

**Fertile Grounds Initiative**  
**UGANDA**

## Towards Nutrient Cycle Optimization through Synergies with Sustainable Land Management Stakeholders in Pilot Zones of the Fertile Grounds Initiative in Uganda



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### **Abstract**

Low and declining soil fertility levels present a real constraint for agricultural production in general and food security in particular. Uganda's declining soil fertility is largely caused, inter alia, by soil erosion, nutrient removal, inadequate capacity of farmers to replenish soil nutrients, and leaching of soils. The key concern is that most Ugandan farmers do not have the technical capacity and the financial resources to carry out soil sample testing. As a consequence most are unable to detect which nutrients are lacking nor to identify locally available nutrient sources.

In the past there have been many interventions and huge investments to increase soil fertility levels, but they did not solve the problem of disconnected nutrient flows. This is why additional action is required that will enable farmers to improve their low soil fertility levels by optimizing and redistributing locally available resources, supplemented with external inputs. Alterra Wageningen UR, ZOA and Soil & More International have launched the "Fertile Grounds Initiative" (FGI), and developed an approach aiming at a better nutrient management with the intent to increase soil fertility and thus enhance food and economic security. This approach is based on 8 components, and includes: inventory of nutrient requirement and supply, forming a so called nutrient gap analysis; producing integrated fertilizer products; bringing together supply and demand of nutrients and developing arrangements for trade (brokering); optimizing nutrient trade and transport to ensure a well-organized nutrient supply (trade logistics); capacity building for a variety of different stakeholders; institutional arrangements regarding cooperatives, nutrient banks, legal and institutional embedding; and upscaling activities to the governmental scale and providing support to policy making. This report is an output of the initial stakeholder mapping as part of the preparation phase for the piloting of the Fertile Grounds Initiative in Uganda.

Keywords: Fertile Grounds Initiative, Uganda, Soil productivity, Soil fertility, Stakeholder alignment, Synergy, Rural development

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## Acronyms & Abbreviations

ARIS	Agricultural Research Information Systems
BN	Biological Nitrogen fixation
CAADP	Comprehensive Africa Agriculture Development Programme
CHEHRI	Community Health Environment and Human Rights Interventions
CSOs	Civil Society Organizations
CRIST	Church Role In Socio Economic Transformation
DETREC	Development Training and Research Centre
FGI	Fertile Grounds Initiative
GDP	Gross Domestic Product
Ha	Hectare
ISFM	Integrated Soil Fertility Management (ISFM)
KDFA	Kyenjojo District Farmers Association
Kg	Kilogram
IFDC	International Fertilizer Development Centre
IFPRI	International Food and Policy Research Institute
IITA	International Institute Tropical Agriculture
NAADS	National Agricultural Advisory Services
NaRL	National Research Laboratories
NARLab	National Agricultural Research Laboratories
NDP	National Development Plan
NFS	National Fertilizer Sub-Sector Development Strategy and Investment Plan
NGOs	Non-Governmental Organizations
PASIC	Policy Action for Sustainable Intensification of Ugandan Cropping Systems
RPOs	Rural Producer's Organizations
TOR	Terms of Reference
UBOS	Uganda Bureau of Statics
UIC	Uganda Investment Company
UIRI	Uganda Industrial Research Institute
UNFA	Uganda National Farmers' Association
UNFFE	Uganda National Farmers Federation
URA	Uganda Revenue Authority
USIF-SLM	Uganda Strategic Investment Framework for Sustainable Land Management
WUR	Wageningen University and Research Centre

## Executive Summary

Presented in this report are the findings of the stakeholder mapping study of key actors in the sustainable land management sub-sector with a specific focus on nutrient recycling potential among farmers in selected agro-ecological zones of Uganda. This stakeholder mapping study is based on the study commissioned by the Fertile Grounds Initiative (FGI) and conducted during the month of May 2015 by an independent Ugandan consultancy (Winsor Consult Ltd.) and a fact finding mission in the same month.

The objectives of the study included: i) capturing relevant details and needs of major Integrate Soil Fertility Management (ISFM) stakeholders, initiatives and policies at national level in Uganda; ii) obtaining relevant details and needs of major ISFM stakeholders in the FGI pilot zones; iii) identifying major constraints and current needs of stakeholders; iv) Identifying critical partnerships for cooperation, together with operations that could contribute to synergies with FGI; and v) identifying possible quick wins for restoring and maintaining land productivity through FGI activities in each of the FGI pilot zones.

The main stakeholders for FGI in Uganda are Government ministries notably the Ministry of Agriculture Animal Industry and Fisheries (MAAIF); Ministry of Lands Housing and Urban Development (MoLHUD), and Ministry of Trade, Industry and Cooperatives (MoTIC), and district local governments and urban authorities including Kampala Capital City Authority. Other stakeholders are government bodies established by statutory instruments including the Uganda National Bureau of Standards (UNBS) and the National Agriculture Advisory Services (NAADS); Non-Government Organizations (NGOs) and Civil Society Organizations (CSOs). National and international level research institutions, private soil science and farm extension service providers, financial institutions, importers, whole sale traders, and stockists complement the stakeholder spectrum surrounding farmers, producers and farmer organizations.

At a more technical level, FGI-U takes note of interventions linked to its strategic focus including: the current initiatives by Government and development partners to finalize and operationalise the national fertilizer sub-sector development strategy and investment plan; the process to undertake a meta-evaluation/assessment on organic fertilizer use and application of these findings; the work being done by the Ministry of Trade to provide guidance on the legal framework for fertilizer trade. Other important developments include the work done by PASIC where key potential partners: MAAIF, National Agriculture Research Organization (NARO), IFPRI, Microfinance Support Center (MSC); Economic Policy Research Centre (EPRC), National Agricultural Research Laboratories (NARL) - Kawanda, and IFDC are working to update Agricultural Research Information Systems, soil resource maps and a soil database; and to develop partnerships in disseminating soil analysis findings and nutrient deficiency information. The FGI-U will work with and through partners in Uganda who are implementing projects to improve soil fertility, productivity and economic security of smallholder farmers, and focuses on the following core areas:

- i. Provide knowledge and training on integrated soil fertility management and develop fertilizer recommendations (capacity building),
- ii. Processing of good quality integrated fertilizer products, and upscaling of this knowledge

- iii. Bringing together supply and demand of nutrients and developing arrangements for trade
- iv. Strengthening networks and knowledge management that provide sufficient input along the entire chain of the FGI approach linking various stakeholders which also increase awareness among stakeholders.
- v. Provide support to policy making that leads to more government investments in the above areas.

As the FGI-U moves forward it will be registered to formally operate in Uganda. In the immediate future FGI-U will undertake a feasibility study on production of organic fertilizer production from public waste to build a business case for organic fertilizer investment in Uganda. FGI-U will bring together stakeholders in functional partnerships to realize its vision - more food from fertile grounds.

# 1. Introduction

## 1.1 The Fertile Grounds Initiative

The Fertile Grounds Initiative (FGI) was initiated by Alterra Wageningen UR following the reporting on main soil fertility issues in sub-Saharan Africa upon request from the Dutch Ministry of Foreign Affairs and the Ministry of Economic Affairs (van Beek *et al.*, 2014).

FGI developed an approach based on 8 components aiming at a better nutrient management with the intent to increase soil fertility and thus to enhance food and economic security (Fig. 1). This approach needs to be adapted to local conditions and single components will be executed simultaneously.

The first two components including the inventory of nutrient requirements (demand of farmers) and the inventory of nutrient availability (supply at different scales) form what can be called the nutrient gap analysis. Together with the verification of the capacity of institutional willingness these aspects are fundamental to close the nutrient cycle more efficiently. This requires the concerted alignment of a variety of actors and stakeholders at various levels of scale. While component III focuses on producing integrated fertilizer products (Product formulation and processing), component IV is bringing together supply and demand of nutrients and developing arrangements for trade (brokering). Component V deals with optimization of nutrient trade and transport to ensure a well-organized nutrient supply (Trade logistics). In addition to component VI, i.e. capacity building, component VII (Institutionalization) promotes institutional arrangements regarding cooperatives, nutrient banks, legal and institutional embedding. FGI also recognizes the importance of an enabling environment (component VIII) that should mobilise support for market access, micro-credits, insurances, etc. for smallholder and other farmers. As a concept FGI also aims to facilitate upscaling of results obtained and provide support to policy making.





