Fertilizer Distribution Development and Promotion

FINAL TECHNICAL REPORT

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Start Date: April 17th 2007
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Project Completion Summary

Project Title:	Fertilizer Distribution Development and Promotion	
Grant Number:	KT0207	
Lead Organization:	Appropriate Technology Uganda Ltd.	
Project Leader:	Dr. Rita Laker Ojok	
Partner Organizations & names of key staff from each	**Organization**	**Name of Key Staff**
	Uganda National Agro-input Dealer's Association	Thembo Mwesigwa Wilfred
Project Purpose	To foster sustainable adoption of productivity enhancing production technologies by smallholder farmers	
Location	**Country & Districts**	**Sub-Counties/Division**
	Country: Uganda, District: Kanungu	Kambuga, Kanungu T/C, Kanyantorogo, Kayonza, Kihiihi S/C, Kihiihi T/C, Kirima, Mpungu, Nyamirama , Rugyeyo, Rutenga
	Kasese	Bugoye, Bwera, Ihandiro, Karusandara, Kisinga, Kitswamba, Kyabarungira, Kyarumba, Maliba, Muhokya, Munkunyu, Rukoki
	Sironko	Buginyanya, Buhugu, Bukiyi, Bunambutye, Bwikonghe, Butandiga, Buyobo, Muyembe, Nalusala, Buwalasi, Sisiyi, Masira
	Mbale	Bukhonde, Bonghokho
	Manafwa	Bugobero, Butiiru, Manafwa T/C
	Bududa	Bubiita, Bududa, Bukigai
	Interventions also extended to Tororo, Busia, and Budaka through INSPIRE project	Busano, Molo, Bulumbi and Budaka subcounties
Start Date	April 17th 2007	
End Date	March 31st 2010	
Kilimo Trust financial contribution	Grant Amount: £ 159,980 (US$231,971) Loan Amount: £ 140,000 (US$207,402)	
Other donor financial contribution	During the life of the project AT Uganda has also funded by AGRA, DANIDA, ASARECA, NARO, EnterpriseWorks/Vita, and FAO. These other projects help to cover the overhead costs of the organization but have not made a specific contribution to project implementation.	
Total Project cost	£299,980 (US$439,373)	

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Julian Nyachwo, Project Manager, AT Uganda Ltd.

LIST OF ACRONYMS AND ABBREVIATIONS

ACE	Area Cooperative Enterprise
AGRA	Alliance for a Green Revolution in Africa
APEP	Agricultural Productivity Enhancement Program
ATU	Appropriate Technology Uganda Limited
BOD	Board of Directors
CBO	Community Based Organisation
CIAT	International Centre for Tropical Agriculture
DANIDA	Danish International Development Agency
DLG	District Local Government
ESP	Extension Service Provider
INSPIRE	Integrated Soil Productivity Initiative through Research and Education
ISFM	Integrated Soil Fertility Management
KT	Kilimo Trust
MOU	Memorandum of Understanding
NAADs	National Agricultural Advisory Services
NARO	National Agricultural Research Organisation
NGO	Non Government Organisation
PFA	Prosperity For All
RPO	Rural Producer Organisation
TOT	Training of Trainers
UCA	Uganda Cooperative Alliance
UNADA	Uganda National Agro-input Dealers Association

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

Soils in Uganda have been exhausted of their natural fertility through continuous cropping without external inputs and are now extremely deficient in phosphorus and nitrogen. The country has one of the highest soil nutrient depletion rates in the world, yet it also has one of the lowest rates of annual inorganic fertilizer application – less than 1kg per hectare. As a result, crop yields have become very low and the incidence of poverty in rural areas is high. Improving agricultural productivity is vital for rural households in Uganda to meet their food security needs and to promote sustained increases in income. Inorganic fertilizers can be a powerful productivity enhancing input, but must be integrated with other inputs and proper soil management for their economic potential to be realized. Fertilizer in Uganda, is conventionally sold in 50kg bags and farmers are used to thinking that that they cannot afford fertilizer and other improved inputs. Not only are they also unable to obtain appropriate fertilizers and improved seed varieties, but also many farmers are unaware of the correct inputs required to achieve sustainable yields from increasingly depleted soils. But perhaps most important is the common perception that fertilizers spoil the soil. On the side of the input retailers, the vast majority are relatively new micro-enterprises. Most of those in the crop sector sell seeds and chemicals but have been unable to secure credit guarantees to stock fertilizer. Low and uncertain demand, small volumes, fluctuating foreign currency rates, and lack of concerted promotion have been serious constraints.

The fertilizer distribution development and promotion project was implemented by AT Uganda Ltd. in partnership with Uganda National Agro-input Dealers Association. It was a 3-year project that adopted the dual strategy of stimulating the demand for farm inputs by increasing farmer awareness, while improving the availability of inputs through stockists and private sector partnerships to meet the increased demand. The main objective of the project was to foster sustainable adoption of productivity enhancing production technologies by smallholder farmers by increasing farmer's access to inputs and knowledge on proper use of the agricultural inputs. The project was intended to deliver the following key outputs:

1. Capacity of smallholder farmers to efficiently use fertilizer and complementary inputs enhanced for at least 3 selected agricultural enterprises
2. Demand for fertilizer and complementary inputs sustainably increased
3. Local private sector capacity to supply appropriate inputs sustainably enhanced
4. Private/Public partnership capacity to scale-up and out efforts towards overall smallholder farmer access to fertilizer and other improved technologies strengthened

Implementation was in collaboration with UNADA, to create a synergistic inter-relationship between a large number of public/ private stakeholders that are already involved in the sector including among others, NAADs, NARO and private sector seed and fertilizer companies.

