

**THE ROLE NATIONAL AGRICULTURAL ADVISORY
SERVICES (NAADS) IN POVERTY REDUCTION AMONG
RURAL COMMUNITIES: A CASE OF AYIVU COUNTY,
ARUA DISTRICT**

BY

**MUNGULENI MANSON ALFRED
12898/61/DU**

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fulfillment of the requirement for award of Master of Arts degree in
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DECLARATION

I hereby declare that this thesis is an original and that no other university or academic institution has ever received it for any other academic or award.

Signed:

MUNGULENI MANSON ALFRED

Date:

APPROVAL

This thesis has been submitted to Kampala International University School of Post Graduate Studies for examination with my approval as the supervisor.

Signed:

Name:

SUPERVISOR

Date:



DEDICATION

I dedicate this piece of work to my parents, brothers, sisters and family members whom I had robbed of resources in the two long years in pursue of Master of Arts Degree in Development Studies (MADS).

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The completion of this thesis has been possible by the grace of Almighty God, may He be glorified.

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LIST OF ACRONMNYNS/ABBREVIATION

AAS	Agricultural Advisory Services
ADAS	Agricultural Development and Advisory Services
ATMA	Agricultural Technology Management Agency
CBFs	Community Based Facilitators
CDO	Community Development Officer
FEW	Field Extension Workers
FFS	Farmer Field School
FG	Farmer Group
FGD	Focused Group Discussion
FY	Financial Year
GoU	Government of Uganda
HH	Household
http	Hypertext Transfer Protocol
ICTs	Information, Communication and Technologies
LDCs	Low Developed Countries
LLGs	Lower Local Governments
MAAIF	Ministry of Agriculture Animal Industries and Fisheries
NAADS	National Agricultural Advisory Delivery Services
NARO-NARS	National Agricultural Research Organization – National Agricultural Research Services.
PAF	Poverty Action fund
PC	Procurement Committee
PCCs	Parish Coordination Committee
PEAP	Poverty Eradication Action Plan
PMA	Plan for Modernization of Agriculture.
PMCs	Project Management Committees.

DEFINITIONS

Attitude means the totality of beliefs and value that cause human behavior to be what it is.

Corruption refers to deviation from the accepted norm in terms of performance of ones duties particularly for personnel gains.

Empowerment refers to expansion of people's capacities and choices; ability to exercise choices based on freedom, want and deprivation; and the opportunity to participate in, or endorse, decision – making that affect their lives

Enterprise is a group of related product promoted and developed for profit

Farmer groups refers to a voluntary group of farmers (persons) that have common socio-economic needs and have agreed to work together in pursuit of solutions to these needs.

Policy refers to a course of action for dealing with a particular matter or situation. Policy decisions are thus what the organization stands for.

Programme refers to related services/projects directed towards the attainment of specific (usually similar or related) objectives.

Stakeholder refers to agencies, organizations, groups or persons, who have or will have a positive or negative interest or stake in the project.

Strategy refers to an approach to get from one situation to another or a particular plan for gaining success in a particular activity or a planned way of achieving a goal.

ABSTRACT

This study was an inspired effort to examine the role of National Agricultural Advisory Services (NAADS) towards poverty reduction in Ayivu County, Arua District.

The study was conceived under the assumption that poverty reduction through NAADS is dependent on the level of empowerment of the active poor, that the successes of NAADS programme to increase rural household income is influenced by intervening variables (namely: acceptance/attitude change, political will and economic environment).

The study adopted a case study design with more emphasis placed on qualitative methods of data collection and analysis, supplemented by quantitative method. This study was carried in Ayivu County, Arua District due to indicators of high poverty level reported in 2002 Uganda Population and Housing survey report. The study adopted a sample population of 150 respondents comprising of two sample units (30 key formants and 120 households).

The key finding were: that there were significant evidence of increased access use of improved technologies; deepened understanding of decentralization; NAADS contribution in supporting other government programmes like Universal Primary and Secondary Education, Immunization, Sanitation and HIV/Aids.

However, the results of the study showed challenges like: political interference, counterfeit inputs, corruption, inadequate funding, poor attitude, unreliable rainfall, frequent pest and disease built up, high cost of farm inputs, lack of access to agricultural finance, rain fed agriculture.

The study therefore suggests recommendations and mechanisms that NAADS programme can adopt to minimize these challenges to transform rural farmers from subsistence to commercial farming to realize improved livelihood.

CHAPTER ONE:

INTRODUCTION

I.0. Introduction

This chapter focuses on the background to the study, statement of the problem, purpose of the study, research questions, scope of study, significance of the study and conceptual frame work.

1.1. Background to the study

The evolution of public agricultural extension emerged at a worldwide point in the 1980's, one that represented the end of a major phase in the growth of public funded extension in both the developed and developing countries. The declining relative importance of agriculture for economic growth, the increasing education and use of externally purchased inputs have changed nature of publicly funded extension services and led to questioning of the means of delivery of extension services by government.

As result, many countries have examined alternative structural arrangement, including the feasibility of reducing public sector extension expenditure (with associated staff reduction, changes of extension services, privatization and commercialization (Howell, 1985). A number of countries have moved towards reducing, recovering or shifting the burden of the costs associated with provision of public sector agricultural extension. Public sector extension, facing criticism for its cost and its lack of efficiency and for not pursuing programme that foster equity, is confronted with a number of possibilities for change.

The need for improved and expanded extension activities, together with a strengthening philosophy view of less government involvement in national economies, has led to institution reform which is either market oriented or non-market oriented (Smith 1997). According to this distinction, market reforms encompass four major reforms strategies: Revision of public sector extension systems. pluralism, cost recovery and total privatization. Non-market reforms comprises of two main reform strategies: (a) decentralization, transferring central government authority to lower tiers of government and (b) delegation or transferring responsibility to other entities (Porter 2001)

In respond to the new paradigm, some countries like Chile, Colombia replaced extension delivery system with voucher, distributed by government services for farmers to use in hiring private extension consultation coupon attached to bank loans committing a certain percentage of loans for extension services. New Zealand's Ministry of Agriculture and Fisheries (MAF) agricultural advisory service now operates under user-pay (Hercus, 1991). Its employees have given up a number of public employment benefits and now receive commission for consulting work undertaken.

Agricultural Development and Advisory (ADAS) in England and Wales notionally commercialized operates on cost recovery basis which begun in 1987. Clients of ADAS pay a fee for advice which formerly was free of charge (Bawcutt, 1991). In 1990, Netherlands privatized public extension services by transferring field extension personnel, with initial government financial support, to the farmers associations. The elements of the extension services responsible for linking research and the privatized extension services policy preparation, implementation, and promotion and regulatory tasks remained under aegis of the ministry of agriculture (Le Govis, 1991). The privatized extension services are governed by board on which farmers organizations and government are equally represented (Proost and Roling, 1991).

Mexico has also developed a fee based system among large scale farmers in the northwest region and plans the development of similar arrangement among small scale farmers in the south central region (Wilson 1991). Similarly, Indonesia, and other countries adopted decentralization non-market reform strategy. In developing countries, where publicly funded extension is often more important, there has been considerable questioning of the structure and forms of extension delivery.

Against this background, governments in recent times have found that they are less able to continue providing all the services previously provided. With cost rising, limited resources available, and changes in the prevailing philosophy or appropriate extent of government intervention, governments have been slow to increase appropriations for

many publicly funded activities. Some functions of government have been curtailed and other privatized.

As result, many countries have examined alternative structural arrangements, including the feasibility of reducing public sector extension expenditures (with associated staff reduction, changes in tax raising, extension services and commercialization and privatization (Howell, 1985). A number of countries have moved towards reducing, recovering or shifting the burden of the costs associated with provision of public sector agricultural extension

In an effort to respond to the new paradigm, Uganda adopted decentralization, Government services in 1992. Despite adoption of decentralizing government services in by the local government statute, (cited in Livingstone and Charton 2001), provision of agricultural extension and other agricultural support services became the responsibility of local government in 1997 as per the local government Act. Several challenges remained. e.g. the proportion of district budgets allocated to agricultural production and marketing in district was 3% or less while the sub-county level proportion were even much smaller (Francis and James, 2003). Extension agents surveyed in Tororo district felt that decentralization had negative impact on their ability to provide extension services (Enyipu et al 2000). More generally, lack of funds and equipment to facilitate the work of extension agent is a common complaint at the LLGs (Sserunkuuma et al, 2001)

In 1997, the government of Uganda developed the Poverty Eradication Action Plan (PEAP) with the aim of reducing poverty, increasing income of the poor people and ensuring good governance. In recognition that over eight percent (80%) of the population depends on agriculture as a source of income and livelihood, the government took a step further to design a comprehensive plan to modernize agriculture as a strategy for eradicating poverty in rural areas. The Plan for Modernization of Agriculture (PMA) was the out come. PMA provides guidelines for the transformation of agriculture through seven major pillars. National Agricultural

Advisory Delivery Services (NAADS) is one of the pillars which was established by an Act of parliament in June 2001.

Objectives of NAADS programme

- (i). Increase effectiveness, efficiency and sustainability (including financing private sector participation, farmer responsiveness, deepening decentralization and gender sensitivity) of the extension delivery services.
- (ii) Increase farmers' access to and sustaining knowledge (education), information and communication.
- (iii) Increase access to and sustaining effective and efficient productivity enhancing technologies to farmers.
- (iv) Create and strengthen linkages and coordination within the overall extension Services
- (v) Align extension to government policy, particularly privatization, liberalization, decentralization and democratization.

Funding arrangements

NAADS programme funding is through 'Basket funding' estimated at US\$108 million in first phase (7 years). Development Partners contribute 80%; Government of Uganda (GoU) 8%; Lower Local Governments (LLGs) 10%; Participating farmers 2%. These shares in the budget will change over the planned 25 years of the programme. Farmers and local government will take on increasing funding responsibilities in line with the level of commercialization achieved.

NAADS Implementation

The NAADS secretariat uses not more than 12 % of the budget for national coordination, and supervision of NAADS Board and Secretariat. Districts use not more than 12 % of budget for district co-ordination, quality assurance, de-layering and district wide technology development. Lower Local Governments (LLGs) uses over 75% of the budget for contracting of Service Providers, Technology development and capacity building of participating planning, monitoring and evaluation.

1.2. Statement of the Problem

Despite governments' attempt to reduce rural poverty through NAADS, the poverty level among the rural farmers in Ayivu County, Arua District, is increasing in alarming rate. Agricultural production has declined making the population rely on foods from neighboring districts of Nebbi for beans and Aru from Democratic Republic of Congo for cereals, roots, oil and pulse crops, and livestock products from districts beyond River Nile. The persistent food insecurity has caused malnutrition, misery and poverty in rural communities. Local paper 'West Niler' of September 15, 2007, page 3, reported Chairman Arua District Local Government Council decrying food scarcity in region, quoting high prices of food in markets and large quantity of foods imported into district.

It is against this background that this study was meant to examine the feasibility of the role of NAADS in increasing agricultural production and productivity for poverty reduction by equipping farmers with educational information and modern farming technologies

1.3. The Purpose of the Study

The purpose of this study was to examine the contribution NAADS has made to farmers in Ayivu County, Arua district as response to the persistent food scarcity and reduced agricultural productivity experienced by the local population over the last 5 years.

1.3.1.The main Objective

The main objective of this study was to examine the role of NAADS towards poverty reduction in Ayivu County, Arua District.

1.3.2.The specific objectives of the studies were;

- (i) To examine the contribution of NAADS towards increasing household income of rural farmers in Ayivu County
- (ii) To analyze the challenges facing NAADS programme in Ayivu County.

- (iii) To assess the strategies adopted by NAADS Officials to address the challenges faced.

1.4. Research Questions

- (i) What is the contribution of NAADS towards increasing household income of rural farmers in Ayivu County?
- (ii) What are the challenges facing NAADS programme in Ayivu County?
- (iii) What are the strategy undertaken by NAADS Officials and address the problems faced?

1.5. Scope of Study

The scope of study here determines the geographical, content and time scope.

(a) The geographical scope

The study was carried out in Ayivu County, Arua District. Ayivu County lies between latitude $20^{\circ}31' N$ and $30^{\circ}51' N$ and longitude $300^{\circ}30' E$ and $310^{\circ}30' E$ in Arua District, North Western Uganda. It is bordered by Maracha Country in north; Vurra County in south; Terego county in East and Democratic Republic of Congo in the west. Ayivu County covers a total area of 391.19 square kilometer.

(b) The content scope

The study focused on farmer empowerment (i.e. access to advisory and information services, technology development and linkages with markets, programme management and monitoring, and cross cutting issues), challenges faced in implementation of the NAADS programme and strategies to the challenges faced. All data relevant to the case were gathered and organized to provide an opportunity for intensive analysis of many specific details often overlooked by other methods.

(c) The time scope

The study considered NAADS activities of first phase (from FY 2001/2 to FY 2007/8).

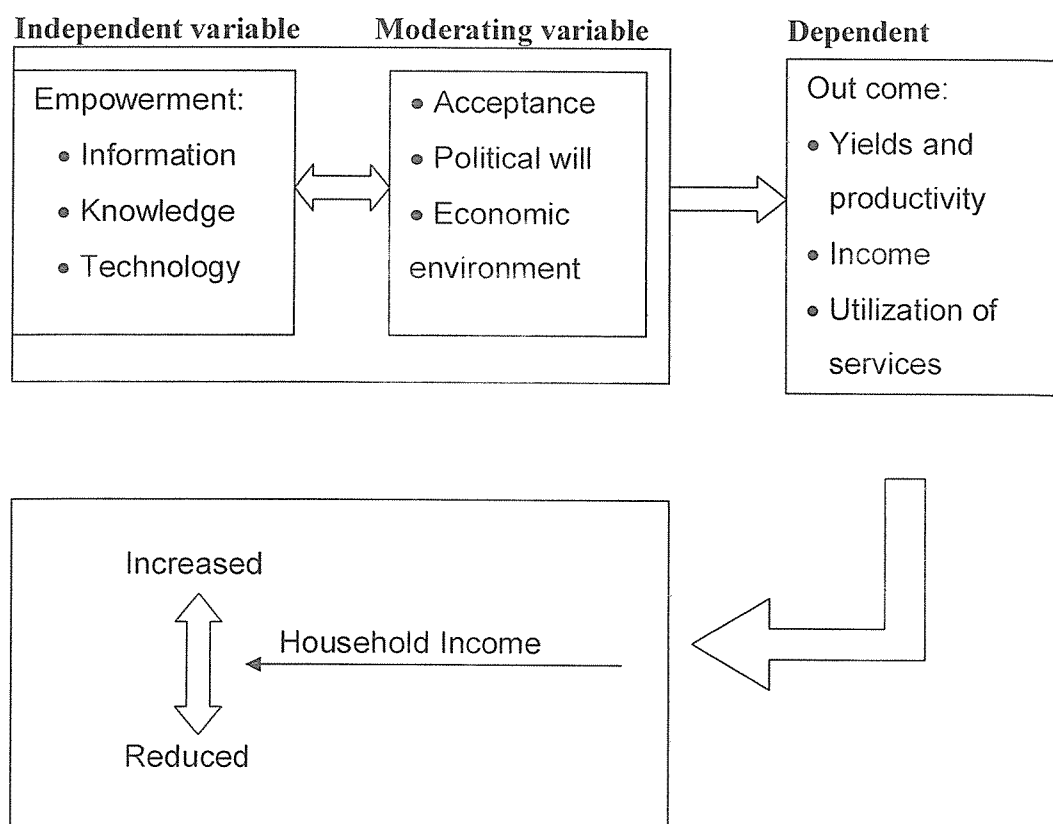
1.6. Significance of the Study

Since the establishment of NAADS in Ayivu County, Arua District, there has been no study undertaken to assess its performance. The study in question raises critical questions pertaining to NAADS activities and their roles in improving household income. The data herein generated will be of great importance to anybody interested in the area of the role NAADS in poverty reduction and its components in improving household income.

1.7. Conceptual framework

The study is conceived under the assumption that poverty reduction through NAADS programme is dependent on the level of empowerment of the active rural poor farmers, that the success of the NAADS is influenced by intervening variables. Supportive intervening variables scores positive outcome hence household income improved.

Figure 1: Conceptual framework indicating the relationship between empowerment and poverty reduction in rural communities.



CHAPTER TWO

LITERATURE REVIEW

2.0. Introduction

This chapter focuses on available literature on NAADS farmer empowerment, its challenges, strategies and recommendations.

2.1. Historical background of NAADS in Uganda

Uganda's history of agricultural extension is quite similar to that of many other African countries where various extension approaches, including: the Training and Visit (T&V) system, Farmer Field School (FFS), were tried without much success.

Failed attempts to decentralize extension, and the downsizing of public services during a period of Structural Adjustment eventually led to complete breakdown extension. At the end of the 1990s, policy makers realized, however, that an effective agricultural extension services was essential to realize Uganda's new agricultural sector policy, the Plan of Modernization of Agriculture. It also had become clear that an alternative to the traditional model of publicly financed and publicly provided extension had to be found. After studying extension approaches in other countries, most notably Latin America (Qamar 2002), a new extension model was created, the NAADS.

The NAADS (<http://www.naads.or.ug/>, viewed on 13/06/08) has the following design features:

- (i) Decentralization: In an effort to bring decision making closer to the farmers, the lowest tier of local government, the sub-county. This enhances the efficiency, effectiveness and sustainability of service delivery to farmers. It will increase farmer involvement in technology development and improve linkages. The program presents innovative approaches to delivery of services, stakeholder roles, funding and government-donor relationships, process management and organization of institutions. All these necessitate major attitudinal changes and

adjustments in working methods at all levels (national, district, sub-county and farmer).

- (ii) Outsourcing: Extension services are contracted out to private or non-governmental services providers in competitive process, using the procurement system.
- (iv) Farmers' empowerment: Farmers are encouraged to form interest groups at the village level, which send representatives to Farmers' Fora at sub-county level. These representatives of the Farmers' Fora participate in priority setting for extension activities. Importantly, they have a vote in the procurement committees that award the extension contracts.
- (v) Market Orientation: the extension services does not only concentrated on increasing agricultural productivity, but also on helping farmers to integrated into national and international markets and to link with other support services.
- (vi) Increasing cost recovery: While NAADS was introduced as a public financed service; the expectation is that farmers will increasingly be able to contribute to cost recovery by paying extension fees, thus reducing the burden on the state budget.