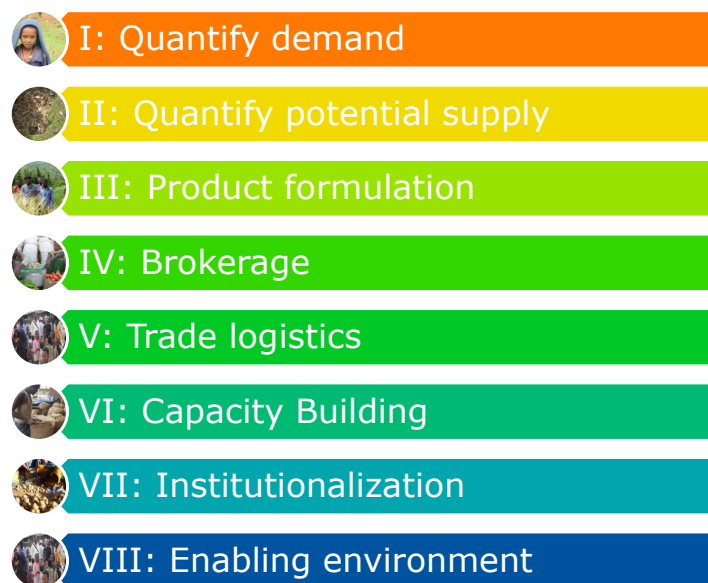


Figure 1: The eight steps of the FGI approach.

The idea of the FGI is to bring together the supply and demand sides of nutrients within a specific geographical area, to make optimum use of site-specific interventions and available nutrients, supplemented with external inputs.

FGI-U started its activities in November 2014 with a Theory of Change (ToC) workshop in Kampala (see section 1.2). Since then it is coordinated by a voluntary Task Force, facilitated in Uganda by ZOA, and has its secretariat currently at IFDC Uganda.

The focus of the initiative is empowering communities with sustainable agricultural livelihoods based on farmer-centred, applicable, proven, and reliable ISFM practices. FGI-U is in its planning phase of mapping out its potential collaborating stakeholder network and designing its key priority intervention areas. This report is one of the outputs of this phase.

## 1.2 Main results of Theory of Change workshop

A Theory of Change (ToC) is a planning model presenting all building blocks required to bring about a given long-term goal (the vision to be realized). These blocks, -also referred to as outcomes, preconditions or breakthroughs that are depicted on a map: the change pathway. The ToC consists of 5 steps: (i) Formulate the 'dream' or 'vision of success' at the goal or impact level, (ii) Develop pathways of breakthroughs (outcomes), (iii) Articulate assumptions, (iv) Make explicit the role of stakeholders and factors in the given context and how to deal with these, and (v) Test the logic and relevance of the theory and consult (more) stakeholders. As a consequence, the ToC is an important first step for a project or program because it creates a commonly understood vision of the long-term goals, how they will be reached, and what will be used to measure progress along the way.

In the workshop the following main vision elements were formulated:

1. Secured land tenure as prerequisite to adoption of ISFM practices;
2. Sustainable soil management for improving production and productivity of Ugandan farmers;
3. Farmers aware & able to manage the soils in a sustainable way;

4. Efficient extension services and information dissemination (public and private); and
5. Development of a clear soils map for the various zones of Uganda.

They were the foundation of a single group vision for FGI in Uganda:

**Empowered Communities with sustainable agricultural livelihoods based on ISFM approach.**



Figure 2. Visualized vision for 2025.

ACTOR	POTENTIAL ROLES														
	Awareness creation	Advise farmers	Supply inputs	Policy	Financing	Technology development	Dissemination	Advocacy	Demonstration	M&E	Trading/ Entrepreneurship	Soil Management	Risk Management	Regulation	Laws
MAAIF	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
CSOs	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
NARO	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Input Dealers	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Local Governments	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Legislators/Parliament	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
UNBS	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Funding Agencies	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Consumers	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
URA	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Financial Institutions	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Judiciary	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Agro processors	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Department of Disaster Preparedness	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Academia	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue

Figure 3. Potential roles of the various actors identified (blue blocks) and additional suggested one (yellow blocks).

The mapping includes various actors in the fertiliser sub-sector, their relationships, and potentiality for collaborative linkages with FGI-U. The mapping provides information that enables the FGI Theory of Change<sup>1</sup> to respond to interests, abilities and framework conditions of ISLM stakeholders.

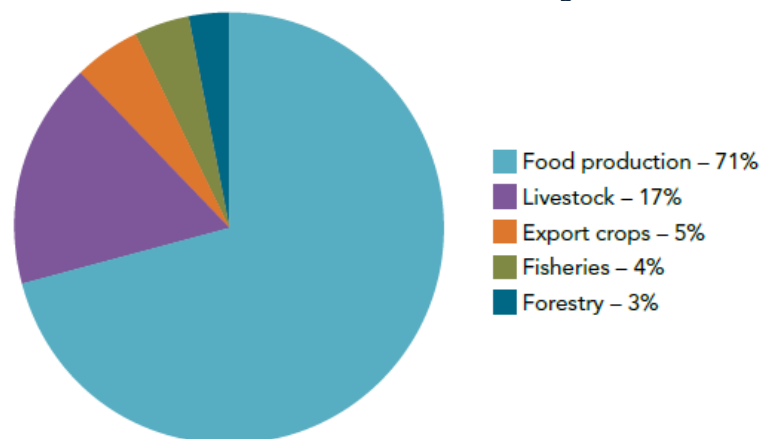
<sup>1</sup> The FGI Theory of Change presents a road map and guide towards causal modelling. It articulates the assumptions used by FGI to explain the change process thereby indicating interventions that bring about outcomes and impact with respect to ISFM.

## 2. Overview of the Fertilizer Sub-Sector

### 2.1 Uganda's agricultural sector in brief

About 73% of Ugandans are employed in an agriculture sector blessed with rainfall received for most of the year. While progress in the agro-processing sector has been slow, it has boosted agriculture to contribute about 24% to Uganda's gross domestic product (MoFPED 2013). Coffee, tea and cotton are Uganda's leading cash crops. However, as the number of commercial farmers has increased over the last decade, food crops like maize, rice and beans are now both food and cash crops. This is partly due to their high demand in neighbouring South Sudan and Kenya. Other food crops include bananas, cassava, sorghum, millet, potatoes, sweet potatoes, yams, simsim, cow peas and a range of other fruits and vegetables. Uganda has also made progress in growing cocoa, vanilla, sunflowers, soyand tobacco in response to global market demand. There are three types of farmers in Uganda: Subsistence farmers (who comprise about 70% of the farming population); Semi-commercial farmers who also participate in agri-business (25% of the total); and Commercial farmers (about 5% of the total).

Chart showing contribution of various sub-sectors to GDP from the agriculture sector



Source (MoFPED, 2013)

Of the 5.13 million hectares of land that is owned, 4.2 million hectares (86%) are cultivable but only 58% is currently under cultivation (MoFPED 2010a). Over 80% of Ugandans reside in the rural countryside and are dependent on land for their livelihood. Uganda's second national development plan (NDP II) emphasizes commercialization of agriculture, to increase production and productivity along the value chains. The prosperity of this sector is heavily dependent on the productivity of Uganda's soils. After centuries of mining, majority of Uganda's soils have lost their fertility. This is at a time when Uganda's population is growing very rapidly, at a rate of 3.4% per annum. However, low and declining soil fertility levels present a real constraint for agricultural production in general and food security in particular. Uganda's declining soil fertility is largely caused, inter alia, by soil erosion, nutrient removal, inadequate capacity of farmers to replenish soil nutrients, and leaching of soils. The key concern is that most Ugandan farmers do not have the technical capacity and the financial resources to carry out soil sample testing neither to purchase commercial inputs at the volume to compensate all negative nutrient balances. As a consequence most are unable to detect which nutrients are lacking and unaware about local nutrient sources.

## 2.2 Fertilizer availability

Uganda's economy is heavily dependent on agriculture with 70% of the population directly deriving their livelihood from agriculture or its related enterprises. The sector contributes to 23% of the Gross Domestic Product (GDP) and 48% of the country's exports (UBOS 2012). Uganda vision 2040 positions the agricultural sector as a lead sector that should lift millions out of poverty by that year. Uganda has over 14 distinct agro-ecological zones as shown in Figure 4.