To make fertilizers and improved varieties more accessible to small farmers, the project used the mass promotional approaches that included use of mass media and intensive awareness campaigns at organized events where mini-packs of fertilizer and seed were made available by project staff and collaborating input dealers. The mini-pack method was closely linked with farmer trainings and farmer participatory technology demonstrations to promote best practices and recommendations on the appropriate fertilizer types and rates for specific crops and soil conditions. The effort was also closely linked with an input supply component to make fertilizers available on a commercial basis in affordable packages at the rural stockist level. Agricultural extension service provider and stockist capacity in more participatory extension methods was strengthened and their knowledge of fertilizer utilization enhanced.

On the supply side, the promotional efforts were closely linked with an input supply and distribution component to make the fertilizers available and accessible to farmers. The project had a £140,000 (equivalent to US$207,402) fertilizer loan component that was intended to build a distribution system that ensures that farmers gain timely access to inputs and that is capable of responding quickly to increased demand. A procurement scheme was designed with affordable payment terms and implemented by UNADA. District level distributors were identified and facilitated to get fertilizer stocks using a combination of cash loans with partial down payment. A credit guarantee scheme with 30% cash down-payment was also designed for the input retailers to get fertilizer stock from the distributors. Emphasis was also placed on improving the capacity of dealers to make sound business decisions, and to be able to better advice farmers on appropriate fertilizer use.

Interventions were piloted in Kanungu and Sironko Districts in year one, and expanded to Mbale, Manafwa, Bududa and Kasese Districts in year two and three, covering a total of 43 subcounties. The following are the key outputs and outcomes of the project:

1. By end of project, 365 farmer groups had been mobilized and over 400 demonstrations established (83% of target) on 13 (433%) crop enterprises over the three year period. Evaluation of demonstration gardens indicated good returns to fertilizer use and improved agronomic practices (226 % increase in income compared to non use). New crop varieties of maize, beans, tomatoes and cabbages with specific desirable characteristics were introduced and appreciated by farmers. Awareness, farmer training and input promotional events resulted in new farmers using fertilizers. In total, 31,567 (105%) individual farmers were reached by the project, of which at least 10,574 were new farmers using fertilizers for the first time. As a result of increased knowledge and skills on fertilizer use, farmers were able to efficiently use fertilizer and realized at least 40% increase in yields of key crops, particularly maize, beans, rice, sunflower, tomatoes, onions, cabbages, coffee and bananas.

2. Media campaigns to promote improved inputs and fertilizer use were conducted on 6 local FM stations and it is estimated that over 10 million listeners were reached. The impact survey conducted in August 2009 found that 18.1% of the non participating farmers learnt about fertilizer use through radio programmes.

3. This combination of fertilizer promotion efforts resulted in an increase in demand for fertilizer and complimentary inputs as evidenced by the sales levels realised by input retailers (stockists). More evidence of this is also provided by the fact that the subcounty level NAADs procurements in all districts in the project area has now focused on fertilizers. In year 2, procurements of over 80MT were documented in the pioneer districts of Kanungu and Sironko. An annual impact study was conducted and indicated that in Kanungu, demand for fertilizers for food crops had been created by the project unlike before, when farmers knew its use traditionally on tea and tobacco production only. At least 20 % (approximately 6,313 farmers) learnt about fertilizer for the first time, that is, through the project; and at least 33.5% (approximately10,574 farmers) used for the first time. The quantities of fertilizer bought by the farmers increase over the seasons from 25kg in 2008B to 52.4kg in 2009B, an increase of 109.6%.

4. Impact data has also revealed that yields increased substantially, and that adopting farmers derived various benefits from use of productivity enhancing technologies that included increased productivity which led to adequate food supplies for home consumption, more incomes and other benefits accruing from increased incomes such as better education for

their dependants and purchase of productive assets such as livestock and land among others.

5. The project worked with 6 (300%) fertilizers suppliers, 14 (233%) distributors and 97 (242%) input retailers in an effort to make appropriately packed fertilizers available to smallholder farmers. Thirty five (35) of the retailer businesses were started as a result of increased demand due to the project intervention. However, availability of fertilizers in small packs was generally constrained by very low supply. Instead, input retailers adjusted to meet the demand by illegally repacking at the point of sale to suit the farmer's needs. At the close of project, all the fertilizers suppliers, distributors and 95 (98%) of the input retailers were still in business.

6. In total Ushs. 481,292,650 (US$240,646) was disbursed in loans to the distributors, who in total procured 1384.75 tons of assorted fertilizers worth Ushs. 2,273,195,150 (US$1,136,598) for onward sale to stockists through a credit guarantee scheme. However, only 20 retailers utilized this service and procured 26 tons worth. The rest of the stockists obtained their fertilizer supplies from informal sources. Repayment of the loan fund stood at 30% at the EOP.