The NAADS programme has five components within which its anticipated outputs are defined, namely:

- (i) Advisory and Information Services to farmers
- (ii) Technology development and Linkages with market
- (iii) Quality Assurance of Services
- (iv) Private Sector Institutional Development
- (v) Programme Management And Monitoring (PMM)

In critical look at fifth component, institutions created such as Parish Coordination Committee (PCC), Sub-county Farmer For a (SFF) and District Farmer Fora (DFF) provides little checks and balance. It could have been better to create and empower Social Accountability Committee (SAC) to over see Transparency and Accountability (TAC) in NAADS implementations. SAC could be established right from

implementation to coordination levels which help in reducing costs and complication of corruption investigations.

2.2. Contribution of NAADS and other programmes toward increased agricultural production and productivity

The contribution of NAADS in poverty reduction among rural communities through empowerment –information, knowledge and technology has long being recognized as important factor in agricultural development. The assignment of extension functions to private service providers rather than local government (Carney, 1996; World Bank, 2006b) is increasing happening in many parts of the developing world. This strategy has been pursued in several West African countries (Rondot and Collins, 2002) where there have been some notable successes in Guinea. This approach is likely to have a greater impact on accountability, as the employer represents even more closely the Clientele and thus the initiative for higher quality of services are better.

In examining the contribution of NAADS on agricultural productivity, one needs to take into account that productivity improvement are possible only if a differential exists between the actual productivity on the farms and what could potentially be produced with better know-how, subject as always, to farmers' preferences and resource constraints. In the past, rapid technology advances have created a differential in many developing countries. According to Lewis (1966) productivity differential can be broadly classified into two types of 'gaps': a technology gap and a management gap. The former might entail additional investment and higher recurring cost (e.g. for inputs such as improved seeds, fertilizers) while the latter may offer the farmer a low-cost means of raising productivity by applying improved management practices. These gaps are, in the first instances, a manifestation of difference in knowledge and skills that farmers possess and best-practice knowledge and skills that exists at any point in time. Extension helps to reduce the differential between potential and actual yields in farmers' fields by accelerating technology transfer (i.e., to reduce technology gap) and helping farmers become better farm managers (i.e., to reduce the management gap).

2.2.1. Farmers' access to Knowledge

NAADS incorporated Professor Sen's (1955) view in its first Human Development Report. According to it extension has an important role to play in helping the research establishment tailor technology to the agro-ecological and resource circumstances of farmers. Extension thus has a dual function in bridging blocked channels between scientists and farmers: it facilitates both the adoption of technology and the adaptation of technology to local conditions. The first involve translating information from the store of knowledge and from new research to farmers, and the second by helping to articulate for research systems the problems and constraints faced by farmers. Moreover, it has increasingly been recognized in recent years that important innovations, for example, those relevant in natural resource management, are developed by farmers themselves rather than from agricultural research stations.

2.2.2. Farmers access to Technologies

Adoption of innovations by farmers is inevitably affected by many factors. In general, farmers will adopt a particular technology if it usefully suits their socioeconomic and agro-ecological circumstances. According to Professor Amartya Sen (1955) availability of improved technology, access to "modern" inputs and resources, and profitability at an acceptable level of risk are among the critical factors in the adoption process. Adoption can be influenced by educating farmers about improved varieties, cropping techniques, optimal input use, prices and market conditions, more efficient methods of production management, storage, nutrition, etc. To do so, extension agents must be capable of more than just communicating messages to farmers. They must be able to comprehend an often-complex situation, have the technical ability to spot and possibly diagnose problems, and possess insightful economic-management skills in order to advise on more efficient use of resources. The training extension workers receive in many cases unfortunately does not prepare them well for such demanding tasks. Likewise, the training of extension personnel is often a considerable challenge for the range of new tasks that agricultural extension is expected to address, such as facilitating market access, promoting environmental sustainability and helping farm families to cope with the effects of IV/AIDS).

Professor Sen (1955) further advanced that new technology is a major source of social change. Since modernization deals with social change from agrarian societies to industrial ones, it is important to look at the technological viewpoint. New technologies do not change societies by it-self. Rather, it is the response to technology that causes change. Frequently, technology will be recognized but not put to use for a very long time. Take for example the ability to extract metal from rock. It was not just a new technology at one time, but one that had profound implications for the course of societies. It was always there, but went unused for a great period of time.

According to Neil Postman (1972) technological change is not additive; it is ecological. A new technology does not merely add something; it changes everything". People in society are always coming up with new ideas and better ways of making life easier and more enjoyable. Technology makes it possible for a more innovated society and broad social change. What becomes of this is a dramatic change through the centuries that has evolved socially, industrially, and economically, summed up by the term modernization. Cells phones, for example, have changed lives of millions throughout the world. This is especially true in Africa and other parts of the Middle East where there is a low cost communication infrastructure. Therefore, widely dispersed populations are connected, it facilitates other business's communication among each other, and it provides internet access, which also gives greater value in literacy.

According to Zack Taylor of USAID (2003), this new technology has brought the indigenous industry into the modern age. Coir products are made from fibrous husks of the coconut. Using a new technology called the decorticator; workers can extract coir fiber in a single day. In the past they have had to soak the coconut husks in salt water for 6-8 months until they are soft enough to be separated by hand. This new method of the coir industry will improve the income opportunities of the community that was once devastated. This project is being funded by USAID.

2.2.3. Farmers access to Information.

According to World Development report (2001), the term empowerment has different meaning in different social, cultural and political context. An exploration of local terms

associated with empowerment around the world include: self strength, self power, self reliance, own choice, life of dignity in accordance with ones' values, capacity to fight for ones' right, independent, own decision making, being free, awaking and capability and so forth.

2.3. Challenges faced by NAADS in poverty reduction among rural farmers.

The challenges faced by NAADS in poverty reduction among rural communities manifests it's self in persistent poverty. Several theories have been advanced to explain challenges faced by NAADS. The minority group theory postulates that poverty is caused by the inability of the vulnerable group to fully participate in the existing economic opportunity (Rowntree, 1901). The vulnerable groups are identified as the women, youth, sick, old and unemployed. Sociologists led by George explain poverty in terms of the behavior and attitudes of poor themselves (Social Darwian theory of poverty). According to them the poor are poor because they did not work hard. They have no ambition and inner call for work (cited in Matza, 1966).

Everywhere the poor made up the "dangerous classes" living in "regions of squalid want and wicked woe" (cited in Matza, 1966). Both Mathus and Herbert Spencer (1972) though that only hunger could teach the poor civility and subjection (Townsend, 1972). A more recent proponent of this view has been the US new right. George Gilder, Murray and Richard Herrnstein (1968) have argued that the poor are genetically blue printed to be at the bottom of the social hierarchy. The poor are poor because they have low Intelligent Quotient (IQ) and low mental capacity and biological destined to be poor. The welfare system that underwrites this human substratum of deviance is a sheer wastage of resources and should be dismantled (Kerbu, 1996)

The Situation theory of poverty holds that the poor behave differently because they do not have the resources and opportunities for adopting the middle class life styles. Young people have few opportunities to go to college and so they drop out. Women prefer matrifocal family because it allows them have greater claim upon their children.

The Situational theory gives importance to the structural conditions that give rise to poverty, but it also tends to focus upon the individuals responses to the objective situation of poverty.

2.3.1. Donor Dependence Syndrome

In developing countries, contracting out usually still entails considerable public funding even if the provider is private (e.g. in form of the government funded vouchers or other government funding such as reported by Keynan, Manuel and Dunar (1997) and the consequent un-sustainability of extension operations, are common in the extension literature (e.g., Howell 1985, Röling 1986, Ameer 1994, Feder, Willett and Zijp 2001, Hanson and Just 2001). Purcell and Anderson (1997) cited funding shortfalls as such a common phenomenon that over 70% of the extension projects in their sample of Bank-supported operations faced “unlikely” or “uncertain” sustainability.

The T&V model of extension organization was promoted by the World Bank between 1975-1995 as a national public extension system, with application in more than 70 countries (Anderson, Feder and Ganguly 2006). The T&V design attempted to tackle directly or indirectly some of the weaknesses highlighted above. But some of the modifications exacerbated other weaknesses, and the ultimate result was a widespread collapse of the structures introduced. The World Bank funds NAADS 80% (Nahdy 2007).; according to history of T&V, long life of its implementation is questionable.

2.3.2. The Cost-Recovery

The rational of cost-recovery, which may or may not be combined with contrasting out, is two fold. On the one hand, cost recovery aims at addressing the fiscal sustainability problems inherent in publicly funded extension. On the other hand cost recovery is expected to make extension more demand driven, as clients are expected to exercise voice if they pay for the services (Gautam, 2000). However, cost recovery may further exclude poor farmers and marginalized groups (Heeskerk and Wennink, 2005)

2.3.3. Human Resources

Large farmer-to-extension agent ratios make it is a difficult task to develop channels by which individual farmers, including women farmers and marginalized groups, can in fact exercise voice and hold extension providers accountable. Farmers' organizations that follow internal principles of democracy play an important role in this regard. Even though recent figures are unfortunately unavailable, one can assume based on earlier surveys that typical farmer-to-extension agent ratios are in the range between 1,000 and 2,500 to 1 (Swanson, Farner and Bahal 1989).

The challenge of reaching farmers is complicated further by the fact that farmers' information needs vary even within a given geographical area due to variations in soil, elevation, microclimate and farmers' means and capabilities (Holloway and Ethui 2001). The large size of the clientele inevitably leads to a situation where only a limited number of farmers have direct interaction with extension agents. Since direct contacts are rationed, agents often exercise selectivity as to which farmers they interact with, and the selectivity often manifests preference for larger, better endowed, and more innovative farmers, who can provide some in-kind payment. This sort of supply-side rationing is exacerbated by self-selection on the part of farmers, where those with a higher value (larger demand) for information tend to be large-scale farmers, with better opportunities to take advantage of information. Needless to say, resource poor socially disadvantaged female farmers often are among the more neglected categories.

2.3.4. Politicization of Programme

In more than one-half of the projects reviewed in a World Bank retrospective, an "entrenched top-down" attitude by staff was noted, and, not surprisingly, three-quarters of failed extension projects were characterized by such conduct (Purcell and Anderson 1997). This pattern of behavior has been common in both more- and less-developed countries, and is derived from a common distorted incentive system, as reviewed by Anderson and Feder (2007). The farmers are the only ones who can relatively easily observe the quality and effectiveness of the extension service they receive. In the absence of mechanisms to implement accountability to farmers (which would improve the effectiveness of extension), incentives are distorted.

2.3.5. HIV/Aids Epidemic

Some 40 million people are affected by HIV/AIDS worldwide of whom 95 per cent live in developing countries, 28.7 million in sub-Saharan Africa and 7.1 million in Asia. The epidemic has killed millions of people. According to an estimate World Health Organization report (2005), about 32 million people are currently infected with HIV, and the number is spreading fast. In 2001, AIDS killed over two million people, and may kill additional 70 million in the next 20 years unless drastic measures are taken to effectively end this invasion of death. There are indisputable, negative effects on manpower, resulting in the loss of trained, skilled and experienced workers in all disciplines. Farm labour, plentiful in the past, is diminishing fast.

The epidemic has also affected agricultural extension organizations in the sense that not only there have been deaths and long absenteeism among the staff but also the old, traditional extension approaches have been rendered unsuitable. This is due to the fact that the current cropping patterns have been changed due to weakening physical condition of farming population, emergence of "new farmers" comprising elderly, widows and young children, unsuitability of current farm tools, and unsuitability of existing rural credit approval criteria. Extension organizations in the countries affected by HIV/AIDS, especially in the sub-Saharan Africa, have to come up with fresh extension strategies, supported by modified farming systems and appropriate farm tools.

2.3.6. Effects of Privatization.

Several effects of the privatization can be distinguished, according to Duijsings (1998), Tacken (1997), and Proost and Röling (1992). Under privatization, farmers sound better than government. Farmers can choose the best available source of advice. They are more particular about quality, and they expect information from advisory services to be clear, practical and applicable immediately. Farmers are looking for custom-made knowledge and information that fits their farming situation and specific needs.

Money increases the effectiveness of the information, although no large-scale research has been undertaken so far. But farmers report that they treat the information in a

different way, now that they have to specify their question to the advisor and have to pay for it. Privatization also has effects on other suppliers of knowledge and information in the agricultural sector; financial arguments are dominant over administrative (Proost and Matteson, 1997). Of course, competition may lead to a spectrum of different information sources, and also to doubling of efforts.

One criticism of the current system is that the agricultural knowledge and information system in the Netherlands which has always been characterized by an openness of information flows and strong linkages between actors, has become less so as a result of the process of privatization and commercialization (Proost 1997). Another criticism is that farmers in remote areas, those growing a minor crop, or those who cannot afford to pay for information are not served by the privatized organizations.

According to H. Chenery (1956) privatization has provoked all sorts of initiatives by farmers' organizations. Some have created an information service for their particular conditions. Others, like growers' associations, employ their own advisor or develop internet sites. In the transfer of knowledge and information, topics for which no interest is shown from the side of the clients will disappear from the 'menu', although they may be relevant for society as a whole -- like some of the environmental issues in the Netherlands. In short, privatization has had a major influence on agricultural targets, target groups, issues, methodologies and exchange of information. Money has become the decisive factor.

2.3.7. Forces of Bad Culture

People of varying backgrounds often have different belief and value systems which give rise to dissimilar attitudes (Rathus and Nevid 1987). Beliefs and values form a basis of attitudes towards technology (Pancer, George and Gebotys 1992; Gardner, Dukes and Discenza 1993). Therefore varying backgrounds and belief systems contribute to an individual's attitude towards a technology.

Belief systems also contribute to attitudes towards innovation adoption rate. A study contrasting early innovation adopters and the later majority concluded that not only do

early innovation adopters use new products more, but also seek new applications of the innovation more than later adopters (Ram et al., 1994). The authors point out that usage rate may be linked to individual perception of the technology.

Currently there are various schools of thought that have advanced theories and approaches to the causes of poverty in rural setting. These include:-The “culture of poverty” these suggest, that poor are poor because they have a certain culture of their own and this culture prevent them from achieving success and prosperity. The concept of a culture of poverty which was introduced by an American anthropologist Oscar Lewis (1998) as a result of studying the adult poor in Mexico and Puerto Rico constitutes “design living” that is passed on from generation to the next. This theory suggests that the poor have values and ways of life that differ from that of the rest of the society (Townshed, 1999). It further suggest that the poor have culture of poverty which prevents them from succeeding in society and stops them from taking advantages of opportunities to break away from poverty. This theory emphasizes laziness, thoughtlessness, irresponsibility, dishonesty, indiscipline, extravagance, apathy, submissiveness, hopelessness and female centered as some of the causes of poverty.

The culture of poverty perpetuates itself and is passed from one generation to another. The poor produce children amid poverty and most likely their children produce poor children. The theory emphasis personal character of poor as being responsible for the continued existence of poverty.

Sociologists led by George (1965) explain poverty in terms of behavior and attitudes of the poor themselves (social Darwinian Theory of poverty). According to them the poor are poor because they did not work hard; they squander money on gambling, drinking and unnecessary luxuries and they have disorder of family life. They have no ambition, inner call for work. They are fatalistic and suffer from “an intractable in educability” as the Brock Committee phrased it (cited in Matza, 1966:294)

The Neo-classical marginal distribution theory postulates that all factors of production (land, labour, capital and others) taking account of their quality difference are in scarce

supply and that their rate of return are set equal to their difference in the marginal distribution of economic and political power in society are the cause of poverty. For instance, if the marginal product of capital is high but access to capital is limited, then poverty tends to be severe. Technological progresses are regarded as the most important factor in progress of economic growth. They are related to changes in the methods of production which are the result of some new technique of research or innovation. Adoptions of technology lead to increase in production.

Kuznet (1966) also traces five distinct patterns in the growth of technology in modern economic growth. They are a scientific discovery or an addition to technical knowledge, an invention; an innovation; an improvement and spread of invention usually accompanied by improvements.

Like Schumpeter (1966), he regards innovation as the most important technological factor in economic growth. In modern economic growth the five factors, mentioned by Kuznet, have helped in the development of technology. Kuznet points out that, LDCs must import modern technology to accelerate their productive capacity in the short run because they cannot wait until they themselves invent or modify the technology of advanced countries. But as they adopt improved technology, they must develop their indigenous technical skills. It is a misnomer that all modern technology is capital intensive.

Schumpeter (1966) regards entrepreneurial ability as a focal point in the process of economic development. Entrepreneurial ability is important feature in technology adoption. In Low Developed Countries (LDCs) entrepreneurship is inhibited by the social system which denies opportunities for creative faculties. The force of custom, the rigidity of status and distrust of new ideas and of the exercise of intellectual curiosity, combine to create an atmosphere inimical to experiment and innovation.

2.3.8. Poor Research-Extension Linkages

A review by the World Bank of a large portfolio of extension projects (Purcell and Anderson 1997) pointed out that research-extension linkages were generally weak, and

neither research nor extension was sufficiently conscious of the need to understand the constraints and potentials of the different farming systems as a basis for determining relevant technology and technology development requirements. Consequently, the inadequate research-extension links and poor technology foundation led to adverse outcomes in a large proportion of the projects reviewed, and claims of insufficient relevant technology were frequently found.

2.3.9. Discrimination against Women in Extension Services

There is widespread discrimination against women in extension services and agricultural innovation. The most systematic study of the effect of extension services on rural women was carried out by Kathleen Staudt (1987) in Western Kenya. She noted, among things:-

- (i) Women have few agricultural extension services directed at them.
- (ii) Capable women were being ignored for innovative men.

In a similar vein, Fortman noted in Tanzania “the conventional wisdom that woman cannot reason as well as men reduces any incentive for working with women.

This lack of attention is due to discrimination; it is not because women are inferior farmer. The history of this neglect of women farmers can be traced back to mission and colonial times, and in most places unfortunately, continues in the post-colonial period. The discrimination systematically blocks women’s access to critical knowledge and inputs which could help them improve their productivity.

2.3.10 Income Inequality

In the 1950s and 1960s, the thinking on income equality and growth was influenced by Kuznets U shape curve (1955). Kuznet suggested on the experience of the developed countries that historically there was a tendency for income inequalities to increase first, and then to be reduced as countries developed from low level. Accordingly, Kravis (1963) believed that a high degree of inequality in the distribution of income had a favourable effect on economic growth in the early stages of development and as development gained momentum, its benefits would automatically ‘trickle down’ to the lower income and grows over the long run. So this approach emphasized the maximization of the growth rate of the economy by building up capital, infrastructure

and productive capacity of the economy, and leaving the income distribution untouched.

Lewis (1955) was the principal supporter of this view. He outlined the process through which income inequalities led to the economic growth of the 19th century England, 19th century Western Europe and early 20th century Japan. He advocated the same for Low Developed Countries (LDCs)

However, this is not a correct view in context of developing countries. Perpetuation of income inequalities is no condition for rapid economic growth. Unlike the developed countries, the conditions in developing countries are such that income inequalities are not necessary for their economic development. There is no guarantee that the wealthy classes in such economy will utilize their saving in productive channels. Inequalities retards development, therefore, prudence demands that efforts should be made to raise the incomes of the majority of the people.

