (farmer fora): In the NAADS program, farmer fora is a congregation of farmer's representative at sub-county level. (The word fora is used as a plural for forum.) Each farm group that is registered with NAADS program at the village level selects two of its

members to represent them at the sub-county level. These form the sub-county farmer's forum.

Farm group: A congregation of individual farmers who share common goals. The philosophy of group formation, according to NAADS, is to help farmers access easy training, agricultural inputs, markets and market information, agricultural advisory services and other services, collectively, as well as share risks in the process of production.

NAADS: National Agricultural Advisory Service, which is a new extension program under the ministry of agriculture animal industry and fisheries with the mandate to develop a farmer's ability to effectively demand for agricultural advice from the NAADS-contracted service providers.

Progressive farmers: Defined by group participants as farmers who practice at least three enterprises, regularly attend meetings, training sessions and field days, own an average of 3.8 ha of land, are optimally motivated to participate in NAADS activities, and have improved their overall farming production since NAADS started their operations.

Service providers: An individual, group of individuals, a private company, or non governmental organization contracted by NAADS to deliver agricultural advisory services to farmers based on the identified enterprises.

Struggling farmers: Farmers, who practice one enterprise, sometimes attend meetings, field days or training session, own 1-2 ha of land, do not optimally practice NAADS technologies, and are not motivated to participate in NAADS activities.

Technology development sites: Agricultural demonstration plots established by NAADS and managed by selected farmers to help them learn and obtain new agricultural techniques.

CHAPTER 2. LITERATURE REVIEW

This chapter presents the philosophy and a review of the history of agricultural extension to provide a background to understand the NAADS extension program in the Kabale district of Uganda. The researcher then presents the evolution and current transformational reforms and changes in Uganda's agricultural extension system under the umbrella of NAADS and discusses agricultural extension in the framework of the learning process. The existing educational process in the institutions of higher learning in Uganda regarding agricultural extension in relation to farmers' needs and priorities is explored according to learning theories in the framework of agricultural extension.

History and Philosophy of Agricultural Extension

The agricultural extension service is one of the most highly developed government sectors in industrialized countries. Consequently, extension systems in poor countries, with varying degrees of success, strive to emulate the extension systems of industrialized countries, especially those of Western Europe and the United States (Bembridge, 1993). However, extension systems have been conceived differently by different countries (Roling, 1988). For example, Dart (2000) stated that extension, in French, is referred to as *vulgarisation* (i.e., literally referring to simplification of new information for ordinary farmers to understand); in Dutch, extension is referred to as *voorlichiting* (i.e., keeping a light in front of farmers to encourage them to find the way); extension in Spanish is referred to as *capacitacion* (i.e., empowering farmers for self-reliance) (p. 41).

Roling (1988) provided different definitions of agriculture extension from various languages and found a few converging principles that are associated with extension. First, extension is an intervention and, second, it relies on communication to influence behavioral change among farmers. Roling emphasized that, to understand any model of extension, it is important for extension practitioners to understand various extension models used by different extension institutions. Van den Ban & Hawkins (1988) gave a commonly used definition of extension as "the conscious use of communication of information to guide people to form sound opinions and make good decisions" (p. 9).

Historically, agricultural extension worldwide has emphasized efficiency in agricultural production and the sustainability (Dart, 2000). The practice and philosophy of agricultural extension has been publicly funded and characterized by a top-down, "science-push" approach, which is now being replaced by what Dart described as a "holistic, responsive, pluralistic and bottom-up" approach (p. 40). Semana (1999) pointed out that the philosophy of agricultural extension in Uganda, like any other developing country, has been that of bridging the gap between the farmers and the researchers, who were conceived as the sources of agricultural knowledge and information. The dissemination of new agricultural technologies has depended on extension workers who were accountable to the Ministry of Agriculture.

Evolution of Extension in Uganda

Colonial era (1890-1962)

Over decades, agricultural extension in Uganda has changed in its approach, strategy, and goals. Until 2001, one commonality among Uganda's agricultural extension was that it

was exclusively funded and delivered by the public sector (Mangheni et al., 2004). Semana (1999) contended that agricultural extension was introduced in Uganda in the late 1800s by the colonial government at that time. Since its inception, the agricultural extension system has gone through several changes in its approach and strategy.

Semana (1999) noted that, during the period from the 1890s to 1910, the British colonial government introduced cash crops such as coffee, cotton, tea, and tobacco. The objective of agricultural extension during the colonial administration was to increase agricultural production to cope with competition in international trade and, thus, increase national profits. From 1920 to the early 1960s, local chiefs ran the extension services. Chiefs assisted colonial administrators to distribute seeds for cash crops and direct farmers on how to grow the crops. Semana pointed out that, between the 1950s and 1960s, extension concentrated and relied on technical advice in the form of information given to selected progressive farmers by newly-trained agricultural professionals from institutions of higher learning. The colonial government's expectation was that the improved performance of the selected farmers would be demonstrative and have a multiplier effect of increased production. This approach was considered the best and most cost effective because, at that time, there were few trained extension workers to teach the farming population at large. However, this extension approach had mixed results. Most of the selected farmers abused the special support they received from the extension system by not cooperating or their unwillingness to work with the rest of the farmers. The masses of farmers judged the progressive farmers as a privileged group, thus, nullifying extension's intended purpose to utilize progressive farmers as examples for emulation (Semana, 1999). Thus, the history of the extension system has been coercive rather than educational**.**

Post-Independence (1962-2001)

Agricultural extension in Uganda during the period from 1970 to 1980 was described by Semana (1998) as a dormant phase due to political turmoil during the administration of President Idi Amin. Between 1981 and 1991, there was no clear extension policy, and the period was characterized by parallel extension services by different ministries, non-governmental organizations, and other aid agencies. Extension at that time was marked by a duplication of services by the aforementioned extension providers and poor coordination of activities, with no clear policy from the government.

In an effort by President Museveni's regime to promote citizen participation in decision making to foster socio-economic and political development, Uganda has implemented several reforms; among these were devolution of power to district and sub-county government through a decentralized system. The early 1990s saw radical reforms (decentralization, liberalization, privatization, restructuring, and retrenchment of public civil servants). These reforms (restructuring and retrenchment) led the Ministry of Agriculture to downsize its extension staff.

Like other developing countries, Uganda has attempted to decentralize its extension systems with the expectation that the services will then become more client centered and, thus, more relevant. Budgetary constraints also played a role in the decision. Smith (1997) stated that there are two main reasons why governments decentralize agricultural services: a desire (or demand) to roll back the role of the state due to inability of the central government to continue to finance a whole range of services, and a view that democracy is best served through devolved functions with enhanced participation at the local level. Malvicini et al. (1996) argued that, if these are the reasons for decentralizing agricultural services,

disappointment is likely to occur. According to Malvicini et al., the decentralization of extension does seem to solve the problems of relevance and responsiveness.

However, most research centers in Uganda are centralized, and the new technologies from these centers may not necessarily coincide with agro-ecological zones (or with socio-economic situations). There may be a large diversity of situations within a local government and the capacity to adjust the advice given to local conditions (or to specific groups) may be negatively affected by decentralization. In particular, good linkages with agricultural research may be difficult to establish at a local level if there is no research facility covering the region.

The new reforms gave district councils primary responsibility for allocating budget resources for extension. However, after five years, budget mechanisms, flow of funds from the Ministry of Agriculture to the district level, and financial management procedures, still needed to be clarified. Available resources were allocated for salaries, leaving little for staff development and extension activities. The extension personnel were employed by the district councils but were technically under the Ministry of Agriculture, which delegated its responsibility for extension to the National Agricultural Research Organization (NARO).

Based on budgetary constraints, NARO was not prepared for the new task and may have seen the extension service only as an arm for transferring research results to the field. This would run counter to the intention of a decentralized, farmer-responsive service (Semana, 1999). The objective of NARO has been to increase the quantity, quality, and availability of technologies, methods, and policy advice for the efficiency and profitability of agriculture, while improving food security (MAAIF, 2000). It was assumed that these technologies would be communicated and would, in turn, change farming practices and increase food production. However, this has not materialized due to a lack of skills by

extension agents to facilitate learning and help farmers improve their farming practices. The extension policy of National Agricultural Research Organization (NARO) did not provide detail as to how farmers might learn and apply new technologies.

The greatest challenge to extension during the post-colonial period (1962-2001) was not a question of approach, strategy, or goals but, rather, the nature of the agricultural programs that were provided to agricultural extensionists who were trained in institutions of higher learning. Makerere University and other institutions of agriculture did not equip their graduates with a relevant curriculum to help them understand the farmers' socio-economic and environmental challenges and responsibilities. The graduates, therefore, had and continue to embrace a misconception about the role of agricultural extension and how extension should be implemented. Extension was adversely associated with the notion of "transfer of technology" of "top-down" programs of the central government (Kidd et al., 2000, p. 95). The educational system did not equip graduates with the skills of helping farmers to solve and address problems related to their livelihood needs. The new reforms should have promoted, among other things, the transformation of the agricultural instruction curriculum to enhance the capacity of universities to respond to society's changing needs, making agriculture more economically competitive, socially responsible, environmentally sustainable, and able to effectively contribute to food security and poverty-reduction strategies (Kay, 2003).

During the colonial administration and the first two decades after Uganda's independence, extension was characterized by a set of bylaws informing farmers which crops to grow and about soil conservation technologies. The aim was to increase food production and household food security (Seman, 1998). The new reforms, however, did not agree with

extension challenges, which required new approaches. Agricultural professionals and extensionists needed to embrace new ways of thinking that would partner with farmers in social and behavior change, rather than focusing on promoting the dissemination of new knowledge and technologies.

Agricultural extension has evolved over time. Most of its philosophy has been extension centered, with little emphasis on exploring how farmers learn. Extension has been characterized by the provision of giving technical advice to farmers in the form of farm inputs. Extension has basically relied on expert advice and donor funding (Semana, 1999). Table 1 provides a summary of the evolution of agricultural extension in Uganda. As shown in Table 1, there has been no mention of the potential and role of institutions of higher learning and farmers, themselves, as potential problem solvers. Instead, the evolution as regarded farmers as mere problems.

Establishment of the Farmer Advisory Services under the Umbrella of the NAADS Agricultural Extension Approach

Agricultural extension approach

Until 2001, after the institution of NAADS, agricultural extension in Uganda was a public sector domain (Mubangizi et al., 2004). Most farmers in Uganda received agricultural information and technologies through the private sector, but it was delivered through publicly-funded extension advisory services through contracted service providers (Mubangizi et al.). The new reforms outlined high expectations for rural subsistence farmers' capacities to understand and analyze the historical and current problems facing their agricultural

Table 1. A chronology of agricultural extension in Uganda

Year	Evolution of agricultural extension
1812-1900	Colonization and concentration on promotion of export crops.
1920-1956	Extension through local chiefs, with enforced production of cash crops.
1956-1961	Extension through progressive farmers; emphasis on provision inputs.
1964-1971	Commodity approach with demonstration farmers for transfer of technology.
1971-1992	Political crisis and civil war. Disruption of economy, centralization. Confusion. Limited transition and recovery.
1992-1998	Government Agricultural Extension Program (AEP), with a "unified extension approach" and the "training & visit (T&V) system" introduced in phases in 27 districts. Criticism of public extension services (e.g., World Bank, 1996). Various other bilateral financing arrangements and extension approaches.
1998	Village Level Participatory Approach (VLPA) introduced into public extension service, the last death throes of the T&V system. Introduction of graduate specialist scheme by central government, with the responsibility for extension developed in districts. Pluralism increasingly a reality. NGOs contracting public agents to deliver services, effectively privatizing the management of extension services in many areas. Support for advisory services delivery by farmer organizations through DANIDA supported Agriculture Sector Support Program.
1999-2001	Finalization of PMA, concentrating on food security through commercialization. Preparation for NADDS program, based on public finance, private delivery, contracting-out demand oriented, farmer-"ownership, cost-sharing, and decentralization to sub-counties. Basket financing arrangements supported by a number of donors. Support for advisory service delivery by decentralized farmer organizations. National Agricultural Research Organization (NARO) introduced the outreach program. Various experiences with private sector development in service delivery; with support to advisory services for vertical integration and commodity system approaches (for example USAID funded "Investment in Development Export Agriculture" (IDEA) project of Agribusiness Development Center (ADC)).
2001	NAADS bill passed by the parliament and NAADS Secretariat established a corporate body. Phased introduction of NAADS program linked to broader decentralization of capacity-building initiatives, initially in six trailblazing districts (beginning with a couple of sub-counties in each district). Graduate specialist scheme to be phased out.

Source: Farrington & Ian (2004).

practices. The new NAADS extension model also put in place operational procedures that were meant to facilitate farmer's articulation of these problems in the form of farmer demand-driven extension (Friss-Hansen & Kidoid, 2004).

NAADS is managing the new extension approach of shifting from a public extension to a private and farmer-owned extension system through its secretariat, which is based in the capitol, Kampala. It is a decentralized, farmer-owned and private-sector serviced extension with the primary objective of initiating structural change to meet farmers' needs and enhance their rural livelihoods through increasing food production. The impetus for the establishment of NAADS was the result of growing criticism of the publicly-financed extension cost, its perceived lack of relevancy, its persistent failure of innovation in new knowledge and agricultural technologies, and a disconnect between researchers and farmers (MAAIF, 2000). The role of the private sector through service-provider contracting is considered the best approach to achieve these objectives.

In order to increase relevancy and reduce public spending, NAADS was created in 2001 by an Act of Parliament to spearhead the privatization of the public extension system in Uganda (GoU, 2001). According to the Ministry of Agriculture, the leading donors stressed that the aim of NAADS should be to develop a demand-driven, client-oriented and farmer-led agricultural advisory service delivery system (MAAIF, 2000). The specific objectives of NAADS are to:

- increase the availability of appropriate advise and information to categories of farmers in an equitable and effective manner;
- avail appropriate technologies in sufficient quantities to meet identified farmers' needs;
- assure the quality of the advice and information provided to farmers by service providers;

- enhance the capacity of private-sector service providers to meet farmers' advice and information needs; and
- develop appropriate farmer-controlled institutional structures and processes for managing NAADS at all levels. (Oba et al., 2005 p. 1)

Institutional framework

As shown in Figure 3, for NAADS to achieve efficiency and effectiveness in the new approach, NAADS has put in place an institutional framework from the NAADS national secretariat to farmer groups at the village level, consisting of various institutions as defined in the NAADS Act of June 2001. The implementing members include: the NAADS secretariat; sub-county farmer fora; and private service providers, (which may include NGOs, private individuals, or groups of individuals) and sub-county contracting committees. According to NAADS, the institutional framework is meant to enable farmers participate in their decision making and play a role in agricultural development based on informed decisions.

Secretariat

The secretariat is comprised of a small staff at the central level in the capital, Kampala. Its responsibility is to provide technical guidance and operational oversight to program implementation and monitoring.

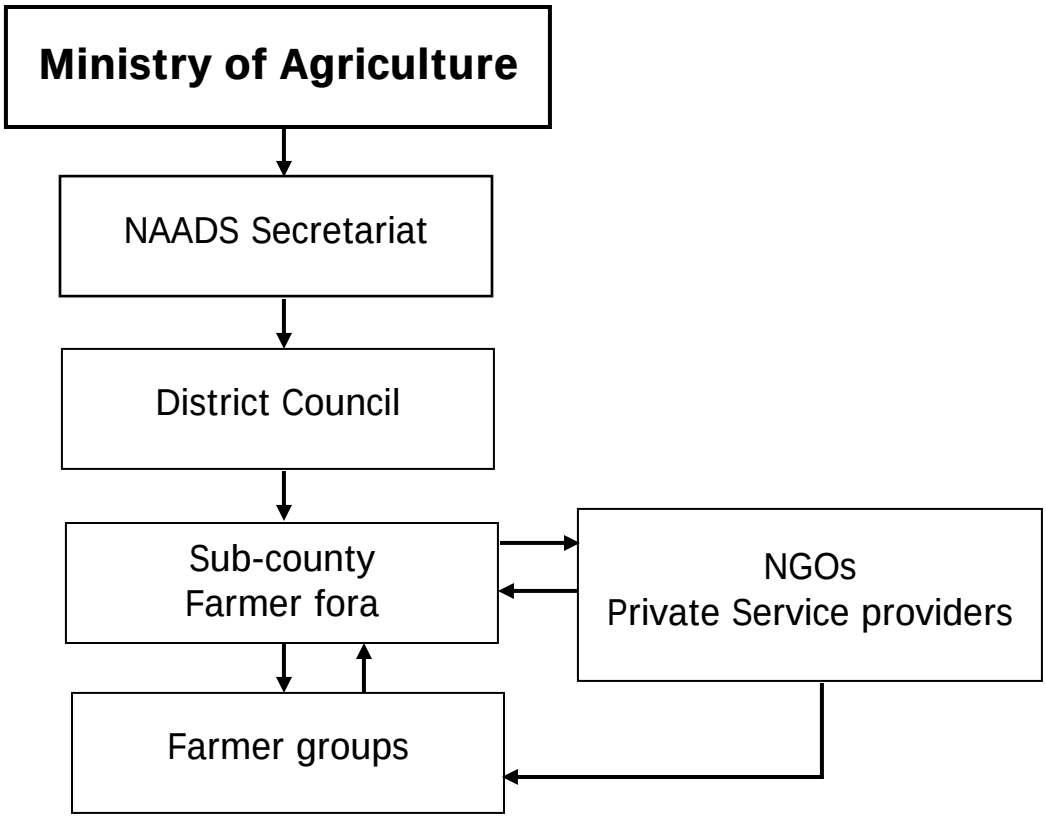


Figure 1. Current NAADS operational organizational structure

Farmer fora

The farmer fora at the sub-county level sets priorities for all farmer groups in the sub-county and manage NAADS sub-county resources. The primary responsibility of the fora at the sub-county level includes:

- planning, estimating costs, and contracting advisory services through their procurement committees; monitoring and evaluation;
- determining priorities and allocation of resources to contracted service providers;

- approving sub-county NAADS plans for final inclusion in the sub-county development plans; and
- providing feedback to farmer groups.