7. By end of year 2, each stockist was selling on average 5,682 MT annually. At least 65% of the input dealers started selling fertilizers due to increased demand. About 53.1% reported increase in the quantities sold due to increased demand.

8. A few stockists established links with bulk buyers specifically District Local Governments/ NAADS as reported by 43.8%, and NGOs as indicated by12.5 % of the stockists. About 40.6 % sold to organized farmer groups.

9. The project created links with the district production departments, district NAADS programs, Non Government Organisations, Community Based Organisations and Public/Private Isntitutions. Their capacity to scale out project interventions was enhanced through training. As a result, a total of 308 (308%) private and public sector extension service providers, farmer facilitators and local stockists were trained to conduct demonstrations and provide technical advice on fertilizer use. They later, were able to include fertilizer use in their own work plans, and assisted in promoting fertilizer use using the different techniques. They are expected to have reached at least 97,976 farmers by June 2010.

In summary, the findings of this project suggest that improving the efficiency of fertilizer use among smallholder farmers through more effective extension messages and timely fertilizer availability makes fertilizer use profitable. The project also confirmed that Public-Private Partnerships need to be enhanced to make development outputs more achievable. The "farming as a business" approach that emphasized record keeping and assessment of profitability for alternative farming methods, income target setting through proper enterprise selection, risk management to maximize productivity and incomes was very well appreciated. Farmers were able to replicate the messages, resulting in high productivity levels. However, output marketing remained a key challenge that needed to be addressed if these productivity levels are to be sustained. Small holder farmers' acquisition of fertilizer is governed by the profitability of their crops and access to functional output markets. The cash raised by sales of produce in turn allows further investment in inputs for soil health. In the pilot districts of Kanungu and Sironko, the resultant productivity levels in season 2009B led to a market glut, causing market prices to significantly reduce. This led to an outcry from the farmers, especially

those who had invested in fertilizer. An assessment of the current structures in place clearly indicated a lack of adequate capacity to address marketing interventions that included having in place strong organized farmer groups, good post harvest handling and adequate storage capacity. This case has been highlighted by many if not all the stakeholders during the most recent exit meetings and calls for a follow-on intervention to fill the gaps. Improved market access will result in improved input utilization and management of natural resources, resulting in sustainably enhanced productivity and livelihoods.

1 BACKGROUND

1.1 Introduction

Uganda is predominantly an agricultural economy. The agricultural sector contributes 38% of the gross domestic product (GDP), employs 80% of the population in the rural areas and is a main source of foreign exchange. Yet land and labour productivity is low and the incidence of poverty, especially in rural areas is high. Nearly one half of the population lives below the poverty level and faces food insecurity. The challenges of food insecurity and poverty are compounded by the HIV/AIDS health crisis and environmental degradation that Uganda is facing. In confronting these socio-economic challenges, the agricultural sector has a lead role to play. However, with its current low productivity status, the agricultural sector can do little to improve the socio-economic situation. The plan for modernization of Agriculture (PMA) recognizes the high contribution of the environment and natural resources (ENR) to gross domestic production. More specifically, that the poor depend on the ENR for basic needs and food security and that turning subsistence farmers into commercial farmers will depend on the quality of land to sustain and increase yields or to diversify into other enterprises (Ssali, *et. al* 2005). Soil productivity decline has been highlighted by stakeholders as a major constraint to agricultural productivity throughout the country. While recent studies may differ slightly in their estimates of the annual nutrient depletion of Uganda soils, they strongly agree that the problem is extensive as indicated in table 1 below. The level of nutrient mining differs by region, with the highest agricultural potential regions experiencing the highest depletion as a result of more intensive production systems with higher yields not being offset by net nutrient inflows.

The soil nutrient depletion is as a result of (i) the soils being mined for a long time without replenishment, (ii) water losses by run-off and evaporation, (iii) loss of soil by "in-situ" destruction or removal of crop residual and land cover, (iv) accelerated loss of soil organic matter due to continuous cultivation, removal of residues, and erosion, and (v) restricted rooting caused by soil compaction, often linked to soil texture and tillage practices.

Table 1: Annual estimates of nutrient depletion from two sources

Major Nutrient	FAO estimate Average balance (kg/ha[1])	IFPRI estimate Average balance (kg/ha)[2]
N	-38.1	-72
P_2O_5	-16.5	-23
K_2O	-32.2	-43
Total	**-86.8**	**-138**

Ironically, recent in depth research (Nkonya *et. al.* 2004) indicates that improved market access actually results in greater soil depletion, as a result of stepwise adoption of productivity enhancing inputs. The Ugandan smallholder's first response to improved market opportunities is to adopt more productive seed varieties. This process increases the off take of soil nutrients without making any effort to replace the nutrients represented by the extra marketed surplus.

[1] Uganda soil fertility initiative (USFI) and studies by FAO exploratory mission.
[2] Ssali et. al 2005. These are total farm level balances. Depletion at the plot level is even higher, averaging 112.6 kg N, 32.6 kg P and 97.2 kg K indicating that a fair proportion of farm level inflows do not actually reach the plot.