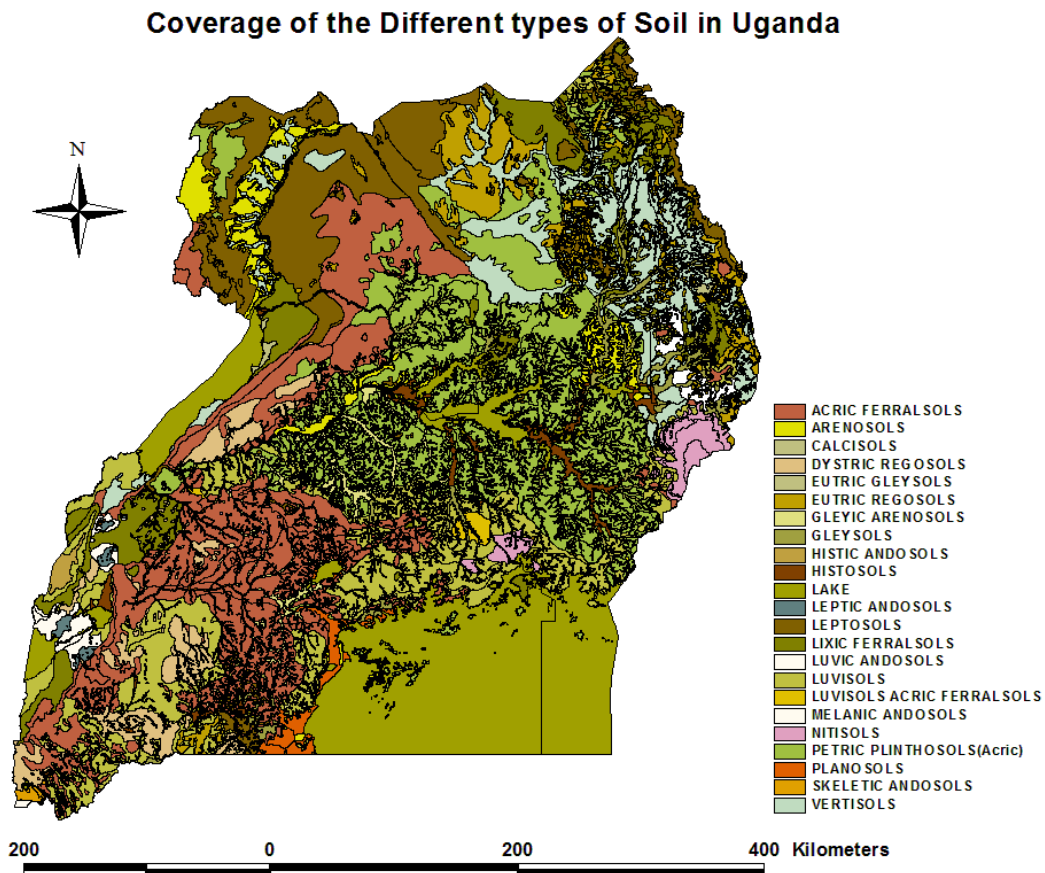


Figure 4. Map different coverage of various soils in Uganda: Source: *Dr. K. Kaizzi Describing Cropping Systems Climate and Soils in Uganda* <http://www.yieldgap.org/Uganda>

The areas above have a diversity in soil health with richest soils in the river and Lake Victoria crescent and volcanic belts. Soil fertility studies show a gradual decline in potassium in most parts of Uganda. As a whole, Uganda falls short of the target set at the Abuja Declaration (2006) that tasked all African Countries to raise their inorganic fertilizer application to 50 kg/ha by 2011 as noted in the Figure 5 below. The use of inorganic fertilizer in Uganda averages 1 kg/ha and is below the Sub-Saharan Africa average of 9.6 kg/ha, and far below the world average of 177 kg/ha (World Resources Institute, 2010). Uganda's inorganic fertilizer market is liberalized, but small, with associated high

prices (subsidies are non-existent). As a consequence, all Agro Ecological Zones (AEZ) have negative nutrient balances, as illustrated for some of them in Figure 6.

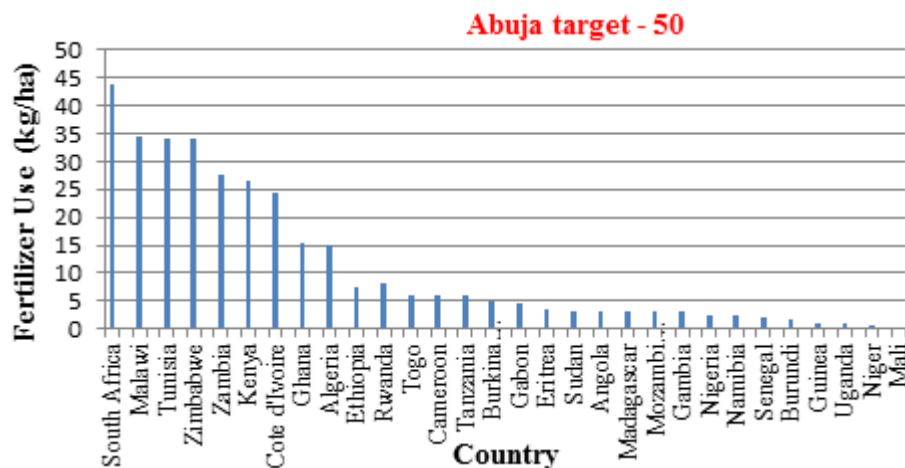


Figure 5: Fertiliser use in Africa Source: The Africa Fertilizer Summit: In: Lisa Thigpen (ed). 2011. IFDC Report Volume 36, No. 2:15 & 17.

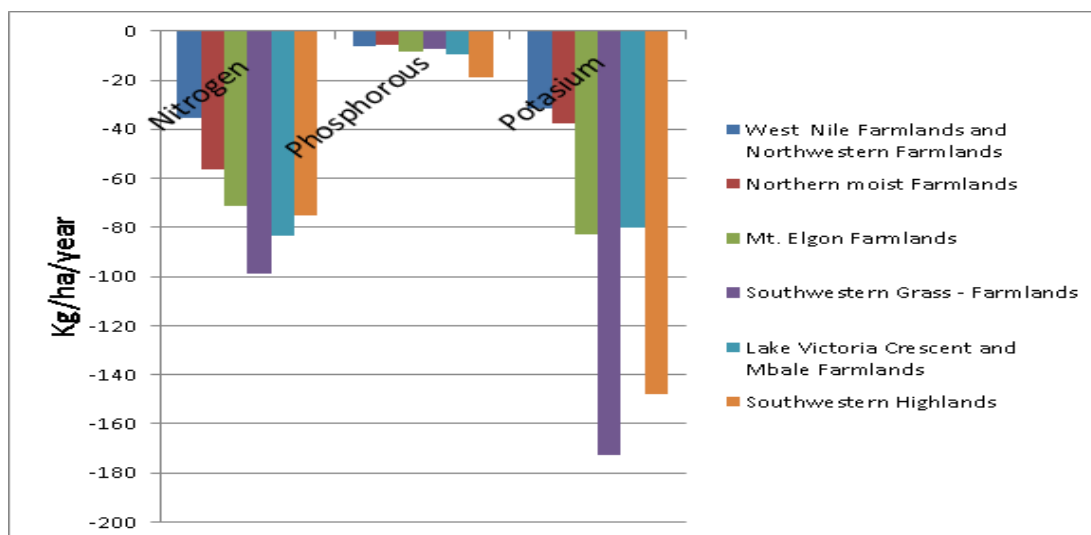


Figure 6. Nutrient balances in farmlands for selected agro-ecological zones (adapted from Kaizzi et al. 2006).

The national statistics hardly account for the inorganic fertilizer, and mostly, present data on trade and use of imported Urea, Diammonium Phosphate (DAP), Calcium Ammonium Nitrate (CAN), or Muriate of Potash (KCl). However, organic fertilizer is processed and applied on-farm, and clearly influences yield in farmers' fields. As shown in Fig. 7 below, fertiliser imports between 1994 and 1996 were already insufficient but declined further to about 2,500 T in 1996. Between 1998 and 2004 the import of fertilizer stagnated averaging 8,000 T until 2005 where they peaked at 20,000 tonnes. Afterwards fertilizer imports declined up to around 14,000 T and did not recover until 2008. They later short up to 47,000 T in 2009, but declined in the year 2010 due to a number of factors that including:

global economic depression of the time and low demand at the level of farmers (linked to drop in coffee, tea and cotton prices on the global market).