Private sector

The private sector includes service providers—who might be a private firm, an individual or an NGO—that are responsible for delivering agricultural advisory services to farmer groups at the village levels on a contractual basis in accordance with NAADS Act, 2001.

NGOs

Non-governmental organizations (NGOs) collaborate with NAADS during the setup activities of farmer mobilization and the farmer group's institutional capacity development. They help farmers to organize themselves in order to request agricultural advisory services, and to monitor and evaluate their own activities and service providers. The sensitization process involves definition and appreciation of NAADS principles and procedures, and conditions related particularly to tendering, contracting, and reporting. The second stage of sensitization of farmers is to help them to identify and assess needs, and plan and monitor progress. The third stage involves group and stakeholder dynamics. The final stage of mobilization includes input supplies, marketing of agricultural/farm products to credit facilities, negotiation skills regarding prices, quality standards, and other relevant issues such as gender and environment. NGOs also assist in the supervision of extension service delivery until service providers have been contracted. Some NGOs also choose to be contracted as

service providers, in which case they are required to register a commercial arm to enable fair competition with other private firms. This changes their tax-exempt status.

Farm groups

Farm groups are grassroots institutions of NAADS' implementation, and their subsequent participation and empowerment are principle determinants of the success of the NAADS extension program. They operate at the village grassroots level. For a group to be a client of service provision contracts farmer groups are supposed to be legally registered in a formal relationship with NAADS and they must comply with the NAADS operational procedures, including co-financing between 5% – 10% for the provision of advisory service contracts.

Learning Theory: Theoretical Framework

Introduction

Taylor et al. (2006) pointed out that it is common knowledge that learning is important for social change to take place. These researchers posited that most professionals place importance on the objectives of learning and the content of the curriculum but neglect to reflect on *how* people/farmers learn. Birkenholz (1999) and Knowles (1984) contended that the definition of learning depends on the philosophy one adopts. For example, Birkenholz and Knowles argued that behavioral adult education philosophy defines learning as a measurable and observable change in a desired behavior. This argument was echoed by Schunk (2004), who stated that learning is an enduring change of behavior in an intended manner.

In order to understand how adults learn, Birkenholz (1999) and Knowles (1980, 1984) identified adult learning principles first and foremost as change. Learning processes among adults take place every day. Learning is life long and happens at the moment one acquires new knowledge and information. Second, Birkenholz (1999) and Knowles (1980, 1984) stated that there must be "a need for adults to learn." Schunk (2004) pointed out that learners strive to learn behaviors they value. Schunk contended that adults learn certain behaviors because they believe that acquiring specific knowledge will help them achieve desirable consequences.

The third principle of learning, according to Knowles (1980, 1884), is that adults learn by doing. Knowles argued that, for learning to be effective, adult education facilitators should encourage learners to participate in the entire learning process. Another adult learning principle is that learning should focus on farmer's realistic problems and priorities. Adult learning emphasizes learning or acquiring information and the knowledge that can be applied to day-to-day problems. Knowles argued that adult learning becomes effective in an informal setting that maintains flexibility throughout the learning process. Adult learning requires guidance—not earning grades—and self-evaluation is important in order to assess the extent to which learning outcomes have been achieved.

Learning theories in agricultural extension

Griffith (1984) described the theory of extension education in two ways—deductive and inductive. The deductive approach in extension education borrows learning theory from psychology and logical reasoning, which derives generalizations to guide the decision-making process of the extension agents. The inductive approach, on the other hand,

emphasizes the farmers' actual performance along with an assessment of changes in their knowledge and attitudes.

Snellbecker (1977) argued that, in addition to learning theory, it is important to develop instructional theory, which he described as "a set of statements based on sound replicable research which would permit one to predict how particular changes in the educational environment…would affect…learning" (p. 12). Griffith (1984) stated that learning theories possess two values: one helps learners with a conceptual framework for purposes of interpreting examples of what they observe in learning, and the other helps maintain attention to the variables that are important in discovering solutions. Griffith pointed out that learning theories do not provide operational procedures for extension agents but are helpful in organizing information and thinking through practical problems in designing and conducting programs.

Griffith (1984) argued that the best time for the learner to actively participate in the learning process is when the learner, or the farmer in this case, anticipates the need to use the new knowledge or technology. A learner will be highly motivated to learn a particular new technology when he or she feels the need to learn. Griffith asserted that it is important first and foremost for the extension agent to assess whether farmers are actually interested in learning what is required to be taught.

Researchers in adult education argue that the ability to learn rests entirely on the ability of adults to cope adequately with practical learning tasks throughout their lives (Griffith, 1984). The researcher emphasized the aforementioned argument by citing the common expression, "You can't teach an old dog new tricks," a phrase which most psychologists have refuted. In most cases, when extension agents encounter a non-

cooperative farmer, a common mistake they make is to repeat the same problem over and over again. This repetitious learning approach does not comply with how adults learn. Luckett and Luckett (1999) defined knowledge as personal knowledge which is derived from transformation and social knowledge which may be socially and culturally transmitted through a network of words, symbols, and images.

Kolb (1984, as cited in Luckett & Luckett, 1999, p. 174) argued that social knowledge does not exist independently of the knower, as knowledge is continuously recreated in the learner's experience, either through concrete interaction with the environment or through the media of language and symbol. In his research, Kolb emphasized both learning styles and a structural theoretical foundation for personal and social learning styles. Kolb contended that learning is rooted in two dialectic processes involving four modes of learning:

- Concrete experience
- Abstract conceptualization
- Reflective observation
- Active experimentation (p. 174)

According to Kolb (1984, as cited in Leeuwis, 2003) "learning occurs from continuous interaction and iteration between thinking and action: concrete actions result in certain experiences, which are reflected upon (also against the background of relevant non-experiential insights), and subsequently generate cognitive changes, from which new actions can emerge" (p. 149). Leeuwis (2003) argued that learning can be influenced by supporting the basic steps and translations that take place in the process of learning, along with offering new learning opportunities. Experimentation widens the range of observation and stimulates

the process of reflection, thus assisting the learner in drawing conclusions. Kolb (1984, as cited in Leeuwis, 2003) described how experiential learning takes place, but also explains how people learn in different ways for example; (farmers) prefer to discuss their problems and experiences in group meetings. He described these group meetings as an example of cooperative learning, contrasting it with a competitive outlook on the issue at hand. Boyle (1997, as cited in Blackburn, 1984) echoed Leeuwis, stating that "one learns best by doing; hence, the vast extension service and county extension agent system through which people learn by first hand experience how to apply new methods in farming, homemaking and community activities" (p. 8).

Leeuwis (2003) further described external versus internal motivation as another style of learning. He argued that, depending on the problems at hand, an internal drive can influence people to learn about something or feel more "forced" by others to engage in it (Stolzenbach & Leeuwis, 1996; Ketelaars & Leeuwis, 2002, as cited in Leeuwis, 2003). Leeuwis argued that learners, in this case farmers, may develop an interest in an issue or a problem and become enthusiastic to learn and know more about it due to internal and external motivations. Conversely, people may be influenced to learn about something out of fear of negative consequences.

Leeuwis (2003) argued that "decision making" in agricultural extension, was the main concern among extension agents in the early years of extension research (p. 151). In his early writings on agricultural extension and extension science, Leeuwis defined extension as "the conscious use of communication of information to help people form sound opinions and make good decisions" (p. 151).

Communication intervention activities formed the backbone of extension in the early years of extension. With the persistent failure of farmers to make good decisions regarding their farm practices, there has been a shift in extension education from planning and decision making to applying learning approaches (Leeuwis, 2003). Thus, according to Leeuwis, in a real agrarian society, it appears to be unrealistic to expect farmers to adhere to rational decision-making procedures as it would be time-consuming, given the multidimensional nature of farming and innovation and the multiplicity of goals and aspirations involved. Leeuwis argued that it is more reasonable to view decision making as the final outcome of a long-lasting process with varying degrees of deliberateness and consciousness, involving also what Giddens (1984, as cited in Leeuwis, 2003) has called "reflective monitoring of action" (p. 152).

Leeuwis (2003) contended that, for learning to take place, people (farmers) need to experience a problem which creates for them a frame of reference; in other words, there must be some kind of tension between the farmers' aspirations and their perceptions of reality. Based on the priority of aspirations involved and the would-be perceived magnitude of tension between the desired state of affairs and the current state of affairs, farmers may deem a problem to be relatively important and, thus, be enthusiastic to learn. Verplanken (1989), and Johnson and Eagly (1989, as cited in Leeuwis 2003) referred to this kind of situation as personal relevance and outcome relevant involvement.

For learning to take place, Leeuwis (2003) argued that effective learning requires self-efficacy and environmental efficacy. Farmers need to have self-confidence and trust in their own abilities to solve an imminent problem. Lack of confidence, which could be caused by past negative experiences, might inhibit learning or incite a lack of willingness to engage

in social learning. Likewise, the complexity of problems at hand may indirectly affect a farmer's motivation to learn. This could be due the farmer's feelings that the problems to be solved are too complex, either technically or socially, thus reducing his or her perceived self-efficacy to learn. According to Leeuwis, the process of learning can be easily observed with the help of human senses. Leeuwis cited an example of how, in a technical sphere, farmers can easily learn how the soil responds to different chemical treatments. Similarly, it is easier for farmers to learn, especially in a social setting, how to organize a stimulating group meeting on a particular topic than it is to learn about how to facilitate negotiation processes among stakeholders.

Another approach that can facilitate learning in farmers is triability, which Leeuwis, (2003) defined as "the extent to which learning can be supported through small-scale experiments" (p. 158). Leeuwis contended that small-scale learning trials help farmers to optimize new technologies before the same technologies are applied on a big farm. This minimizes the risk of failure when applied to large-scale farms.

Learning is also influenced by perceived social learning consequences, or the risks associated with accepting alternative cognitions. Leeuwis (2003) argued that "the novel cognitions that people encounter in a learning process, therefore, may be experienced as either threatening or rewarding. They are threatening when people feel that accepting the alternative views may jeopardize their macro or micro interests in a specific context" (p. 159). Leeuwis stated that, in the process of learning, farmers might be reluctant to accept new technologies even if there is supporting evidence that their own farming practices may cause environmental or cultural damage. If farmers believe that new technologies conflict with

existing technologies, they are less likely to adopt the new technologies; hence, they have less interest in learning new things.

Sherif and Nebergall (1965, as cited in Leeuwis, 2003) argued that "social psychology research indicates that people are less inclined to accept radically different ideas and find it easier to incorporate those that are less conflictive with existing perspectives" (p. 159). This is echoed by Festinger's (1957) cognition dissonance theory, which describes what learners tend to do when confronted with cognitions that conflict with already existing cognitions. Festinger contended that learners tend to reduce dissonance by rejecting or sometimes denying what they feel are unfavorable cognitions. He gave the example of a heavy smoker who denies that smoking significantly increases his or her chances of getting lung cancer because accepting this fact would jeopardize his peace of mind. In such situations, learners try to convince themselves that health is not a serious issue that requires immediate attention. They might also assert arguments, such as smoking reduces stress or prevents weight gain. On the contrary, people who are interested in changing their behavior and stopping smoking may argue in favor of, or reinforce, the decision to quit smoking. For example, they may argue to a man that women find smokers unattractive (Zimbardo & Leippe, 1991). Leeuwis (2003) argued that, when learners feel that there are rewarding outcomes, the learning processes may accelerate. If farmers feel that learning or adopting certain technologies will improve their livelihoods, they will be more eager to learn about new technologies.

Social and organizational space is another important factor that influences the learning process (Leeuwis, 2003). The learning processes of farmers depend on the context of social environment, notably farmers' groups or organizations as well as their cultural and

community settings. In some cases, the environmental setting determines whether new technologies may be appreciated or not. For example, Leeuwis contended that, if farmers are part of a group that is comprised of community leaders who view some technologies as threatening to the interests of the group, some of the farmers who may be open to new technologies might be discouraged to express further interest in adopting the new technologies. Conversely, accelerated learning may take place if the situation is reversed.

Resources and a safe space for experimentation can influence the learning processes (Leeuwis, 2003). Leeuwis argued that experiential learning requires not only time and energy but also equipment and infrastructure. These resources present a challenge, especially among small-scale or poor-resource farmers in developing countries. Leeuwis argued that, even if they are eager to learn, farmers who have poor resources may be constrained by their lack of resources, such as agricultural inputs (e.g., fertilizers, improved seeds, etc.). The presence of resources may also be influential in resolving constraints of triability in the learning process, especially where sufficient resources exist, as the likely risks associated with triability can be neutralized by financial compensation.

For learning to be successful to farmers, Leeuwis (2003) identified the following aspects as important in the social learning process:

- An atmosphere where there is a need for farmers to know something
- Farmers have to become interested
- An atmosphere where farmers can see direct benefits from being involved or learning
- It is beneficial to be involved in active experiential (social) learning
- The practices gained from the new knowledge must become established as routine (p. 161)

However, Leeuwis contended that awareness, interest, and active learning may vary based on numerous interconnected topics. A relevant example of learning occurs when farmers

establish the need to learn and become interested in a particular seed variety only after they have had to use it due to the unavailability of their preferred seeds (p. 161).

Freire's dialogue in the framework of the learning process

Although Freire's (1970) work focused more on issues of social oppression of the poor peasant class by the elite, his philosophy of learning pertains to the dialogue between the learner and the teacher. Freire's goal for learning was to first help peasants become aware of their surrounding environment. He believed this would be a good foundation which would help peasants understand their problems and would lead them to identify ways of solving the problems within their own environment.

Another important goal in Freire's (1970) philosophy of learning was to help peasants gain more confidence and self-esteem instead of staying in a "closed system" that kept them in ignorance. Freire's notion of learning was to create a dialogue where the instructors and learners would be on the same level in the learning process. He found, however, that it was not uncommon in an educational session to hear a peasant say to the instructor, "Excuse me, we ought to keep quiet and let you talk. You are the one who knows. We don't know anything" (p.50). This concept is reinforced by the trickle-down system of diffusing innovations (new knowledge and technologies) advocated by Rogers 1983, in which the researcher, the extension worker, and the opinion leader are considered—by poor or subsistence farmers—the only people who know anything about agriculture and other aspects of their livelihoods.

In his article, "Issues in Freirean pedagogy," Heaney (1995) pointed out that adult education generally replicates patterns of earlier school and is characterized by a top-down

model of instruction which fosters respect for authority, expert, discipline, and good work habits. The learner and the instructor are considered as two individuals whose relationship is built on the transfer of information from the instructor to the learner. This perception, on how the relationship between the instructor and the learner should be, goes against the principles of andragogy as described by Knowles (1998).

Knowles (1998) defined andragogy, applied in adult education, as the way to help adults learn. This can be interpreted as an educational system which uses the instructor as a facilitator in guiding adult learners to find their own way of learning. It implies dialogue and reflection from both the instructor and the learner. Ban and Hawkins (1996) illustrated this concept with an example related to extension service when commenting that extension serves as a link between the scientific researcher and the farmer. Innovations are often developed in research that is sometimes carried out by farmers. This example demonstrates how farmers can play an important role in the innovation process if they are intrinsically involved in the process and not simply deemed as receivers of innovations developed in research centers.

Educational Element in Extension

Semana (1999) noted that the educational element of extension is twofold, namely informal and non-formal education. Informal education is a kind of education that has no defined syllabus. Semana contended that the concept of teaching and learning is based on farmers' identified needs and problems. However, it is not clear who is responsible for identifying the needs (i.e., whether it is the farmers themselves [learners] or extension agents [teachers], or the two working in partnership for the identification of the farmers' needs). The non-formal education system, on the other hand, takes place in the field or the farmer's

home. There is no specific classroom. Teaching and learning are based on the farmer's conditions and the nature of his or her individual needs.

An informal education system of extension is planned with objectives and predetermined content, or innovations, to be delivered by the teacher to the learners (farmers). This is one-way communication. The learners have little input in the generation of knowledge and technology. Semana (1998) argued that, in Uganda, formal education is carried out by extension agents to farmers in community centers, district farm institutes, or schools. He contended that, because extension is for educational purposes, it should engage both the learner (farmer) and the teacher in the whole process of learning.

Semana (1998) pointed out that the ideal extension worker should be governed by the philosophy of extension. According to Semana, the extension philosophy is:

> (a) "Start where people are." This means studying the farmers through visits and surveys in order to identify their level of farming knowledge, their communication skills, their attitudes, their social-cultural system, way of life, problems and felt needs.
> (b) "Start with what they have," such as farm tools and any other capital available.
> (c) "Help them help themselves." This means teaching farmers how to practice better farming using their own efforts and resources following the principles of extension. (p. 2)

The following are the features of extension were recommended by Semana (1998):

- That extension should not be forced on the people.
- That extension should not be a form of charity.
- That rural people should participate in every effort intended to improve their way of life.
- That the extension workers should do one thing at a time.
- That the extension staff should utilize local leadership.
- That the extension workers should study the job thoroughly. (p. 2)

In his advice based on the aforementioned features, Semana (1998) pointed out that the extension workers should effectively do the following:

- Teach the rural people and advise them on how to improve their way of life.
- Encourage them to appreciate and recognize rural life as honorable.
- Train the rural people how to make decisions on the use of their resources through their own efforts. (p. 3)

The application of Semana's philosophy of extension is far removed from the prevailing philosophy currently applied in Uganda. The history of the extension system has been coercive rather than educational. During the colonial administration and the first two decades after Uganda's independence, extension was characterized by a set of bylaws to direct farmers which crops to grow and about soil conservation technologies. The aim was to increase food production and household food security (Semana, 1998). Later, extension involved teaching progressive farmers how to practice new techniques; these selected few were, in turn, supposed to mentor the rest of the community. However, this program had mixed results. The selected progressive farmers were not cooperative and viewed themselves as superior—a privileged group. This nullified the original objective, which was to make them examples/models to be emulated (Semana). Thus, the extension system in Uganda has been characterized by one-way communication. The extension system, until the introduction of the NAADS Program in 2001, was teacher- or extension-centered and did not respect philosophy regarding leaning theories that emphasizes learning how to learn. The new NAADS extension is trying to learn from past mistakes and is slowly introducing the farmer-centered approach to learn by listening to the farmers' voices.