The result is a short term unsustainable increase in production, and a long term increase in soil depletion.

1.2 The Problem

Millions of households in Uganda are trying to survive from farming. Most live below the poverty line and suffer food insecurity. In Uganda, where soil erosion and depletion of soil nutrients is widespread, land degradation is a major cause of declining productivity and increasing poverty (Nkonya *et. al.* 2004). Greater use of inorganic fertilizer, supplemented with labour intensive approaches to soil and water conservation and organic nutrient supplementation, is central to realizing the productivity and yield increases required to override the current situation. Unfortunately, only 2[3]% of smallholders (who are the major food producers) use inorganic fertilizer, and only about 24% apply organic inputs – mostly on perennial crops (Ssali *et al* 2005). The current fertilizer usage rate is estimated at just 1kg/Ha, a very low utilization level compared to Kenya's 31.6 kg/Ha (Jayne et al, 2003 as cited by Omiat & Diiro, 2005).

A number of reasons explain the low fertilizer use in Uganda. There has been little emphasis on fertilizer application during the past two decades, and until the 1990s, many Ugandans believed that the soils in the country were sufficiently fertile, and that there was no need to apply fertilizers. Unfortunately, this misconception still prevails. The knowledge of proper application practices, including appropriateness of different products for specific crops and soil conditions, is highly deficient among extension workers and stockists, who are therefore unable to provide the appropriate advisory services to farmers. Consequently, many farmers lack the knowledge and skills needed to use fertilizer efficiently. Other NGO's committed to "sustainable agriculture" go so far as to actively de-campaign the use of fertilizer, telling farmers it spoils the soil, despite the lack of sufficient organic alternatives in many locations.

However, even if farmers had the knowledge and skills, often times, the fertilizers are not available when needed, where needed, and in the appropriate size and formulation. The prevailing system of fertilizer procurement and distribution in Uganda is dominated by wholesale procurement, high prices and low retail margins. The high costs associated with fertilizer imports into Uganda make fertilizer too expensive for most smallholder farmers to afford, especially when the farmer's high transaction costs of procurement are added. The country has a thin distribution network of about 20 distributors and 760 stockists, with very limited volumes of sale. The vast majority of what importers sell is wholesaled directly to the large commercial estates and out-grower schemes, with no importer deliberately targeting smallholder farmers. There is a scarcity of dealers in the rural areas, and farmers have to travel long distances (of up to 50km) to purchase fertilizers.

Farmers have little if any access to credit to purchase fertilizer except through out-growers schemes in the tea and sugar industry and informal credit markets. Additionally, there are high risks associated with fertilizer application. These include farmers' over dependence on rainfall, thereby exposing them to weather related production variability. Drought often leads to crop failure and heavy losses, thereby reducing incentives to fertilizer use. Similarly the strong interrelationship between soil fertility, pests/weeds and diseases implies that all three need to be

[3] (Pender et al. 2001) estimated that fewer than 10 percent of smallholder farmers in Uganda use inorganic fertilizer.

addressed concurrently in order to achieve positive returns to investment[4]. The lack of appropriate research has also resulted in continued use of outdated fertilizer recommendations[5]. Another reason for low fertilizer use is poorly functioning output markets. Demand for fertilizers is a derived demand, and until such time that output market development and price stability is suitably addressed, the fertilizer market will continue to be slow to develop.

1.3 The Structure of The Fertilizer Sub-Sector

Uganda's fertilizer market is fully liberalized. Procurement and distribution of fertilizer is thus, the preserve of the private sector. Fertilizer imports have traditionally been procured from suppliers in South Africa, the Middle East, Mauritius and Europe. However, direct importation was limited by the associated stringent requirements[6], which were not favourable for small scale importers. Import costs by Ugandan firms were extremely high by world standards due to the high transaction costs resulting from low volume purchases, limited competition, high transport costs, knowledge gaps, depreciating value of the Uganda shilling, and high interest rates. As such, Ugandan importers have in the recent years been mostly procuring supplies from Kenyan importers (i.e. YARA-formerly Norsk Hydro, SKL and MEA) either via the port of Mombasa, or directly from Nairobi, Nakuru or Eldoret. These business linkages with importers from Kenya have helped the local importers to achieve 20%-30% lower import procurement prices. Even then, the prices still remain high. The key players in fertilizer procurement and distribution include:

a) Large scale farms: These are mainly commercial tea, sugar, tobacco, flower and rice growers. They typically procure fertilizers directly, either from Europe or South Africa where they have established trading houses, or from large suppliers in Kenya. Occasionally, they put out tenders for supply by domestic firms. Their estimated market share is about 30%.

b) Commercial importers: This category consists of about 8-10 fertilizer importers (excluding unlicensed importers), who are mostly based in Kampala and Mbale. An important feature of the fertilizer marketing system is that Uganda's importers function primarily as brokers. Brokers import fertilizers only after tendering for and being awarded a contract by the commercial crop growers. Due to market risk and high cost of credit, importers do not maintain significant inventories of fertilizer for resale. The vast majority of what these importers sell is wholesaled directly to the large commercial estates and out-grower schemes. None of the importers is intentionally targeting the smallholder market.

c) Wholesalers: There are about 15-20 distributors in Uganda, who pick fertilizers from importers and sell it to retailers and a small number of farmers on retail basis. Save for two importer-wholesalers in Mbale, fertilizer wholesaling is concentrated in Kampala. In addition, there is a significant parallel market of informal importer/wholesalers who

[4] Nkonya et. al. (2004) stress the point that pests and diseases limit the response of crop yield to fertilizer, thus reducing farmers' use of such inputs. Inversely, failure to use replenishing inputs depletes the soil of its fertility, making crops more susceptible to disease/pest attack and encourage parasitic weeds like striga (Sserunkuuma et al. 2001).