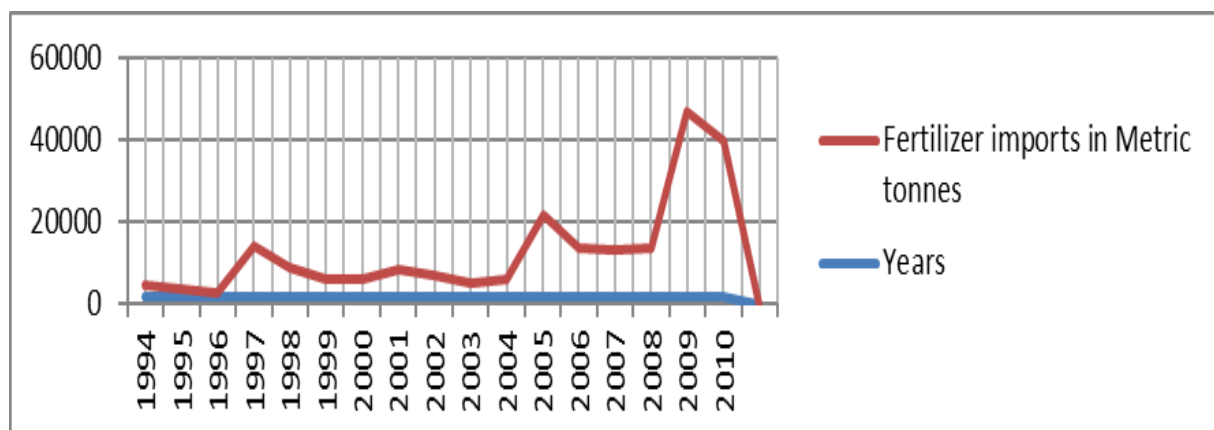


Figure 7. Uganda's fertilizer imports in the period 1994-2010 (*Uganda Revenue Authority, 2013*)

Most fertiliser (mainly inorganic) used in the country is imported through Kenya and is mainly manufactured from Europe, the United Arab Emirates, and South Africa. The players in the supply-distribution chain for inorganic fertilizers in Uganda include few importers, large-scale farmers, commercial importers, wholesalers, retailers, and farmers. A few agricultural focused NGOs also link farmers to importers-distributors of fertilizers mainly based in Kampala and Mbale. In some towns, district branches of the Uganda National Farmers' Association (UNFA) sell fertilizers often at subsidised rates to their members.

Currently, it is difficult to distinguish chain actors because trade in organic fertilizer does not transit beyond farm level. Most farmers are conversant with: practices as mulching, grass strips, soil bunds, fallowing, submersion of crop residues, use of animal manure and compost in fields. A small number around the greater Kampala use processed liquid fertilizer (by mixing and fermenting molasses, animal droppings and plant tissues) and apply it on orchards, banana plantations, horticulture crops and even in home flower gardens. There only a few identified on-farm initiatives related to processing and applying organic fertilizer were identified during the FGI fact finding mission around greater Kampala and in the districts of Mbale, Kyenjojo, Kiruhura, Kabale, Kanungu and some parts of Kumi.

During interviews with agricultural officers and farmers in the FGI pilot zones, the stakeholder mapping study found the following core factors were responsible for low fertiliser use;

- i. **Narrow range of fertilizer products on the market** - Urea, TSP, DAP, NPK, CAN are the most common types of fertilizers on the market yet results from recent research (Kaizzi et al 2011) indicate that crop response to application of NPK fertilizer is still below the breeders yield potential of most crop varieties currently being used by smallholder farmers, indicating the need for more fertilizer products such as Mavuno, Minjingu Rock Phosphate, (which supply additional nutrients e.g. calcium, magnesium, trace elements).

- ii. **High fertilizer prices** - linked to high transaction costs of fertilizer trade arising from transportation costs. Interview with fertilizer suppliers in Kampala revealed heavy reliance on fertilizers imported from USA, Europe, China and India. They also indicated that fertilizers were priced highly because of the low turnover.
- iii. **Lack of information** - Farmers in the FGI pilot zones lack information on availability and cost of fertilizers, including return on investment. The District Production and Marketing Officer in Kyenjojo indicated that stockists take advantage of farmers' ignorance to hike prices, which further dissuades farmers from purchasing and using fertilizers.
- iv. **Lack of capital to purchase fertilizers** - Farmers in the FGI pilot zones lack capital for investing in fertilizer trade. The existing credit/financing institutions charge relatively high interest rates. This study, however, found that there is an opportunity presented by the Uganda Micro Finance Support Centre (a Government Company established in 2001 with a high rural outreach to provide whole sale credit to SACCOs, Micro Finance Institutions, and Small and Medium Scale enterprises) that need to be harnessed. This is one of the key stakeholders that need to be engaged by FGI in order to stimulate demand and promote affordability of organic and inorganic fertilizers by farmers in the pilot zones.
- v. **Inability of farmers to purchase fertilizers in bulk** - During Key Informant Interviews with farmers in all the study districts, the stakeholder mapping established that farmers were unable to purchase fertilizers in bulk due to lack of financial resources, and other related factors such as access issues including distance to nearest stockists. The implication by these factors is that when farmers get more organized through their farmers associations and cooperatives, and gain access to credit facilities plus other enabling services (such as crop insurance) the opportunity to buy fertilizers in bulk purchases will be enhanced.
- vi. **Low farm gate prices for agricultural products**- Interviews with farmers in Kiruhura revealed that the uncertainty of the price at which they finally sell their agricultural produce discourages them from investing in (commercial) mineral fertilizers, hence relying on animal manure. In Kyenjojo, farmers indicated that information given to them on existing local FM radio stations through an initiative funded by HIVOS (an international Charity supporting Twaweza and Uganda Radio network partner radio stations). In the table below the SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis is presented.



Table 1. SWOT Analysis of the Fertilizer Subsector.

<b>STRENGTHS</b>	<b>OPPORTUNITIES</b>
<ul style="list-style-type: none"> <li>• Most farmers organized through district farmers' Associations, Unions, SACCOs hence presenting entry points for FGI to reach smallholder farmers.</li> <li>• Field practitioners and NGOs in the agriculture sector with long standing working knowledge of the farming context in rural areas. These provide a potential for collaborative research, information as well as prospective building farmer engagement frame works/platforms plenty of organic/compost material is generated from crops and livestock residues in pilot zones most already with farmers, schools, prisons, hospitals, markets that could be harnessed.</li> <li>• Expertise is available in the country for undertaking agricultural research on soil fertility management in organizations (NARO, IFDC, IITA, ASARECA, IFPRI, etc). A wide knowledge base has been created in agricultural research, training and extension by these and by academic institutions such as EPRC in Makerere University,</li> <li>• The SLM framework has been established in Uganda with an inter-sector ministerial committee that brings together: agriculture, trade, energy, finance lands housing and urban development.</li> <li>• The NAADS has developed a business development model for small and large scale farmers that can be used by FGI to develop a business case for organic fertilizer.</li> <li>• A lot of credit facilities are available for farmers including publically availed resources (Youth livelihood scheme, NAADS, NUSAF, PRDP, Micro Finance Support center, Private Sector Foundation of Uganda etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Fertilizer trade liberalizations offer an opportunity for building a private sector-led fertilizer sub-sector,</li> <li>• Markets are available for most agricultural products, more so considering that the demand for fertilizers is directly related to the profit margins generated from output sales.</li> <li>• The AFMU (Agribusiness and Farm Management Unit) has been established by MAAIF at national level to share knowledge and information relating to agribusiness, strengthening market business, and value chain analysis,</li> <li>• Research centers exist with infrastructure for soil analysis, on-farm trails, demonstrations-arrangements are in place for field days and knowledge sharing by farmers,</li> <li>• Small and large farmer organizations have been set up to mobilize inputs, players and other facilities along production and market chains,</li> <li>• Government provides tax incentives (despite recent imposition of taxes on inputs) for agribusiness in Uganda, including; i) income tax exception on agro-processing investment especially for new plants and machinery, ii) value added tax exemptions on civil works related to agriculture, etc.,</li> <li>• The Uganda Micro Finance Support Centre (Government of Uganda Company limited by guarantee) offers wholesale lending to SACCOS which are farmer focused.</li> </ul>





## WEAKNESSES

- Limited capacity by NARO and other agricultural research service providers to package and disseminate research findings leading to low knowledge diffusion, esp. to smallholder farmers.
- Weak agriculture research diffusion - agricultural research knowledge fail to reach small holder farmers.
- Inadequate information on profitability and return on investment for applying fertilizers.
- Limited financial inclusiveness among smallholder farmers (large number of unbanked farmers- this limits their capacities to access formal financing mechanism for agrobusiness Loans; yet 74% of the rural population in Uganda relies on informal financial services (Finscope study 2013).
- Inadequate enforcement of fertilizer grades and standards by Uganda Bureau of Standards- it is worsened by alienation of local government directorates for production and marketing, from fertilizers trade and pricing limited farmers' knowledge on the application of inorganic and organic fertilizer.
- Limited research undertaken by agricultural institutions on the applicability of different forms of organic fertilizer.
- Inadequate coordination on fertilizer production, use and application between agricultural focused CSOs, Government of Uganda relevant Ministry Departments and Agencies and Development partners.
- Inability of local governments to sustainably support agricultural extension work due to understaffing.
- Weak policy framework on import commodities
- Farmer's poor perception of inorganic fertilizers use.