Semana (1999) maintained that agricultural extension in Uganda has evolved with mixed reviews. There was no clear policy on agricultural extension until the establishment of

the National Agricultural Advisory Services (NAADS). Semana pointed out that the transformation and the evolution of extension did not build on the strengths of the past but, rather, relied upon expert advice over local wisdom and was dependent on donor funding. NAADS was created to reverse this supply-driven orientation and place emphasis on farmer-demanded service delivery.

CHAPTER 3. METHODOLOGY

Research Design

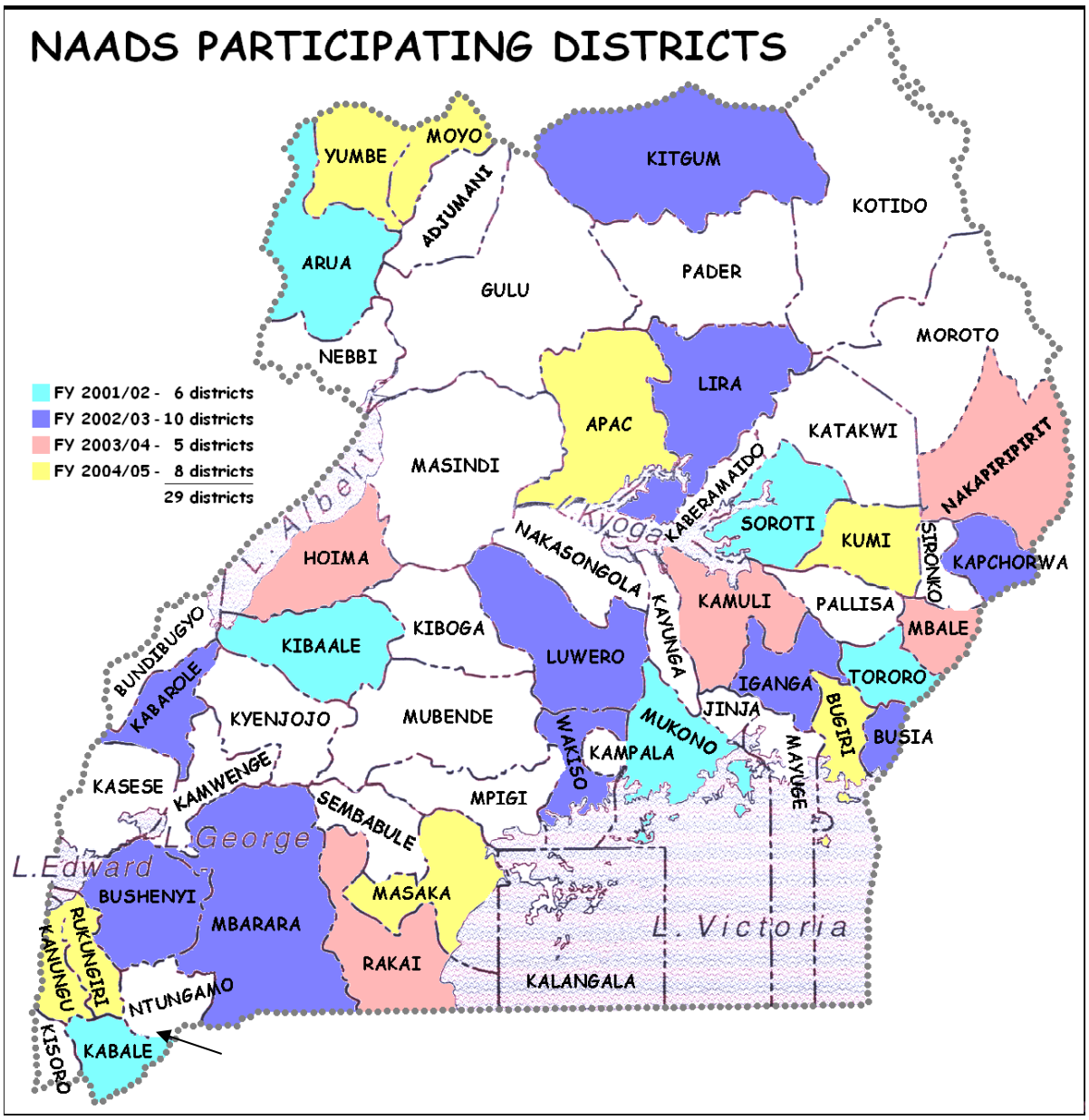
A qualitative research design was used in this study to obtain farmers' perceptions and experiences regarding their changes in the behavior and actions as a result of the NAADS extension program. Data were collected using three qualitative research techniques: (1) in-depth conversational interviews with 16 farmers; (2) structured interviews with four sub-county coordinators and; and (3) analysis of secondary information produced by NAADS, comprising of evaluation reports, publications, newspaper articles, progress reports, and conference proceedings. The strength of qualitative research rests on collecting data in a natural setting (Patton, 2002). The three qualitative design techniques were used in this study because they provided the researcher with the opportunity to tell a story by capturing and communicating the participants' information regarding their experiences with the NAADS extension program. From the participants' stories, the researcher was able to learn what happened, and how and what farmers gained and experienced from the extension program (Patton, 2002). Patton stated that qualitative inquiry entails "going into the field—into the real world of the program, organizations, neighborhoods…and getting close enough to the people and circumstances there to capture what is happening" (p. 48). Denzin (1978) contended that qualitative researchers should immerse themselves in what is naturally occurring in the area of study. Immersion helped the researcher to experience personal contact with the interviewees in their own environment. By getting get close to the people and situations being studied, the researcher gained an opportunity to understand the realities and minutiae of their daily lives.

Population and Sample

In order for to effectively gain farmers' experiences and perceptions in regard to changes in their behaviors and actions as a result of the NAADS extension educational program, a review of all districts where NAADS was offering its extension education program to farmers, in Uganda was carried out. The researcher found out that, since its inception in 2001, NAADS was operating in only six districts of 56 districts—Arua, Kibale, Kabale, Mukono, Soroti, and Tororo. By the 2005 fiscal year, NAADS had expanded to 29 of 56 districts (see Figure 2). The researcher purposively selected Kabale district. It is one of the six districts that were first selected by NAADS when it started the program in 2001. Also, compared to other districts in Uganda, Kabale district has experienced the fewest research assessments in terms of farmer's experiences and perceptions regarding NAADS Extension program. Most researchers conduct assessments in other more accessible districts in Uganda, and most of the studies concentrate on program implementation, which do not emphasize the farmers' experiences and perceptions in regard to their changes in behavior and actions as a result of the NAADS extension educational program.

Kabale, the study district

Uganda is divided into 56 districts. Each district is divided into a number of sub-counties, depending on the size of the district and the number of inhabitants. For example, Kabale district is subdivided into 17 sub-counties. Each sub-county is divided into parishes and each parish, in turn, is divided into villages. Each of these sub-units form local government units (Mutimba & Semana, 2005). NAADS currently covers approximately 65% of the district, which accounts for 12 of 17 sub-counties. The remaining 35% benefit from the



Source: NAADS, April 2005 <www.NAADS.or.ug>

Figure 2. Map of Uganda depicting Kabale district in the SW region

Area-Based Agricultural Modernization Program (AAMP), whose mission, objectives, and strategy are similar to those of NAADS

Location

Kabale district lies in Southwest of the Republic of Uganda, East Africa. It lies between 29^{o} 45' and 30^{o} 15' East and 1^{o} 00' and 1^{o} 29' South. It borders with the Districts of Kisoro to the West, Rukungiri to the North, Ntungamo to the East and the Republic of Rwanda to the South (Figure 2).

Population and land

Kabale district has a large population of 458,318 people, wherein only 45,892 live in the municipality and the remaining 91% live in rural areas. The population density is 281.1 persons per square kilometer, making it the third most densely populated rural district in Uganda, after Mbale and Kisoro. Kabale district has a total area of 1,827 Km^2, of which the arable land area comprises 1,695 Km^2, the water bodies and swamps/wetlands comprise 48.5 Km^2 and 79.4 Km^2, respectively, and marginal land comprises 41.1 Km^2. Approximately 75% of the arable land is largely owned through customary laws. However, some land is held by free hold and lease hold; about 41.1 Km^2 (2.4%) and 391.2 Km^2 (22.6%), respectively. The district has 95,071 households, each with an average of 6 persons. The average land area for agriculture is 2.06 hectares or 5.08 acres per household (National Housing and Population Census, 2002).

The per capita land holding in Kabale is 0.3 ha/0.8 acres. Land is seriously fragmented and an average household has 6-7 plots of land scattered across the landscape. Each plot measures between 0.1 and 0.7 acres. Kabale is a potential food surplus district but,

according to the District Development Plan of 2005, many families experience food shortages due to the following issues:

1. Pre- and post- harvest losses associated with poor storage, pests, and disease infestation;
2. Declining land size and fertility due to population pressure, land fragmentation, and poor agricultural practices;
3. Natural disasters such as floods, dry spells, and pests/diseases;
4. Sale of food leaving little for home consumption;
5. Poor infrastructure, especially road networks;
6. Inadequate availability of water for household use and livestock;
7. Low coverage of agricultural extension services; and
8. Gender imbalance in food production with over-reliance on women.

Agriculture

Agriculture is the main economic activity in the district engaging over 85% of the working population. The majority of farmers are small landholders who live in nucleated homesteads. Farming is dominated by use of traditional agricultural techniques. The tools of the farmers are still limited to a hoe and panga (i.e., large hatchet for chopping). Most farmers rely on family labour, which is often comprised of the husband, wife, and children (Kabale District Development Plan [KDDP], 2005). Agricultural production is dominated by small-scale subsistence annual crop cultivation. Productivity levels are low; as a result, food security is fragile with little surplus for sale. Farming is on a small scale on scattered pieces of land and primarily at a subsistence level.

As a result of land shortage, there is intensive cultivation with little furrow period fertility rejuvenation, and some cultivation is on marginal areas such as steep slopes. This, coupled with other poor farming practices, has resulted in an increase in soil erosion and low yields per unit area. Intervention to increase food production would directly affect the farmers in the district in terms of ensuring food security and increasing incomes (KDDP, 2005). Thus, agricultural extension service has been one of the primary initiatives targeting increasing farmers' yields through educational initiatives.

Sample selection and characteristics of Kabale district

After reviewing the sub-counties where NAADS was providing extension services since its inception from 2001 to 2006, 4 of 12 sub-counties (Bubare, Bukinda, Kyanamira, and Rubaya) were purposively selected because they were the first NAADS piloting sub-counties in the district (see Table 2). The researcher believed that these four sub- counties had greater experience working with NAADS compared to other sub-counties. Thus, it was assumed that farmers in these sub-counties would have enough experience with NAADS extension program. The researcher selected a purposive sample of 16 farmers, four from each sub-county listed. The sample was selected from among farmers who had worked with the NAADS extension program in the district since its inception in 2001 to the present year (2006). The selected sample of farmers was assumed to have greater experience with the program and, therefore, more likely to provide maximum insight into the dynamics of the

Table 2. NAADS coverage in Kabale district based on year of implementation

Year of implementation		NAADS roll-out coverage	Number of households	Population
2001/2002	1	Bubare	8,935	43,674
	2	Bukinda	3,796	19,647
	3	Kyanamira	4,089	19,515
	4	Rubaya	5,293	25,773
2002/2003	5	Hamurwa	5,403	26,886
	6	Kamuganguzi	5,104	24,828
	7	Maziba	3,606	18,121
	8	Muko	7,724	38,420
	9	Rwamucucu	5,612	24,433
2003/2004	10	Kamwezi	4,825	23,619
	11	Kitumba	3,299	16,281
	12	Kabale Municipality	9,550	41,503
		TOTAL	67,236	322,700

Source: National Housing and Population Census, 2002.

NAADS extension program. Thus, an assumption was made by this researcher that these farmers had ample experience with the NAADS extension program.

Sixteen farmers were purposively selected from the four sub counties. Selection was based on contrasting levels of each farmer's comprehension and application of the NAADS technologies. In collaboration with farmer fora and local parish leaders, this researcher selected four farmers in each sub county—two women and two men. The selection criterion was based on farmer fora and local parish leaders' perceptions of the farmers' comprehension and application of NAADS new knowledge. Participants were defined as

farmers having a minimum of five years of experience with NAADS. One supervisor from each region was also interviewed (not included in this table).

With the help of the aforementioned group, this researcher examined and analyzed the characteristics of what constitutes farmer comprehension and application of the NAADS technologies. Two categories of farmers were agreed upon and were referred to as: "struggling farmer" and "progressive farmer." "Progressive farmers" were regarded as well organized in terms of farmer comprehension and application of technologies from the NAADS extension program. "Struggling farmers" were regarded as having a low level of comprehension and application of technologies from the NAADS extension and program. From each sub-county, a female and a male farmer were selected from each category (progressive and struggling) farmers. Four farmer participants from each sub-county were selected from the group that was first registered and approved to work with NAADS.

In addition, four NAADS coordinators from the aforementioned selected sub-counties were interviewed using a semi-structured interview format. A set of guiding questions was administered by the researcher (see Appendix A). No sampling was applied since there was only one NAADS coordinator in each sub-county.

After a meeting with the Kabale district NAADS coordinator, the researcher requested an introduction the parish leaders and the sub-county farmer fora. The NAADS coordinator contacted the representatives and the researcher scheduled meetings with them in their respective parishes. Each of the four different discussion sessions that the researcher held with farmer fora and parish leaders began with a prayer. The number of participants in four different groups ranged from 10 to 12. The researcher had four separate meetings with

the participants for 2-3 hours. The researcher introduced the research to each group as follows:

> *I am a student who is interested in learning and understanding the way NAADS has been working with farmers in the district. The overall purpose of this study is to gain Kabale district farmers' perspectives on their experiences and perceptions regarding their learning processes and the extent to which they have applied the knowledge acquired from the learning process.*

The primary purpose of the study was to gain from farmers' perspectives as to whether there has been a change in behavior and action by farmers as a result of the NAADS extension program. The researcher selected Kabale district parish because NAADS had worked there since 2001. Therefore, an assumption made by the researcher was that farmers had acquired immense knowledge from the program. During the meetings, the researcher also stated to the participants:

> *For me to understand farmers' perceptions and experiences with the program, I would like you to assist me in identifying farmers who will give me a true picture of their perceptions and experiences with NAADS. I am requesting to know from selected farmers if there have been successes and or failures in the NAADS extension program. The information that I will gather will help NAADS improve their program. All, I am requesting is your time and patience as you reflect on the different farmers that NAADS has been working with.*

The researcher asked the participants to introduce themselves. This was to give the researcher an understanding of the participants. From the introductions, the researcher realized that most of the parish representative leaders had completed high school, while farmer representatives had attained secondary level education.

In each meeting, the researcher encouraged the participants to keenly reflect and identify farmers in their respective parishes who they perceived had experience with the NAADS program. During the reflection, the researcher encouraged the participants to ask questions for clarification in cases where a participant or participants did not understand what

was being discussed. The participants cooperated, and they agreed to help the researcher to select farmers and anonymously divide the farmers into two categories in order to help the researcher gain varying views from farmers. The farmer selection participants agreed on the criteria to use to provide a good representation of farmers who would participate in the study. The criteria were based on the following characteristics (see Table 3).

Table 3. Characteristics of farmers selected for the study

	Type of farmer	
Criteria	Progressive	Struggling
Practices technologies disseminated by NAADS	High (3 enterprises)	Low (<1 enterprise)
Attend meetings, training program, field visits organized by NAADS	Always	Sometimes
Contribute regularly to the marching funds	Always	Sometimes
Perceived level of adoption of NAADS practices	High	Low
Participation in the overall Program	Always	Sometimes
Age range between 35-75	Yes	Yes
The size of land average	Average of 3.8 ha	1-2 ha
Gender inclusive	Yes	Yes
Improved agricultural production within 5 year period	High	Low
Participants' acquaintances with the farmers before (5-10 years) and after (4-5 years) NAADS program.	Yes	Yes
Farmers opinion about NAADS, (attitude, skills, motivation)	High	Low
Farming practice change (quantity in terms of production)	High	Low

The participants were able to identify the farmers who might fall into the two aforementioned categories. In addition, the researcher wanted to ensure that gender was balanced, and age of the farmer was also taken into consideration. For gender, the researcher wanted both male and female selected in both progressive and struggling categories. The researcher also wanted to select farmers who had ample experience as farmers, and selection participants agreed to select farmers who fell in the categories of not less than 35 and not

older than 75 years. The researcher perceived that young farmers (under 35 years of age) would not have had enough experience working without NAADS program. Interestingly, the level of education was not considered as one of the criteria in the selection. At the end of the first meeting, the researcher inquired whether education level might be a factor to consider in the selection process, and the participants argued that farmers were mature enough to cope with any new technologies.

Following the participant selection criteria, the participants agreed to list as many farmers' names as possible. The selection of identified names ranged from 10-15 members in both categories of farmers (progressive and struggling farmers) which were equally female and male. An agreement was later reached by participants to vote only one female progressive farmer and one male farmer, and the same procedure was repeated for struggling farmers. Two progressive farmers (one female and one male) with the greatest number of votes (that best met the characteristics presented in Table 3) were selected to participate in the study in each respective parish. The same procedure was repeated with struggling farmers.

The aforementioned procedure was conducted in each of the four purposively selected sub-counties of Rubaya, Bukinda, Bubale and Cyanamira. Presented with the names of 16 selected people and their locations, the researcher tracked down the farmers in their respective villages. Table 4 provides the demographics of the farmers who participated in the study.