2.4.0. Strategies adopted by NAADS in addressing the Challenges faced.

The strategies mechanisms adopted by NAADS in addressing the challenges to bring needed extension services to the poor, particularly among over disadvantaged and needy groups, such as female-headed households is clearly much to be done.

2.4.1. Increasing Cost Recovery

While NAADS was introduced as a publicly financed service; the expectation is that farmers will increasingly be able to contribute to cost. Contracting out and increasing cost-recovery can also be seen as an avenue to full privatization. An example is Chile's experience with privatized extension, where government-funded contracts were expected to be gradually reduced as farmers' cost sharing would increase. However, this case also shows that willingness-to-pay may be slow to materialize (e.g., Cox and Ortega 2004).

There is, however, a variety of other private-sector extension approaches, which have emerged in recent years, often without specific government intervention. Input

providers play an increasingly important role in providing advice. Another form of extension that is gaining increasing importance is that of embedded services. In vertically integrated market chains, for example, companies combine extension with contract farming as it is in their interest to assist farmers in achieving required quality standards.

2.4.2. Combine Reform Model

To exploit the opportunities of decentralization and overcome the problems of implementation, some countries have also tried to combine decentralization with other reform models. An interesting example is India. The Agricultural Technology Management Agency (ATMA) model, which was introduced in two World Bank-assisted projects beginning in the late 1990s (e.g., Singh, Swanson and Singh 2006, World Bank, 2006b, IAP 3.2), combines decentralization with a strong coordination across different line departments, and with the involvement of farmers' groups, private-sector representatives and NGOs in decision making on extension (Swanson and Samy, 2003). The model is judged by many as a major success in extension reform. After a modest beginning in a few states, it has by 2006 been adopted in some 60 districts, about 10% of all in India over just 5 years, and (as discussed in the following section on evaluative evidence) is slated to be extended to all 600 rural districts within the next five years (Swanson 2006, p.14), supported by a centrally-funded government scheme.

The pioneering approach of extension reform in Africa in Uganda's NAADS system (World Bank, 2006) like the ATMA model; this approach combine's decentralization with the involvement of farmers' organizations and a strong market orientation. However, unlike the ATMA model, in which extension services are provided by public-sector extension agents, the NAADS model involves contracting out of extension provision to private sector firms or NGOs.

The mentioned Ghana policy involves similar design features. China, which operates the largest public sector extension system in the world, also decentralized extension in combination with a variety of other approaches (Nie Chuang and Feng Yan (2003), Hu and Huang (2006).

2.4.3. Use of Modern Information, Communication And Technologies (ICTs)

The declining costs of ICTs are giving farmers and rural people in developing countries much greater access to information. The situation is exemplified by the spread of mobile telephony, instructively surveyed by *The Economist* (2005): e.g., China has about 60 percent mobile coverage; India yet only about 20 percent but expanding quickly; and in Sub-Saharan Africa about 9 percent of the population is a mobile phone subscriber. In Uganda the data are exceptional, where the mobile phone network coverage increased from 36 percent in 2003 to 92 percent in 2005. The increased coverage, rather than the possession of individual mobile phones, induced market participation by reducing transaction costs in crop marketing and increasing the prices received for sales, especially for perishable goods. Food-net, a multi-partner public network in Uganda, collects the latest market price information for coffee and maize, which farmers can access at very low cost through a Short Message Service (SMS). Farmers can also use ICTs for accessing extension advice from a range of sources, but it takes time to develop demand-driven services.

While ICT-based models of advisory services, such as online advice, have become common in industrial countries, these technologies have great potential for developing countries (e.g., Gao and Li (2006) and Ramachander and Jhunjhunwalla (2006) provide insightful analyses of the rapidly changing Chinese and Indian situations, respectively). An interesting approach is the e-Choupal model in India, which has been developed by the Indian Tobacco Company (ITC). An e-Choupal is a village Internet kiosk run by a local farmer, which helps villagers to access free of charge information on farm practices, weather, and prices of inputs, services and outputs. This model was launched in 2000 and by 2005 comprised 4,000 e-Choupals serving 2.5 million farmers in six states (Umali-Deininger 2005).

Another example of using the Internet in India is the fee-based and-Logue model of Ulagapitchampatti. Farmers can show crops affected by diseases to a web camera and receive advice on treatment (Bhatnagar 2005). Despite the huge potential of new ICTs, better use of old, low-cost, methods should not be neglected, such as community radio (diverse experiences are reported in id21 2006), and as experience with pest

management in Vietnam has instructively illustrated (Heong et al. 1998). Policies to improve access to ICT in rural areas need to focus as much on content and education as infrastructure. Education is one of the key factors affecting the returns to ICT in agricultural production, together with electricity, roads, and appropriate business models (Lio and Liu 2006).

2.4.4. Stratification of Extension

The stratification of extension systems by type of clients within the country could take care of disadvantaged smaller-scale and poorer farmers. As pioneered in Chile, for instance (River and Alex 2000) smaller-scale and poorer farmers may be served by public extension or by formants of contract extension receiving larger shares of public funding (e.g., an association of smaller farmers receives a larger matching allocation to hire extension staff). In such ways, the particular needs of women farmers, for instance, may be addressed, at least in principle. In all the contemporary efforts to make agricultural innovation systems more demand-driven (Chipeta 2006), there is a great need to pay attention to how underprivileged farmers' and especially women's demands can be better represented (Gladwin 2002, Blagden et al. 2006, Rangnekar 2006).

2.4.5. Market Place for Africa Information Services (MPAIS)

MPAIS is an online knowledge bank and trading area for agricultural information and advisory services in Uganda. The Uganda Plan for Modernization of Agriculture places emphasis on a private sector led economy through commercialization, private sector participation, decentralization and broader participation of multiple actors in the provision of agricultural services including research and extension. The MPAIS project, therefore, explored the opportunities to stimulate a market for agricultural information services in the rural areas by providing profitable opportunities for a variety of firms, NGOs and others to meet the growing demand for extension service providers for quality information advice, training and other products. The results of this pilot project were to inform and guide policy formulation and create the foundation for possible wider implementation. MPAIS was a pilot project being implemented jointly by Africa 2000 Network Uganda, Infobridge Foundation (the Netherlands) and Source KM (United Kingdom)

2.4.6. Institutional Development.

Srinivas Melhote (2001) argues that, while social and institutional evolution is considered necessary for modernization, it cannot occur unless individuals change first. Weiner (1966) believed that attitudinal and value changes are prerequisites to creating a modern, socio-economic policy. Also, Stan Burkey (1993) argues that development is a process by which an individual develops self-respect and becomes more self-confident, self-reliant, co-operative and tolerant of other through becoming aware of his/her shortcomings as well as his/her potential for positive change. Which takes through working with others, acquiring new skills and knowledge and active participation in the economic, social and political development of the community (Stan Burkey, 1993). To Cees Leeuwis extension services draws heavily on communication as strategy for furthering individual aspiration.

The impulse to individual modernization, to David McClelland (1966), consists in part of a personal variable and in part of a social virtue-interest in welfare from others. McClelland was interested in identifying and measuring the variables that might be the impulse to modernization. Thus according to Hagen the impulses for socio-economic development were sustained by creative individuals whose ancestors had suffered withdrawal of status respect. Hagen used the concept, withdrawal of status respect, to show that creative individuals reject traditional values, take on new roles and become innovative thus influencing social change.

According to Alex Inkeless (1966) transformation of individuals is both a means to and end in itself of development process. Inkeles used nine attitude items to construct standard scales of modernity, which has later used to identify the character of a modern person: He argues that a modern person has readiness for new experiences and openness of innovation, disposition to form and hold opinions, democratic orientation, planning habits, beliefs in human and Personal efficacy, belief in that word which is calculatable, stress on personal and human dignity, faith in science and technology and belief in redistributive justice (Alex Inkeles, 1966). Development in any meaningful sense must begin with and within, the individual. Unless motivation comes from within,

efforts to promote change will not be sustainable by the individual. The individual will remain under the power of others (Stan Burkey, 1993)

2.4.7. Power and Knowledge

Sociologists usually define power as the ability to impose one's will on others, even if those others resist in some ways. By power, "it means an opportunity existing within a social relationship which permits one to carry out one's own will even against resistance and regardless of the basis on which this opportunity rest" (www.keepmedia.com). The imposition need not involve coercion (force or threat of force). Thus, "power" in the sociological sense subsumes both physical and political power, including many other types. In some ways it closely resembles what everyday English-speakers call "influence". More generally, one could define power as more or less unilateral ability (real or perceived) or potential to bring about significant change, usually in peoples lives, through the actions of oneself or of others (www.keepmedia.com)

The Cornell Empowerment Group, 1989 (Srivivas et al 2001) looks at power as an intentional, on going process centered in the local community, involving mutual respect, critical reflection, caring and group participation, through which people lacking an equal share of valued resources gain access to and control over those resources (cornmell Empowerment Group, 1989). Thus, power is the mechanism by which individuals, organizations, and communities gain control and mastery over social and economic conditions, over democratic participation in their community and over stories (Rappaport, 1988)

Rural people have an intimate knowledge of many aspects of their surroundings and their daily lives. Over centuries, people have learned how to grow food and to survive in a sometimes difficult environment. They know what varieties of crops to grow, when to sow and weed, which plants are poisonous and which can be used for medicine, how to cure disease (www.panasia.org.sg/irr/ikmanual).

To Bengtsson (1979) rural development takes place in the political context and it means nothing but a social transformation in rural areas by which poverty is eradicated through attacking the existing power structure. But this has not been conspicuous in the past development thinking which has assumed a social framework that will change without conflicts.

Amantya Sen argues that there is an extensive interconnection between political development, understanding and the fulfillment of economic development needs. He suggests that the connections are not only instrumental but also constructive as social economic development depends crucially on open public debates and discussions to empower people.

Freire 1973 argues that the major sources of oppression are educators and communicators whom aim to bestow their knowledge on ignorant and passive recipients or students. This system of banking education merely reinforces existing power structures and does nothing for the empowerment, awakening and liberation of their oppressors or oppressed (Freire, 1973). Friere argues that the system of banking education, persuasive communication and similar processes need to be replaced with emancipatory dialogue, dialogue grounded in equality, mutual trust and affirmation. To the extent that oppressors participate in dialogue, they will be liberated as well as the oppression of other humans is dehumanizing to all involved (Freire 1973). To Speers and Hughey (1995) power is exercised by influencing or shaping the shared consciousness of a people, community, or nation.

2.4.8. Commercialization and Agri-Business

Srinivas Melhote (2001) argues that, while social and institutional evolution is Commercial agriculture has been practiced for centuries in all parts of the world, by individual farmers holding vast pieces of land, by colonial powers in their respective colonies, by socialist and communist regimes through state farms and cooperatives, and by commercial agricultural companies, both national and international. Millions of subsistence farmers have rarely participated in commercial agriculture due to the fact

that they produce barely enough for their own consumption, and in some very favourable cropping season, produce a bit surplus for marketing.

However, currently, there is an all out force aimed at commercialization of farming even at small scale. There are questions, both ethical and technical, whether it makes sense to let the subsistence farmers continue as they have been doing for generations, or whether their operations should be transformed towards agri-business, rural enterprise, rural industries, or commercialization. These questions seem to be valid in light of the evidence that rural poverty has persisted, if not worsened, and in many countries rural young people, unlike their parents, are less inclined to stay in villages and continue farming.

Appropriate agricultural policies and land consolidation laws will be required if privately owned and cultivated small units of land are to be combined or merged to create larger, commercially viable plots. The agricultural extension services will have to come up with the strategies that could help subsistence farmers in organizing themselves for commercializing their operations profitably, without losing the pride of land ownership.

2.4.9. Democratization and Participation

The civil society is advocating, more than over, why democracy, participatory decision making, transparency in government affairs, and good governance are necessary for eradication of poverty, uprooting of corruption, relatively equal distribution of benefits among various sections of society, welfare of disadvantaged and vulnerable groups, optimum utilization of human and physical resources, sustainable livelihoods, and overall human development. Even the economic aid to be given by bilateral donors to poor countries, in many instances, has been tied with the government records on human rights and good governance. These powerful forces are challenging the ages old traditional practices in almost all walks of life, at household, national and international level, in political, economic, and social terms.

A large number of strategies have evolved during recent years which supposedly ensure participatory decision making and involvement of all stakeholders in joint planning and

implementation. The agricultural extension services, and for that matter, all grassroots level service institutions have been influenced by these conceptual thrusts. However, the national agricultural extension systems in most developing countries have still to learn to translate the concept of farmers' participation into action. This is because most of them have been following for decades the top-down models of extension.

2.4.10. Participatory, Planning, Monitoring and Evaluation

In Netherlands, participatory monitoring and evaluation is important tool in assessment of project (Gladwin 2002). If the client is the center of activities, monitoring of clients' appreciation is of vital importance. An advisor has to verify whether the service met expectations, but the organization also has to check if the service was up to standard. Under the slogan 'we are satisfied if you are satisfied' questions are asked such as: did the advice answer your question? did you follow the advice? how satisfied are you with the advice?

Earlier extension projects yielded evidence of accountability failures in many cases (e.g., Farrington et al. 2002). Little attention was given to the introduction of systematic participation by the farming community in problem definition, problem solving, and extension programming (e.g., Katz 2002). In more than one-half of the projects reviewed in a World Bank retrospective, an "entrenched top-down" attitude by staff was noted, and, not surprisingly, three-quarters of failed extension projects were characterized by such conduct (Purcell and Anderson 1997). This pattern of behavior has been common in both more- and less-developed countries, and is derived from a common distorted incentive system, as reviewed by Anderson and Feder (2007).

Farmers are the only ones who can relatively easily observe the quality and effectiveness of the extension service they receive. So it's important that they should be involved right from planning, implementation, monitoring and evaluation.

2.4.11. Decentralization

Decentralization of extension is a widely used approach, as it is linked to a general trend of decentralization in developing countries (e.g., World Bank 2006b, Boxes 3.10-12 and related text). Several Latin American governments undertook decentralization of extension in the 1980s and 1990s, and more recently this approach is being initiated in many Asian (e.g., Qamar 2002) and increasingly also African countries. The main expected advantage of the general approach is in improving accountability, especially if agents become employees of local government, which (if democratically elected) can be expected to be keen on receiving positive feedback on the service from the clientele-electorate. This was expected to improve extension agents' incentives, and induce better service. Improved management capacity is another advantage, as the scale of the operation is reduced for each decision-making unit.

Political commitment may be stronger as well since the clientele is closer to the political leadership, and this can lead further to improved fiscal stability. The combination of these rationales has compelled policy makers in many countries, including some large ones such as China and India (as noted below in other contexts), to embrace decentralization as a central element of reform (e.g. Suleiman and Hall 2006, Swanson 2006).

CHAPTER THREE

METHODOLOGY

3.0. Introduction

This chapter focused on the research design, area of study, sample selection, instrument used, data collection, data quality control, data processing and analysis.

3.1. The Research Design

The study design used in this research was a case study. A case study design was chosen to facilitate an understanding of household income situation and provide a basis to apply solutions to situations. Both qualitative and quantitative data collection methods were used because the data collected included both numerical and the qualitative nature.

3.2. Area of Study

This study was carried in sub-counties of Aroi, Adumi and Pajulu in Ayivu County, Arua district which started implementing NAADS from its first phase since 2001/2. Ayivu County was selected for study due to indicators of high poverty level as revealed in 2002 Uganda Population and Housing Survey report; among which include: - high population density (487 people per square kilometer), high number of orphan hood status of less than 18 years old (10,654), high disability status (167,316 persons), high death rates, high malnutrition, food insecurity, high school drop outs. The area of study has projected total population of 203,700 and 33,966 Households (*Source: Arua District population Office report March, 2008*)

The following parishes constituted area of study: Michu parish (672 HH) in Aroi sub-county, Lufe parish (617HH) in Manibe sub-county, Komite parish (599 HH) in Pajulu sub-county and Nyiovurra parish (1281) in Adumi sub-county.

3.3. Population of Study

The study adopted a sample population of 150 respondents comprising of two sample units; 30 key informants and 120 households (HHs). (see working calculation: WK1).

3.4. The Sample Selection

Two sample selection methods namely purposive and stratified random selection samplings were used for this study. The steps below indicate how the samples were selected

Step 1.

The 30 key informants (10 NAADS Officials, 10 Public Service Providers and 10 Private Service Providers) were selected by use of purposive sample technique. These key informants were selected based on their knowledge ability of subject under investigation.

Step 2.

The population of 120 HHs was selected and stratified as male headed HHs to female headed HHs in ratio of 5:1 (*source 2002 Uganda Population and Housing Census*). The selection was made easy by use of farmers' registration book available at the Sub-county head-quarters. Then, 30 HHs were selected by use of simple random technique per sub-county.

Figure 2: The category of respondents.

S/No	Category of Respondents	Total
01	Key Informants	
	(i) NAADS Officials	10
	(ii) Public Service Providers	10
	(iii) Private Service Providers	10
	<i>Sub-total</i>	<i>30</i>
02	HHs Respondents	
	(i) Female headed HHs	20
	(ii) Male headed HHs	100
	<i>Sub-total</i>	<i>120</i>

3.5. Data Collection Methods

Several methods of data collection were adopted and these included: interviews, observation, questionnaire and documentary analysis method.

3.5.1. Unstructured Interview

In this research, unstructured interviews were used to elicit information from the HHs and other key informants who could find time and interviewed using a document called an interview guide which gathers information from them on the contribution of NAADS towards poverty reduction in Ayivu County.

3.5.2. Questionnaire Method

A questionnaire method was used due to fact that most of the Key Informants were busy and could not have time for interview and therefore preferred a questionnaire. AS result a list of questions were developed in line with specific objectives and administered by the researcher assisted by research assistant.

3.5.3. Observation Method

Observation was used as additional method of data collection. The method was used to supplement and validate data from the interview technique to capture silent and sensitive issues. The observation list was designed to collect data from the respondents. The following were some of the observation schedules: - health, environment, plant protection and soil and water conservation

3.5.4. Documentary Data Analysis.

This was a supplementary method of data collection that the researcher used to obtain data from the respondents. Secondary documents such as work-plans, physical progress reports, review reports, Participatory Monitoring and Evaluation (PME) reports, legislation and policy papers were reviewed.

3.5.5. Focused Group Discussion

This was another supplementary method of data collection that the researcher used to probe more information from respondents. The focused group discussion was done with service providers and farmers. The guiding questions in this technique were formulated in line with specific objectives of the study.