[5] Current fertilizer recommendations are based on the trials that were conducted in the 1960s by FAO and MAAIF. KARI, under NARO, is responsible for soil fertility research, but has limited resources.

[6] Overseas suppliers require consignments to be at least 300mt. Such consignments cost cash amounts well beyond a typical Ugandan importer.

bring small truck loads directly from Kenya, bypassing customs and avoiding payment of the 6% withholding tax that is borne by the licensed importers. These imports never register in the national statistics and the volume they represent is unknown, but they are the primary source of fertilizer for the smallest commercial farmers and retailers – especially in Eastern Uganda[7]. The absence of a geographically dispersed wholesaling backbone is thus, a unique feature in Uganda's fertilizer market. Virtually all fertilizer sold outside Kampala is sold on retail basis. Several traders interviewed, quoted "wholesale prices" but most invariably, "wholesale" refers to a few 50kg bags.

d) Retailers: There are only about 966 input retailers in the country who sell fertilizer[8]. The implication of this is that the number of dealers serving the farming population is very limited. In most cases, trade occurs in one-person small stalls (kiosks) in or near central market places. According to the agro-input dealer's census conducted in 2004, the districts with the largest number of fertilizer retailers included Sironko, Masaka, Mukono, Mbale, Iganga, and Kapchorwa. In theory, retailers should form a vital link between fertilizer importers, dealers and users, but only very small quantities (less than 1%) pass through this channel. The lack of effective demand, absence of regional wholesale sources, and low access to credit for fertilizer (despite the offer of credit guarantees) severely impede the functioning of fertilizer retail markets.

1.4 Previous Efforts

Some donor funded programmes/projects implemented by NGO's such as SG2000, the the former IDEA and APEP projects funded by USAID and AT Uganda Ltd. have since 1998, played a key role in initiating new approaches such as investing resources to build capacity for input supply among stockists in the country so as to catalyze the demand for inputs by smallholder farmers. Over the years, these organizations have trained over 3,000 individuals in business management, financial management and in fertilizer product knowledge so that they can advise farmers on the proper use of fertilizers and other inputs, but not all of the individuals trained are active stockists.

In October 2003 AT Uganda launched a three-year project to "Facilitate Agricultural Input Distribution in Uganda", funded by USAID and Rockefeller Foundation. The Project was intended to facilitate the growth and development of private sector agro-input distribution networks in Uganda. AT Uganda Ltd. also facilitated the rural agro-input retailers to form the Uganda National Agro-inputs Dealers Association (UNADA) which had over 450 members from 43 Districts by the end of 2005. These members were organized in 52 local branches in 10 Regions all across Uganda.

During the last quarter of 2004, a National Agro-Input Dealers Census was conducted. The purpose of this massive endeavor was to gain valuable information about the nature of the Agro-Input Distribution System in Uganda, its composition, challenges and needs. The census was repeated in December 2009. The Census takers identified and interviewed a total of 2,064 input dealers. This should be considered a minimum estimate of the number of input dealers in the country, since the Census process was less than complete in some areas due to political insecurity (especially in the North) and inaccessibility due to weather and poor roads. Of the

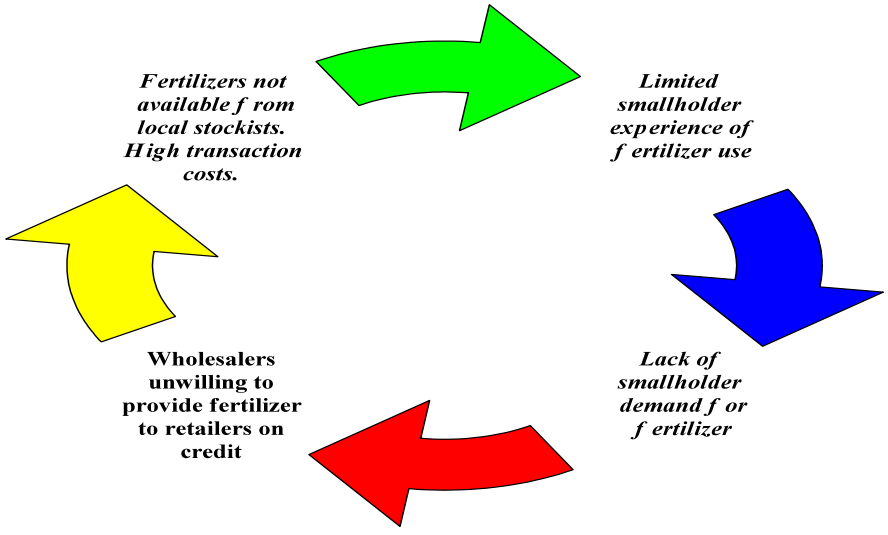
[7] There are also reportedly malpractices whereby informal traders unstitch the bags and remove a portion of the fertilizer before stitching back the bags, thereby selling underweight fertilizer that goes undetected by retailers and farmers, further undercutting legitimate importers.