Table 4. Demographics of participants having five years of experience with NAADS

	Type of farmer				
	Progressive		Struggling		
Region	Male	Female	Male	Female	Total
Bukinda	1	1	1	1	4
Rubaya	1	1	1	1	4
Bubare	1	1	1	1	4
Kyanamira	1	1	1	1	4
Total	4	4	4	4	16

Data Collection

Data collection focused on in-depth conversational interviews between the researcher and the interviewees and an analysis of NAADS program documents. The data were gathered to understand the farmers' experiences and perceptions "as expressed in their own words" regarding NAADS extension program in Kabale district (Taylar & Bogdan, 1998). Prior to going into the field to meet with the informants, with the help of the major professor, the researcher sent two letters to the NAADS Director of Program Planning and Evaluation at the NAADS Secretariat in Kampala, Uganda. The first letter from the major professor introduced this researcher to NAADS while the second letter from the researcher described the purpose of this study and the request for permission to carry out the study in Kabale district (see Appendix B).

Following approval from NAADS office, the Director of Production and the NAADS Coordinator in the district were contacted and asked to help organize and schedule meetings with farmers and local leaders. The farmer representatives and local parish leaders helped in the selection of participants for the study. This researcher held consultative meetings with the

local leaders and farmer representatives to select the study participants. One meeting was held in each sub-county and, in each meeting, four farmers were selected (two progressive and two struggling farmers). The data collection was carried out using the following techniques: (a) in-depth conversational interviews with 16 farmers; (b) structured interviews with four sub-county coordinators; and (c) analysis of NAADS documents comprised of evaluation reports, publications, newspaper articles, progress reports, and conference proceedings.

Interviews were conducted for a period of two months, from mid-June to mid-August, 2006. In-depth conversational interviews and repeated face-to-face collaborative and discussion meetings between the researcher and the selected farmer participants took place at the individual farmer's residence. This researcher's collaborative and discussion meetings with participants in their homes took place between 11:00 a.m. and 4:00 p.m., usually dependent upon each farmer's availability. The interviews were conducted between Monday and Saturday. The interviews focused on understanding the farmers' perceptions and experiences with the NAADS extension program, as expressed in the farmers' own words. Approximately three hours were spent interviewing each farmer.

During the interview process, this researcher spent an extra 20-30 minutes walking through the farm fields to add greater understanding of the farmer's words. Walking with a farmer in the farm fields provided an opportunity for the researcher to obtain a comprehensive picture of what the farmer was saying and what was on the ground. After the initial meeting, this researcher spent an addition one- to two-hour period of time revisiting and cross-checking to share the information and ensure understanding regarding the information collected. This procedure was carried out with 12 of the farmers.

In-depth conversational interviews

In-depth conversational interviews using open-ended questions were applied in this research. In-depth interviews provided an opportunity not only to extract information from farmers, but also to gain insight on how the NAADS extension program has influenced their farming practices (Summers, 2005). Taylor and Bogdan (1998) pointed out that, through open-ended interviews, the reality of the individual is revealed according to his/her perspective on life as he/she interacts with and contemplates his/her own environment. According to Merriam (2002), the central purpose of in-depth interviews is to engage participants in a dialogue to obtain a natural setting, and to hear their own descriptions and understanding of the phenomenon under the study. Merriam asserted that this "phenomenological approach emphasizes the importance of providing the structure for the participants to communicate their own understandings, perspectives, and attribution of meaning" (p. 166). Gillham (2000) asserted that in-depth conversational interviews are appropriate and necessary when:

> a small number of participants are involved in the study; participants are accessible; most of the questions are open and require an extended response with prompts and probes; every participant is "key" and a researcher can't afford to lose any; …and the research aim mainly requires insight and understanding. (p. 11)

Patton (2002) argued that open-ended interviews permit the researcher to capture the perspectives of program participants. Patton provided thought processes to guide questions:

> …what does the program feel like to the participants involved? What kind of experiences do participants have from the program? What insights do participants knowledgeable about the program have concerning the outcomes and the impact of the program? And what socio-economic changes do participants perceive themselves as a result of their involvement in the program? (p. 341)

Interview questions arose from the participants' responses. The researcher and the interviewees played an active role in building the conversation. Patton contended that there is no predetermined set of questions that is appropriate under many emergent field circumstances where the researcher "doesn't know beforehand what is going to happen or what will be important to ask…." (p. 340). Patton argued that:

> The issue is not whether observational data are more desirable, valid, or meaningful than self–report data. The fact is that we can not observe everything. We cannot observe feelings, thoughts, and intentions. We cannot observe behaviors that took place at some previous point in time. We can observe how people have organized the world and the meanings they attach to what goes on in the world. We have to ask people questions about those things: an event, incident, or experience. (p. 341)

The purpose of interviewing, then, is to enable the researcher to enter into the other person's perspective. This is referred to as "empathy" (Keats, 2000 p. 26). Qualitative interviewing begins with the assumption that the perspective of others is meaningful, knowable, and able to be made explicit. Patton stated that "we interview to find out what is in and on someone else's mind, to gather their stories" (p. 341). He argued that fieldwork interviews are important because they permit the researcher to discover things that are unobservable to him/her. The current study integrated the following features of in-depth conversational as recommended by Patton (2002) and Gillham, (2000): listening skills; maintaining a rapport with the interviewees; use of probes and clarifications; and participant feedback and utilization of low-inference.

Listening skills

The researcher focused on active listening throughout the interviews. The interviewer may know his or her broad aim and the particular topic that the researcher wants information about but it is the interviewees who have the information required by the study (Gillham, 2000). Gillham argued that, although a skilled interviewer should focus more on listening, listening itself should not be a passive business. Listening provides a good opportunity to build an interpersonal relationship between the interviewer and interviewee. It assures the respondent that his or her contributions in the study are important. In the course of the interviews, listening demonstrates a signal to the interviewees that the information they are providing is important in the study. Dilley (2000) suggested that interviewers should spend 80% of the interview listening and 20% of the time talking. Dilley also suggested that interviewers should have good listening skills in order to successfully obtain all of the necessary information from the interviewee.

Participant feedback and probing

Member checking was incorporated in the study by checking with participants two to three times, when it was deemed necessary to ensure the accuracy of the collected data and collaborative effort between the researcher and the interviewees in the interview process. Collaborative efforts between the interviewer and the respondents yielded positive results in the study by way of member checking. This enabled reaching consensus regarding the findings with the interviewees and subsequently enhanced validity of the conclusions from the study. Sharing the researcher's interpretations with the participants' viewpoints, themselves, helped the researcher to clear areas of miscommunication (Burke & Larry,

2004). This process took place during each interview and at the end of the interviews with the purpose of cross checking to ensure accuracy in recording what participants said (audio-digital recorded) and what they actually meant. Probing and member checking with interviewees not only established and strengthened rapport in the interview discourse but the interviewees also had a voice in the interpretation of the findings. Fontana and Frey (2000) pointed out that the rapport between the interviewer and the interviewee provides a sense of comfort and trust with interviewees in sharing their perceptions and experiences in the study, thus impacting the ability to obtain objectivity leading to validity of the findings in the study. Burke and Larry (2004) stated that interpretive validity refers to:

> Accurately portraying the meaning attached by participants to what is being studied by the researcher. More specifically, it refers to the degree to which the research participants' viewpoints, thoughts, feelings, intentions, and experiences are accurately understood by the qualitative researcher and portrayed in the research report. An important part of qualitative research is to understand research participants' inner worlds (i.e. their subject worlds), and interpretive validity refers to the degree of accuracy in presenting these worlds. (p. 251)

Low-inference

Since this study utilized interviews, each interview was audio-digital recorded, transcribed, coded, and analyzed for reporting. Report writing incorporated participants' actual words and personal meaning. The direct quotations from the recorded raw data enabled the reader to hear how participants think and feel about the issues and experiences in the area of the study (Burke & Larry, 2004).

Analysis of program documents

The second data collection technique that was applied in this study was document analysis. The researcher obtained several documents regarding the NAADS program ranging

from: (a) NAADS quarterly and annual reports; (b) evaluation reports; (c) minutes from program meetings; (d) newspapers; and (e) journal articles. Program documents enabled the researcher with an opportunity to obtain data that were thoughtfully compiled which saved the researcher to reduce time and expense from transcribing (Creswell, 2003). The aforementioned documents assisted the researcher in developing a thoughtful understanding of the topic being studied, particularly the impact of NAADS and how the program might have influenced the farmers in their farming practices.

Data Analysis

This study utilized interviews and analysis of data from the NAADS program documents. Each interview was audio-digital recorded and notes were taken from interview conversation in the researcher's notebook. The collected data were then transcribed, coded and the conversations were analyzed for the emerging themes using constant comparative method of data analysis (Taylor & Bogdan, 1998). This method suggested by Taylor and Bogdan helped the researcher to continuously review the data, refine emerging concepts and explore relationships which could be transformed later into a coherent theory. Themes emerged from each interview with the respondents as well as analysis of the data from NAADS program documents. Theme development was followed by member checking with each respondent for review and clarification.

Data analysis went through two phases. The initial phase followed Patton's (2002) recommendation which, unlike the existence of a clear distinction between data collection and analysis, where data are gathered based on standardized tests and experimental designs, there is a less absolute distinction in qualitative research where data collection is based on the

emergent nature of naturalistic inquiry. In the course of the fieldwork, “patterns take shape,” and ideas about the direction for data analysis occurred (p. 436). Making sense of the data that emerge over the course of the fieldwork through interviews and note taking constituted the initial stages of data analysis. Patton pointed out that recording and tracking analytical issues and insights that appear and occur during qualitative inquiry with participants in the field are the preliminary phase of data analysis. Creswell (2003) argued that, in qualitative research, data analysis is an ongoing process which begins right from the beginning of data collection. Creswell referred to this as an “interim analysis” (p. 501), which is a continuous process that ends when the researcher is content with his/her topic. The researcher followed Patton’s suggestion that one should avoid too much focus on analysis in the process of data collection because it might interfere with the openness of naturalistic inquiry, which is the main strength of qualitative inquiry.

The second phase of data analysis was undertaken at the completion of the fieldwork. This process constituted the transcribing of data gathered in the interviews. The transcribed data were coded and themes were developed for further analysis. Themes were based on Patton’s suggestion that analysis should be organized to illuminate major issues in the study. Burke and Larry (2004) defined transcribing as a “process of transforming qualitative research data such as audiotape recordings of interviews or field notes into typed texts” (p. 502). The process of transcribing helps the researcher to organize raw data while preparing the data for analysis.

Hoepfl (1997) argued that the second stage of data analysis begins with theme identification selected from the transcribed data by the researcher, a process referred to by Strauss and Corbin (1990) as “coding.” Coding involves identification and tentative naming

of the conceptual categories into which the observed phenomena are grouped for the purpose of creating a descriptive and multi-dimensional preliminary framework for analysis (Hoepfl).

To ensure careful analysis, the researcher transcribed the raw data from the audio-taped interviews and stored them electronically on a flash disk. The researcher then analyzed the electronic files of the interviews and replaced names with numbers (codes) to maintain confidentiality in compliance with the Personal Interview Consent Form submitted and approved by the Institutional Review Board prior to conducting the study (see Appendix C).

The purpose of coding, according to Hoepfl (1997), is not only to "describe but, most importantly, to acquire new understanding of a phenomena of interest" (p. 55). This leads to a descriptive study, in which the findings are explained in a written report and recommendations for future implementation and/or future avenues of research can be made. The direct quotations from the recorded raw data enable the reader to hear how participants think and feel about the issues and experiences in the area of the study (Burke & Larry, 2004).

Triangulation

Burke et al. (2004) stated that method triangulation is when an investigator uses more than one method of data collection in a single research study. Hargrove (2002) contended that triangulation is used as a means to ensure that each data collection method yields additional information about the same topic being studied. As mentioned previously, the researcher used informal conversational interviews with the farmers and NAADS staff as well as examined document analysis from the NAADS program to enable the additional information from each data collection method to enrich the findings of the study.

CHAPTER 4. FINDINGS AND DISCUSSION

Introduction

The overall purpose of the study was to gain farmers' perspectives on their experiences and perceptions regarding their learning processes and the application of the knowledge acquired from the learning process. The primary purpose of the study was to gain each farmer's perspective as to whether, overall, there has been a change in behavior and action by farmers as a result of the NAADS extension program.

Qualitative methods were used to collect data. Data collection focused on in-depth conversational interviews with selected farmers to glean their understanding, perspectives, and experiences—expressed in their own words—with the NAADS extension program. This chapter provides a description of the participants who were involved in the study and the research methods that were used. The chapter is subdivided three sections based on the research questions. Each section includes research findings and discussion/interpretation. A summary concludes each section.

The study was carried out in Kabale district, in Southwest Uganda. This district was purposively selected because it is one of the first six trailblazing districts in Uganda, thus farmers have had ample experience with the NAADS extension activities. Two categories of farmers were selected from each of the first four NAADS sub-counties in the district. In collaboration with parish leaders and members of the farmer fora—which represents farmer groups at the sub-county level, this researcher selected four farmers from each sub-county. Selection was based on local leaders' and farmer fora perceptions of each farmer's level of comprehension and application, in correlation with their experiences with NAADS extension

activities. The following terms were used as a benchmark for categorizing farmers: (1) progressive farmers, and (2) struggling farmers. Two farmers were selected for each of the categories from each of the four sub-counties. Four NAADS sub-county coordinators were also interviewed. To supplement the findings of the interviews, the researcher used existing research reports and program document analysis based on previous literature and evaluation studies.

Section 1 – NAADS Extension Strategies

Research question 1: What extension strategies are used by NAADS program to disseminate agriculture technologies in Kabale, Uganda?

This section provides the findings of NAADS' first encounter with farmers, which involved an initial phase of farmer mobilization, sensitization, and the formation of the farmer groups. Discussions were centered on the new extension strategies used by NAADS to disseminate agricultural technologies.

Mobilization, sensitization, and formation of farmer groups

In-depth conversational interviews were used to establish strategies used by NAADS to disseminate agricultural technologies to farmers. Overall findings from the 16 farmers indicated that NAADS' initial contact with farmers was through local radio announcements, local meetings, seminars, and workshops. Seminar and workshop facilitators used lectures and other visual techniques such as pictures and diagrams. The facilitators also encouraged farmers who could read and write in the local language (*Rukiga*) to take notes. The facilitators provided books and pens.

All the participants indicated that they had first contact with NAADS in 2001 through local radio announcements, which informed them of a new farmer-owned agricultural advisory service system, not only in Uganda but also throughout Africa. Farmers reported that the key information delivered through radio announcements described the new extension as:

1. Belonging to them at their villages (i.e., decentralized and farmer-owned);
2. Not free but having support of the government (i.e., privately serviced but public funded);
3. Information delivery is determined and controlled by them (i.e., farmer group agricultural advisory service controlled); and
4. Addressing their felt needs and priorities (i.e., based on farmers' demands, in terms of provision for agricultural technologies and farm inputs)

Following radio announcements, schedules were announced informing farmers to meet the new extension staff under NAADS in their respective parishes and that free lunch would be provided. All of the interviewed farmers revealed that during their first meeting at local primary schools, parish headquarters, or sub-county offices with NAADS and contracted NGOs, they were informed of the new extension system, its conditionalities, and the expectations placed on them. Farmers further reported that they were taught guidelines and the dynamics of how to organize themselves into farmer groups of 10-40 members. In general, farmers were taught the importance of working in groups, which was one of the guiding principles of working with NAADS. Farmers learned that, if they formed groups, they would enjoy certain advantages such as lower production cost because of shared risks,

less costly training due to large numbers, easy access to credit facilities, and provisions of farm inputs.

All farmers reported that NAADS contracted NGOs helped them form farmer groups. Participants also reported that they formed farmer groups in anticipation of acquiring private, yet publicly-funded agricultural advisory services, such as new knowledge and information, access to credit facilities, marketing information and farm inputs. In general, all respondents reported that the training led to the massive formation of farmer groups, who were consequently registered in compliance with NAADS regulations. A 39-year-old female struggling farmer remarked:

> *Following NAADS mobilization and sensitization of farmers, NAADS contracted NGOs told us that to have access to NAADS agricultural benefits we needed to work in groups. Since we were told that NAADS is a new government organization with new agricultural programs, we thought that this was now our opportunity (the poor) to take advantage and get something from the government. Traditionally, what you receive from the government, you don't pay it back. We then formed farm groups and complied with the NAADS regulations which included formulation of group constitution and registration. We invited several men for confidence building in the group. However, our group did not stay longer because NAADS did not fulfill what they promised us (i.e., provision of farmer inputs and improved seeds).*

This revealed that some farmers formed farm groups to take the advantage of the new government extension program. Some farmers had a dependency syndrome and formed groups with opportunist intentions that were not in congruence with NAADS philosophy of encouraging farmers to work in groups.

Research findings by Boesen (2004) revealed that, after NAADS' mobilization and sensitization of farmers to form farmer groups, Rubaya sub-county alone registered 500 farmer groups with approximately 10,000 members. Friis-Hansen (2005) found that group formation was extrinsically driven in order for farmers to access tangible external agricultural

inputs which were not provided by NAADS in their extension program. Participants reported that, although advisory services were privately delivered and publicly funded, they were instructed to pay a matching fund of about 2% – 5% for the total cost of advisory services, in accordance with the NAADS provision. The purpose of the matching fund, according to NAADS, was to promote farmers' ownership in the program. When asked who made up the group membership, most farmers reported that most of the groups were comprised mainly of youth and poor farmers, who one year later were unable to pay the matching fund, or membership fee, of 2% – 5%. Consequently, the program dropout rate spiked. Table 5 provides a list of the original groups formed in 2001-2002 and the current groups in the four sub-counties studied. As revealed in Table 5, more than half of the groups originally formed between 2001-2002 were no longer operating in 2006.