3.6. Data Quality Control

It was necessary to control quality of data to minimize errors. This was done through pre-testing questionnaires before reaching final respondents. Pre-test was done with six colleagues. Thorough screening was done to remove errors, repetition to obtain consistent and accurate final questionnaire which were administered to the selected final respondents.

3.7. Data Processing and Analysis

Various procedures were used to get meaningful results from the raw data. The procedure used included editing, coding and tabulation.

3.7.1. Editing

Data was given a thorough check both during field work and after. In the field, data were scrutinized to check omissions, inconsistencies, illegible writing and other errors to make sure that the questionnaires were completed in every respect and that the information supplied were consistent and accurate.

3.7.2. Coding

The data from the field were coded by classifying all the responses gathered. In the process of coding, the responses were translated in numerical terms in order to facilitate the analysis. All questionnaires were given unique codes under which the data for each questionnaire was entered carefully by reading through the responses one by one.

3.7.3. Presentation of Data and Analysis

Data from this study (especially the questionnaire from farmers) was analyzed using the Statistical Package for Social Science (SPSS) software. Qualitative data was too analyzed based on opinion expressed by respondents while observation was analyzed along the terms of the major variables.

Direct quotations from the discussions and literature review were used to compliment the overall results.

3.8. Ethical Consideration

The following ethical considerations were taken into account. First, the purpose of the study was clearly explained to the respondents. Secondly, all information gathered was confidentially handled. Lastly but not least, respondents' consent was sought before commencing the study. Respondents were not paid in exchange for the information sought.

3.8. Limitation of the Study

The study was conducted during high economic activities of first rain season. Most of the respondents were very busy with their planting activities and could rarely get time for interview schedules but the researcher used fixed appointments to meet them. Most of them postponed the interview to a time convenient to them especially after Sunday services. So, this forced the researcher to persevere and of course it caused wastage of time

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

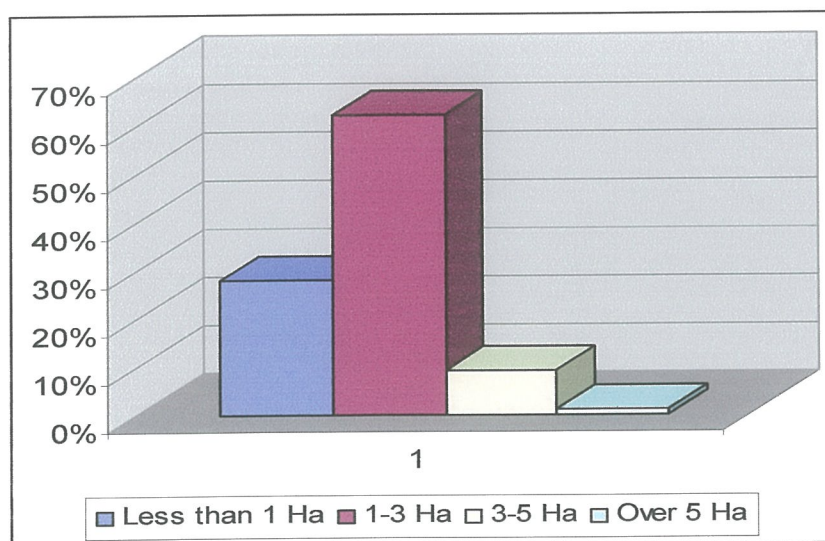
4.0. Introduction

This chapter presents the findings of the study in line with the objectives. Under this section data presentation, analysis and interpretation was focused on the objectives of the study. It's important to note that a total of 120 HHs were reached (100% representation) and questionnaires sent to key informants were all returned (also representing 100% success).

4.1. General Respondents Profile

Land ownership and use within the households

Figure 3: Distribution of household owning land in Ayivu County



Source: Field findings

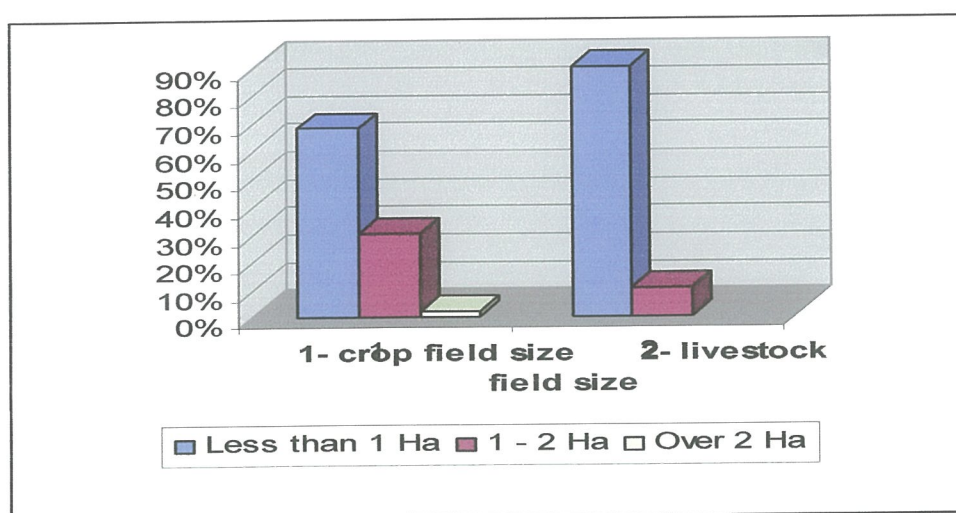
From the study it was found that 28% of household have less than 1 Ha of land for supporting their livelihoods. Majority of people 62% have lands ranging from 1-3 Ha. Meanwhile 9% have lands ranging from 3-5 Ha and other 1% has lands over 5 Ha. This means that large population is engaged in agriculture mainly crop production than livestock.

One farmer in a Focused Group Discussion (FGD) in Pajulu Sub-county was quoted as saying:

'he owned ¼ acre piece of land and does most of farming at his wife's place which is 6 km away where he was farming on 2.5 acre. He said it took him 2:00 hours to reach the field and spent much of the time unproductive.

Land Use

Figure 4: Enterprise field sizes



Source: Field findings

The study also reveals that 80% of farm land was used for cultivation, 18% for livestock management and 2% for apiculture. Further finding on the sizes of crop fields indicated that, 30% of households have less than 1Ha, 68% of households have between 1-2 ha and 2% have more than 2 Ha. While for livestock production, 90% of household have less than 1 ha and 10% have more than 1 Ha. This results means there's high pressure on land leading to 'heavy mining'.

Education Level

Figure 5: Highest education attainment by Age and Sex for the population Aged 6 years and above

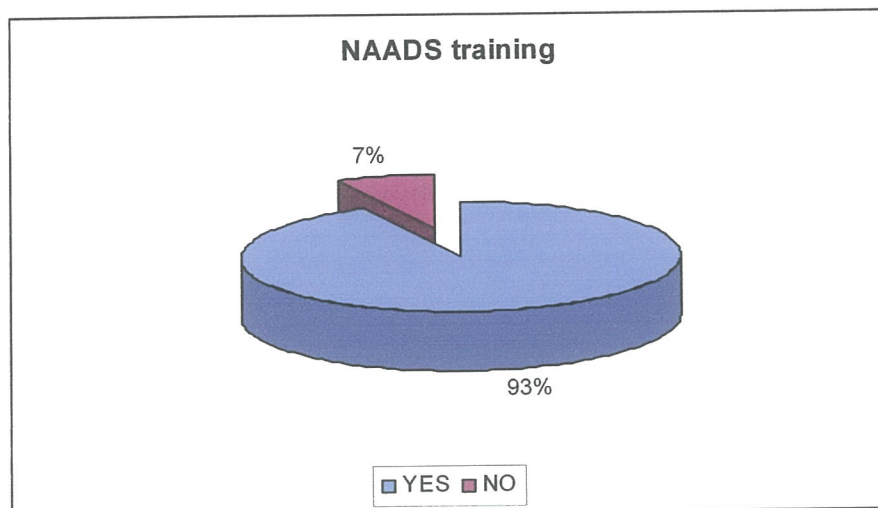
School Attendance									
Level Attained	6 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 44	45 to 59	60+	Total
Male									
Never Attended School	9,791	2,224	1,549	1,801	2,174	6,240	4,901	6,240	34,918
Attended School	42,337	55,674	44,670	30,274	25,472	48,640	18,198	8,937	274,202
In complete Pri. (P1 – P7)	42,337	53,895	29,820	14,246	12,221	24,444	9,779	6,759	193,501
Completed Pri. (P7)	0	1,424	7,012	5,238	4,570	10,945	3,675	447	33,118
Incomplete Secondary	0	353	7,520	8,355	5,073	7,271	2,950	1,156	32,678
Completed Secondary	0	2	318	2,435	3,508	5,980	1,794	575	14,712
Total Male	52,128	57,898	46,219	32,075	27,646	54,878	23,099	15,177	309,120
Female									
Never Attended School	11,795	4,165	6,008	10,609	12,716	31,390	20,498	14,673	111,854
Attended School	40,801	52,356	41,875	27,936	23,438	31,916	8,300	87	299,309
Incomplete Pri (P1-6)	40,801	51,415	32,722	19,314	17,594	24,323	6,637	2,455	195,261
Complete Primary	0	669	4,797	3,994	2,317	3,936	754	59	14,881
In-completed Sec	0	264	4,797	3,994	2,046	2,105	490	80	13,776
Completed Secondary	0	8	282	1,556	1,481	1,552	419	93	5,391
Total	40,801	56,521	47,883	38,545	36,154	63,306	28,798	17,360	341,163
Never Attended School	21,586	6,389	7,557	12,410	14,860	37,628	25,399	20,913	146,772
Attended School	83,138	108,030	86,545	58,210	48,910	80,556	26,498	11,624	503,511
Incomplete Pri	83,138	105,310	62,542	33,560	29,815	48,767	16,416	9,214	388,762
Completed Primary	0	2,093	11,086	8,310	6,887	14,881	16,416	9,214	388,762
In-completed Sec	0	617	12,317	12,317	7,119	9,376	3,440	1,236	46,454
Completed Secondary	0	10	600	3,991	5,089	5,089	2,213	668	20,103
Total	104,724	114,419	94,102	70,620	63,800	118,184	51,897	32,537	650,283

Source: 2002 Uganda Population and Housing Census (Arua District)

Secondary data obtained from the office of population, Arua district indicated that there's still high rate (22.6%) of illiteracy in the community. This means the population will not easily adopt improved technologies of production because literacy is power for development.

4.2. Roles of NAADS in Poverty Reduction

Figure 6: Service provision (method/demonstration trainings)



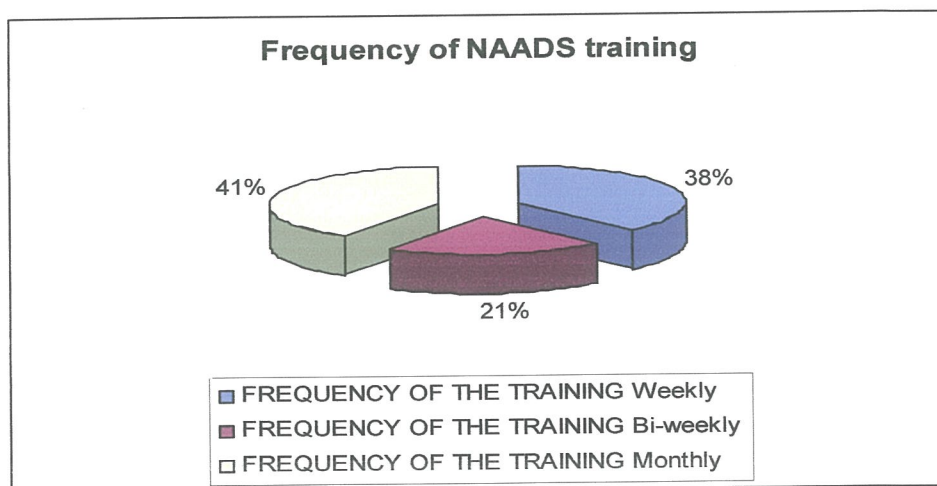
Source: Field findings

Farmers were asked to express views on methods, usefulness and timeliness of advisory services provided by service providers under NAADS arrangements.

Of the 84 farmers reached during the study, 93% received trainings and only 7% do not access the advisory services. This result means NAADS has increased farmers access to knowledge and information.

Frequency of NAADS Training

Figure 7: Frequency of NAADS training

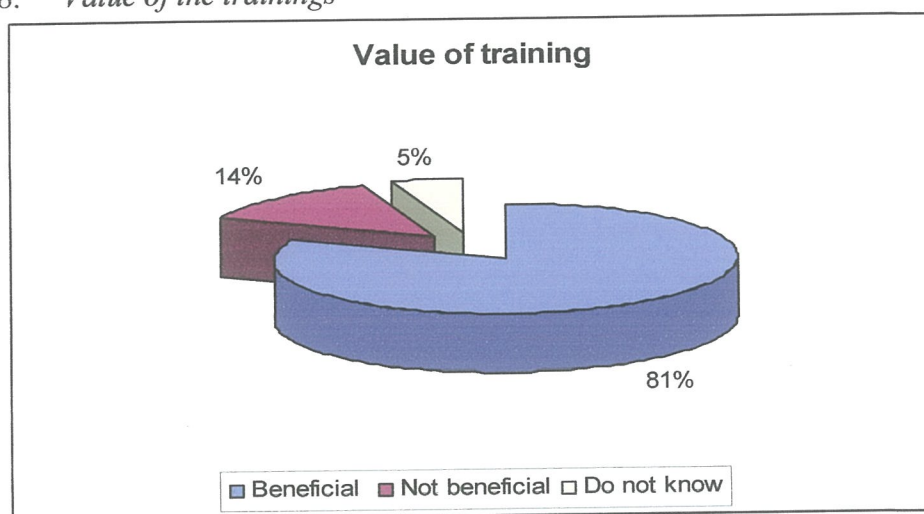


Source: Field findings

Of the farmers who participated in NAADS, 41% received trainings monthly, 38% of them received the training weekly and 21% bi-weekly. This result reveals inadequate provision of advisory services for a particular enterprise.

Value of the Trainings

Figure 8: *Value of the trainings*

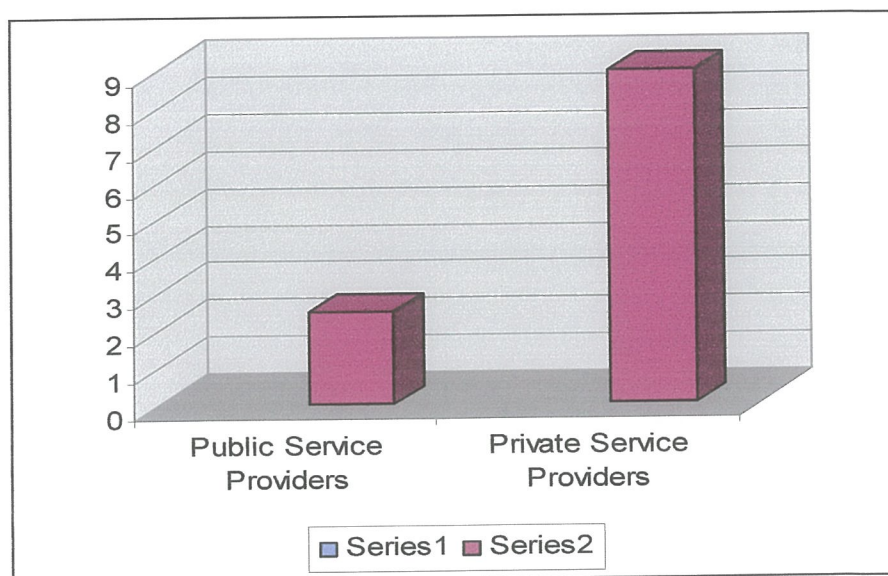


Source: *Field findings*

81% of the farmers who received the training perceived that the training was according to their needs and timely, while 14% of farmers perceived that the training is not beneficial and 5% of the farmers reported they do not know the importance of the training. In addition, more than 80% of the farmers perceived that the frequency of visits by private service providers was better than Public service providers. This perception is supported by the large frequency of advisory service agents visit gaps between the public and private service providers.

Extension Visits

Figure 9: Average number of extension visits by service providers per contract



Source: field findings

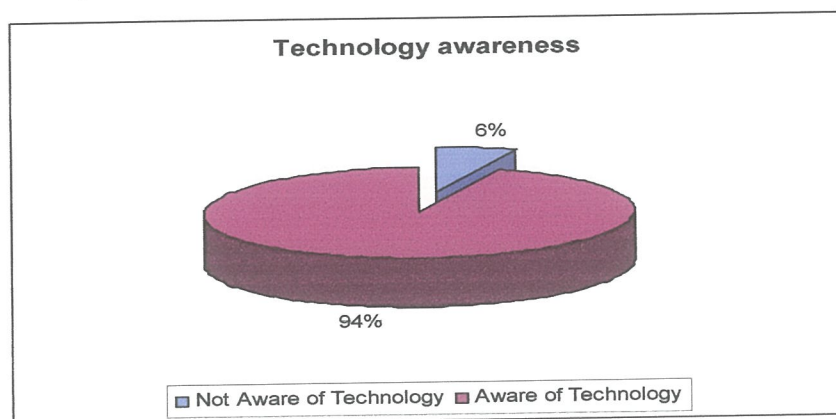
The study revealed that extension visits by Private Service Providers was found to be thrice more than Public Service Providers. In addition, 68% perceived that the quality of advisory service provided by Private Service Providers was found to be better than that of Public Service Providers. This result reveals that Private Service Providers were more effective and efficient than Public Service Providers. Like one woman in Aroi sub-county

One female farmer in a Focused Group Discussion (FGD) in Adumi Sub-county was quoted as saying:

'female SP visits more frequent female farmer than male SP and added that the reverse was true. She urged procurement committee to contract more female SPs since they (women) are the ones growing food for their families.'