## THREATS

- Increased weather variability, creating more uncertainty on investment returns.
- Competition for waste products by biogas conversion initiatives.
- Fake fertilizer supply on the market, which is originating from beyond national borders, yet there has a weak fertilizer quality assurance system (benchmark for fertilizer quality),
- High prices of other agricultural inputs (worsened by a tax level on some products during the 2014/15 national budget)
- Volatile exchange rate affecting purchasing power
- Declining public investments in the agriculture sector, signaling lack of commitment by government to the Maputo Declaration (Uganda has spent about 4% on the sector on average over the last decade in contrast to the 10 % commitment)
- Misinformation about excessive negative side effects by artificial agro inputs which is spread by poorly informed organic campaigners



## 2.3 The Guiding Sector Policy Framework

Uganda depends heavily on its soils for the production of food, cash crops and fodder for both domestic consumption and to be able to the produce abroad. Cognizant of the low fertilizer user level (Figure 5), there are now various efforts on the policy side to improve the fertilizer sub-sector and include the following policies:

### 1. **The National Fertilizer Sub-sector Development Strategy and Investment Plan**

The government initiated the process of developing the fertilizer policy and regulations. Once in place, they will be operationalized by the national fertilizer strategy, which goal is to *'increase farm level fertilizer use and application rates, from the current national average of 1 to 50 kg/ha per year by 2019'* (MAAIF, 2013). Under the NFS-DSIP the following four priority actions were identified as: (i) creating conducive fertilizer business environment; (ii) increasing demand and use of fertilizers; (iii) enhancing the supply and distribution of quality fertilizers; and (iv) generating and appropriately managing fertilizer knowledge. Furthermore, the NFS-DSIP recommends waiving of withholding tax on fertilizer.

### 2. **Ugandan Strategic Investment Framework for Sustainable Land Management**

The U-SIF-SLM is an integral element of National Development Plan and specific Development Strategy Investment Plans (DSIPs) – 2015-2019 for five sectors, including agriculture, water and environment, energy, lands and trade. The purpose of the U-SIF is to upscale SLM practices across sectors, and to avoid duplication across stakeholders and sectors. Among other elements, the U-SIF focuses on supporting on-the-ground activities that will upscale SLM, thereby promoting key sector co-operation in improving natural resource based livelihoods and other ecosystem services.

### 3. **Liberalization policy**

In the mid -1980s' Uganda adopted a liberalization approach in trade and service delivery. The liberalization policy opened up the economy, for the private sector to freely trade with minimum interference from government. The fertilizer trade has positively benefited from liberalization as evidenced by trade volumes, which have expanded since the early 1990s.

### 4. **Regulatory framework**

The most outstanding regulatory framework for fertilizers in Uganda is the Control of Agricultural Chemicals Statute dated 1989. However, the existing Agricultural Chemicals Regulations (1993) do not specifically explain how fertilizers shall be regulated. As a result, fertilizer import has to go through the whole range of unnecessary certification training on safe use and handling of a wide array of agrochemicals, in order to acquire an import permit and license.



## 3. Key Actors in the Fertilizer Sub-sector

The application of fertilizers stands out as a key strategy for increasing crop production, in addition to using other complementary inputs such as improved seed and supportive services (credit, insurance, and extension). The reality is that a considerable proportion of soils in Uganda are weathered, and cannot release sufficient phosphorus, potassium, calcium, magnesium or sulphur (Bekunda et al 2002) required for sustaining on-farm productivity. Most actors in the fertilizer sector understand the magnitude of the problem and have intervened in various ways ranging from policy, business or capacity building and other development support perspectives. It is under these various perspectives that we categorize the various actors in the fertilizer sub-sector in this section and their potential for engagement under the Fertile Grounds Initiative.

### 3.1 Governmental and national institutions

#### 3.1.1 SLM FRAMEWORK

The FGI-U will work within the policy framework of Sustainable Land Management Policy and Implementation Framework and will anchor its programme within the ministry policy direction for the purpose of alignment with government framework. FGI-U will participate in the period Task Force meetings from January 2015 onwards under inter-ministerial framework and is grateful for this invitation to be an observer participant.

#### 3.1.2 MTIC

The MINISTRY OF TRADE INDUSTRY AND COOPERATIVES will be a potential key partner in the lobbying efforts by FGI-U to address the issue of taxation on agricultural inputs. On the other hand, bulk purchase of fertilizer through cooperatives has tremendous potential in reducing the unit cost a farmer eventually pays and reducing the transaction costs related to transport borne by each individual farmer without cooperatives. In this regard working with cooperatives will be critical. Already FGI-U is in consultation with a dairy cooperative in western Uganda for the potential use of cow dung to process liquid manure on a fairly large scale as well as linking the cooperative to a pasteurizer producer to process milk into higher value yoghurt.

#### 3.1.3 UNBS

UGANDA NATIONAL BUREAU OF STANDARDS (UNBS) has the mandate to ensure enforcement of standards for all products produced and consumed in the country whether domestically produced or imported from outside. For the interest of the FGI-U, UNBS will be a partner for ensuring that imported fertilizer into Uganda is authentic and that end-point sellers do not adulterate the content to the detriment of user farmers.

#### 3.1.4 NARO



The National Agricultural Research Organization (NARO) is an apex body that guides and coordinates agricultural research activities in Uganda's National Agricultural Research System (NARS). The National Agricultural Research Laboratories (NARL) is one of the six public Agricultural Research Institutes (PARIs), under the NARO. The NARL conducts client oriented, demand driven research for generating information within six impact areas that comprise of; (i) enhanced utilization of research outputs; (ii) improved farmers access to markets; (iii) enhanced productivity; and (iv) improved management and sustainable use of natural resource base. The NARL operates a Soils Agro-Meteorology and Environment Unit (SAMEU) at Kawanda. The SAMEU has the national mandate for conducting client-oriented research and disseminating to uptake pathways, land resource management information, and technologies, which improve and sustain agricultural production. Specific activities at SAMEU include: developing techniques for better soil and water management practices for agricultural systems including wetlands; developing appropriate methods and management practices for proper utilization of organic residues to improve and sustain soil productivity; developing methods and practices for improving soil fertility in various cropping systems; increasing agricultural production through efficient use of fertilizer and biological nutrient sources; and agro-meteorology and adaptation to climate change.

The researchers at SAMEU have conducted studies on crop responses under a wide range of ISFM alternatives - they have also carried out on-station demonstrations in different regions of the country. Furthermore, NARL is collaborating with national and international universities, agencies, CGIARs, and other institutions, alongside the mandate of NARO. The NARL also backstops other NARO Institutes, local governments and NGOs, which are involved in the dissemination of ISFM technologies. The above services fit within the knowledge generation component of FGI-U.

### **3.1.5 PASIC**

Policy Action for Sustainable Intensification of Ugandan Cropping Systems (PASIC) is implemented by International Institute of Tropical Agriculture (IITA); Ministry of Agriculture, Animal Industry and Fisheries (MAAIF); Economic Policy Research Center (EPRC) and International Food Policy Research Institute (IFPRI) and is funded by the Embassy of the Kingdom of the Netherlands. Its specific objective is to stimulate action in selected policies or programs, relevant for agricultural intensification of smallholder production systems, through evidence-based research and strengthening capacities of relevant institutions. PASIC is working to ensure that quality, price, availability & knowledge of use of fertilizers is improved across the country.

### **3.1.6 NAADS**

The NATIONAL AGRICULTURE ADVISORY SERVICES (NAADS) support farmers to transform from subsistence to commercial agriculture through a value chain approach. The core service areas include, reinforcing business and market linkages, particularly at farm level, and supporting collective action and alliance building. The beneficiaries access NAADS services through farmer groups (FAO, 2014). The secondary service areas of NAADS include value chain analysis and investment appraisal, especially at farm level. Most of these services are implemented through private sector service providers. The NAADS uses a business model, which is intended to uplift farmers from poverty and



food insecurity, and transform them to commercial farmers. In pursuance of the business model the NAADS supports the procurement and distribution of agricultural inputs (including organic and inorganic fertilizers), to pre-selected farmers, free of charge as part of the Government Programme “Prosperity for All”.

### **3.1.7 EPRC**

The ECONOMIC POLICY RESEARCH CENTRE (EPRC), based at Makerere University in Kampala has been at the forefront of publishing research information on various themes including agriculture development in Uganda.