Table 5. NAADS groups formed in 2001-2002 versus the current existing groups

Sub-county	Groups originally formed 2001-2002	Current groups 2005-2006
Bukinda	283	131
Bubare	380	245
Kyanamira	342	211
Rubaya	500	113
Total	1,505	700

Source: Sub-county NAADS Coordinators report (2006).

Reports from interviews indicated that, initially, some farmers joined several different farmer groups, greedily hoping to gain more benefits from NAADS activities. The purpose was to maximize NAADS products. Kayanja (2003) contended that strong optimism and interest in accessing external benefits spurs group formation during the mobilization and

sensitization process. The disadvantages of this process are not only that is it an outsider's idea, but also it is executed in a very short span of time, which gives farmers limited time to examine the philosophy of group formation and reflect on their expectations of their respective groups. The massive dropouts which occurred later led to under-representation of the poor and the young, who were unable to pay the membership fee. Ironically, these targeted populations were the original focus of the NAADS extension program.

All eight struggling farmers and two progressive farmers lamented that, if NAADS had not put such rigid conditionalities on their extension system, working in groups would have been a good idea. However, six progressive farmers pointed out that groups helped them learn from each other. Kolb (1984) pointed out that some adult learners prefer to learn in a group meeting which he refereed to as cooperative learning. The literature on working in groups and partnerships identifies several ways in which members in a group can benefit rural farmers: (1) improves agricultural productivity and facilitates economies on a larger scale; (2) promotes mutual learning; and (3) encourages shared knowledge among group members (Albrecht, 1995; Rivera et al., 2001; Wallace, 1992).

Six struggling farmers and two progressive farmers noted that, if farmers in their respective parishes had been consulted by NAADS before they enacted their rigid regulations, the program would have been productive. One farmer commented that:

> *If I was consulted to give my own views regarding working in groups, I would have contributed my own ideas that reflect farmers' interests and priorities in my parish. You see, the problem now is that the NAADS principles regarding working in farm groups are uniform and static to all of us while most of us (*farmers*) are different with different farming needs, wealth and varying ecological conditions. So we hardly learn from each other because group members have different needs and priorities.*

A struggling female farmer also remarked:

> *I feel that I was made to join a farm group that actually was not my group. Most of my group members have five to eight plots of land and their farming practices are exclusively for commercial purposes while my husband bought me two plots. I use these plots only to produce food for my children. If I had known earlier, I would have identified a group with more women not rich men who have enough land and resources to pay casual laborers. My interest is to work hard and produce enough for my family, while most of my group members' interest is to produce enough for Kabale municipality markets. We just formed groups based on where we live, not on common priorities.*

Regarding sensitization and mobilization of group formation, the participants lamented that the process took place too quickly for them to make sound decisions about their priorities. A 42 year-old male farmer remarked:

> *Contracted NGOs which facilitated us to form groups did it in a hurry in order to meet the number of days that were stipulated in the contracts they had signed with sub-county officials. The contracted farm group facilitators were run along commercial lines without considering farmers' needs and priorities.*

Dewey (1938), and Merriam and Caffarela (1999) asserted that successful learning activities in which adults participate depend on their specific needs. However, in Kabale, group formation did not focus on farmers' realistic problems and it was forced on them. Birkenholz (1999) pointed out that adult learning takes place voluntarily. One of the principles of adult learning is that "adults must want to learn," meaning that there are various factors that motivate adults to learn. Advisory service providers, therefore, need to identify or anticipate factors associated with adult participation in education programs (Birkenholz, 1999). Chamala and Mortis (1990) pointed out that extensionists should engage farmers in the learning process with an open mind for them to understand their culture and their ecological environment. Extensionists need to facilitate learning by establishing, first and foremost farmer's problems and their opportunities for achieving their development goals.

The previous findings revealed that NGO staffs were contracted to work for a set number of days for a certain amount of money and that they wanted to follow a tight schedule that was stipulated in the contract. Perhaps, due to their short contracts, the facilitators felt pressed for time and were more oriented towards forming many groups rather than focusing on facilitating the learning process. A 39-year-old female farmer shared her group experience:

> *After NAADS mobilization and sensitization of farmer group formation through lectures and seminars, our group had 38 registered members. By the end of 2002, we were only 12 members*.

This researcher further inquired from the aforementioned participants the reason why some members were not actively participating in NAADS activities and she remarked:

> *The reason is that group formation was instructional, mobilizing farmers to form groups in order to have access to NAADS advisory services in the form of agricultural technologies and farm inputs. Most farmers were promised tangible incentives (i.e., provision of farm in-puts and credit facilities) from NAADS which were not realized later. This discouraged the farmers and most of them left the groups.*

She went on to say:

> *Most farmers thought it was a waste of time to work with an organization that was not trustworthy.*

Research findings from farmers showed that, from the beginning, the group formation process was poorly planned and farmers did not have enough information on group dynamics, the role of farmers, and the expected outcomes. The information was more instructional and coercive, prepared by outsiders without input from the farmers; and consequently, group membership and participation did not last long. Leeuwis (2003) argued that for adult learning to take place, learners need to express a problem which creates a framework of reference. Leeuwis stressed that there should be some kind of tension between

learners' aspirations and their perceptions of reality. Four of the struggling farmers reported that the cost-sharing process, in the form of group membership fees, was not well understood by most members. Chamala's (1990) study revealed that, for any community organization or farm group to initiate its own growth and development, extensionists should engage learners by involving and facilitating them to understand their own problems, and empower them to articulate their needs and priorities which will lead to their own commitment and action. The researcher stressed that empowering farmers is an act of helping farmers build, develop, and increase their capacity to understand their problems through cooperation, shared learning, and working together for a common goal.

Enterprise selection – "Demand-driven extension"

NAADS (2000) defined enterprise selection as identification of development and promotion of farming initiatives that promote profitability of agricultural production. Enterprise development is geared toward promoting and investing in specific farming activities that involve profitability and assume less risk in farming activities. According to NAADS policy, enterprise selection provides avenues for farmers to demand and receive advice in order to make farming more profitable.

After the group formation, farmers reported that several group meetings with contracted NGO staff were conducted to discuss aspects and the implementation of group activities in line with the NAADS program. Findings from interviews from both categories of farmers indicated that NGOs initiated the ice-breaking discussions to provide opportunities for farmer groups to learn from each other, and to streamline and consolidate their needs and priorities. A female progressive farmer remarked that:

> *Facilitators from Africa Network 2000 invited us to a meeting. During the meeting, they encouraged us to discuss what we felt as our farming needs and other farming activities that were of our interests. Most of us had different needs and priorities. I wanted to grow kale to sell in the market and a lady seated next to me wanted to rear chicken. It was hard to bring everyone together in one group. However, I got to know my group members and had an opportunity to discuss with them on farming issues and the discussion helped put me in a journey to increasing food and cash in my home.*

Through ice breaking and group discussion, farmers reported that they were able to identify things that they felt that were important for them to improve their agricultural production and move out of poverty. In general, farmers asserted that they were encouraged by NGO staff facilitators to consolidate their desired needs into the framework of their present state of farming practices. This would enable them to envision where they wanted to be by helping them to identify the obstacles that would otherwise prevent them from reaching their desired goals. As a result, they were able to consider their existing enterprises, and the necessary knowledge and information they would need.

In the second stage of the group meetings with NGO facilitators, farmers reported that they were told to highlight the likely actions that they considered appropriate to achieve their desired changes. This ice-breaking discussion is a reflection of Cooperrider and Whitney's (2002) model of the four D's: *discover, dream, design,* and *deliver*. The discussion helped NGO staff to engage farm group discussions geared toward their understanding the resources that were available in their communities and how they could exploit them to improve their farming practices. The NGO facilitation enabled farmers to identify and prioritize their appropriate enterprises.

Based on findings from the interviews, the criteria for the group enterprise selection were based on NAADS enterprise guideline selection procedure. Farmers indicated that they were given the following guidelines:

- Farmers reported that profitability of the enterprise was the first attribute of the NAADS guidelines and was ranked highest with four points. Farmers reported that an enterprise that requires a minimum cost of production and is considered to be in high demand in the market, with large-scale production, is considered profitable.

- The second attribute given to farmers was marketability of the enterprise, which was ranked with three points. Based on NAADS principles, any enterprise that is perceived by farmers to be more marketable than others is considered most appropriate, based on other factors, such as climate, location, infrastructure, and enterprise (crop) processing skills.

- Farmers indicated that low financial outlay was ranked with two points, based on availability of initial capital to grow the enterprise, such as availability of land, production costs in terms of inputs, and market research.

- Low risk was also ranked with two points, based on perishability, storage requirements, and ecological and climate conditions in the area.

- The fifth and last guideline in the process of enterprise selection was the farmers' perceived knowledge, which was ranked with one point. Farmers reported that selection of this attribute depended on their experience and the production knowledge they had in an enterprise.

According to the interviews, the score for each enterprise listed was calculated by multiplying the number of farmers who voted—through show of hands—by the weight of the attribute. Farmers reported that, after the voting, they totaled the weighted attributes and then ranked the enterprises in order of total scores. Farmers were told that NAADS would only fund the top-three ranked enterprises. The first three enterprises selected by each group were given the priority at the group level and then the parish level. They were finally submitted to a sub-county selection committee for final selection. These guidelines for enterprise selection are found in the NAADS Strategy for Enterprise Development and Promotion (2004).

Table 6 depicts the outcome of the enterprise selection process in farmer group K in Bubare sub-county. According to a male participant:

> *The enterprise selection was too advanced for us. Most of us farmers are not formally educated and we did not understand what the facilitator was talking about. In any case, my most important enterprise was not selected because it did not rank among the first three. The facilitator went further to teach me about the first three enterprise which I am not growing on my farm. For instance, they taught me technologies about Irish potato and I am not interested in growing Irish potato.*

After the selection of the enterprises, farmers reported that, based on the NAADS enterprise selection guidelines, they were guided by NGO staff to collectively identify would-be related problems that might prevent them from maximizing production in their

Table 6. Outcomes of enterprise selection process for farmer group K, Bubare sub-county

Enterprise	Profitability	Access to market	Low risk	Financial outlay	Knowledge and experience in enterprise production	Total score
Irish potatoes	20x4=80	18x3=54	15x2=30	12x2=24	20x1=20	208
Sorghum	19x4=76	20x3=60	12x2=24	12x2=24	18x1=18	202
Hybrid goats	16x4=64	14x3=42	11x2=22	15x2=30	16x1=16	174
Beans	20x4=80	15x2=30	12x2=24	11x2=22	16x1=16	172
Hybrid Poultry	18x4=72	15x2=30	10x2=20	14x2=28	14x1=14	164
Local goats	15x4=60	15x3=45	12x2=24	10x2=20	12x1=12	161
Exotic cows	12x4=48	12x3=36	14x2=28	12x2=24	11x1=11	147
Piggery	15x4=60	12x3=36	12x2=24	11x2=22	10x1=10	152
Bee keeping	6x4=24	8x3=24	10x2=20	10x2=20	9x1=9	97
Fish rearing	6x4=24	8x3=24	3x2=6	10x2=20	9x1=9	83
Passion fruits	5x4=20	6x3=18	3x2=6	9x2=18	7x1=7	69
Tomatoes	4x4=16	5x3=15	3x2=6	7x2=14	5x1=5	56
Watermelon	4x4=16	2x3=6	3x2=6	5x2=10	4x1=4	42
Pineapples	3x4=12	2x3=6	2x2=4	5x2=10	4x1=4	36
Pumpkins	2x4=8	1x3=3	1x2=2	1x2=2	4x1=4	19

KEY: Profitability = 4; Access to Market = 3; Low Risk = 2; Financial Outlay = 2; Knowledge and Experience in enterprise production = 1.

three selected enterprises. Farmers reported that they collectively identified various problems that could potentially interfere with efficient production and, later, with the guidance of facilitators, they grouped related problems into themes. Based on the feedback from interviews, all farmers highlighted the following themes: soil erosion, crop disease, lack of market information, and lack of credit facilities and farm inputs. Farmers reported that each farmer group submitted its selected enterprises, along with their anticipated potential problems, to the parish level.

The parish administration scrutinized the lists from all of the groups and then submitted them to the sub-county offices for further scrutiny. The farmer fora at the sub-county level, along with technical experts and local government staff, reviewed the reports from all of the parishes in the sub-county and developed sub-county advisory services accordingly and a technology development plan for each enterprise. These were, in turn, expanded into sub-county development plans and, ultimately, contracts for service providers were drawn. Based on the findings from document analysis, selection criteria for advisory services and technology development at the sub-county level were based on national policy issues, such as poverty reduction, gender equality, natural resource management, and productivity (Oba et al., 2005; NAADS, 2001). The enterprise selection and technology development for each enterprise at the sub-county level were guided by the beneficiaries and stakeholders in the sub-county. NAADS (2001) and Oba et al. (2005) outlined the crosscutting issues as a guideline for the final selection. Approval and awarding of contracts to farmer groups in respective parishes included:

- the target group, whether they are the most vulnerable and in what proportion

- the beneficiaries or participants, whether they are subsistence farmers or semi-commercial farmers
- the specific opportunities for the poor
- the nature of the resources required to implement the sub-county development plan
- who controls the required resources
- whether the program involves significant participation of women;
- the specific constraints of the selected beneficiaries
- the roles and responsibilities of the selected enterprise
- whether the enterprise promotes balance of development
- how the gaps will be addressed (Mutimba et al., 2005; NAADS, 2001)

While deliberating on the feasibility of a submitted contract, the selection committee considered whether the farmer group had access to resources, such as agro-chemicals, fertilizers, and knowledge on how to use the resources. The potential for negative environmental impact was also taken into account. For example, if a farmer group proposed growing a corn enterprise on a wetland, the committee would readily turn it down.

Findings from enterprise selection revealed that farmers were given an opportunity to discuss enterprises. They discussed the nature of the agricultural advisory services they received from the private advisory providers. However, participants cited that they had problems with the rigid enterprise selection process. Three farmers pointed out that the process was too technical and tiring. Two struggling farmers summarized their experiences as follows:

> *We just filled in their papers and responded positively to enterprise selection facilitators in order not to waste our time on a process that seemed technical and academic to us.*

Six of the eight struggling farmers who were interviewed complained that the goal of the enterprise selection process was based on NAADS own priorities that promoted agricultural production for commercial purposes, whereas the farmers' priorities were on growing food for their families and home consumption. They asserted that most of the

selected enterprises were voted by a majority vocal farmers and left out minority (resource poor) farmers and, thus, excluded them from active participation in the NAADS extension activities. The other problem cited by a majority of the farmers was the lack of market information during the enterprise selection. The most common explanation given by a majority of the farmers was that the enterprise selection process was allocated a short span of time. In addition, members of the different farmer groups had limited knowledge of marketing which led to a poor selection of appropriate enterprises. One farmer pointed out that most farmer groups in the parishes selected almost the same enterprises, and production flooded the market during harvest time. The majority of the farmers realized that, during the enterprise selection, they lacked the necessary skills to identify market opportunities for their enterprises.

> *When we selected an enterprise, we did not consider where we could sell the products. Most of us were happy to learn and grow crops such as Irish potato that we could sell. But the facilitator failed to inform us where to sell and the price to bargain with. Unfortunately, many of the farmers who grew the same enterprise later faced the problem of product flooding in the market and they got very poor prices. Al the facilitators were interested in fulfilling their contracts and did not care about our understanding and problems, now and in the future.*

The enterprise selection process did not include planned educational activities that provided entry level information for adult learners. This would have empowered farmers to participate more fully in the learning and enterprise selection process (Knowles, 1984). As indicated previously, enterprise selection did not focus on farmers' realistic problems or their perceived needs. Adult learners are interested in learning new knowledge and skills that have immediate application to their lives, and they tend to resist learning that has little or no relevance to their needs.

Summary

A major problem that emerged from the findings was that groups were formed in a rather hurried manner using a top down approach. The groups were formed with extrinsic motives rather than based on the original objective of empowering farmers to demand advisory services. Farmers were not fully equipped with all the needed information, rationale of NAADS, and its expectations. The formation of the groups was supposed to be checked against NAADS standards to provide farm inputs, appropriate/relevant education for farmers, and access to markets. Provision of advisory services to farmers in the form of new agricultural technologies along with easy access to farm inputs would have been more desirable and effective than forming too many groups that could not be supported. Managing multiple groups became more difficult and complicated, and required financial obligations and skills that were beyond the capacity of NAADS.

Section 2 – NAADS Information Delivery Approach

Research Question 2: What are the perceptions of farmers regarding the NAADS information delivery approach?

Farmers' perceptions of the dissemination of agricultural technologies

The second research question addressed farmers' perceptions of the NAADS extension delivery approach. In-depth conversational interviews with 16 farmers were conducted to establish the farmers' knowledge and perceptions and their experiences with the NAADS extension system. The findings from this section reveal several contrasting responses based on the categories of the participants in the study. The two farmer categories included: (1) progressive farmers; and (2) struggling farmers. In general terms, all 16

interviewed farmers acknowledged awareness of the NAADS agricultural extension activities.