Technologies Awareness

Figure 10: Crop management practices

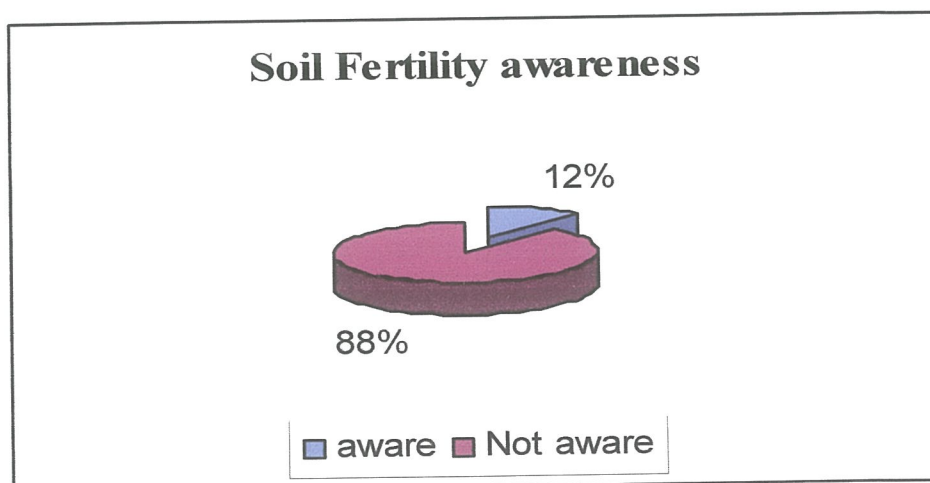


Source: Field findings

In general, the proportion of respondents that were aware of various crop production practices—including methods of disease/pest control, row planting, plant spacing, and weeding techniques—was low, 30%. However, and as is the case with use of improved seeds was 94 % proportion of those becoming aware that actually adopted the practices was significantly. This result reveals that NAADS programme concentrates more on seeds and breeds than other packages of production enhancement.

Soil fertility management

Figure 11: Soil fertility awareness



Source: Field findings

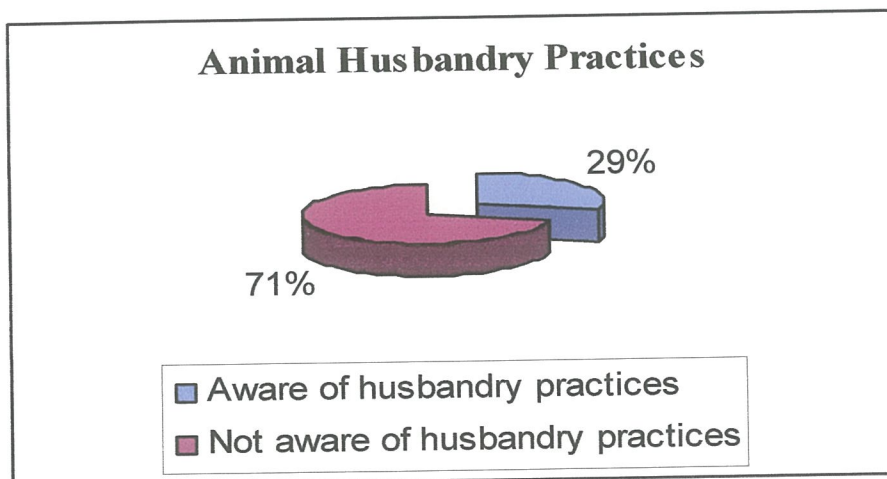
The proportion of respondents being aware of various soil fertility management practices, including application of chemical fertilizers, animal manure, composting, and organic residue management was low (12%) and majority (88%) were not aware. Field observation also gave true picture of crops subjected to physiological disease due to poor soils. On steep slopes signs of gulley erosion were seen in some fields and small rivers were also silted causing floods in times of rains.

Agro forestry

The proportion of respondents being aware of various agro forestry practices (including planting of fruit or wood trees) was low (24%) and majority (76%) were not aware. Improving diet and health were the main reasons given by respondents for planting fruit trees and wood lot because of rising demand for fuel.

Animal husbandry practices

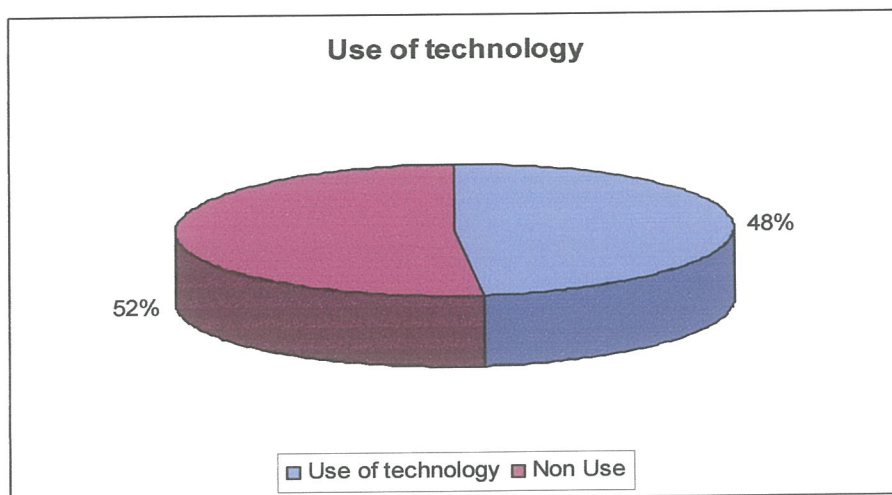
Figure 12: Animal husbandry practices



Use of improved livestock breeds and de-worming practices, were considered in animal husbandry practices. The proportion of respondents being aware of these technologies was low (29%) and majority (71%) were not aware. Livestock enterprises were found to be undertaken by men. The study also reveals that women were not attending trainings as result management practices were commonly done by men.

Use of Technologies

Figure 13: Use of technologies



Source: Field findings

The study revealed that 52% of the respondents reported practicing improved technologies; while 48% don't use technologies introduced to them through seed multiplication, technology development sites and method/demonstration trainings

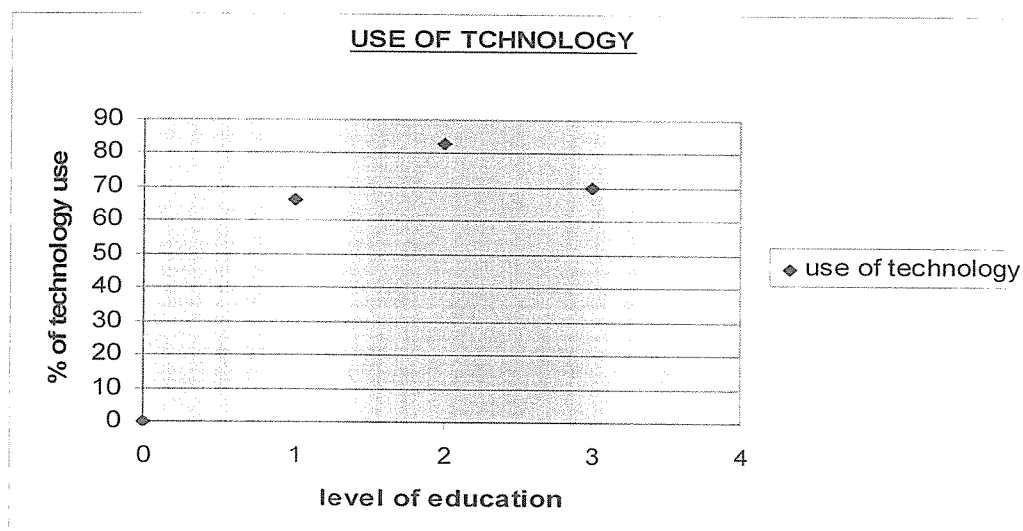
In regard to technology use, 82% of technologies uses were crop production related, while 23% and 2% were livestock production and apiculture management technologies respectively.

Interestingly, it was found that there was a significant difference in adoption of improved technologies among the farmers.

One farmer appreciated the performance of various technologies introduced to enhance production and productivity. Below was what the farmer (Mr. Olema Issac) said in the focused group discussion in Pajulu sub-county:-

' that now days, they weed crops together with his wife because of adopting planting in lines which he said was not the case in broadcasted fields. He noted that row planting is more gender concern bringing couples to share work. He encouraged his fellow farmers to adopt skills taught.l

Figure 14: Technology against education level



Source: Field findings

In the analysis of technology use against level of education a correlation analysis was carried out and the following conclusion was drawn.

Statistical data (ANAVO) of technology use

	Column 1	Column 2
Column 1	1	
Column 2	0.787478	1

Since our p-value is above 0.5 we conclude that there is a high positive correlation between level of education and technology use. The study reveals that the higher the level of education of the farmer, the more the use of modern technology correctly. Observation data collection technique reveals the same. Typical example was that, livestock (goats/cattle) managed by educated farmers were found in good health due to regular deworming and provision of balanced diet feeding.

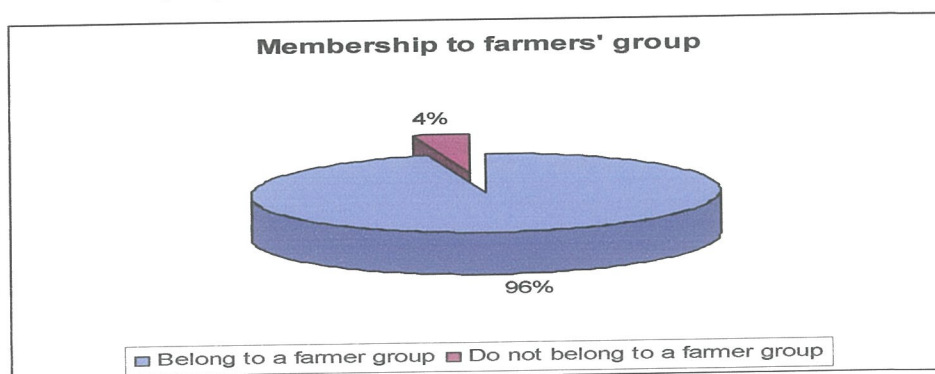
Farmers' Grant

Farmers' grant, the Integrated Support to Farmer Groups (ISFG) introduced by government under NAADS two years ago in study area has greatly increased farmers access to improved technologies (inputs). This is considered an important ingredient in adoption of new technologies by farmers. Out of 173 farmer groups registered in sub-

counties of Adumi, Pajulu and Aroi only 64 groups had their accounts operational and benefiting from the support. The co-funding obligation under ISFG was US\$ 60,000= which was 10% value of technology supplied.

Farmer Institution Development.

Figure 15: Membership to farmers' group

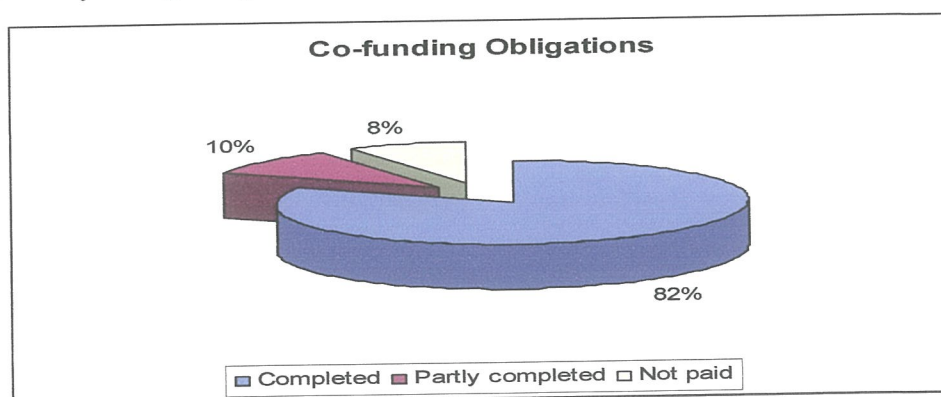


Source: Field findings

The research revealed that in the sample of 84 farmers 96% of them belonged to farmers groups and 4% of them did not belong to any of the farmers groups. Farmers who were not in group cited following reasons that eroded their confidence to join and work in group among other include: - uncooperative members, corruption and inefficiency. This study therefore revealed that many HHs are not benefiting from the programme because they are not in group.

Co-Finding Obligation

Figure 16: Co-funding obligations



Source: Field finding

It was found that 82% of groups met co-funding obligation fully/completed. While 10% of the group co-funded partly and 8% of groups made no co-funding. It was also found out that amount of co-funding depends on the number of farmer groups in the sub-county and amount of funds received under NAADS from central government. The co-funding has been ranging from UShs. 15,000= to UShs. 25,000=. The study also revealed that FGs that received under training under FID performed well in co-funding and live longer in group.

Number of NAADS Participating Groups

Figure 18: Number of NAADS participating groups

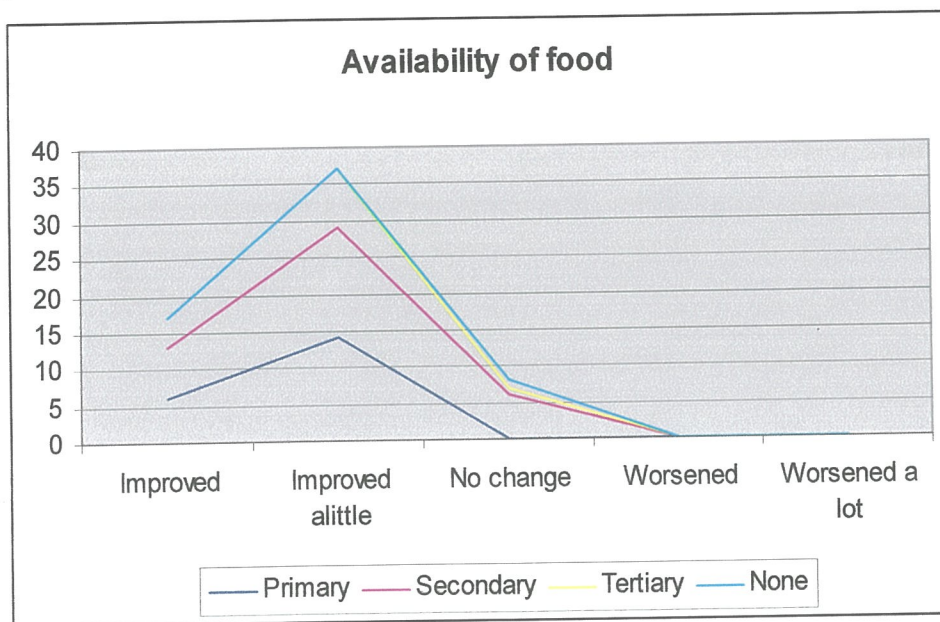
SUB-COUNTY	No OF HHs	NAADS PARTICIPATING		
		FARMER GROUPS	HOUSEHOLDS (HHs)	PERCENTAGE HOUSEHOLDS (%)
ADUMI	7,437	47	235	3.2
AROI	3,275	32	187	5.7
MANIBE	4,282	43	253	5.9
PAJULU	6,226	51	298	4.7
TOTAL	21,220	173	973	4.5

Source: Sub-county NAADS Coordinators Office

There were 973 HHs participating in NAADS programme which represents 4.5% of the total HHs participating in NAADS. This result revealed that very small HHs (4.5%) participate in NAADS and the greatest population of the rural were found neither knowledgeable on NAADS nor participate in any other government programmes of poverty reduction such as Community Demand Driven (CDD), Northern Uganda Social Action Fund (NUSAF), Local Economic Development (LED) etc.

Availability of food

Figure 19: Availability of food against education level



Source: Field findings

In the analysis of availability of food against level of education, a correlation analysis was carried out and the following conclusion was drawn.

Statistical data (ANOVA) of availability of food

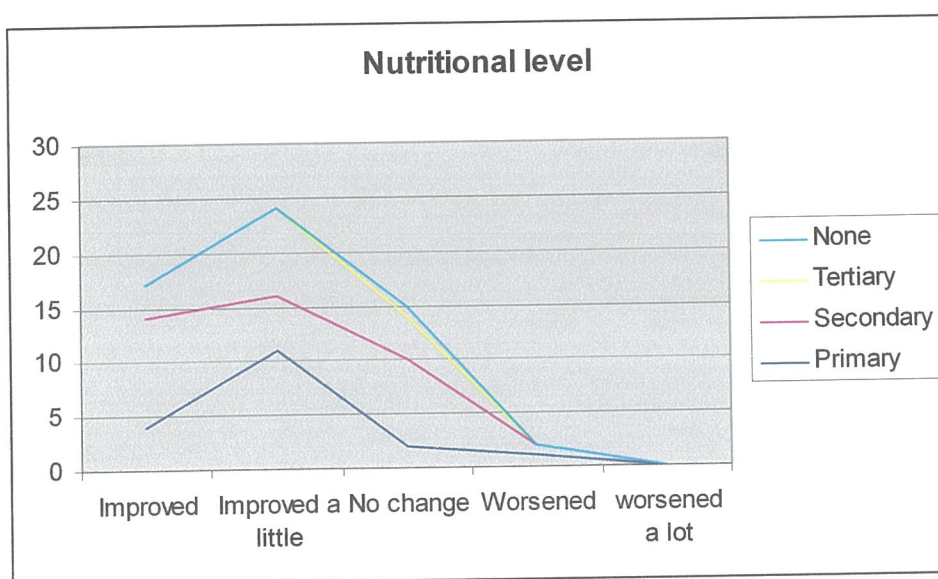
Source of variation	SS	df	MS	F	P -value	F crit.
Between Groups	78.6	3	26.2	1.186863	0.346101	3.238872
Within Groups	353.2	16	22.075			
Total	431.8	19				

Since our p-value is above 0.05 we conclude that there is a high positive correlation between level of education and technology use. The study revealed that the higher the level of education of the farmer, the more increased availability of food in HH. This is

due to awareness of the body requirements for good health. It was also found that at-least three meals of good balance diet were taken in HHs with high education.

Nutritional level

Figure 20: Nutritional level



Source: Field findings

In the analysis of availability of food against level of education, a correlation analysis was carried out and the following conclusion was drawn.

Statistical data (ANOVA) of nutritional level

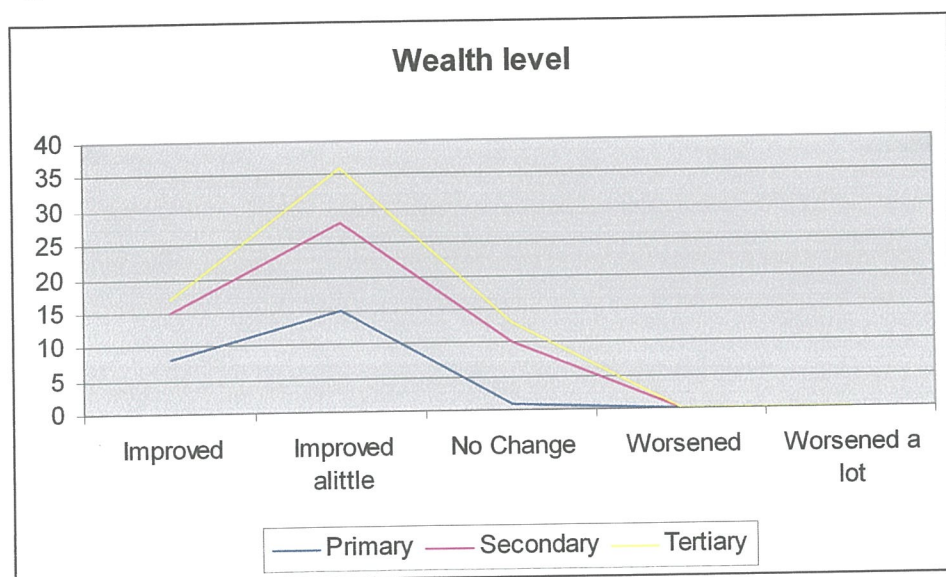
Source of variation	SS	df	MS	F	P -value	F crit.
Between Groups	57	3	19	1.544715	0.241563	3.238872
Within Groups	196.8	16	12.3			
Total	253.8	19				

Since our p-value is above 0.05 we conclude that there is a high positive correlation between level of education and nutritional level. This result reveals that the higher the

level of education of the farmer, the more increased nutritional level due to knowledge of body requirements.