[8] Agri-Inputs Dealers Census Results, 2009. This number is up from 760 who were found to sell fertilizer during the 2004 Census.

identified dealers 1,337 (67%) sold Crop inputs, 211 (10%) sold livestock inputs, and 476 (23%) sold both.

Despite all the effort to strengthen input distribution networks in Uganda, access to fertilizer in the rural areas has not significantly improved. The stockist network remains extremely limited not only in terms of number and the geographic coverage, but in the volume of business for each of these retailers. Most of the dealers selling crop inputs concentrated on agro-chemicals and seeds. The volume of sales for fertilizers is much lower and limited to only 966 in 2009 (up from 760 in 2004). The retailers should form a vital link between fertilizer manufacturers, dealers and consumers, but only very small quantities pass through this channel. According to the 2004 Agro-Input Dealers Census data only 20 of the retailers selling fertilizer sold more than 1mt per year, and only 8 sold more than 2 tonnes. According to the census data, therefore, total rural retail sales to smallholders was less than 150mt. This constitutes less than .5% of the commercial imports at that time. At this rate, it is no wonder that the importers concentrated their attention on competing for the commercial market and ignore the smallholders. The result was that the vast majority of Uganda's farmers, and particularly those in more remote areas, did not have convenient access to fertilizer supplies. There was little effort underway to stimulate demand for fertilizer through promotional activities such as demonstrations, wall posters, farmer education programs, and media campaigns. The distributors and stockists were poorly financed, and because of the significant fluctuation of fertilizer prices and low profit margins, suppliers had been unwilling to extend suppliers' credit to retailers for small purchases of fertilizer, even with the offer of a credit guarantee through UNADA. This problem compounded the problem of fertilizer availability for the smallholder sector. As a result of the aforementioned reasons, the private sector had been unable or unwilling to take the lead in investing in the development of fertilizer distribution channels for smallholder farmers, and new innovative approaches were required to stimulate the demand for fertilizers by small farmers and assure their ready access, and in so doing help to break the vicious cycle of low fertilizer use and access indicated in figure 1 below.

Figure 1: Vicious Cycle of Low Fertilizer Use



1.5 The Fertilizer Distribution Development and Promotion Project

Recognizing the importance of fertilizer use to boost agricultural production AT Uganda Ltd in partnership with Uganda National Agro-input Dealer's Association (UNADA) has since May 2007 been implementing the 3 year "Fertilizer Distribution Development and Promotion" project which uses the dual strategy of stimulating the demand for fertilizer and complimentary inputs, while at the same time improving the availability of these inputs by encouraging the emergence of a sustainable fertilizer small packs supply and distribution system. The demand side interventions were designed to foster adoption of fertilizers, and there by increase productivity among smallholder farmers. On the supply side, the promotional efforts were closely linked with an input supply and distribution system intended to ensure that farmers gain timely access to inputs and to respond quickly to increased demand.

1.6 Project Purpose

The project purpose was to foster sustainable adoption of productivity enhancing technologies by smallholder farmers.

The project was designed to deliver outcomes basing on the following outputs:

1. Capacity of smallholder farmers to efficiently use fertilizer and complimentary inputs for at least 3 selected agricultural enterprises enhanced.
2. Demand for fertilizer and complimentary inputs sustainably increased.
3. Local private sector capacity to supply appropriate inputs sustainably enhanced.
4. Private/Public Partnership capacity to scale-up and out efforts towards overall smallholder farmer access to fertilizer and other improved technologies strengthened.

2 METHODOLOGY

A two prong approach aimed at stimulating demand for farm inputs by increasing farmers' awareness while at the same time increasing availability of inputs through stockists and private sector partners to meet the increased demand was employed. This dual strategy was adapted from the approach used by Farm Input Promotions Service Africa (FIPS-Africa), an NGO in Kenya.

2.1 Demand Side Interventions:

The approach focused on collaboration with a large number of existing farmer groups that have been formed around agricultural production by NAADs, and various other extension and NGO efforts. The methodology included:

2.1.1 Identification and Demonstration of Appropriate Fertilizer and Soil Fertility Recommendations

Participatory selection of crop enterprises with potential for best payoff when using fertilizer was done with the farmers at group level during joint pre-seasonal meetings. At these meetings, the different stakeholder roles were agreed upon. Farmer participatory demonstrations on appropriate fertilizer types, rates, improved crop management practices and varieties were conducted on standard 10 meter by 10 meter plots[9] using the NARO recommended protocols for the selected enterprises with at least two or three treatments per variety. The three treatments included high input (improved seeds with fertilizer, low input (improved seed without fertilizer) and the farmer's practice. The demonstrations (that included subcounty level model demonstrations and road side demonstrations spread around the subcounty) were hosted by selected group representatives, who not only provided the land, but also the local seed and labour. They also made a commitment to share information with other farmers and allow access to the demonstration plot at all times to members and non members of the group, and to implement the knowledge and skills acquired.