The findings suggest that all of the progressive farmers interviewed were very knowledgeable about the NAADS programs. Farmers demonstrated adequate knowledge of the NAADS objectives, approach, and conditionalities. Six out of eight progressive farmers were amazed at how the respective farm group members were able to identify problems that affected them in their parishes. One farmer remarked that:

> *we have experienced the same problems we have for a long time, but no farmer had ever thought about them until NAADS came and told us to form groups and discuss on our own what we thought was relevant to our lives.*

He further added that:

> *It was surprising to see the farmers. Some of my neighbors who I thought were helpless to talk about important issues that even affected not only our parish but also our own families. Our leaders have had a weakness for assuming that farming is for only illiterate people. We are always despised but when we got an opportunity to think about what matters and is more relevant to us in form of groups, we realized that our leaders had never supported us to make our own decisions that have continued to affect our villages. Our role as rural farmers has been to follow the rules and regulations of our agricultural staff from Kabale district headquarters. For a long time, we executed their programs and did not benefit much as farmers because we were not given a voice to talk about our own priorities.*

Ntamahungiro (1988, as cited in Uvin, 1996) stated:

> A bad habit has installed itself in our mores, in which the rich, the powerful, the civil servants, the educated person always has a priority over the poor, the weak, the non-educated, and the "non civil servant." This can be observed in court, at the doctor, in the administration and even in taxis. … This lack of respect towards the peasant manifests itself amongst others in the way they are addressed. They are spoken to in a commanding tone, often with disdain. They are required to behave as inferiors, to make themselves very small. (p. 27)

Another farmer pointed out that working in a group has really helped him a lot. He noted that:

> *Myself and two other members in our farm group came together and combined our efforts and were able to make a joint venture and won a contract supplying matoke* (bananas) *to Bukinda Senior Secondary School, something I, alone, had tried and failed for several years. While sharing my own production and marketing experience in the group, two of the group members got interested, and they shared that they tried to supply Irish potatoes to the same school individually.*

He further stated:

> *One business man used to buy our agricultural produce at a lower price and then supply it to the same school, making higher profits. Personally, I am earning close to double the price of what I used to get from that business man. The school has renewed our tender for the next year, 2007 and now I am motivated to produce more*.

Findings from progressive farmers revealed that farmers have learned organizational skills at both the family and group levels. All eight farmers acknowledged that they are now well versed in record-keeping skills. One farmer appreciated the benefits he received from the NAADS seminars on record-keeping and leadership skills. He stated that he is now able to determine, based on NAADS information, whether he is encountering a loss or profit. Prior to attending any NAADS workshops on record-keeping skills, another farmer pointed out that she never used to care about recording the amount of time or the farm inputs she invested. She was not even concerned with recording her harvests. She asserted that:

> *Now I can determine the kilograms of sorghum I will plant this coming season and can predict, given good rains, the number of bags I will harvest.*

These findings are in line with the adult learning principle which stipulates that an effective way of learning and development is self-development through problem solving and collaborative learning. Chamala and Shingi (1990) revealed that problem solving among

farmers is important in their learning process. In this way, learning changes from providing technical solutions to empowering them in their farm groups or organizations to solve their own problems and undertake their own action learning. The findings revealed that farmers were able to optimize learning by doing through problem identification and problem solving based on their own experiences and available resources.

The major issue raised by participants' perceptions regarding their dissemination of new technologies was the use of lectures. Three farmers summarized their experience of learning by use of lectures as:

> *The service providers are too academic and use a lot of technical language. They taught us as if we are high school students from Kigezi college Butobere or St' Mary's College. We expected to learn through story telling, or visiting other farmers who have demonstrated successes in their farming practices. The service providers are directive and they often deny our freedom to talk about our problems and experiences. They just want to feed us with their technologies without listening to us. Some of their technologies are not necessarily relevant to us. If we would have been given an opportunity to share with the service providers our own experiences, probably it would make a difference in the learning process.*

Two farmers complained that:

> *Service providers insists of farm fallowing, that we skip cultivation for 2-3 season on our plots of land in order for the soils to regain fertility and become productive. This can not work because most of the farmers in our parish have 2-3 plots of land. If we stop for 2-3 seasons there would no food for our families.*

One female farmer lamented that:

> *They teach us spacing the seeds while planting. When I attempted one season, Irish potato plants which germinated were too few to achieve the normal harvest I had expected because my plot of land was too small for crop spacing. There lectures are too academic to suit our farming practices. Their technologies are only applicable in places like Mbarara district where there is no shortage of land like Kabale.*

These arguments raised by farmers indicate that learning is not just the transfer of technology. One of the adult learning principles requires provision of technical advice only where it is required and emphasizes more on understanding the farmer's culture and ecological system in its specific locations. Pretty (1999) encouraged extension agents to always listen to farmers voices and capture their indigenous knowledge before providing technical knowledge. Adult learning should not rely on routine lectures based activities for life long learning (Ison, 1990). Therefore, the service provider's intervention in helping farmers to learn should be based on the farmers' observation and anticipation. In addition, farmers require learning instruments that make visible ecological relationships on and among farmers. NAADS contracted service providers required to help farmer's assess their farming practices through observation such as types of soils, land ownership, soil management, and farmer's abilities and their available resources. Service providers should facilitate farmers in the learning process by way of observing the terrain nature and land existing farming practices and how best to improve the system not lectures.

Farmers' access to information, knowledge, and technology

When asked about their level of access to the new knowledge and technologies from the NAADS extension, all eight progressive farmers acknowledged having access to these through demonstration sites, workshops, and seminars. However, from the in-depth interviews, the findings revealed that all eight farmers were the first farmers in their respective groups to get NAADS support in the form of inputs, such as hybrid goats and cows and spraying machines. Six were selected by NAADS for technology development sites (TDS) on their plots of land. When asked what criteria were used for this selection, five of

the six farmers reported that criteria were based on their past experience with administration and leadership at the parish and sub-county levels. One farmer noted that, besides his leadership experience in the local government over the past 20 years, he had been selected previously and had proved himself to be an excellent farmer in his sub-county.

When asked how many farmers visit the demonstration sites, the same five progressive farmers remarked that most farmers have not shown interest in visiting the sites, especially the poor ones. In response to the question of why the poor do not normally show up, all five farmers said that they do not normally understand the importance of farming and that they do not regard farming as a business but rather for home consumption. When the same question was asked to struggling farmers regarding to how often they visited technology development sites, six of the eight had attempted several times to go to the technology development sites (TDS) at the initial opening but later stopped citing problems of walking long distances over and over again. The other two struggling farmers cited the similar problem of TDS locations in distant places. In addition, some did not have bicycles, so they could travel the long distances to the demonstration sites.

Findings from the sub county NAADS coordinators suggest that increasing the number of technology development sites in the parishes would increase farmers' participation in NAADS activities. As previously mentioned, Leeuwis (2003) argued that adoption and application of new technologies depend on the learner's environment. If the farmers are unable to access new technologies and the cost of reaching TDS is high in terms of time and cost, farmers will be discouraged to engage in the learning process. Adult learning principles emphasize vicarious learning through visual conviction where farmers are able to learn from technology developments sites or their fellow farmers. Farmers are

normally inclined to learn from their fellow farmers because they visualize the benefits of those who have applied the new technologies (Sari, 2004).

Satisfaction of farmers with advisory service providers

All eight progressive farmers knew the main contracted private individuals and organizations that provided agricultural advisory services through NAADS to farmers. From the interviews, all the eight respondents acknowledged attending training sessions organized by NAADS service providers. They remarked that the training sessions take a long time and become boring. Farmers who had missed some training sessions attributed their absence to the inappropriate location of training venues, in terms of accessibility and conflicting training schedules with farmers' activities. Farmers suggested that, if NAADS wanted farmers to have ownership in the extension program, they should always be contacted before the scheduling of NAADS training programs regarding the location where sessions will take place. A female participant lamented that:

> *The training sessions were organized when I was busy. The venue was in a school compound far away. As a mother, I have a lot of responsibilities and hence limited time to attend meetings. My husband could get angry if I spent over three hours away from the farm. I tried talking to the facilitators to shorten the time for sessions, but it could drag on and on and eventually I had to leave before the training was over. So, I missed some of the key issues they discussed at the end of the day. In any case, if my husband is angry, I am always worried and not concentrating on the training.*

One of the principles of adult learning suggests that learning occurs best in informal places. A rigid and strict schedule associated with youth learning can inhibit learning. Agricultural advisory services should carefully provide constructed guidelines that are flexible for adult learning.

Adult learning requires an appropriate educational environment that promotes and facilitates learners to meet their real needs and interests. Service providers need to create an educational environment that promotes a democratic philosophy of adult education. Democratic adult education is characterized by respect of learners, providing opportunities for learners to participate in the whole process, freedom of expression, mutual responsibility for formulating goals, planning, implementation, and the evaluation process (Birkenholz, 1999; Merriam & Caffarella, 1999). Service providers should have emphasized a democratic philosophy of learning by encouraging and facilitating farmers to participate in the entire process of learning so as to incorporate farmer's needs and interests.

Most farmers indicated that participation would increase if NAADS availed production inputs to farmers in time. Research by Sari (2004) revealed the provision of technologies and agricultural inputs (e.g., fertilizers and improved seeds) in an appropriate time are influential in farmers learning process. All respondents suggested that agricultural inputs should be provided to farmers after training. They complained that the supply and distribution of the NAADS-improved seeds were delivered a couple of weeks past the planting season, and this affected productivity and reduced the anticipated profits.

Four progressive farmers suggested that, because they already knew some of the farmers with improved seeds and hybrid goats, it would be fair for NAADS to give money to the farmers, themselves, so they could purchase the inputs from their fellow farmers at lower prices. This would save the farmers money because the inputs supplied by NAADS-contracted businessmen cost more and, therefore, the businessmen make a large profit at the expense of the farmers. One female farmer said:

> *One hybrid female goat from a contracted trader costs 50,000 Uganda Shillings while the same goat is sold at 30,000 Uganda Shillings from a local farmer in the village. This is ridiculous and we know that NAADS is stealing our money. At first, we did not know that they were stealing till one farmer noted the differences. We tried to ask why the difference in the costs and we did not get a satisfactory answer. We were cheated out of our money.*

Six of the eight progressive farmers interviewed felt that selecting their own enterprises was a sign of increasing program ownership. They perceived that NAADS was a good program which could increase agricultural productivity. The same farmers suggested that NAADS activities would be beneficial if NAADS, in collaboration with the government, provided farm inputs at subsidized prices for farmers. Learning requires not only time and energy but also agricultural inputs and necessary infrastructure. Even if there is an eagerness to learn, a lack of agricultural inputs such as fertilizers and improved seeds may inhibit learning, especially among resource-poor farmers (Leeuwis, 2003).

The most interesting complaint voiced by four of the progressive farmers and all eight struggling farmers was the inability of service providers to effectively disseminate information to farmers. The farmers asserted that most service providers concentrated on subject matter/content and that their teaching methods did not really benefit them. Most farmers shared a similar view:

> *…in most cases advisory service providers use technical terms in training sessions that are hard to understand. This makes trainings irrelevant because the content more often does not reflect our interests. The facilitators use difficult words sometimes in English that we cannot understand.*

Findings from the majority of the farmers and four sub-county NAADS coordinators indicated that the competency of the service providers working with farmers had a lot to be desired. Two of the four sub-county NAADS coordinators argued that most of contracted services providers are only equipped with subject matter and have little or no knowledge of

working farmers. One sub-county NAADS coordinator pointed out that the sub-county technical team should revise the qualifications required for contracting service providers if NAADS wanted an appropriate learning environment for farmers. The sub-county NAADS coordinator emphasized incorporating human behavior as another qualification for service providers to promote a good learning environment for farmers. The NAADS sub-county argument reflects the extension workers personal equipment (see Figure 3). The findings from NAADS sub-county coordinators suggested a need to provide contracts to organizations that have proven experience working adult learners in an informal environment. The four sub-county coordinators stressed the need to promote multi-disciplinary service providers with experiences on how farmers learn, citing the need for background in issues such as environmental concerns**,** gender equality, and poverty alleviation**.**

One farmer pointed out that:

> *Service providers know a lot of technical stuff, but all we need is simple information that is suitable in our villages and for our own environment. They seem to train farmers without understanding the real objective of why we are learning it. We need pictures that we can hang on our walls. It is easier to learn through pictures.*

Three progressive farmers and one struggling farmer lamented that the instructors concentrated on the teaching task but did not care whether the farmers comprehended what was taught. One farmer said that it would be better to use their own farmers who have proven themselves to be exemplary—because they know what other farmers want and how they want it. They understand the language and know their circumstances better. Five pf the eight respondents summarized their remarks:

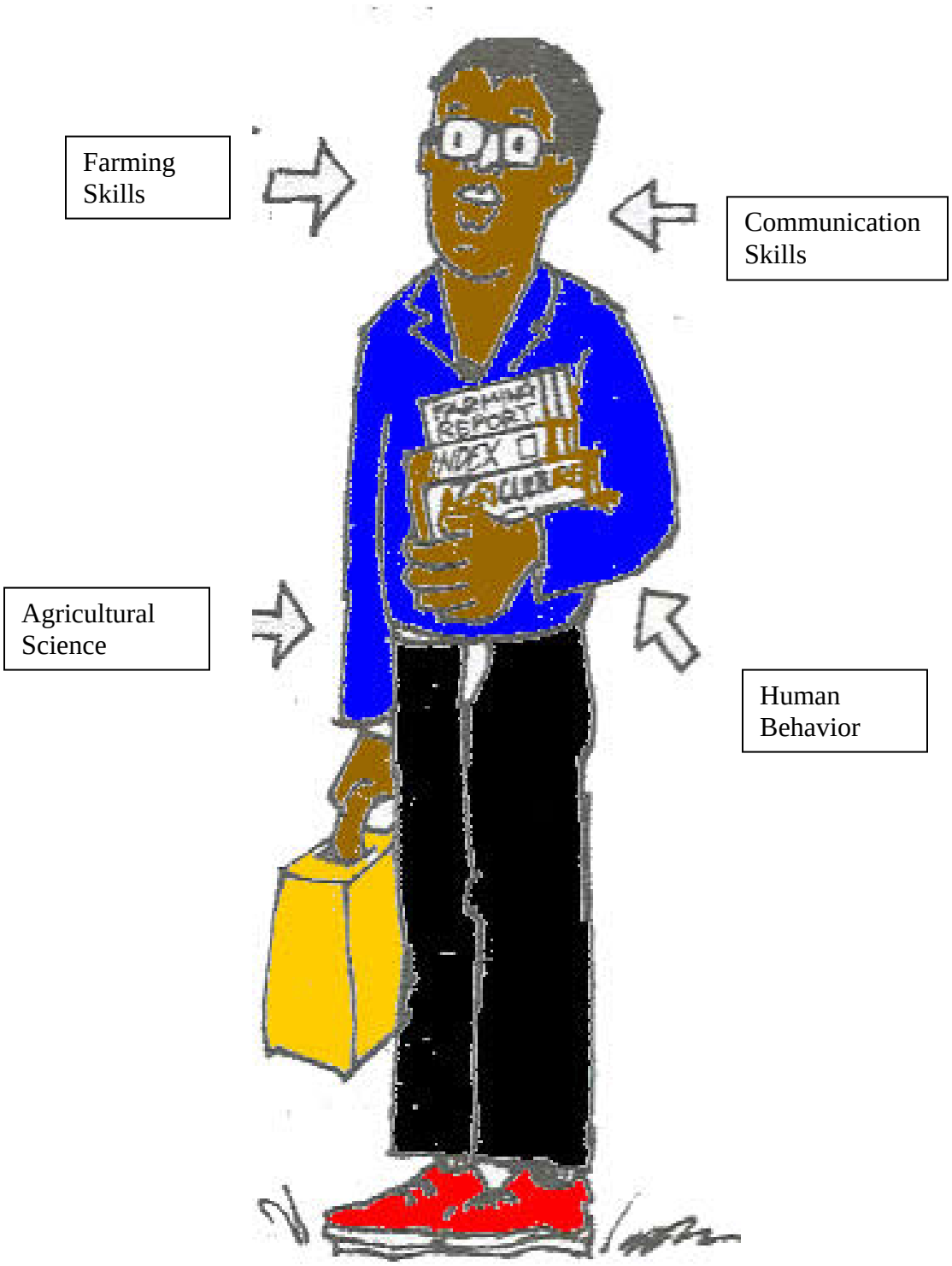


Figure 3. The extension worker's personal equipment (Bembridge, 1993)

> *Service providers don't stay with us. We are not even sure of the criteria used in selecting the service providers. How come they are selected to teach people they actually don't know? There are farmers among us who are excellent farmers that we can learn from them. If the service providers could listen to us, they could be successful now.*

A 36-year-old female farmer questioned why some service providers talk about political parties during training sessions and, yet, are supposed to talk about agriculture. It is important to note that politics in developing countries, particularly in Uganda, is a sensitive issue and educators need to refrain from revealing their political affiliations during training sessions. As discussed in Chapter 2, adult learning should focus on learners' realistic problems that can be applied to their day-to-day problems.

Most of the struggling farmers were not happy with the service providers' attitudes and actions. They gave examples of keeping time during training sessions, exhibiting a lack of respect for poor farmers, initiating social interactions that favored the elite farmers, losing their tempers, and showing political partiality. Common problems that were revealed in the findings of this section indicate that advisory service providers did not have knowledge of how farmers learn. Bembridge (1993) asserted that a professional extension worker must have knowledge of agricultural science and practical farming skills. He further contended that these qualifications are not enough, and that advisory service providers should also be equipped with communication skills and an understanding of human behavior (see Figure 3).

There was a poor linkage between the services providers and the farmers they were contracted to serve. For example, needs are decided and determined by farmers in their farm groups with the help of NAADS private contractors. Service contractors were contracted to disseminate agricultural knowledge and information with little knowledge. Rasheed and

Sadamate (2000) termed this need as the diagnosis of farmers' socio-economic or ecological conditions along with their opportunities and challenges.

Semana (1998) argued that the ideal extension worker should be governed by the philosophy of extension. As previously discussed in Chapter 2, extension philosophy states that the extensionist should first identify the level of farmers' knowledge, their attitudes, their social, cultural system and way of life, and their problems and perceived needs. Semana asserted that extensionists should help farmers to help themselves by focusing on their existing local knowledge and the farmers' own resources. In his advice based on the aforementioned features, Semana pointed out that extension workers should practice the following in the process of carrying out their duties:

- Teach the rural people; advise them on how to improve their way of living.
- Encourage them to appreciate and recognize rural life as honorable.
- Train the rural people how to make decisions about the use of their resources through their own efforts. (p. 3.)

According to Wentling (1993), service providers should model and implement adult learning activities as captured in the concepts outlined as follows:

1. Set a climate for learning;
2. Establish a structure for mutual planning;
3. Diagnose a means for learning;
4. Formulate objectives for learning;
5. Design a pattern of learning experiences;
6. Manage the implementation of learning experiences; and
7. Evaluate results and re-diagnose learning needs.