Wealth level

Figure 21: Wealth level



Source: Field findings

In the analysis of availability of food against level of education, a correlation analysis was carried out and the following conclusion was drawn.

Statistical data (ANOVA) of wealth level

Source of variation	SS	df	MS	F	P -value	F crit.
Between Groups	86.8	3	28.9333	1.322667	1.30175	3.238872
Within Groups	350	16	21.875			

Since our p-value is above 0.05 we conclude that there is a high positive correlation between level of education and nutritional level. The higher the level of education of the farmer, the more wealthily the farmer is.

4.3. CHALLENGES FACED IN NAADS IMPLEMENTATION

Inadequate amount of information

Service Provider (SP) noted the information available was inadequate both in quantity and quality. Some noted that information about some practices was not available. Because of the inadequate amount of information available, there appears to be cases where the SPs were using information whose quality they were not sure of. Like one SP in Manibe narrated in a focus group discussion;

'I was one time requested to formulate pesticide for beans from local materials. I did not know the concoction values of the different local materials and I could not even get this information anywhere around. So I went to a friend of mine who is senior extension worker, who told me to use percentage' when asked whether the information is true he replied, 'of course he can not lie'.

Translation of the information is very difficult

The SPs in all sub-counties noted that the majority of the farmers do not know English implying that the information has to be presented to them in local languages yet information from most of the sources is very technical. One SP for Farmer Institution Development in Manibe sub-county expressed fear that translation of package into local language may derail information. He was quoted as saying:-

'most of the farmers are literate and this requires one to know the local language very well, but then there are some technical words, which are not in the local language, if you say these in English, the farmers will not understand and they will complain, so you translate them in the local language but you are not sure whether they are the right ones'.

Information processing is time consuming and expensive.

SPs in all sub-counties reported information processing required a lot of time and expensive. They noted that information processing was not catered for in the 22 or 18 working days in each calendar month as per the contract thus forcing them to do it in their free time, which they do not have. They noted that they are expected to conduct too

many farmer trainings in a short time due to short and poorly timed contracts and large number of FGs. Besides this, planned activities frequently flop due to poor time keeping by farmers and numerous and frequent community events like parties and funerals.

SPs also complained that they were/not well facilitated in information processing. One SP noted as below:

'the money for overheads is so small for information processing. The services in town are very expensive. if I am to take any training notes for typing I have to think of spending UShs. 40,000= for type setting and printing 20 pages.

Decline in yields

Agriculture which is single most important source of food and income for household is faced with a number of problems resulting very low yield. Low yield can be a problem or an effect of a problem.

Figure 22: Yield gaps of selected crops (MT/ha)

S/No	CROP	Present yields Kg/ha)	Potential yields (Kg/ha)	Ratio of potential to present yields.
1	Beans	652	2,500	3.8
2	Maize	1,570	4,000	2.5
3	Finger millet	1,559	2,800	1.8
4	Cassava	6,658	18,000	2.7
5	Sweat potatoes	4,000	5,200	1.3
6	Sorghum	1,501	2,800	1.9
7	Matooke	5,900	10,030	17

Source: Agric department – Arua district (2006)

Plant health

Figure 23: Causes of poor plant/crop health

District	Cause of poor plant health							Total
	Nutrient deficiency	Recurrent plant pests	Recurrent plant diseases	Drought	Un reliable rainfall	others	None	
ARUA	27.8%		5.6%		25%		41.7%	100%
Gulu	11.1%		8.3%		2.8%	52.8%	25.0%	100%
Nebbi	2.8%		22.2%		8.3%	2.8%	72.2%	100%
Kasese	27.9%	4.4%	8.7%	7.8%	7.7%	6.1%	44.7%	100%
Tororo	30.6%	2.8%	11.1%	13.9%			41.7%	100%
Masaka	11.1%	5.6%	2.8%	47.2%	13.9%		19.4%	100%
UGANDA	20.6%	4.4%	8.7%	7.8%	7.7%	6.1%	44.7%	100%

Source: Farm Income Enhancement and Forestry Conservation Project (Forestry component)

Baseline and socio-economic Survey Report

Poor plant health as result of disease infection is another cause of low yields. The disease are classified as physiological and pathogenic diseases. The more frequent observed type of diseases was physiological one. Farmers reported that the improved crops such as ground nut (*serenut species*) and peas have many pests. One farmer in an FGD in Manibe sub-county expressed disappointment with total loss of peas crops last year. This was what he said:

I received 2 Kgms of peas seeds under seed multiplication which planted halve acre and also planted local seeds of the same crop. Sprayed two times but no harvest from the whole field of improved plants due to bugs, beetles, and aphids. This occurrence discourages adoption of new technologies

This study also confirmed the finding by the FIOFOC baseline survey

Under funding

The allocation for the agricultural development funding was found to be meager as per data obtained below.

Figure 24: Share of agriculture to overall economy

Year	Percentage
1988 – 1997	3.9
1998 – 2002	5.4
2004 – 2006	1.1
2007	1.7
2008/09	2.6
2009/10	3.8
2010/2011	5.4
2011/2012	4.9

Source Daily Monitor Tuesday, June 1, 2010

(a) Allocation to sub-counties (appendix v)

The District NAADS Coordinator commended that the funding of agriculture represents “a gross under investment” that will make it difficult to reduce poverty.

High costs of inputs

Improve technologies are rear and very expensive in open market. One kilogram of serenut IV costs Ushs. 3,800= in Kampala while Ushs. 6,000= in Arua town. Asiku John of Aroi Sub-county lamented that the escalating cost of seeds were too high for him to afford, given that the returns he gets from selling excess surplus is not very big.

Other challenges

The study also revealed the following as key challenges facing farmers:- shortage of capital/lack of credit facilities, uncooperative group members, lack of adequate farm land, un-favorable weather pattern, reduced labour and shortage of agricultural inputs.

“production is not sufficient for home consumption and therefore no sales to make saving hence nothing to bank thus making account dormant.”

Support to different farmer categories

Support to Demonstration, Lead, Modal and Nucleus farmers in addition to the farmer groups boosts technology use and increase production.

A Demonstration farmer is a member of a farmer group who hosts a demonstration or learning site for a selected enterprise on behalf of a group. A Lead farmer is an early adopter who has transformed the demonstration into a standard production unit and has some resources to upscale the technology. A Model farmer on the other hand, has started to commercialize and has potential to generate US\$ 20 million per annum while A nucleus farmer may be involved in processing, value addition or marketing.

In all the four sub-counties of study, they had registered 6 farmers per parish to act as technology promoters to increase multiplier effect.

Farmer Institutional Development (FID)

The study reveals that 96% of the respondents were in groups. They registered a lot of benefit of being in groups. Others said, the group helps them build on each other to easy pulling of resources to access services, working together in their fields increase hectareage and carry out timely operations like planting, weeding and harvesting. The Cornell Empowerment Group (1989) support these ideas as it looks at power as an intentional, on going, process centered in the local community, involving mutual respect, critical reflection, caring and group participation, through which people lacking an equal share of values resources gain access to and control over those resources (Cornell Empowerment Group 1989). We can see that if a group develops members become alike and begin to share the same socio-cultural characteristics. Srinivas Melkote (2001) argues that, while social and institutional evolution is considered necessary for modernization, it cannot unless individuals change first.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.0. INTRODUCTION

In this chapter, findings from chapter four were discussed, conclusions and recommendations were made.

5.1. DISCUSSIONS

5.1.1 The roles of NAADS.

Farmer empowerment

One of the key principles of NAADS is farmer empowerment. Empowerment is a cognitive state characterized by a sense of perceived control and competence, and internalization of the goals and objectives of the organization or group by their members (Menon 1999, 2001). The perceived control and internalization of the goals and objectives were measured by asking farmer groups (or community members where there was no farmer group) how they perceived their ability to participate in decision making on matters related to the group (or community) activities and how well they participated in developing the bylaws and constitution of the farmer group and community).

The finding of the study revealed that the NAADS programme have limited impact in empowering farmers due to low level education of most farmers. This is contrary to the finding of the study by Scanagri (2005), which reported strong impacts of NAADS on empowerment. However, this could be due in part to contribution of other stakeholders especially the NGOs, Agricultural input dealers, marketing organizations.

The gender focuses where at-least one third of farmer fora representatives, procurement and executive committee where required to be women in some cases this proportion were far exceeded.

Figure 25: Photo of Drifeni women farmer group being supplied with improved goats.



Women group were found excellent in technology development and operation due to their commitment.

Education Level

Education level was very critical this study looked at in the profile of respondents because literacy is power of human engine. Secondary data obtained during the study puts illiteracy level at 22.6%, this study therefore confirms that illiterate persons are easily eliminated from the written world that's explained by the very low population (4,5%) participating in NAADS programme in Ayivu County, Arua District.. It's therefore important to acknowledge that education facilitate socialization, empowerment, attitude and practice/use of technologies.

Its important to note here that if we desire the future generation to find better environment to live in, more emphasis be put on Functional Adult Literacy (FAL) campaign so that parents use natural resources sustainably.

Apiculture was the least adopted as new enterprise yet it was district enterprise intervention. Less than 5% of household across the county went for apiculture. The reasons for adoption cited includes: - high profit, home consumption (honey considered to be highly nutritious) and supports high crop yield through pollination.

The technology of soil and water management was very low (14%). Respondents reported that water and soil management practices such as grass strips, mulching, and agro-forestry were enforced through community bylaws. This result supports the finding by Nkonya, et al (2005b) that community bylaws have important impacts on Natural Resource Management in Uganda. Regarding use of mulching, reduction in farm size was also cited as a reason for adoption.

Interestingly, the study also revealed that, the adoption declines with years. Farmers who started adopting these technologies were found no longer practicing. The reasons cited includes: - Reduced supply of improved seeds (for both plants and animal), high costs of technologies, fake agro-inputs and reduced food security.

Service Provisions

Private Service Providers were found to be better than their counter part the Public Service Providers because they worked on contract with clear Terms of Reference (TOR) and deliver quality service in order to win more contracts. While the Public Service Providers' contract had unclear TOR because of conflict of interest and they were/are stressed due to other assignments like in-charge of PMA, Northwest Smallholder Agricultural Project and in acting position of CDO, Sub-county Chief etc.

Co-funding

Majority of the respondents (82%) fulfilled co-funding obligations. The co-funding (cost recovery) is important at addressing the fiscal sustainability problems inherent in publicly funded extension. On the other hand, cost recovery is expected to make extension more demand-driven, as clients are expected to exercise voice if they pay for the services. However, cost recovery may further exclude poor farmers and marginalized groups. The

subsistence nature of farming system leads to much stronger state intervention in support of advisory services. Therefore privatization of advisory may not be possible.

Participating groups

The study has therefore recognized the need to move slowly and study carefully the existing developments regarding impact of privatization of extension. The low participation of farmers in groups resulting low HHs participation (4.5%) in NAADS reflected very minimum impact of NAADS in poverty reduction among the rural communities. Some of the reasons cited by the respondents included: - loss of trust in groups due to corruptions, co-funding, and enterprise preferences.

5.2. The Challenges faced

Extension services

Privatization has effect on suppliers of knowledge and information. Competition among Service Providers (SPs) has positively led to a spectrum of different information sources and also doubling of efforts. One criticism of the practice is that knowledge and information which has always been characterized by openness of information flow and strong linkages between actors has become less so as a result of competition.

Agricultural advisory service provider access information from a variety of sources, though access to a given source seems to depend on availability and existing personal information network or relationships. Information from most of the sources was described as being clear and hence useful. One criticism is that such sources as manuals and school notes which appear to be the most important and preferred stand high chances of becoming out of date. There are mechanisms to support Service Providers to access up to date quality information.

Soil fertility management

The major biophysical limitation in yield gap is soil problem. NAADS appears to be having more success in promoting adoption of improved seeds and some other yield enhancing technologies than in promoting improved soil fertility management. This

raises concern about sustainability of productivity. The findings also suggest that emphasis be given to organic sources of nutrients (e.g. manure, compost, crop residue). This also is troubling, as organic methods are mostly recycling nutrients and can at best act as a buffer to the system but not redress problem of nutrient depletion. In addition, they can be very costly when used alone due to low concentration of nutrients especially phosphorus (Palm et al, 1997, Larson and Frisvold, 1996).

Although planting legumes has the potential of restoring soil fertility through nitrogen fixation, it is not effective because of short rotation cycles or planting species that concentrate the nitrogen in the pods (which are harvested for consumption) and add little to soil (Giller and Cadisch 1995).

The data also shows that low use of inorganic fertilizer by farmers is attributed to its high cost relative to output prices and in turn, low returns. Lack of capital and unavailability of inorganic fertilizer were also cited as common problems. Thus, interventions that address access to credit and affordable chemical fertilizer may help to address the soil nutrient depletion problem. Nevertheless, there is need for Scientists to identify cost effective soil fertility management options so as to reduce production costs.

High Cost of Inputs

The data from this study revealed low use of inputs (e.g. planting materials, breeds, chemicals and farm machineries) by farmers due to high cost. Farmers mainly rely on inputs supplied under technology promotion funds and they can not either procure for themselves or supplement. This raises question of sustainability and adoption effect of technologies.

Co-funding

The study result indicated that 82% of the groups made co-funding obligation fully and it study also revealed that the co-funding is paid by few individuals in the group. Further probing showed that those capable of mobilizing resources for the group benefit more technologies allocations which kills spirit of group development and cohesion.

Inadequate Cohesion in Farmer Groups

The group concept is quite new to farmers. They are mostly not well informed on the benefits of working together. Group mobilization was also inadequate often focusing on quick access to services or resources rather than on developing long-term mutually enhancing relationships and structures. The contribution of NGOs to good farmer group formation should be strategically exploited.

Mobilization for Group formation and sustainability are the key challenges to the structure of NAADS service delivery. Leadership and group development roles also play a supportive role for the support of farmers with newly acquired practices. It was discovered that these two skills were not handled well during farmer institutional development. The Acting District NAADS coordinator of Arua, Mr. Andiandu Joachim, strongly recommended leadership and group development skills for Community Based Facilitators.

Counterfeit/fake agro inputs

High counterfeits agro inputs in production is major cause of low yields.

The study also reveals poor performance of technologies was due to counterfeit agro inputs. These technologies include seeds, fertilizers, veterinary drugs, agrochemicals, tools etc. In case of seed, it may be expired or simply coated with related colors to deceive farmers yet have poor/low germination rates. Expired/diluted fertilizers, drugs and agrochemicals sold to farmers may have poor action and dangerous residual effects. Poor performance of technologies frustrates attitude change in adoption and practice of technologies.

Impact of counterfeit on farmer

- (i) Increased food insecurity due to low performance.
- (ii) High costs of production due to frequent repairs and replacements
- (iii) Perpetual poverty due to reduced farming profits (low yields verses high operation cost)
- (iv) Loss of premium markets and good price

Impact of counterfeit on consumer

- (i) Poor products from the farmers
- (ii) No value for money

- (iii) Health hazards due to contamination and adulterations

Impact of counterfeit on natural economy

- (i) Long term environmental degradation consequences
- (ii) High costs to attend to healthy hazards among the population resulting from counterfeit inputs.
- (iii) Loss of trust and loan security to farmers
- (iv) De-motivation of genuine manufacturer to invest in country
- (v) Low revenue from the agricultural sector due to low yields (low exports and taxes)

The penetration of counterfeit products in markets reveals very big weakness in custom department and plant protection department of Ministry of Agriculture Animal Industries and Fisheries (MAAIF) whose roles among which includes certification of agro inputs.

Misuse of NAADS funds by implementers.

The study revealed weakness in sub-counties in terms of capacity and governance which has resulted into mismanagement of funds, defrauding the procurement processes, inadequate follow ups, inadequate audits, quality assurance and monitoring. All these resulted into funds getting lost, misused and a lot of cases have been reported in the study. Typical example was revealed by Richard Bakoa of Manibe sub-county. He said that full package of technologies were not given to poultry farmers adding that he received 200 chicks without chicken feed.

Misuse of technologies by farmers

Misuse of technologies was greatly reported in all the sub-counties. Chairman District Farmer Association Mr. Draguma Patrick said some beneficiaries' misuse technologies and keep on asking for more. He cited example Mr. Drapari Mike of Pajulu sub-county who received 30 local female goats and one Boer male goat, but because of his negative attitude, he neglected them, saying there were NAADS goats. This finding confirms school of thought "*the concept of a culture of poverty*" introduced by an American anthropologist, Oscar Lewis (1963). This theory suggests that the poor have a culture of poverty which prevents them from taking advantages of opportunities to break away from

poverty. This theory linked the culture of poverty to laziness, irresponsibility, dishonesty, indiscipline, extravagance, apathy, submissiveness, hopelessness

Weak Savings and Credit Cooperative Societies (SACCOS)

SACCOS across the district is not picking well and yet it could be a great relieve that farmers can enjoy while borrowing to supplement acquisition of farm inputs.

Cooperative movements in Africa have not been successful due to bad management and political interference.

SACCOS has been politicized since 1960's. For instance, at the time of independence in 1962, cooperatives expanded but changed purpose and direction, after leaders of primary societies began forming alliances with the new political parties that had been formed. This resulted into cooperatives movements being politicized and the government taking control through the Ministry of Land and Agriculture in the early sixties.

Unlike Uganda, the politicians in Demark do not interfere in the activities of cooperative. They only contribute to the growth of cooperative societies as independent people's fora. This has helped to enhance democracy and cooperative development.

Therefore, for Uganda cooperatives to succeed we need harmonization in the operation and implementation of SACCOS as a way of improving people's lives and we need political support rather than interference.

Information quality assurance mechanism before farmer consumption

The existing information quality assurance procedures seem to indicate that there are no standard procedures for ensuring the quality of information before farmer consumption. The technical competence and suitability of some of the persons involved in the process is not clear. What was/is done in the process of checking the information is equally worrying as to whether it can truly assure the quality of information to be consumed by farmers.