### **3.1.8 UNADA**

The UGANDA AGRO-INPUT DEALERS ASSOCIATION (UNADA) represents networks, and empowers agro-input dealers in Uganda to operate sustainable and profitable business, as they provide quality agro-inputs and related services to farmers. The aims of UNADA include: representing all agro-input dealers in the country and acting as a negotiating body; providing professional support to members; establishing and enforcing a code of fair business conduct; and contributing to the modernization of Uganda’s agriculture. UNADA members are organized under district level branches/associations which are completely autonomous.

### **3.1.9 NOGAMU**

The NATIONAL ORGANIC AGRICULTURE MOVEMENT OF UGANDA (NOGAMU) promotes the use of organic resources, certifying organic farmers, linking farmers to markets of organic produce. It also trains farmers in production and use of organic fertilizers.

### **3.1.10 UNFFE**

THE UGANDA NATIONAL FARMERS’ FEDERATION (UNFFE) organizes farmers, markets their produce and links them to markets. It also links farmers to quality inputs including fertilizer.

### **3.1.11 PELUM**

The PARTICIPATORY ECOLOGICAL LAND USE MANAGEMENT ASSOCIATION (PELUM) is a national and regional networking of CSOS that promotes and supports ecological land use practices with a focus on smallholder farmers.

## **3.2 International institutions**

### **3.2.1 IFDC**

The IFDC collaborates with national research institutions, governmental and non-governmental agencies, and the private sector to advance, improve and promote food and nutritional security, agricultural sustainability and economic development. The IFDC interventions in Uganda aim at



improving access to fertilizers through linkages with farmers. The beneficiaries (farmers) aggregate their demand for fertilizer, raise requisite funds through their leaders/committees, and subsequently submit the lists to IFDC, through credible agro input dealers. IFDC works with agro-input dealers who have been certified by UNADA. Through its nationwide program, the IFDC has carried out several soil analysis studies - the results will significantly inform the FGI interventions by characterising demand for organic fertilizers in Uganda. IFDC is already providing logistical support to the FGI-U Task Force.

### **3.2.2 ZOA INTERNATIONAL**

ZOA Uganda is an international relief and rehabilitation NGO characterised by strong field presence in remote communities in Northern Uganda. It has distinguished itself in providing agricultural extension services to smallholder farmers in complement to its support to (vocational and civic) education, WASH and land security interventions. Its training curricula are based on academic farming system analysis and several practical action research initiatives on modern conservation farming with herbicide use. The organization has a presence mainly in West Nile, Acholi and Karamoja sub regions and is already supporting the FGI-U as host to the FGI-U Task Force.

### **3.2.3 FOOD AND AGRICULTURE ORGANIZATION (FAO)**

FAO has a long standing reputation in Uganda in supporting the advancement of modern farming practices beginning with on-farm productivity, to post-harvest loss reduction and food market systems. Over the years, FAO has provided technical assistance on soil health while encouraging an integrated approach with environmental, social and economic considerations for sustainable food production. FAO is also lobbying governments to accelerate interventions beginning with policy designs to bring about appropriate programs to meet the on-farm needs including soil health.

### **3.2.4 USAID**

United States Government through USAID's Feed the Future (FTF) Program is supporting various projects in Sub Saharan Africa geared towards increasing on-farm productivity, reducing acute food shortages, developing focus commodity value-chains and increasing the nutritional status of the population. A central tenet of the FTF global initiative is to promote country ownership of efforts to reduce poverty and hunger in a sustainable manner. Over the next few years, the FTF Program in Uganda will focus on helping and estimated 700,000 farmer households to improve their food security status and overcome poverty. The promotion of among other things, increased fertilizer use by smallholder producers, is already a feature of a number of these interventions.

### **3.2.5 NCBA CLUSA INTERNATIONAL**

Since 1945, NCBA CLUSA has supported international communities and aims to improve food security for smallholder farmers through implementing the Uganda Conservation Farming Initiative (UCFI) funded by the American people through the United States Department of Agriculture (USDA). One of the key interventions under the Uganda program is improving soil health systems and NCBA CLUSA is a potential partner with FGI-U on this process.



### 3.2.6 UNDP

UNDP Uganda is aiming at expanding market opportunities for farmers through value addition. Through its local development and social cohesion program in Northern Uganda, farmers are being supported through cooperatives in collective market systems and incentives to increase production (both in quality and quantity). The funding for this initiative is from UNDP Bureau for Crisis Prevention and Recovery and will focus on Northern Uganda which over the last 30 years has suffered disruption from a civil conflict that displaced over 1.8 million people.

### 3.2.7 AGRA

The Alliance for a Green Revolution in Africa (AGRA) acknowledges that Africa has some of the world's most degraded soils. Most of Africa's soils need to be transformed into ones that are healthy, fertile and able to retain water, nutrients and essential organisms that support crop and livestock farming. It is from this standpoint that AGRA is bent on restoration of soil health in Africa through the implementation of the Soil Health Initiative. The Soil Health Program focuses on rapid dissemination of locally adapted and environmentally sound integrated soil fertility management practices and water management. It funds and collaborates on a continent-wide project to map Africa's soils using advanced satellite and other technologies; develops fertilizer supply chains; funds training and extension programs; and advocates for soil health regulation.

### 3.2.8 WORLD BANK

The World Bank has over 50 years' experience of working in Uganda and has funded landmark projects to address challenges for Uganda's agriculture sector including the National Agriculture Advisory Services (NAADS). The focus for the Bank is to contribute significantly to the revitalization of an agricultural sector that delivers food security and poverty reduction. The Bank has been supporting many projects one of which is solid waste management in urban areas including Kabale, which was noted with keen interest by the FGI-U specifically on sorting the waste to extract garden manure. This particular project is being done with Uganda's National Environment Management Authority NEMA. The Municipal Councils in Uganda are implementing the CDM small-scale program on Municipal Waste Composting. The initiative is supported by the World Bank, the Government of Netherlands, and the Government of Uganda through the National Environmental Management Authority (NEMA). The programme started in 2007 and will last until 2028. It involves collection of municipal waste, which is transported to composite facilities and aerobically composted. The program uses a phased approach. At the time of compiling results of this scoping study the scheme was in its second phase in Masindi, Busia, Hoima, Mityana, Entebbe, Kabale, Arua, Gulu and Tororo, municipalities. The successes of this project are varied, with some Municipalities such as Fort portal producing fertilizers, while others, such as Mityana moving at a much slower rate.



### 3.2.9 IFPRI



The International Food and Policy Research Institute is a global powerhouse in food related research in a rapidly changing food policy landscape. In Uganda IFPRI has already undertaken research on application of fertilizer in rice and Irish potatoes and has tremendous technical capacity to undertake similar other studies that would inform planned FGI-U interventions. IFPRI notes that the success of its research strategy will rely mainly on building the capacity for policy research within developing nations like Uganda, and being able to clearly communicate IFPRI research results in a manner that would trigger more effective agriculture policies that deliver results.

### 3.2.10 IITA

The International Institute of Tropical Agriculture (IITA) has a vision to enhance food security and improve livelihoods in Africa through research for development (R4D) as model in setting Africa on path that addresses major problems than simply providing scientific research and results. IITA works with research and development partners to deliver research output that aim at helping attainment of outcomes including broadening access to opportunities and technologies by broadening the participation of communities and farmers.

## 3.3 Small & Medium Enterprises

There are rather few business players in the fertilizer sub-sector with a reputation of having sustainably carried out the fertilizer supply on a commercial scale for over 20 years. The few identified are shown below:

Table 2. Key business players in the fertilizer sub-sector

Name of Entity	Address	Key Role
1. Allied Chemicals Ltd	Plot 78/84, 6 <sup>th</sup> Street, Industrial Area Kampala, Uganda, P.O. Box 2566 Kampala Tel: 04142545480 Email: asbk@spacenetuganda.com	Distribution of fertilizers
2. Evergreen International (U) Ltd	Plot 21 Entebbe Road, P.O. Box 33991, Kampala Tel: 0414252914	Major Supplier of Agro-inputs in Uganda.
3. Cooper Uganda Ltd	Plot 41/43, Nasser Road , MTK Building, P.O. Box 929 Kampala Tel: 041-4231177, 041-4255389/0772410150	Procurement and distribution of fertilizer
4. FICA Seeds Uganda Ltd	Plot 167, Bombo Road, P.O. Box 34095, Kampala Tel: 041456631	Procurement and distribution of fertilizer
5. TWIGA Chemicals Industries	Plot 71, 7 <sup>th</sup> Street industrial area, Twiga House , P.O.BOX 4800, Kampala Tel:041-4257050	Procurement and distribution of fertilizer
6. Organic chemicals (U) Ltd,	Plot 30A Kibira Road, Industrial area, P.O. Box 589 Kampala	Procurement and distribution of fertilizer
7. Uap Chemicals Ltd	Plot 4 Entebbe Road, KamuKamu Plaza, P.O. Box 7351, Kampala Uganda Tel: 0414233591	Procurement and distribution of fertilizer
8. ETG Export Trading Co. Ltd	P.O Box 33336 Kampala Uganda Email: fertilizer@exporttradinggroup.com	Procurement and distribution of fertilizer





# 4. Setting FGI priorities

## 4.1 Geographical Scope

FGI-U will focus on the cattle corridor that stretches from Mount Elegon sub-region below the Lake Kyoga across to the middle-western rangelands above Lake Victoria crescent and to the mid-western Uganda areas below the Albertine region down to Ankole and Kigezi regions in south-western Uganda. In addition to these priority areas, FGI-U will maintain an interest in collaborative work with partners in the northern region due to the number of ongoing sustainable farming initiatives. We believe that these areas have potential for agriculture, have vast lands that remain not fully utilized and receive stable rains for the most parts of the year. There is a particular interest for FGI-U in cattle farming since a lot of manure potential remains untapped. The table below expounds on the features of this agro-ecological scope.