The strongest resentment of five of the struggling farmers was that the people who benefit from the NAADS activities are the service providers, who are paid huge amounts of shillings for conducting workshops, seminars, and training activities to farmer groups. Two farmers complained that most of the training activities are scheduled to suit the service providers' own programs, and there is no consultation with farmers regarding training schedules. One female farmer likewise lamented that service providers impose their training schedules without consulting farmer groups:

> *We need to be consulted because we have other things to do other than their meetings and their training programs. Besides this, the same service providers decide the venues for the meetings and sometimes the venues are up to five kilometers away.*

Leeuwis (2003) asserted that, for social learning to take place, organizational space is an important factor that influences learning. Leeuwis cited community setting and social environment as instrumental in whether new technologies may or may not be appreciated. One farmer pointed out that her group had long requested two of their advisory service providers to visit them on their plots of land to reveal the problems they face in the farm fields. However, when they were asked why they had not visited them in their farm fields, the providers replied that their sub-county contracts did not pay for individual farmer visits. This might provide and explanation for the low turn-out of group members during training sessions.

One farmer complained that what NAADS terms farmers' ownership, in terms of awarding advisory service contracts and monitoring the performance of service providers, was not realistic. This is because the farmer fora and the technical staff at the sub-county

level are dominated by farmers who have been local government leaders or business community leaders for a long time. One farmer remarked that:

> *The elite farmers, who exclude us, the poor, vulnerable, and disadvantaged, they are the ones who sit on the final committees that decide which individuals or groups of people get to be awarded contracts for delivering services or buying agricultural inputs for poor farmers. They normally choose what suits them, not poor farmers. We small farmers have been always excluded when it comes to making final decisions.*

Boensen (2004) posed the same argument that was raised by this farmer. Boensen asserted that most of the NAADS sub-county farmer fora in Kabale district are top-down, consisting of influential farmers, and chiefs and other leaders who were selected by contracted NGOs on the advice of the local extension workers' sensitization team, and who later requested farmer groups to confirm their choice. He pointed out that the large number of farmer fora in the district is a reflection of the local power structure—vocal and influential non-poor farmers, normally teachers from government and private schools who demand "kick-backs" for allocating contracts to private service providers (Boesen, 2004; Friis-Hansen, 2004a, 2004b). In the farmers' opinion, the farmer fora became illegitimate, more occupied with demanding high "sitting allowances," ensuring the technology trials took place on their farms, and in neglecting the poor farmers.

The common and interesting concern from both categories of farmers interviewed was that training programs by service providers took a lot of time. When asked why advisory service providers take so long, the most common explanation was that the service providers live far from the sub-county so, when they come, they want to cover a lot of topics in a short order. Twelve farmers remarked that most providers live in Kampala or Kabale and they have limited time for other activities. Most also have other jobs in Kabale district

headquarters or even in different parts of the county. For any learning to be successful, it is important for service providers to engage the learners in scheduling timetables, scheduling calendars, and even helping determine the content to be taught.

The research findings revealed that most farmers from both categories believe that the service providers treated farmers as if they were high-school students and they disregarded adult teaching methods that engage the farmers in the whole learning process. One farmer complained that, because the service providers are professionals from Makerere University, he expected them to teach, through storytelling, about other farmers' practices and what these farmers did to increase their agricultural production. They lamented:

> *They teach us in our language but commonly use technical statements which most of us don't understand. They don't listen to us because they rely on lecturing using a package approach.*

Gibbs (1989) argued that teaching farmers through lectures is not a suitable way for adult learning. Lectures do not permit the learners to participate in the learning and the construction of meaning, thus learning becomes irrelevant to the learners. Service providers did not provide farmers with greater learning autonomy that promotes farmers responsibility, innovation, and creativity in their learning process which is one of the principles of adult learning.

One farmer lamented:

> *I see NAADS as a good organization that helps only those farmers already have extra resources such as financial. Particularly it is good for farmers who can mange to pay matching/group member fees and are able to purchase agricultural inputs. These farers can afford to lose a season of crop. We poor farmers, we don't benefit because we don't have the means to buy inputs to supplement the knowledge we get from private advisory services providers*.

Summary

Based on the findings, the NAADS extension program seems to benefit progressive farmers while it excludes struggling farmers. This indicates that advisory service providers treated progressive farmers as early adopters and struggling farmers as passive learners. The study also revealed that the NAADS-contracted agricultural advisors pay more attention to subject matter and technical skills associated with their disciplines and less attention to what facilitates farmers to learn. This argument is echoed by Martin Luther King, Jr., who is credited with the quotation: “Our scientific power has outrun our spiritual power. We have guided missiles and misguided men” (Taylor et al., 2006, p. 25). Advisory service providers focused more on technical skills with little knowledge on how to facilitate behavioral change among farmers. The research showed that NAADS technologies alone do not facilitate farmers to practice new technologies if agricultural inputs are not made available to farmers in a timely manner.

Although struggling farmers frequently complained about a lack of inputs, there was no evidence to suggest that, if they were provided with inputs, their comprehension and application of the new information they received would automatically increase. In other words, it is not sound to assume that everything would have worked out all right if the farmers had received their desired inputs. To be successful, farmers need both inputs and a real understanding of how to utilize the inputs appropriately. A reason that they might not have achieved this crucial understanding is that the demand-driven extension service providers were not able to access and meet the farmers’ learning needs. In addition, the education given to farmers did not provide them with the ability to effectively demand agricultural advisory services.

Findings from the study also revealed that the service providers' contracts are too short to ultimately meet the farmers' needs. Indeed, the contracts are given for a short time and not adequate to address farmers' long-term goals of improving agricultural production. The sub-county implementing institutions that awarded contracts to service providers expected quick results, but lessons in extension education from the past suggest that learning, especially the learning of new behaviors, is a lifelong venture that cannot be held to timetables. True learning requires patience and guidance. Moreover, the service providers visited the farmer groups only a handful of days in perhaps a three-month period.

Section 3 – Comprehension and Application of New Skills and Technologies

Research question 3: What are the levels and the extent to which farmers have comprehended and applied the new skill and technologies from the NAADS extension education program?

The objective of research question 3 was to gain farmers' perceptions regarding the extent to which they had comprehended and applied new knowledge and technologies from the NAADS extension program.

Comprehension and application of new technologies

Discussions about how farmers comprehended and applied what they had learned from the NAADS extension program led to a dialogue about the program's impact on their lives. One progressive farmer pointed out:

> *I got a hybrid cow from NAADS. I was lucky to have been among the first four farmers in a farm group of 36 members. It has given birth twice. An NGO contracted by NAADS taught me how to look after the cow, and I am looking after it as directed by the veterinary staff from the NGO. I get 6 liters of milk and 4 liters of milk in the evening and morning, respectively. I sell 8 liters a day and use 2 liters for my family. I sell a liter at 300 shillings each and make 2,400 shillings a day. I am now able to pay school fees for my two children in*

> *secondary school and pay the drugs for the cows. The only problem I have with NAADS is that when my cow has serious problems, I can't reach the veterinary doctor because he is only given a specific schedule of when to visit farmers. My veterinary knowledge is not enough; sometimes I do experience some infections that require a veterinary doctor. The doctor does not show up when I actually need him. But otherwise, all other basics from my doctor, I have tried to implement them and learning has been useful. The amount of milk I get daily motivated me to learn more about hybrid cows. I am planning to buy two hybrid goats because I have found out that hybrids generate more profits than local cows.*

Another progressive farmer stated:

> *…now I have two brains in the family, myself and my wife. After taking gender training in our farm group at the parish by the contracted NGO, my wife and I now plan our farming practices collaboratively, in decision-making in our family. I used to be involved more in matoke production and tell my wife to provide food for home consumption. But we are now all involved in production for commercial purposes and this has increased our family income. We are able to hire a few casual laborers in the production of Irish potatoes for commercial purposes. Application of NAADS advice has improved my family's livelihood.*

A third progressive farmer remarked:

> *With the knowledge I got from NAADS, I am able to control soil erosion and produce homemade manure from animal waste this has improved productivity.*

The greatest problem cited by progressive farmers was the lack of markets for their products. One farmer conjectured:

> *The knowledge I got from NAADS has helped me improve production. I had never harvested up to 70 bags of Irish potatoes. Since I started working with NAADS irish production has been increasing. The main problem is that discourages me is the lack of the market for Irish potatoes because with the new farming methods most farmers production has increased while market has remained constant. I think NAADS should help us find markets outside Kabale.*

Although the level of awareness about the NAADS program was high among struggling farmers, all eight farmers were participating in NAADS activities only partially.

Of the eight farmers who were interviewed, six had not used any agricultural technologies delivered from NAADS although they had attended NAADS workshops, seminars, and meetings from NGOs and private service providers. They did indicate that they possessed knowledge of agricultural technologies but did not apply them. When questioned about the new technologies they were taught by contracted service providers, they mentioned hybrid seed varieties, control of soil erosion, soil fertility enhancement, exotic or hybrid animal breeds, and crop pest and disease management. Regarding why they did not apply what they studied through the NAADS extension system, they indicated that learning is one thing but access to agricultural inputs is another thing. One female farmer remarked that NAADS does not provide those aforementioned inputs. Another farmer said:

> *When they started teaching us how best to grow hybrid Irish potatoes and exotic goats, we felt it was an important thing, just as we had suggested in our group. But after we were educated, we had a problem of accessing the goats and improved Irish potatoes. We did not put into practice what we learned because we lacked the capacity to purchase the inputs. We requested NAADS to provide these resources because learning alone was not enough if we did not practice what we learned. A little while after our request, NAADS accepted it but only supplied to six farmers out of thirty eight members in the group. We were told that the remaining members would receive hybrid goats and Irish potatoes in the next season after the first group had harvested. I saw it as time wasted because we learned good knowledge but we did not get required resources to supplement and put into practice what we had learned.*

From the farmers' perspective, new knowledge and information were not enough to enable them to comprehend and apply what they had been taught. New knowledge and technologies need to be complemented with agriculture inputs from the NAADS extension program to facilitate farmers to adopt new technologies.

Four farmers questioned the logic of spending a lot of money on NAADS advisory services through seminars and workshops. When planting season came, NAADS did not

honor their promises to provide improved seed to farmers. Of the eight struggling farmers interviewed, six did not feel that there was increased ownership in the extension program by farmers because NAADS' implementation guidelines benefited only the most influential farmers in the farmer groups.

Of the eight struggling farmers who were questioned about their visits to technology development sites (TDS), five reported having few TDS in their area but had never taken a strong interest in them. The reasons were that the TDS were far away and sometimes the farmers who were selected were not cooperative in taking the time to share information about the TDS. The selected progressive farmers complained that they did not have time to help every farmer in the village who wanted to visit the TDS, that sometimes they had other things to do besides talk to farmers who frequently visited the TDS. One farmer pointed out that she realized some benefits from the TDS by learning improved farming methods, such as soil erosion control and soil fertility management, crop management, and other production aspects.

However, the level of replication of technologies and/or practices demonstrated in TDS was low due to the high cost of the inputs, high labor requirements, and inadequate conviction about the viability of the technologies. Poor access to farm inputs discourages learning through experimentation, observation, and subsequent reflection on the learning process (Leeuwis, 2003). Leeuwis argued that farmers' triability facilitates learning through small-scale experiments. Access to farm inputs would facilitate small-scale trials that could help farmers optimize the new NAADS technologies before the same technologies are applied on a larger scale.

There was also a problem of distance between the farmers and the TDS. A farmer's willingness to visit depended on the distance between the TDS and the individual's farm. The further a farmer lived from the TDS, the less willing he/she was to visit and replicate what was demonstrated at the TDS. The average distance between the TDS and farmers' homesteads was 3 to 4r kilometers. All eight struggling farmers recommended that expanding the scope of enterprises supported by NAADS—from three to a greater variety—would be a good incentive to accommodate poor farmers, who are the majority. This might encourage more farmers to participate in NAADS activities. Six of eight struggling farmers complained the scope of enterprises supported was not representative of a poor farmer's priorities. Besides the few enterprises selected, NAADS only supplied a handful of progressive farmers; the rest were told to wait until the next season.

Summary

The findings revealed that application of new knowledge and technologies requires continuous learning, but service contractors had to work within rigid timelines. In addition, there was inadequate competence of service providers to facilitate learner-centered teaching and ongoing learning as a strategy for empowering farmers to articulate their needs.

Anderson and Feder (2003) argued that effectiveness of extension and adoptability of new technologies are dependent upon timeliness and other factors, such as agricultural inputs, improved seed supplies, price incentives, and marketing channels. These factors determine the adoptability of the new technologies conveyed to farmers by service providers. Since the majority of the farmers in Kabale are resource-poor farmers, this would be a justification for the government to invest in public extension. Government withdrawal from

public extension might entail a total abandonment of the poor and a shifting of provisions of services to well-to-do farmers (Anderson & Feder, 2003). The value of the advisory services provided by private extentionists diminishes when the provision of inputs is biased against resource-poor farmers (Axinn, 1988).

CHAPTER 5. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This chapter provides a summary of the study. It presents the purpose and objectives of the study, the methods, major findings, and recommendations for practice and further study to facilitate farmers' learning processes through agricultural extension education.

The extension program being implemented by NAADS is a new approach for farmers and policymakers in Uganda. This 25-year program was initiated in 2001 in six districts. Its mission was intended to spread nationwide. As a relatively new entity, Ugandan agricultural extension has little prior experience in evaluating its program. The overall purpose of the study was to gain farmers' perspectives on their experiences and perceptions regarding their learning processes and the application of the knowledge acquired from the learning process.

The primary purpose of the study was to gain from farmers' perspective as to whether there has been a change in behavior and action by farmers as a result of the NAADS extension program. Impact stories from farmer organizations were used to help understand the success and failures of the new approach and establish an explanation regarding what worked well, and how and what might be improved. The study also drew upon successful performance-related recommendations and implications for strengthening the future of the NAADS agricultural program in Uganda.

The objectives of the study were to explore the extension strategies used by NAADS to disseminate agricultural technologies, gain farmers' perceptions of information delivery, and understand how these factors influenced the extent to which farmers comprehended and applied the new technologies from NAADS extension program.

This research documented information gathered using qualitative methods to obtain farmers perceptions and experiences regarding their changes in the behavior and actions as a result of the NAADS extension program. Data were collected using three qualitative research techniques: (1) in-depth conversational interviews with 16 farmers; (2) structured interviews with four sub-county coordinators; and (3) analysis of secondary information produced by NAADS, comprised of evaluation reports, publications, newspaper articles, progress reports, and conference proceedings.

The strength of qualitative research rests on collecting data in a natural setting (Patton, 2002). The three qualitative design techniques were used in this study to provide the researcher with an opportunity to tell a story by capturing and communicating the participants' information regarding their experiences with NAADS extension program. From the participants' stories, the researcher was able to learn what happened, how, and what farmers gained and experienced from the extension program (Patton). This study utilized Patton's suggestion that qualitative inquiry entails "going into the field—into the real world of the program, organizations, neighborhoods…and getting close enough to the people and circumstances there to capture what is happening" (p. 48).

Limitations

Caution should be exercised in interpreting the finding of this research based on the limitations of the study. The NAADS extension program has been implanted in 37 districts and over 140 sub-counties nationwide. All the districts were different in terms of natural environment, ethnicity and culture, social economic activities, farming practices, and the level of development varied from one district to another. This study was carried out in one

district and, therefore, the findings of the study cannot be generalized to all farmers in the districts where NAADS has been implemented. However, since the majority of the population was comprised of farmers who lived in rural areas, the learning process might be applied to understand farmers in the entire nation.

Furthermore, although farmers were selected by a farmer fora and leaders' consensus, there might have been bias in the selection process. The selected participants had at least a high school education and considered themselves as progressive farmers; therefore, knowledge of who the struggling farmers might be would have been limited or biased.

The research study did not incorporate quantitative data collection tools such as random surveys. A small group of 16 farmers participated in the study. Thus the findings should not be generalized to other farmers or other farmer groups.

The study was conducted using the local language. Thus, some of the words and sayings and phases that local people used might have been lost during translation into English.

The researcher had prior knowledge of the study area which might have influenced some of the findings. On the other hand, prior knowledge of study area and its people might be an added advantage to the researcher's relationship with the farmers and to the analysis.

Findings

Findings from the study revealed somewhat mixed feelings of farmers regarding the success of the NAADS extension system:

1. Farmers perceived that working in groups provided them an opportunity to brainstorm, analyze, and identify their farming needs. However, the major drawback of the NAADS extension system is that it did not value farmer-centered learning and adult learning principles. NAADS is still a top-down approach, and service providers focused more on academic and subject matter content with little emphasis placed on how farmers learn in an informal environment. Although there was an opportunity for farmers to participate in an enterprise (crop) selection process, through farm group participation, the process was more of a popular participation, rather than a process to empower farmers to articulate their real needs and priorities.
2. The lack of competencies of service providers in implementing adult learning programs may have been a major factor hampering dissemination of technologies to farmers. Farmers criticized service providers for being too technical and rigid in their training programs. According to the farmers, the service providers designed the content, the delivery mechanisms, and the scheduling of the training programs without consulting them. The farmers were not invited to be active members in the learning process and the advisory service providers focused more on the content used in the learning process.

    Service providers need to integrate farmers in the process of behavioral change by increasing their own understanding of the ways in which farmers learn or resist learning. Farmers can draw on this understanding in order to support

communication and knowledge generation through “being by doing” (Taylor et al., 2006, p.4). Semana (1999) argued that, since extension is for educational purposes, it should engage both the learner and the facilitator in the whole process of learning. NAADS did not do enough in this respect; most of the struggling farmers were not happy with the service providers’ attitudes and actions. In particular, the farmers lamented that service providers did not respect poor farmers, initiated social interactions that favored the elite farmers, were not patient and lost their tempers very often, and showed political partiality. In addition, the training sessions were held for long periods of time, thus discouraging most women from attending.