The existing information quality assurance mechanism before consumption if any appears to be 'amorphous' with no specific procedure, benchmarks and format followed. The official quality assurance mechanisms of technical audits and reports during and after the

contract though important seems inadequate given the fact that it is done when the ‘damage’ to the farmers has already occurred in case the quality of the information delivered by the service provider was poor.

There are no mechanisms to support service providers to access information searching, complying, processing and delivery, the usually important research – extension linkage seem to be conspicuously lacking. How to form it, and or strengthen it, and whose responsibility it is to do so is also critical questions that need to be answered.

Under funding

Government has failed to invest sufficiently in agriculture. The planned allocation of around 2 percent of the total national budget between 1988 – 2010 represents ‘a gross under investment’ that will make it difficult to reduce poverty. A 2001 World Bank report, *Uganda’s Recovery, the Role of Farms, Firms and Government* said it was “critical” for Uganda to increase agricultural productivity and rural farm employment if it is to achieve sustainable growth and poverty reduction.

The under funding is failure to modernize the sector. Transforming agriculture will require substantial increase in its share of budget and putting more focus on small irrigation schemes where majority of the small holder farmers are.

Lack of access to agricultural finance

The bottleneck in commercializing agriculture is lack of access to agricultural finance. Financial Institutions are not willing to offer long-term loans to farmers at very low interest. With farming you need to be patient because a longer grace period is needed for the crops to grow and harvested.

Land Tenure System and Household Land Size.

Land tenure system in Uganda has slowed efforts to transform the sector to a modern one. You may have the machines and capital, but the land tenure system may constrain you from accessing more land for expansion.

Locality Condition

The factors that constitute the competitive advantages of localities which includes basic infrastructure such as roads, water, energy supplies and economic overhead such as the education, training research and technical support institution are not well developed. Although radio and cell phone coverage is now fairly widespread, transport network are not adequate. Community and feeder roads are not well developed in rural settings.

5.3. STRATEGIES ADOPTED

Selection of six modal (progressive) farmers

NAADS adopted policy to support 30 farmers per sub-county under technology development fund (35% of budget allocation). The selected farmers are supposed to be the best or among the best in a parish. They should be at a level where they are comfortably earning from their farm. They should have visible enterprises that can be used as an example for other farmers to learn from. They should also be willing to allow people to come and learn farming skills on their farms.

In my view, this strategy corrupts the principle of rural poverty reduction on the following grounds:-

- (i) The composition of the committee that selects the beneficiaries is political. The chairman of the ruling party – National Resistance Movement (NRM) at sub-county local government becomes the chair person of the committee. This has turned the process ‘a political reward’.
- (ii) This strategy develops income equality which is not correct view in the context of developing countries. Perpetuation of income inequalities is no condition for rapid economic growth. There is guarantee that these beneficiaries will utilize the proceeding form the investment in productive channels. Inequalities retards development and therefore support be given to Develop Technology Sites (TDSs) rather than supporting the six farmers per parish.

Land consolidation

Farmers of small land holdings are brought together to put their land in one use. In Aroi sub-county, 10 HHs consolidated their land (40 cares) for rice farming. These FGs are able to offer employment to some unemployed in the villages and mechanize their farm.

Quality assurance of goods/services procured

Quality assurance is performed by Subject Matter Specialist (Agronomist, veterinarian, Entomologists and Auditors. The later performs value for money audit. This component ensures Terms of Reference are adhered to and cracks down practice of dealing counterfeit inputs.

Figure 33: *District Agricultural officer Mrs. Arubaku Caroline carrying out technical auditing on 15/10/2008*

**Banking services for the rural poor.**

Government is promoting saving and credit cooperative organization (SACCOS) as the main avenue for saving and borrowing.

According to Finscope Uganda Survey (The Quarterly PMA Bulletin Vol. 5, Sep 2007), Financial Service Providers (supervised by Bank of Uganda), semi formal institutions

(legal but are not supervised by Bank of Uganda) and other micro finance institutions (MFIs) are current saving about 3.5 million people in rural areas.

Working with the Private Sector

Uganda economy is private sector driven, and producers (farms/firms) are the basic units. The private sector plays vital roles in agro-processing – adding values to primary agricultural products to increase their shelf life and returns to producers

Private sector is critical in the process of transformation of agriculture in Uganda through the various roles they play along the commodity value chain – especially in production, processing, transportation and distribution of products to final consumer.

Government's primary role is to address constraints the private sector faces at different points in the value chain, right from production, to processing, to transportation and distribution networks to the final consumer, whether in domestic, regional or international markets.

Some of the binding constraints that government is addressing include:- (i) road and railway networks which need a lot of investments in order to reduce the transaction costs for the business community; (ii) Electricity – which is vital in economic transformation both in rural and urban areas. Without sufficient and reliable electricity supply, industrialization will remain elusive in Uganda. However, government is taking this very seriously and construction of power station has started in Nyagaki to supply great North western region.

Monitoring Prosperity For All Implementation

Coordination and monitoring Prosperity For All (PAF) implementation is critical. However, there are two levels of coordination and monitoring at central and local government, and at farmer group level.

At the center, activities of implementing agencies (ministries/programme) are reviewed to ensure that they are relevant to and supportive of the PFA vision. In addition to the projects and activities, resources allocated are monitored. Indicators developed, tracked and reported back to the Presidency to assess progress and where necessary corrective

actions taken. The government through PMA/NAADS Secretariat has gained a lot of experience in central level multi-sector conditions.

At farmer group level, participants are trained on Participator Monitoring and Evaluation. PME lays great emphasis on participation by all stakeholders.

Figure 34: A carefully monitored enterprise does not disappoint (Photo: 12/04/2009, Ombinze FG in Aroi sub-county, Ayivu County)



Agricultural Zoning Strategy

The country has been divided into 10 broad agricultural productions, agro-processing and marketing zones based on agro climatic, soil conditions and land holding pattern. This helps to identify enterprises that are best suited for production, profitability and productivity, agro processing, value addition and sustainable access to markets.

By developing and supporting enterprises that are consistent with the agricultural zones, they will be supporting the production of adequate quantities of produce to attract traders and investors in agro-processing

Given that neighboring districts and sub-counties may share a particular agricultural zones, it will be necessary for them to collaborate in the identification of the enterprises so that they able to reach a scale of production large enough to attract investors. Without large volumes of good quality, not only is it difficult to attract factories, but also more difficult to sustain.

Enterprise mix

Farmers are guided to select and invest in only those enterprises which can bring in maximum profit. The process of identification or selection is based on factors among which include profitability, availability of market opportunities, capital needs, indigenous knowledge and associated risks.

Figure 30: Enterprise mix and indicative net earning for land holding 1 – 2 hectares for crop only

Enterprise	Rice (2.4m)	Pineapple (2.0m)	G/nut (2.0m)	Maize (0.5m)	Beans (0.2m)	Citrus (6.0m)
Rice (2.4m)	X	4.4	4.4	2.9	2.6	8.4
Pineapple (2.0m)		X	4.4	2.5	2.2	8.0
G/nut (2.0m)			X	2.5	2.2	8.0
Maize (0.5)				X	0.7	6.5
Beans (0.2m)					X	6.2
Citrus (6.0m)						X

Figure 36: Showing additional indicative net earning from crop and animal enterprise mixes on the same land holding of 1 – 2 hectares

Enterprise	Rice (2.4)	Pineapple (2.0m)	G/nut (2.0m)	Maize (0.5)	Beans (0.2m)	Citrus (6.0)
Poultry (3.5m)	5.9	5.5	5.5	4.0	3.7	9.9
Bee keeping (3.0m)	5.4	5.0	5.0	3.5	3.2	9.0
Piggery (2.0m)	2.4	4.0	4.0	2.5	2.2	6.2

Source: PMA bulletin (September, 2007)

Establishment of Higher Farmer Association

As part of Farmer Institution Development activities, FGs with similar enterprise were developed into higher level farmer associations or organizations. This is designed not

only to increase internal resource mobilization (savings) but mainly to strengthen their roles in bulking, brokering and primary processing. In doing this, commodity value chains are developed.

5.2. CONCLUSIONS

The NAADS programme to some extent contributed significantly to increased yields, income and utilization of services thus poverty reduction registered among rural farmers in Ayivu County, Arua district.

However, the outcome of the programme was not to the community expectation due to:

- : political interference, counterfeit inputs, corruption, inadequate funding, poor attitude, unreliable rainfall, frequent pest and disease built up, high cost of farm inputs and lack of access to agricultural finance.

Nevertheless, we expect the second phase of NAADS implementation will produce better outcome.

5.3. RECOMMENDATIONS

In the process of documenting this study, a number of recommendations have been made. However, the following are the key recommendations to enhance the role of NAADS in poverty reduction among rural communities and these include:-

There were high (22.6%) illiteracy levels in the rural communities. It is recommended that NAADS initiates collaboration with other government agencies like Community Services and NGOs to address this problem through functional adult literacy (FAL) campaign.

Lack of markets (effective demand) for the farmers products was a disincentive to agricultural production. No organized markets. The situation was aggravated by the fact that most farmers grew similar crops e.g. cassava, all harvested at around the same time, hence increasing supply with very limited demand. It is recommended that NAADS addresses the issue of marketing of or /and adding value to the farmers produce.

NAADS should encourage community procurement. Procurement under NAADS is governed by the NAADS Act and the Public procurement and disposal of assets (PPDA) Act. In order to promote transparency and cut down on costs for technologies, farmers under NAADS should take lead in procurement of goods/technologies. The goods could be procured within the communities depending on their availability.

There is high ratio of extension worker to farmers (1:2779) which requires immediate attention of district service commission to recruit officers especially diploma holders with different disciplines (crop, livestock, fisheries and apiculture) into the system.

5.4. AREAS FOR FURTHER RESEARCH

NAADS is still new extension method with a lot of criticisms from politicians and donors. This therefore demands a lot of research in order to transform the farming system for increased production and income hence poverty reduction. Therefore the following are proposed areas of research:-

- (i) Examine the extend to which illicit trade in counterfeit agro-inputs is the cardinal cause of slow rate of agricultural development in Uganda.
- (ii) Examine the extent to which the marginalized farmers and female farmers benefit from the NAADS.

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APPENDIXE 1: DETERMINATION OF SAMPLE SIZE (POPULATION)

Working One (WK1): Calculation of determining sample size/Study

Population

The population from the surveyed population that researcher selects for the purpose of conducting research is called a target population. Surveyed population is denoted by capital “N” and the target is denoted by small letter “n”.

If the surveyed population is 173 farmer groups, then target farmer groups can be calculated from the formula: $n = \frac{N}{1 + N(e)^2}$

Where N = Survey population

n = Sample population

e = confidence level

Then, N=173, e=5%

Then n can be calculated.

$$\begin{aligned} n &= \frac{N}{1 + N(e)^2} \\ &= \frac{173}{1 + 173(0.5)^2} \\ &= \frac{173}{1 + 173 \times 0.0025} \\ &= 120 \end{aligned}$$

APPENDIXE II: TOTAL POPULATION BY PARISH, SEX, NUMBER OF HOUSEHOLDS AND AVERAGE HOUSEHOLD SIZE

COUNTY: AYIVU

SUB-COUNTY	PARISH	POPULATION		AVERAGE HOUSEHOLD	
		MALE	FEMALE	TOTAL	SIZE
ADUMI	7,437	19,240	21,878	41,118	5.5
Anyara	512	1,376	1,598	2,974	5.8
Anzu	745	2,100	2,347	4,447	6.0
Kati	677	1,984	2,225	4,209	6.2
Kubo	647	1,714	2,016	3,730	5.8
Mbaraka	1,132	2,641	3,063	5,704	5.0
Mite	948	2,280	2,567	4,847	5.1
Nyivura	1,281	3,073	3,439	6,512	5.1
Olevu	630	1,816	2,112	3,930	6.2
Ombaci	3,275	2,254	2,511	4,765	5.5
AROI	3,275	8,881	10,017	18,898	5.8
Aliba	480	1,201	1,403	2,604	5.4
Alivu	559	1,564	1,748	3,312	5.9
Bura	688	1,731	2,022	3,753	5.5
Kamule	323	934	968	1,902	5.9
Michu	672	1,936	2,167	4,103	6.1
Robu	553	1,515	1,709	3,224	5.8
DADAMU	4,712	12,656	13,797	26,453	5.6
Arivu	763	2,048	2,346	4,394	5.8
Ariwara	949	2,650	2,806	5,456	5.7
Luvu	453	1,025	1,106	2,131	4.7
Odravu	718	1,724	1,904	3,628	5.1
Oduluba	672	1,943	2,097	4,040	5.9
Tanganyika	669	2,041	2,087	4,128	6.2
Yapi	488	1,225	1,451	2,676	5.4
MANIBE	4,282	10,936	12,143	23,079	5.4
Eleku	644	1,395	1,573	2,968	4.6
Ewadri	532	1,352	1,500	2,852	5.4
Lufe	616	1,830	2,038	3,868	6.3
Odravu	480	1,280	1,382	2,662	5.5
Ombokoro	572	1,439	1,572	3,011	5.3
Oreku	721	1,721	1,925	3,646	5.1
Robu	268	586	687	1,273	4.8
OLOKU	5,380	13,533	14,746	28,279	5.1
Ambeko	380	928	998	1,926	5.0
Anipi	401	968	1,084	2,052	5.1
Ombokoro	560	1,341	1,479	2,820	5.0
Turu	401	990	1,099	2,089	5.2
Wandi	459	1,107	1,182	2,289	5.0
Yabiavoko	636	1,563	1,712	3,275	5.1
Onzivu	730	2,000	2,120	4,120	5.5
Cont...					

SUB-COUNTY	PARISH	POPULATION		AVERAGE HOUSEHOLD	
		MALE	FEMALE	TOTAL	SIZE
Bunyu	758	1,790	1,959	3,749	4.9
Nyio	1,051	2,846	3,113	5,959	5.1
PAJULU	6,226	16,484	18,244	34,728	5.5
Adalafu	886	2,733	2,909	5,642	6.4
Ayivu	512	1,516	1,733	3,249	6.3
Driwala	734	1,958	2,063	4,021	5.5
Etori	785	1,710	1,983	3,693	4.7
Komite	599	1,717	2,065	3,782	6.1
Nyaracu	359	883	964	1,847	5.1
Urugbo	491	1,216	1,340	2,556	5.2
Pokea	1,034	2,673	2,855	5,528	5.2
Yivu	826	2,078	2,332	4,410	5.3
COUNTY TOTAL	31,312	81730	90,825	172,555	5.5

APPENDIXE III: PROJECTED POPULATION FOR AYIVU COUNTY, ARUA DISTRICT

COUNTY	SUB-COUNTY	2002			2007			2008			2009		
		MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
AYIVU	ADUMI	19,240	21,878	41,118	22,600	26,000	48,600	23,400	26,800	50,200	23,700	27,300	51,000
	AROI	8,881	10,017	18,898	10,017	11,900	22,300	10,800	12,300	23,100	11,000	12,500	23,500
	DADAMU	12,656	13,797	26,453	14,800	16,400	31,200	15,400	16,900	32,300	15,600	17,200	32,800
	MANIBE	10,939	12,143	23,079	12,800	14,400	27,200	13,300	14,900	28,200	13,500	15,100	28,600
	OLUKO	13,533	14,746	28,279	15,900	17,500	33,400	16,400	18,100	34,500	16,700	18,400	35,100
	PAJULU	16,484	18,244	34,728	19,300	21,700	41,000	20,000	22,400	42,400	20,300	22,700	43,000
TOTAL		81,730	90,825	172,555	95,800	107,900	203,700	99,300	111,400	210,700	100,800	113,200	214,000

Source:

Population

Office,

Arua

District.

APPENDIXE IV: ARUA DISTRICT LAND AREA BY ADMINISTRATIVE UNIT.

County	Sub-County	Land Area Km ²	Parishes	Villages
Arua Municipality	Arua Hill	6.38	3	22
	Oli River	3.76	3	28
	Sub Total	10.14	6	50
Ayivu	Adumi	113.68	9	102
	Aroi	42.42	6	52
	Dadamu	50.13	7	51
	Manibe	40.14	8	69
	Oluko	80.71	9	66
	Pajulu	64.11	9	78
	Sub Total	391.19	48	418
Madi-Okollo	Offaka	306.52	6	53
	Ogoko	603.57	6	33
	Okollo	419.34	4	30
	Rhino Camp	247.21	6	50
	Rigbo	233.93	8	68
	Ullepi	130.24	3	18
	Sub Total	1,940.81	33	252
Vuraa	Ajia	274.38	9	32
	Arivu	170.49	6	55
	Logiri	207.24	7	48
	Vurra	118.6	10	84
	Sub Total	770.71	35	219
Total	18	3,112.85	119	939