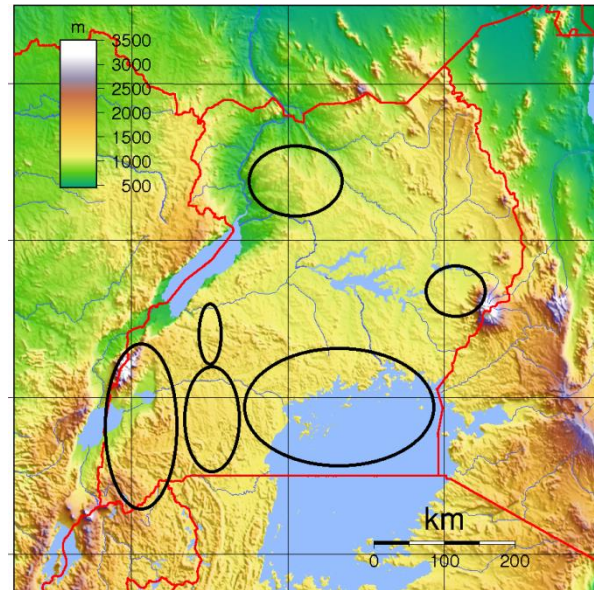


Table 2: Agro-ecological zones of the potential FGI pilot districts

Agro-Ecological Zones	District	Agricultural Highlights in the zone
Western Range Lands	Kiruhura, Kanungu down to Kabale	Rain fed, with predominant cattle rearing, supplemented with banana growing. Rainfall is about 1200mm. Fertile soils and in some places moderately poor. These areas have flat and isolated hills.
Northern Savannah	Nwoya and Lira	This is a rain fed crop cultivation area. Sorghum, millet, cassava, sesame are grown. Cattle-rearing is also undertaken. The area has fairly fertile soils. Rainfall ranges between 915-1020mm.
Eastern Savannah	Kumi	This is a rain fed crop cultivation area. Rainfall ranges between 800-1500mm. Soils are moderately fertile. Mainly grows are cereals, oil crops, paddy rice in drained swamps. Also moderate livestock rearing.
Lake Victoria Crescent	Greater Kampala-Mukono, Wakiso, Kampala and Mpigi	Rain fed with soils ranging from very fertile to moderate. Situated around lake Victoria with rainfall ranging between 1200-1450mm. The zone has mixed cropping of banana, robusta coffee, vegetables, maize, and moderate dairy farming. Areas close to Kampala City and Entebbe Airport are engaged in floriculture and horticulture.
Lake Albert Crescent	Kyenjojo	Rain fed with mixed farming of maize, root crops, coffee, livestock and large-scale tea growers. Rainfall ranges between 800-1400mm. Soils range from fertile to moderate.

Source: <http://www.fao.org/agriculture/seed/cropcalendar/aezones.do?isocode=UGA>

In the targeted districts the study identified also large farmers such as Mukwano Tea growers in Kyenjojo, farmers involved in floriculture such as Rose Bud, Wagagai, and Victoria flowers (in the Greater Kampala areas).



## 4.2 The Fertile Ground Initiative's Planned Interventions

This sub-section presents a description of key FGI areas of intervention that are planned and they include the following 6 actions.

### 4.2.1 Inventory of fertilizer demand

In this process the current soil fertility levels and nutrient flows at farm and plot level are determined and converted into volumes of inputs to improve the unfavourable situation. While micro nutrients are very essential for plant growth, the focus on the inorganic side seems to be on macro nutrients notably NPK. Cost of laboratory analysis stands at 30 USD per sample hence not affordable for most smallholders. More potential is seen in low cost field analysis methods which can be executed by local extension staff with a minimum of tools. Calibration of these tools will be based on larger scale soil mapping efforts done in the past. The use of input / output monitoring tools allows calculation of the required input volumes necessary to compensate the negative nutrient flows. Much attention will be to economies of scale and geographic clustering of smallholders with similar needs.

The intervention will focus on development and validation of low cost soil analysis tools to detect both macro and micro nutrient deficiency. Government extension systems will be closely involved in this exercise. Secondly sensitisation and exposure through on farm experimentation and demonstrations on the potential benefits of organic and inorganic farm inputs is expected to increase awareness and ultimately higher participation in sustainable land management.

### 4.2.2 Inventory of potential supply

Currently, northern Uganda has the lowest percentage of households using fertilizer. Central and western Uganda have the highest percentage of households using organic fertilizer but overall the level of use is very low standing at an average 8.2% for inorganic fertilizer and 24.9% for organic fertilizer.



Table 4: Household fertiliser Use by region (%)

Regions	Fertiliser use	
	Organic	Inorganic
Central region	34.2	11.7
Kampala	23.0	5.5
Central 1	41.5	14.7
Central 2	27.6	9.2
Eastern region	21.9	10.4
East Central	15.4	5.2
Eastern	25.9	13.6
Northern region	9.6	4.4
Mid-North	6.7	3.6
North East	2.1	2.0
West Nile	16.0	6.2
western region	33.9	6.5
Mid-West	15.9	5.9
South-Western	49.0	7.1

Source: EPRC research Series No. 88, Citation based on UCA 2008/9.

The supply inventory component will define sources of organic matter within an economically viable sphere around the pilot zones. Most of Uganda organic fertilizer is largely 'home grown' although much difference is observed in the quality of the matter produced. Due to limited extension service reach in the rural areas, most farmers are unaware of the techniques to produce the most effective types and formats. Inorganic fertilizer remains costly and not readily available.

The mapping exercise shows that organic matter is available both at household level (from crop stovers, manure and processing waste) and in urban and sub-urban areas from deposits of solid waste matter mainly at food markets. The challenge in the first situation is the lack of redistribution within the farm unit in the most affective format. In the second situation the challenge is the weak supply mechanism to have this matter from solid waste sites and landfills processed into potent fertilizer matter.

#### 4.2.3 Product formulation and processing and knowledge formation

The product formulation and processing will entail a transformation of the sources of organic nutrients and supplemented with single or multiple compound mineral fertilizers to produce optimal compositions of nutrients as integrated fertilizer products.

The study tour done by FGI leadership was excited to note that there are farmers already who are able to manipulate various organisms to produce liquid fertilizer, spray to fight pests and diseases and realize a transformation in their produce within one season.



One of the aspects of the FGI U's focus will be to create and spread knowledge and lift the awareness of farmers to appreciate, demand, and utilize opportunities available to them at present before they can purchase with conviction and knowledge of nutrient deficiency that they need. It will not be feasible to produce fertilizer whose demand is too low to support a feasible product formulation and processing investment

#### **4.2.4 Brokerage, trade and logistics**

Key constraints to deepening of fertilizer uptake are largely linked to limitations in farmer knowledge; low household income and the absence of fertilizer agro-dealers and suppliers who can offer various forms of fertilizer at affordable rates for smallholder farmers. Agro-input dealers who would be interested in fertilizer business lack capital and requisite information on the application of both organic and inorganic fertilizers. It will be critical in years ahead to match supply and demand of nutrients under a brokerage arrangement that is feasible to make the fertilizer available and affordable while making a commercial sense for agribusiness- which is a panacea for sustainability.

FGI-U will develop a business case design for nutrient trade, brokerage and logistics (including storage and distribution). With the reality that there are few locally available certified fertilizer suppliers and agro-dealers (for both organic and inorganic) more work will be required to partner and work with agro-dealers already established (but mainly based in Kampala) to deepen their outreach in districts in an attempt to reach more farmers.