3. The research findings from the participants showed mixed feelings regarding comprehension and putting into practice the knowledge and skills gained from the NAADS extension program. The NAADS program generally benefited progressive farmers and excluded the poor, the original target of the program. The progressive farmers already had resources that they would put into use together with the new knowledge. The poor farmers lacked the initial start-up resources that could steer them towards application of the new technologies.
4. Poor farmers lamented that the provision of agricultural advisory services alone is not enough and agricultural inputs need to accompany the new knowledge. This clearly suggests that the NAADS program and the advisory service personnel did not appropriately identify the level of farmers’ knowledge, and their problems and felt needs before embarking on teaching them how to practice better farming techniques by using their own efforts and their own available resources. Moreover, the high cost of agricultural inputs hampered struggling farmers from investing in agricultural

production. Most of the farmers proposed that NAADS should invest more on availing agricultural inputs rather than training programs. In some areas, NAADS did provide inputs yet the timing of disbursement of farm inputs, such as improved seeds, cross-breed dairy cows and goats, and agricultural advisory services to farmers did not come at the appropriate time.

5. Most struggling farmers interviewed acknowledged the importance of technology development sites (TDS) education process but complained that the location of technology development sites (TDS) were usually far from the farmers' locations in their parishes. This created a hardship for farmers to travel long distances of up to 3-4 kilometers each way. Thus, only a handful whose farms were located close to TDS bothered to replicate the technologies being demonstrated at TDS. In addition, the number of technology development sites/demonstrations was considered too few by most of the participants. Consequently, farmer awareness and replication of technologies was low.
6. Despite being given an opportunity to select their own enterprises, the farmers perceived that the NAADS policy guidelines on enterprise selection were externally driven. In addition, the enterprise selection process was more of academic and sometimes rigid for farmers to comprehend. The NAADS approach on enterprise selection contradicts the philosophy of agricultural extension, which stipulates that learning should not be forced on farmers. Farmers should participate in every effort intended to improve their own farming practices. In addition, the NAADS enterprise selection process was driven by the progressive farmers, who were more concerned

with market considerations than food security, which was the most pressing issue for struggling farmers who comprised the majority.

7. Although more farmers were visited by the NAADS service providers to disseminate new agricultural knowledge, the contracted extensionists were provided with short-term contracts and services providers did not have enough time for follow up on the learning process. Most of the farmers perceived that the services providers did not spend adequate time with them. According to the farmers, this was not sufficient since learning is a long-term process.
8. There was a sudden increase in farmer group formation after NAADS sensitization and mobilization. The sudden increase seems to have been intrinsically motivated. Most farmers were excited to form groups and had the high expectation of gaining easy access to handouts and agricultural inputs. Over time, however, many of them became disillusioned with the lack of provisions and irrelevant curriculum, and they dropped out of the program

Recommendations

Based on the research, several recommendations are made for practice and further research.

Recommendation for practice

1. Decentralization of the extension system should move from the national to the district level. Through the decentralization process, all Kabale district-based development organizations such as NGOs, CBOS, public and private service providers, and farmer group representatives should form a consortium in order to coordinate resources

(material and non-material). The decentralization process will give grassroots people power to negotiate and dialogue regarding issues that are central to improving their livelihoods. Farmers will acquire power to articulate their own needs and priorities, and this will promote and encourage implementation of their "own" ideas. In other words, farmers need to own the extension system. The challenge will lie in how to coordinate such a consortium so that it does not become excessively time consuming for any one agency.

2. Based on farmers' feedback, NAADS secretariat should consider not only restructure its implementation procedures but also its rigid policy guidelines and conditionalities. The restructuring process should be a collaborative effort that involves farmers and service providers. The philosophy of agricultural service provision should not be based on the approval of outsiders or policy makers alone, but on the approval of all concerned stakeholders, particularly the farmers who are the engine or the drivers of behavioral change. This will ensure that appropriate pro-farmer policies are designed and implemented by farmers themselves.
3. Since learning is a long-term process, NAADS should provide long-term contracts to enable service providers to interact with farmers for a period of time that is deemed sufficient for farmers to learn, comprehend, and apply the new technologies.
4. In its effort to promote agricultural production through demand driven extension, NAADS does not mention the role, and importance of education for all stakeholders (i.e., private sector service providers, farmers and other collaborators such as universities) in the process of agricultural production. Education is an important pillar in awareness, capacity building and agricultural development. This researcher

suggests that NAADS, in consultation with institutions of higher learning, should redesign a curriculum that will equip graduates with techniques to enable them to address rural farmers' needs. This can be achieved through a curriculum that embraces student-centered learning as opposed to teacher-centered learning. This will encourage what Muir-Leresche (2003) referred to as ethical, decisive, innovative adoptive and reliable graduates that have an understanding of African family responsibilities and their social, economic and cultural values. The new curriculum should endow graduates with skills and knowledge that are responsive to farmers' changing needs. Likewise, the faculty should be trained in a new learner-centered approach that promotes learner involvement in the life-long learning process that enables the learners to be independent learners and able to challenge the status quo.

5. NAADS should use the humanistic philosophy of adult education which naturally flows from the principles of adult education. This will provide farmers greater freedom of when and what to learn, based on their needs and interests for learning. In addition, farmers should participate in implementation and evaluation of the whole process of learning. The extensionist-farmers' learning methods should be multiple and flexible based on the farmers' ecological, social, and cultural contexts. This requires farmer group self-direction in learning along with individual farmer self-direction. The whole context of farmer learning should involve farmer group members with the common goal in planning learning and integrating their experiences in the whole process of extensionist-farmer learning. Service providers should facilitate a learning environment that is relevant and meaningful to promote motivation in the learning process. The researcher's suggestions conform to Thorpe's

(1997) recommendations of shifting from teaching to a new culture of learning (see Figure 4).

6. Service providers should always attempt to conduct learning activities that enable farmers to attend and participate. This can be done through establishment of technology demonstration sites in areas that are easily accessible to farmers. In addition, timing of learning sessions should be agreed upon by farmers so that they do not coincide with periods of their own activities. Determining training schedules and the duration and venues of the trainings should be the responsibility of the learners in communication with the service providers. The service providers should schedule learning sessions well in advance through announcements. This would

From		*To*
Teaching	----------►	Learning
Feeding	----------►	Finding
Subject-centered	----------►	Student-centered
Content	----------►	Context and process
Talking	----------►	Listening
Expert	----------►	Exemplar
Position of power	----------►	Personal authority
Over	----------►	With

Figure 4. Changing the lecture culture (adopted from Thorpe et al., 1997)

constitute an appropriate and conducive initial learning climate setting for farmers, especially if done in consultation with the farmers. Service providers should remain as facilitators and coordinators in the planning of the learning activities.

7. There is need for the NAADS to increase the number of technology development sites (TDS) to ensure that all farmers (through their groups) gain access and benefit from them. TDS should be located near the farmers' locations to enable them to attend.
8. NAADS should widen its scope of enterprise selection to encompass more enterprises. Currently, the top three enterprises are selected, thereby eliminating other enterprises that might be important to struggling farmers. Most farmers are excluded from the NAADS extension program because their priority enterprises are not included among those supported by the NAADS guidelines.
9. There is a need to promote regularity and greater contact between farmers and service providers to enhance farmer participation in the NAADS program, as opposed to the current one or two stop-over-style visits by contracted advisory service providers.
10. It is important for the government to subsidize the cost of agricultural inputs, at least in the early phase, because learning, alone, is not enough if farmers are not provided with agricultural inputs. Inputs should be provided as a public good to those farmers who are unable to cover the high cost of inputs since production is based on subsistence for home consumption. In addition, NAADS should identify some farmers and train them to train the other farmers. This will lead to a farmer-to-farmer training approach whereby local farmers gain experience and are knowledgeable

about each other's environment. However, there must be resources from the government to facilitate the farmer-to-farmer approach.

11. Learning is important for behavioral change. However, the biggest drawback of the NAADS extension system is that it seems not to value learner-centered instruction. Therefore, learning is not happening as it should, and behavior is not changing as it might. The findings show that advisory services focus more on the content to be used in learning (Taylor et al., 2006). Taylor and others argued that examining the meaning of the concepts of "learning," "knowledge," "facilitation," and "social change" (p. 3) is long overdue. They contended that, for any social change to take place as a result of learning, the recipients' "personal" issues are those that matter most in the process because it is the recipient who is the "source, and the driver of social change. Paying attention to the 'personal,' one is able to share learning" (p. 20). An extension agent does not necessarily need to be an expert in the subject matter or a master of technical skills; nevertheless he/she needs to have knowledge of how to work with farmers. Teaching should be based on what extensionists learn from the farmers in their fields, in other words, at the grassroots level.

Recommendations for further research

This study was a qualitative case study to gain an understanding of the extent of agricultural extension service provided by NAADS. Further research should be conducted to delve into issues raised in the current study.

1. What educational approaches are preferred by farmers with different needs and interests, gender, ethnicity and culture, and socio-economic environments?

2. What are the necessary requirements and actual competency levels of contracted agricultural advisory service providers?
3. What methods can be used by NAADS service providers that take advantage of the assets and resources (human, social financial, physical, natural, informational etc.) of progressive and struggling farmers?
4. What assets do farmers bring to the learning environment, and how might these be strengthened? Using a capital framework in future research would provide a more positive or supportive environment on which to make future recommendations.

APPENDIX A. BASIC QUESTIONS THAT GUIDED THE INTERVIEWS

ISU IRB # :	06-183
EXEMPT DATE:	March 31, 2006
Initial By:	DKA

John Musemakweri

Interview guide questions for Farmers

1. How did you know about NAADS?
2. What kind of information do you receive from NAADS, and in what format, and how often do you receive the information?
3. How has this information helped you in your farming practices?
4. Do you apply NAADS information directly or have you modified it and how?
5. What benefits have you acquired from NAADS extension education? (Tangible and intangible benefits).
6. To what extent has NAADS changed your life? (Economically, Socially, Culturally, etc...)
7. Are there changes you would like NAADS to implement? And if yes what are the changes?
8. What are the constraints/challenges/success stories and how do you deal with each constraint?

Interview guide questions for NAADS sub-county coordinators

1. Why was there a need to create NAADS program?
2. What are the NAADS implementation plans and strategies in this sub-county?
3. How do you measure success (output, impact of the NAADS) in the sub-county?
4. To what extent has NAADS program achieved its goals?
5. What are the constraints/challenges/success stories and how do you deal with each constraint?

ISU IRB # :	06-183
EXEMPT DATE:	March 31, 2006
Initial By:	DKA

John Musemakweri

Interview Guide Questions for Farmers and NAADS sub-county Coordinators

Questions for Farmers/Enyerekyerero y'ebibuzo byabahiingi

1. NAADS okagimanya ota?
2. Ni kumanyisibwa ki okworikutunga kuruga omuri NAADS kandi mungyeri ki, kandi emirundi engahi ninga buri ryaari?
3. Ebyorikwega om NAADS nobita omunkora nkoku wa byegire neinga nohinduramu?
4. Okumanyisibwa oku kukuyambire kuta omubuhingi n'oburiisa bwaawe?
5. Nibirungi ki ebyoyihire omuri NAADS (ebyorikubasa kworeka)?
6. NAADS ehindwire eta amagara gaawe? (omuby'entasya, omuby'entuura, omuby'obuhangwa N'ebindi)
7. Hariho ebi wakwenzire NAADS ehinduremu? Kubirabe biriho, nibiha?
8. Nibizibuki ninga shi bulemezi ki obw'oshangire omunkora ya NAADS kandi nobimaraho ota?

Questions for NAADS Sub-county Coordinators/Enyerekyerero y'ebibuzo byaba kodineta ba NAADS bahamagomborora

1. Ekyayetagyeise kutandikaho NAADS niki?
2. NAADS eine ntekateka ki kandi eyetekatekire eta kugita omunkora omugomborora egi?
3. Nopiima ota okuhikirira kw'ebigyendererwa bya NAADS?
4. NAADS ehikirize mungyeri ki ebigyendererwa byaayo?
5. Nibizibuki ninga ni bulemezi ki obwoshangire omunkora ya NAADS ,kandi nobimaraho ota?

APPENDIX B. CORRESPONDENCE

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Department of Agricultural Education and Studies
201 Curtiss Hall
Ames, Iowa 50011-1050
Administration and Graduate Programs 515 294-59
Research and Extension Programs 515 294-5872
Undergraduate Programs 515 294-6924

Date: March 31, 2006

Dr. Francis Byekwaso
Manager, Planning Monitoring and Evaluation Department
National Agricultural advisory services
Kampala, Uganda.

Dear Dr. Byekwaso,

I am writing to introduce to you Mr. John Musemakweri who is a graduate student in the department of Agricultural Education and Studies at Iowa State University. I serve as his major professor. I am requesting your organization to give him permission to carry out his research.

If you have any particular questions or concerns about his research, I can be reached at 515-294-0898 or by email at X1jones@iastate.edu

Thanking you in advance for your consideration and cooperation in this matter.

Lynn Jones, Professor
Department of Agricultural Education and Studies
201 Curtis Hall, Ames Iowa 50011
Iowa State University

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Department of Agricultural Education and
201 Curtiss Hall
Ames, Iowa 50011-1050
Administration and Graduate Programs 51
Undergraduate Programs 515 294-6924
Extension Programs 515 294-6924
FAX 515 294-0530

Date: March 31, 2006

Dr. Francis Byekwaso
Manager, Planning Monitoring and Evaluation Department
National Agricultural Advisory Services
Kampala, Uganda.

Dear Dr. Byekwaso,

Developing countries have invested heavily in agricultural extension, expecting increased agricultural production. Despite investments in the sector, poverty, food production and rural development continue to be greater challenges in agricultural sector. Growing up in Uganda, like any other developing countries, I have experienced these challenges. It is against this background that I developed an interest in pursuing a degree in agricultural extension education to understand how best to deal with these problems facing extension education.

I have chosen to evaluate farmers' learning process and application of the knowledge acquired from the NAADS extension program. This research also serves as a requirement for my Doctor of Philosophy degree in the Department of Agricultural Education and Studies at Iowa State University.

The primary purpose of the study is to assess and evaluate whether there have been changes in behavior and actions by farmers as a results of the NAADS extension program. Analysis and evaluation of the program through impact stories from farmer organizations and the NAADS program staff will provide evidence of how the extension program is making a difference in farmers' lives. The research will be carried out in Kabale District.

The purpose of this letter is twofold. First, is to request your permission to carry out my research with NAADS program and, second, is to request your participation in the study, arrange for an on-site visit, and accessing NAADS information, i.e., NAADS documentation and progress reports. The findings of the study will be of benefit both to the research and the Ugandan extension system. It will help the extension system in improving its delivery program wile at the time helping me fulfill my PhD program requirements. This knowledge gained will be useful for extension education facilitators and practitioners to understand better how farmers learn and apply what they have been taught.

Information from the farmers will be gathered through informal conversational interviews and selected program staff in the District. The data collection process will be from May, 2006 to December 2006. The interviews will be audio taped. The interview shall be conducted approximately for two hours and participation in this study will be completely voluntary.

I thank you in advance for your cooperation and help in this study. If you have any particular questions or concerns about this study, I can be reached at 515-294-8691 or by email at msma@iastate.edu.

Sincerely yours,

John Musemakweri, PhD Stu
Agricultural Education and St
Iowa State University, USA

APPENDIX C. HUMAN SUBJECTS APPROVAL

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office of Research Assurance
Vice Provost for Research
1138 Pearson Hall
Ames, Iowa 50011-2207
515 294-4566
FAX 515 294-4267

DATE: April 4, 2006

TO: **John Vianney Musemakweri**

FROM: Institutional Review Board,
Office of Research Assurances

RE: IRB ID Number: 06-183 **Study Review Date:** March 31, 2003

The Institutional Review Board (IRB) has reviewed the project, "Agricultural Extension Experience: Evaluation on the Impact of the National Agricultural Advisory Services (NAADS) Agricultural Extension System in Kabale District, Uganda," and declared the study exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b)(1) and (2). The applicable exemption category is provided below for your information. Please note that you must submit all research involving human participants for review by the IRB. Only the IRB may make the determination of exemption, even if you conduct a study in the future that is exactly like this study.

The IRB determination of exemption means that this project does not need to meet the requirements from the Department of Health and Human Service (DHHS) regulations for the protection of human subjects, unless required by the IRB. We do, however, urge you to protect the rights of your participants in the same ways that you would if the project was required to follow the regulations. This includes providing relevant information about the research to the participants.

Because your project is exempt, you do not need to submit an application for continuing review. However, you must carry out the research as proposed in the IRB application, including obtaining and documenting (signed) informed consent if you have stated in your application that you will do so or if required by the IRB.

Any modification of this research should be submitted to the IRB on a Continuation and/or Modification form, prior to making any changes, to determine if the project still meets the Federal criteria for exemption. If it is determined that exemption is no longer warranted, then an IRB proposal will need to be submitted and approved before proceeding with data collection.

CC: Professor Lynn Jones

Exempt Categories

(1) Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

ORA 03/06 – Exempt

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This research was made possible due to the cooperation and understanding of the Kabale district farmers who participated in the interview discussions. Their participation in the data collection was highly appreciated. I am also grateful to my editor, Pat Hahn, for being a friend as well as my editor. I appreciated her support and kind words of encouragement throughout my tenure at Iowa State. I am also thankful to many special friends, particularly Gasana, Kagame, Mutimura, Ruganbwa and Gashaija, Kagorora who helped me in several ways to fulfill my life’s journey at Iowa State University.

Finally, and most importantly, I am grateful to my wife, Dadali, and two sons, Elvis and Kevin, who have patiently endured my long absences during the completion of my post-baccalaureate degrees. My success is their success. To my sons, may you one day follow a similar path, but with fewer boulders along the way, to complete your education and fulfill your dreams!