The demonstration inputs were initially provided by the collaborating suppliers (year 1) but because of the challenges faced, especially with regard to timely establishment of demonstrations, the project later took on this role. Various options of varieties of the selected enterprise (annual crops) and alternative fertilizers types were availed. Subcounty level Extension Service Providers (Public and Private) were engaged to provide short term technical advice for purposes of the participatory and timely technology testing, but the project did not make long term commitments to support the groups. Mini and major field days were organized around the demonstrations (for the group members and the public respectively) to learn how to improve their crop productivity. The process was carefully documented (see annex.1. for sample data collection tools) including costs. The data from the demonstration was analysed using simple quantitative statistics that are easily understandable by smallholder farmers. The results were promoted and disseminated using different approaches and at the end of season evaluations and other training events. The computed costs and benefits in turn formed the basis on which a farmer would make an informed decision on whether to invest in fertilizers and improved seed or not in the coming season.

2.1.2 Farmer Training and Advisory Services

[9] This sometime varied and increased or decreased depending on the size of land allocated by the contact farmer.

Regular training and supervision was provided to the farmers participating in planting and managing the demonstrations or observing the demonstrations through field day sessions. Other trainings were conducted at subcounty or parish levels to capture other community members and not necessarily the demonstration group. Messages on inorganic fertilizer use, integrated soil fertility management (ISFM), soil and water conservation, recommended agronomic practices, and farming as a business were emphasized.

The training of trainers (TOT) approach was another strategy used to train contact farmers /community based facilitators who would in turn train other farmers/group members.

2.1.3 Training Extension Service Providers (ESPs)

Two – four day workshops were held to train collaborating local government staff (Agriculture/Production Department and NAADS), private sector ESPs, stockists and NGOs. Key facilitators from NARO specifically from Kawanda Soils program, MAAIF, Makerere University and Senior District Production Staff handle selected topics. The following tools and approaches were adopted to achieve the workshop objectives:

a) *Short Presentations*: to introduce and highlight the concepts and issues that were less familiar to participants. They were instrumental in creating concept understanding and mapping out possible application avenues. Trainer's manuals and notes/hand outs were provided to trainees.
b) *Class Discussions* - Q&A plenary discussions to come to a common agreement.
c) *Group work*: Participants were divided into smaller groups to, for example, to conduct soil test practicals or discuss a topic and present their results for further discussion in a plenary.
d) *Field Practicals:* to build participant skills in identifying pests and diseases, on soil sampling techniques, etc.

This training of Trainers' methodology was an upfront exit strategy for scaling up the project interventions and promote long term impact.

2.1.4 Intensive promotion of fertilizer and improved inputs

To make fertilizer and improved varieties more accessible to smallholder farmers, the approach was based on the mass promotion of improved technologies through small affordable packs of fertilizers and an equivalent seed pack. This approach (called the small packs approach) entailed re-packaging fertilizer into mini packs of 1, 2 and 5 kilograms and selling it together with a free promotional packet of seed so as to encourage farmers to try-out/experiment on a smaller and affordable scale. Farmers were trained in seed spacing and fertilizer placement to get maximum economic returns from the inputs. The awareness raising campaigns were staged at retailers' shops, in markets, during farmer field days and farmer group/village meetings and at any other public gathering where the small packs were sold by project staff and collaborating stockists. The campaigns also involved local and opinion leaders, an approach that scored very highly in Kanungu District[10]. Production/fertilizer literature was also disseminated. Since farmers contributed to the cost of the promotional package (on average Ushs.2000 per 1 kg fertilizer pack), they were encouraged to consider farming as a business. Efforts to closely link the promotion effort with the input supply

[10] In subcounties like Kayonza and Kihiihi where LCIII chairpersons were involved, the campaign turned into a food security campaign and many households were encouraged to participate.

component to make the appropriate fertilizers available on a commercial basis in affordable packages (1, 2, 5, and 10kg) at the rural stockist level were made. The project supported the importation/repackaging of the 2, 5 and 10kg sizes on special arrangement with the distributors. All mini packs were labeled with the fertilizer type and instructions for use.

2.1.5 Production and Dissemination of Promotional and Educational Materials

Technical leaflets, posters, brochures on production of selected crops and fertilizer product knowledge and utilization were designed, pre-tested with a few beneficiaries and revised accordingly. Copies were reproduced and disseminated/distributed to various stakeholders who included farmers, input dealers, and ESP's and to other stakeholders during stakeholder meetings as an output of this project. Translations to local languages that included Runyakitara, Lukonjo and Lumasaba were done for Kanungu, Kasese and Mbale regions respectively.

Radio programs on local FM stations that included pre-recordings and interactive shows were also used to disseminate the information. Presenters included project staff and technical resource persons from the production sector, agro-dealers, and farmers who shared their testimonies. Appropriate topics were selected according to timing of agricultural activities and based on critical issues raised through feedback from the listeners. Radio programs also included regular advertments of the location of stockist shops.