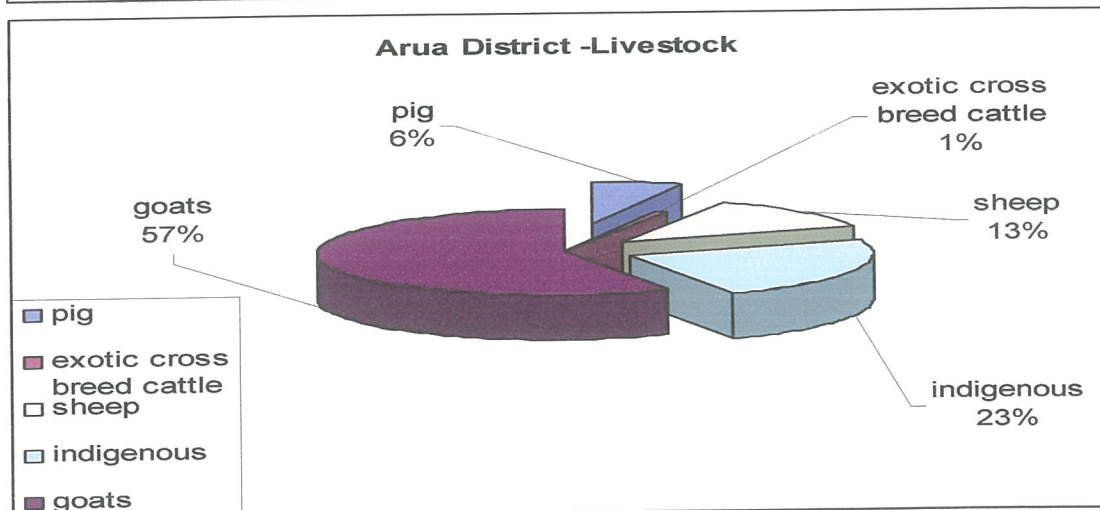
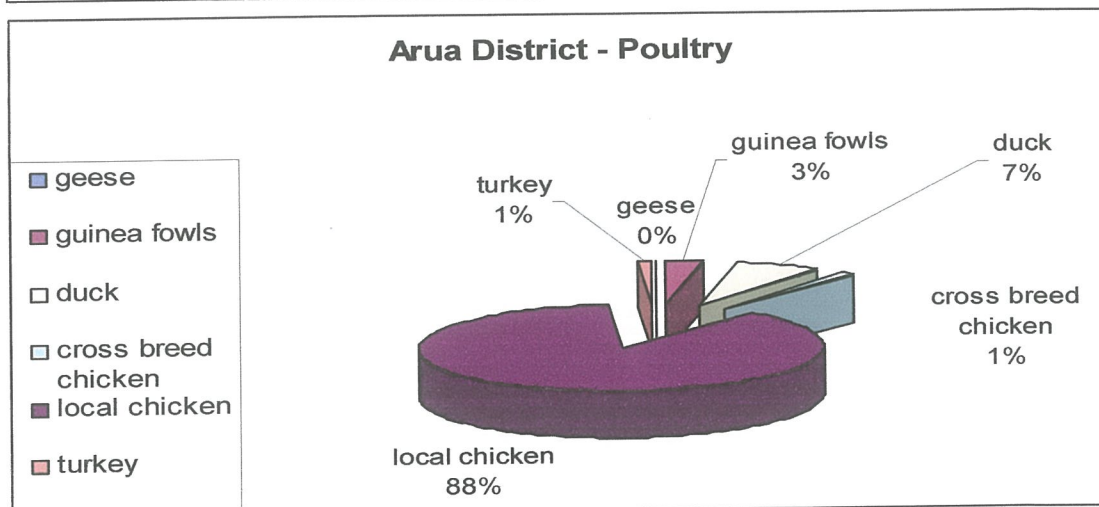
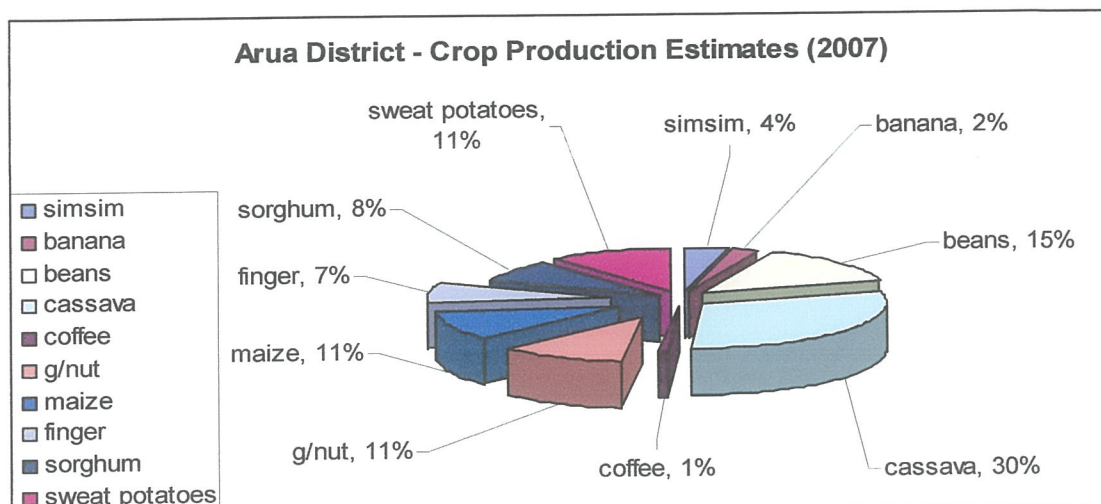
Source: Population and Housing Census 2002

APPENDIXE V: FUNDS ALLOCATION TO SUB-COUNTIES BY FY 2007/08

Sub-county	Financial Year (FY) Ushs. 000'					
	2001/02	2002/03	2003/2004	2004/2005	2005/06	2006/07
Adumi	-	48,000	48,000	52,000	56,000	76,000
Aroi	52,000	52,000	52,000	52,000	56,000	76,000
Manibe					56,000	76,000
Pajulu	-	48,000	48,000	52,000	56,000	76,000
Oluko	-	48,000	48,000	52,000	56,000	42,000

**APPENDIXE VI: PRODUCTION ESTIMATES OF KEY ENTERPRISES
INARRUA DISTRICT**

Graph 1: Production estimates of key enterprises in Arua District



Source: Sector of Production and Marketing, Arua District Local Government (2007)

APPENDIX VII: EVOLUTION OF EXTENSION IN UGANDA

PHASE	PERIOD	MAIN FEATURES
1	1872 – 1920	Colonial period with concentration on importation of planting material and promotion of cash crops for export
2	1920 – 1956	Extension through chiefs, emphasis was put on enforcing by-laws
3	1956 – 1964	Transfers of technology through progressive farmers; focus was on providing advise, inputs and credit to progressive farmers
4	1964 – 1971	Extension approach become more educational and professional; Extension methods like demos, farm visits and radio broadcast were used for transfer of technology
5	1971 – 1980	Mostly commodity oriented approach, Research and Extension services suffered due to disruption of the economy and impaired delivery of goods and services as a result of civil unrest
6	1981 -1992	Recovery and revitalization of extension and research activities
7	1992	Cost sharing. UNAFA members pay registration and subscription fees and a number of training sessions have been organized over the year for which members have been meeting part of the costs. UNFA are exclusive catering for only few members of the association; leaving out the majority of the farmers in a given area.
8	1993 – 2001	Agricultural Extension Programme – unified extension using a modified T& V methodology
9	2001 – 2007	Empowering farmers to demand and control agricultural advisory services (National Agricultural Advisory Services (NAADS))

Source: Kawanda Agricultural Research Institute

APPENDIX VIII: UGANDA POVERTY STATUS BY SUB COUNTY, 2002/03

REGION/ Sub DISTRICT that were	No. of sub counties (SC)	% of people living below Poverty line (Average poverty level)	No. of poor Sub Counties	% of total Counties poor
CENTRAL REGION	172	27	95	55
1. Kalangala	6	8	2	33
2. Kayunga	8	36	4	50
3. Kiboga	13	35	7	54
4. Luwer	17	30	9	53
5. Masaka	19	30	10	53
6. Mpigi	16	30	9	56
7. Mubende	18	33	9	50
8. Mukono	24	24	14	58
9. Nakasongolo	8	24	6	75
10. Rakai	23	31	13	57
11. Ssembabule	6	32	4	67
12. Wakiso	14	13	8	57
EASTERN REGION	249	47	153	61
13. Bugiri	15	51	10	67
14. Busia	9	50	6	67
15. Iganga	24	46	19	79
16. Jinja	16	28	14	88
17. Kamuli	22	49	11	50
18. Kapchorwa	15	29	12	80
19. Katakwi	17	59	11	65
20. Kumi	15	57	7	47
21. Mayuge	6	45	5	83
22. Mbale	28	33	14	50
23. Pallisa	27	53	13	48
24. Sironko	18	32	9	50
25. Soroti	14	64	9	64
26. Tororo	23	48	13	57
NORTHERN REGION	203	66	106	52
27. Adjumani	5	68	3	60
28. Apac	21	51	9	43
29. Arua	33	54	16	49
30. Gulu	19	67	9	47
31. Kitgum	18	78	7	39
32. Kotido	18	91	9	50
33. Lira	24	56	15	63
34. Moroto	9	89	6	67
35. Moyo	7	62	3	43
36. Nakapiripirit	9	86	8	89
37. Nebbi	16	65	6	38
38. Pader	17	76	11	65
39. Yumbe	7	63	4	57
WESTERN REGION	233	34	123	53
40. Bushenyi	27	30	14	52
41. Bundibugyo	9	44	5	56
42. Hoima	11	35	5	46
43. Kabale	16	35	6	38
44. Kabarole	11	29	7	64
45. Kamwenge	8	38	5	63
46. Kanungu	9	33	4	44
47. Kasese	19	48	10	53
48. Kibaale	18	36	10	56
49. Kisoro	13	44	7	54
50. Kyenjojo	13	35	9	69
51. Masindi	13	42	6	46
52. Mbarara	42	27	23	55
53. Ntungamo	14	30	8	57
54. Rukungiri	10	28	4	40

*Excludes Kampala district

Source: Uganda Bureau of Statistics (UBOS) & the International Livestock Research Institute (ILRI), 2007

APPENDIX IX: INTERVIEW GUIDE FOR FARMERS

PREAMBLE

The purpose of this questionnaire is to find out information on the role of NAADS in poverty reduction among rural communities. The finding of this reach will be used for academic purpose only.

CONFIDENTIALITY

ALL information provided herein will be treated with strict confidentiality.

Date of interview: _____

Questionnaire No: _____

PROFILE OF THE FARMER

Sub-county: _____

Parish: _____

Village: _____

Q1. Sex of the respondent: (1) Male (2) Female

Q2. Age _____

Q3. Marital status _____ (1) Married (2) Single

Q4. Number of Household members

	Female	Male
Adult		
Children		

Q5. Educational level (farmer) _____
(1) Primary (2) Secondary (3) Tertiary (4) None

FARMING ACTIVITIES

Q1. How long have you been engaged in farming.
1. Less than 3 yrs 2. 5 – 9 yrs. 3. Over 9 yrs

Q2. Nature of farming activities involved
1. Crop farming 2. Animal farming 3. Others (specify)

Q3. Size of each enterprise

Crop		Livestock		Others (specify)	
Enterprise	Field size	Enterprise	Farm size	Enterprise	Farm size

Q4. What are the major food/cash products grown/reared on the farm

	Crop	Livestock	Others (specify)
Cash			
Food			

Q5. Who provide the labour for the farm work

No of family member _____ Male _____ Female
 No of hired labourer _____ Male _____ Female

Q6. Who does what activity within in household (indicate F/M against each activity)

Digging () Planting ()
 Weeding () Marketing ()
 Cattle rearing () Others ()

Q7 Yields of major enterprise per year

Crop		Livestock		Others (specify)	
Enterprise	yields	Enterprise	yields	Enterprise	yields

MEMBERSHIP TO THE GROUP**Q1. Do you belong to a farmer group?**

Yes ()
 No () (if No go to Q9)

Q2. If yes which one _____**Q3. When was the group formed?**

(1) <2 years (2) 2 – 4 years (3) >4 years

Q4. Number of the members in the group

Youth _____ Adult Male _____ Adult Female _____
 PDW _____ HIV/Aids _____

Q5. Co-funding obligation during participating in NAADS programme

1. Completed 2. Partly completed. 3. Not Paid

Q6. What role do you play in the farmer group?

Q7. How do you benefit from being a member?

Q8. How do you rate the management?

1. Very effective 2 Effective 3 Not effective 4 Not at all.

Q9. Why do you dislike being in a group?

AWARENESS AND USE OF INFORMATION IN PRODUCTION PRACTICES

Q1. Do you have anybody who advice/trains you about better farming practice in this area?

(1) Yes (If Yes move to Q2) (2) No (move to question 6)

Q2. If yes, from which organization does the person come?

Q3. In the past 12 months how many times did you receive advice/training?

S/Provider	Extension Code	No of visits	Change Since 2003
1. Gov't FEW	1		
2. FG members	2		
3. NAADS	3		
4. NGO not in NAADS	4		
5. Other farmers	5		
6. Project/Programme			

Codes: No of visits (1) Weekly (2) biweekly (3) monthly
Change (1) Increased a lot (2) No Change (3) Decreased alot

Q4. Is the training according to your needs?

(1) Yes (2) No (3) I don't know

Q5. Do you know how much worth the contract is?

(1) Yes (2) No

Q7. Use table below to assess knowledge and adopt of good practice in farming.

S/N o	Practices	Aware of technolog y Yes/No	Perceptio n on method/a pproach	Percep- tion on usefu- lness	Use of technolog y Yes/No	How much use e.g. acres, # hives, # animal, share marketed	Is there benefit of use (see code below)
1	Crop improved varieties						
2	Crop management practices:- (v) seed sorting and purity (ii) row planting (iii) spacing (iv) weeding (v) soil fertility management • Chemical fertilizer • Animal manure • Compost manure (v) Pest and disease control						
3	Soil/water conservation						
4	Post harvest handling • Drying • Storage • Grading						
5	Agro forestry						
6	Livestock breeds						
7	Livestock mgt • Improved feeding • De-worming						
8	Beekeeping						
9	Value addition						
10	Marketing • Information on market price • Information where to sell • Collective marketing						

11	Proper record keeping						
12	Others specify						

Code: (a) Perception on Method: 1. V/Good 2. Good 3. Fair 4. Poor 5. V/Poor
 (b) Perception on Usefulness: 1. V/Useful 2. Useful 3. Somehow 4. Not useful
 (c) Benefit: 1. Improve production 2. adequate food in house 3. more income to meet HH requirement 4. bought physical HH assets 5. bought livestock (#) 6. construction of iron roof house 7. reduced erosion 8. others (specify)

Q7. In your view, how good was the Service Provider in method/approach used to give you advice in production practices

Enterprise	Perception on method	Perception on usefulness of advice	Timeliness of service provision

Code: 1. Very Good 2. Good 3. Fair 4. Poor 5. Very Poor

Q8. Does Service Provider make field visits to group members?

(1) Yes (2) No

Q9. If yes, how many times during contract period?

(1) <3 times (2) 3 – 5 times (3) 6 – 9 times (4) 10 ≤ times

Q10. Do you use/access technology development sites?

(1) Yes (2) No (go to question 27)

Q11. Why are you not using/accessing technology development sites?

Q12. Does your group have Facilitator and Community Based facilitator?

(1) Yes (2) No

Q13. If yes, does he/she support group members?

(1) Poor (2) average (3) good (4) very good

CHANGES OF EMPOWERMENT OF FARMERS

Q1. Does your group have meetings? 1. Yes 2. No

Q2. If yes, how often

(1) Weekly (2) Bi-monthly (3) Monthly (4) Quarterly

Q3. How is the meeting attendance and participation?

(1) Very Good (2) Good 3. Fair 4. Poor 5. Very poor
Majority

Q4. Do group members participate in monitoring and evaluating NAADS activities?

(1) Yes (2) No

Q5. How often does the above monitors the NAADS activities?

(1) Monthly (2) Quarterly (3) Bi-annually (4) Annually

Q6. Does your group participate in Integrated Support to Farmer Group (ISFG)

1. Yes 2. No (move to question 31)

Q7. If yes, how much have you mobilized saving? _____

Q8. If no, Why?

Q9. Do you feel the general well being and food security situation in your household has improved/worsened

	Change	Reason for change
Wealth level		
Availability of adequate food		
Nutritional quality of food		

Code: 1. improved 2. Improved little 3. No change 4. Worsened a little 5. Worsened a lot

Q10. What are challenges faced by farmers?

Q11. What are some of the possible solution to the challenges?

Q12. List remarkable achievement(s) of farmers attributed to NAADS

THANK YOU.

APPENDIX X: QUESTIONNAIRE FOR DISTRICT/SUB-COUNTY OFFICIALS

PREAMBLE

The purpose of this questionnaire is to find out information on the role of NAADS in poverty reduction among rural communities. The finding of this reach will be used for academic purpose only.

CONFIDENTIALITY

ALL information provided herein will be treated with strict confidentiality.

Date of interview: _____

Questionnaire No: _____ Date _____

IDENTIFICATION

1.Name of Interviewee _____

2.Designation _____

3.Department _____

MAJOR FARMING ACTIVITES

Q1. What are major farming activities in the district/sub-county?

Crop Livestock Fisheries Marketing Others

Q2. A part from farmers, what other business have invested in the agricultural sector

Type of enterprise Approximate Number

- a) Input Supplier
- b) Agro-input
- c) Produce Buyer
- d) Others (Specify)

EXTENSION SERVICES

Q1. Are you aware of the guideline on standards of advisory services

Yes ()

No () If No, go to question No

Q2. If, yes, descried the standard in place guiding extension work

Q3. Do you use any Service Provider?

Yes ()

No ()

Q4. If yes, how many do you have currently and what type of services do they provide.

Q5. How regular do you monitor Service Providers?

Q6. How often do you make monitoring report?

Q7. How would you describe the extension services in the district/sub-county?

	Public Service Provider	Private Service Provider
Very good		
Good		
Poor		
Very poor		

INFORMATION MANAGEMENT

Q1. Do you have an agricultural data base?

Yes ()

No ()

Q2. If yes, what type data base

a) Annual production figures

b) New technologies

c) Others specify

Q3. What are the major sources of information?

Q4. What are the major users of the information?

Q5. How are the information channels to user?

Q6. Do you have mechanism in place for feedback from users of the information?

Yes ()

No ()

Q7. If yes, what mechanism do you have for feed back from users of the information?

Q8. Do you use the feedback obtained from the information users?

Yes ()

No ()

Q9. If yes, how do you use the feedback obtained.

TECHNOLOGY DEVELOPMENT AND ADOPTION

Q1. How many farmers are involved in OFR in the district/sub-county?

Q2. In what ways do farmers participate?

Q3. In last six years, what new technologies have been adopted by farmers in the district/sub-county?

Q4. What do you view as the major challenges to technology adoption in the district/sub-county?

Q5. Suggest solution to the challenges

Thank You.

APPENDIX XI: OBSERVATION SCHEDULE

(A) Observation Schedule for Soil and Water Conservation

1. What are the activities carried out for soil and water conservation?
.....
2. How well done to improve soil and water conservation?
 - (a) Very well done
 - (b) Well done
 - (c) Average
 - (d) Not well
 - (e) Very poorly done

Explain.....

3. How sustainable are the activities?
.....

(B) Observation Schedule for Pest and Disease control

1. What are the activities carried out for Pest and Disease control?
.....
2. How well done to control Pest and Disease?
 - (a) Very well done
 - (b) Well done
 - (c) Average
 - (d) Not well
 - (e) Very poorly done

Explain.....

3. How sustainable are the activities?
.....

(C) Observation Schedule for Post Harvest Management

1. What are the activities carried out for Post Harvest Management?
.....
2. How well done to handle Post Harvest Management?
 - (a) Very well done
 - (b) Well done
 - (c) Average
 - (d) Not well
 - (e) Very poorly done

Explain.....

3. How sustainable are the activities?
.....

(D) Observation Schedule for Health

1. What is health of vulnerable group?

.....
.....

2. How well done to combat health problems (sickness)?

- (a) Very well done
- (b) Well done
- (c) Average
- (d) Not well
- (e) Very poorly done

Explain.....

3. How sustainable are the activities?

.....

(E) Observation Schedule for Environment Protection

1. What are the activities carried out for environmental protection?

.....
.....

2. How well done to combat environment degradation?

- (a) Very well done
- (b) Well done
- (c) Average
- (d) Not well
- (e) Very poorly done

Explain.....

3. How sustainable are the activities?

.....

APPENDIX XIII: MAP OF ARUA DISTRICT