2.1.6 Provision of soil testing services

For fertilizer use to be effective and profitable, an assessment of the nutrient requirements of the crop must be done, and knowledge of effective fertilizer utilization must be available. Field soil testing kits (STK) (a unique innovation by Makerere University Soil Science Department) were purchased and availed for this purpose, and farmers who were willing pay a small token of Ushs. 5000 for soil testing services were provided with alternative solutions to problems identified in their soils. The STK is simply an assembly of testing reagents which are used for semi quantitative evaluations of five nutrient investigative parameters, which include pH, organic matter, Nitrogen, Phosphorus and Potassium. Approximately 50 to 60 tests can be performed using reagents from one STK, and advantageously, the test reagents can be replenished from the Soil Science Department at a modest cost to allow for continuity in STK use. Presently, the cost of the STK is Ug Shs. 180,000 (approximately US$90).

Participating ESPs were trained and equipped with sufficient knowledge and skills to assess the nutrient requirements, match them with available sources of nutrients and calculate the expected profitability of alternative soil improvement strategies. A sample soil test recommendation form is attached as annex 2.

3.2 Supply Side Interventions

These were intended to encourage the emergence of a sustainable input importation and distribution system. UNADA was the implementing partner responsible for supply side interventions and an important conduit for the supply response principally from private importers and wholesalers.

3.1.1 Agro-dealer Training

Agrodealers are critical to farmers' access to affordable quantities of appropriate fertilizer in their local environments. With business support to increase access to working capital, improve marketing of farm inputs and basic record keeping, agro-dealers are becoming the private sector entities that are the smallholder's source for a range of inputs.

In this project, interested agrodealers were enlisted to participate and mobilized to attend ongoing UNADA's trainings[11] or any other relevant training as demanded such as establishing demonstration gardens. The trainings emphasised on improving the business skills of dealers so they can make sound business decisions; for example, through inventory management; book-keeping; product knowledge; and promotion; and to increase agro-dealer awareness of new products so they can better advise farmers.

3.1.2 Setting up a Fertilizer Distribution Mechanism

A procurement scheme was designed in response to the fertilizer market situation. It was administered by UNADA and targeted to the beneficiaries so as to enhance stockist access to sustainable fertilizer supplies on affordable payment terms, while ensuring availability of appropriate fertilizer packs as close to the farmer as possible. It included a capital fund of £140,000 provided by the Kilimo Trust (the Donor) in 2 installments. It is scheduled to be repaid within one year of the project completion. UNADA identified and facilitated district level distributors to import/bulk sufficient quantities of (appropriately packaged) fertilizer using a combination of consignment and cash loans with partial down payment (40%). The Association also assisted agro-dealers to initiate/build linkages within the supply chain, so as to qualify for supplier's credit. Interested fertilizer retailers got fertilizer from distributors on credit with partial cash down payments of 30%. The fertilizer supplies were coordinated alongside promotions for other agricultural inputs and support of dealership network to supply other complimentary inputs to beneficiaries.

3.1.3 Improving fertilizer affordability

To increase fertilizer affordability for small producers, UNADA worked with an identified supplier (MEA in Kenya) to avail more appropriate and affordable packaging sizes (i.e. 2, 5, and 10 kg) for distribution and sale. This played two key functions, i.e. enhancing affordability of fertilizer for poor households, and reducing the risk for smallholder farmers experimenting with fertilizer.

3.1.4 Strengthening Linkage of Input Retailers to Farmer Organizations

The project made efforts to coordinate with out-grower schemes and producer organizations to arrange bulk procurement of desired inputs. Linkages to small holder tea estates and producer marketing organizations that desire access to quality inputs for their members were initiated. UNADA's capacity to continue facilitating such linkages for its members on a sustainable commercial basis was strengthened.

All in all, the role of AT Uganda Ltd. and UNADA was to facilitate the market rather than provide services directly. All the activities were implemented in close cooperation with the district local governments, particularly the Production Department/District NAADs programs, Smallholder Tea Growers Associations and Producer Organizations (through Kayonza Growers' Tea Factory and Uganda Cooperative Alliance) who are seeking sustainable sources

[11] UNADA already had ongoing programs that train stockists in both marketing/business and technical skills.

of agricultural inputs, and NGOs/CBOs and other development agencies working with farmer groups but have generally failed to make the necessary private sector linkages for access to inputs. Through this collaboration, the project ensured that the same extension messages are disseminated and reached farmers on a large scale. In the process, synergistic inter-relationships between many stakeholders that are already involved in the sector were created.

3.3 Project Implementation Team

This project was implemented by a team of 4 fulltime staff – Ms. Julian Nyachwo, the Project Manager and 3 Fertilizer Promotions Officers (Ms. Ketty Nambozo for Eastern Uganda, Ms. Florence Byamugisha for Kanungu District and Mr. Joseph Bindu for Kasese District). These field staff were technically backstopped by Dr. Rita Laker Ojok, the Executive Director, and Ms. Tino Grace the Monitoring and Evaluation Officer. Project staff worked very closely with seconded staff from a number of collaborating organizations as listed in table 2 below. It also contracted a number of private ESP's to assist with the farmer training programs. Other collaborators included 6 media organizations (refer to table 5 below), private sector seed and fertilizer companies that included Evergreen International, General and Allied, NASECO, EA Seeds, and Mt. Elgon Seeds.