#### **4.2.5 Strengthening institutional linkages and capacity building**

While improvements have been made over the last two decades, agricultural extension service delivery in the Uganda remains weak mainly due to financial, coordination and human resource constraints at the national and district levels. As a consequence, the level of farmer knowledge on the use of organic and inorganic fertilizers is limited. While the challenge may not be necessary absence or weak institutional capacity, there are gaps especially at the district level that need to be closed to lift the profile of the district department of production and marketing to more on fertilizer user awareness. Cooperating with existing farmers' organizations like farmers' cooperatives is also critical.

FGI-U will focus in the interim on building capacity of existing extension workers, brokers and salesmen through training in best practices for optimal nutrient management and how to set up a local nutrient bank. This will be an entry-point on future collaborative partnerships between fertilizer suppliers and farmer-based organisations, at national and district levels.

Institutional strengthening and capacity building will be done in the following ways:

- A. Policy influence interventions



- Supporting the on-going work to operationalize the National Fertilizer Sub-Sector Development Strategy and Investment Plan (NFS) especially in districts where FGI-U will be operating.
  - Supporting outreach programs of district departments of production and marketing to reach farmers through farmer groups and cooperatives and using this outreach work to inform policy change at national level.
  - Using results to support evidence based advocacy work, at national, local government and community levels, for promoting organic fertilizer application; identifying advocacy gaps at each of the above levels and using them as a basis for launching an effective advocacy campaign for organic fertilizers in Uganda.
- B. Institutional based interventions
- Engaging MAAIF (through PASIC), to identify priority areas that FGI could potentially support towards realizing the vision to transform grassroots farming.
  - Collaborating with National Agricultural Research Laboratories (NARL) - Kawanda, to update Agricultural Research Information Systems, soils resource maps and soil database.
  - Collaborating with IFDC to disseminate soil analysis findings and nutrient deficiency information to farmers. This can be done through district farmers associations in each of the FGI-U districts.
- C. Farmers level interventions
- Undertaking awareness raising activities and training events on soil status assessment and fertilizer application through district farmers associations.
  - Determining the rate of return that accrues from applying organic and inorganic fertilizer and disseminating this information to farmers.
  - Increasing the quality and types of fertilizers on the market – making fertilizer available and affordable.

### 4.3 Partnerships

FGI-U will work with and through other players in the fertilizer sub-sector, guided by formal Memoranda. A process is underway to finalize the formal registration status for this initiative in Uganda as a locally based international NGO<sup>2</sup>, to champion sustainable fertilizer focused interventions in Uganda. FGI-U will partner with the public sector institutions, international and local NGOs, agro-dealers and stockists of organic fertilizer, research organizations, financial institutions and farmers in program districts as whom by the figure below.

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<sup>2</sup>At the time of preparing this report, the NGO law in Uganda was under review with a possibility of only allowing one type of registration for charities, and philanthropic organisations.



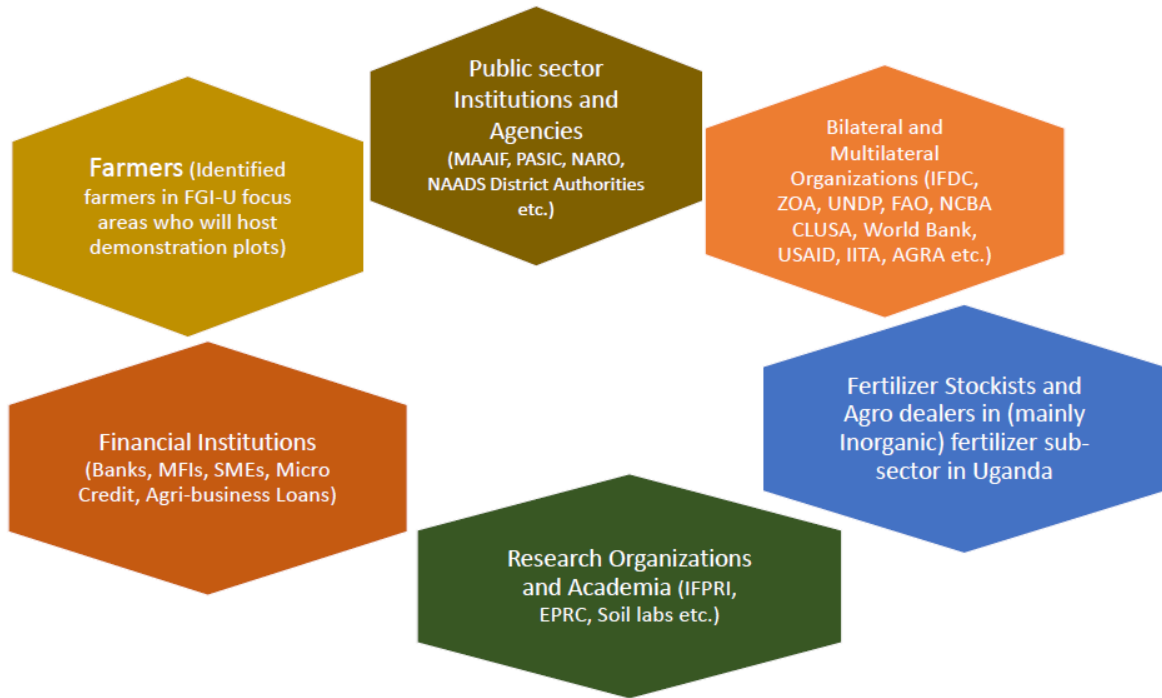


Figure 8: FGI Stakeholder categorization as drawn by the FGI-U Task force

The Initiative will focus on awareness creation, individual farmer strategic planning, local government support and rallying of national stakeholders to support this process. FGI recognizes that this will entail mobilising support for market access, micro credits, and insurance for smallholder farmers as well as a substantial mind-set change wave among stakeholders (especially farmers most of who do not have individually elaborated strategic plans). There will be use of the media, academia and social media platforms to advance this initiative. We appreciate that there are other initiatives that are already operating in this sphere. Rather than duplicate, the FGI will work with these efforts to widen and deepen the impact. Some other key partners will include: Uganda Investment Authority, NEMA, Uganda Chamber of Commerce, Uganda Credit Reference Bureau, UNBS, KCCA, District Local Government Association, Urban Authorities Association and the Private Sector Federation of Uganda.

## 4.4 Funding opportunities

There is a global realization that the cost of food will not drop but exponentially rise over the next century (according to the UN Human Development Report 2013). Food will come from natural or artificial grounds and soil will be a priceless mineral as never before. It is projected that over the next century few African, South American and Asian countries will be the 'bread baskets' of the world - Uganda inclusive. The race to save Uganda's soils is on! Many development partners including the World Bank, UNDP, FAO and others are increasing their focus on on-farm productivity, farmer extension service, methodologies such as agro-pastoral farmer field schools to ensure that soils depletion is curtailed and more food is grown for food security, poverty reduction and economic prosperity in the developing world.

## 5. Going forward

### 5.1 Affirming our presence in Uganda

FGI-U increase its clout in Uganda by working with Government prominent international and local organizations to reach smallholder farmers with the capacity they need to increase the productivity of their soils. This mapping survey exposed knowledge gaps in the role fertilizer can play in farm productivity and a lack of strategic planning at the household level as key impediments to soil health and SLM at the grassroots. The immediate focus therefore will be gathering, processing and dissemination of proven best-practices with a keen focus on local technologies that farmers can relate to and updating it with modern farming techniques and practices.

### 5.2 Making use of currently wasted organic matter as fertilizer

In Kampala, alone, about 28,000 tons of waste is collected and delivered to landfill every month most of which is simply burnt. For most cattle keepers, there is no protracted effort to gather cow dung to larger scale for re-distribution among crop farmers. Everyday every Ugandan household produces solid waste matter part of which can make fertilizer but most of which is thrown away! Following, this mapping survey, FGI-U will commission a study that will assess the feasibility of turning available waste collected in the greater Kampala area into potent fertilizer content to be sold on commercial scale at rates affordable for smallholder farmers in Uganda.

### 5.3 Institutional support for a SLM

The study affirmed that factors responsible for the low fertiliser use include, *inter alia*, inadequate information on fertilizer application among farmers, lack of capital among smallholder farmers who form majority of Ugandan farmers, poor attitudes and perceptions towards fertiliser use, inadequate capital among distributors and stockists, poorly structured fertilizer marketing





systems, poor quality fertilizers on the market, and a weak fertilizer policy framework. While there are a number of actors, within the fertilizer sub-sector in Uganda, that include Government agencies, development actors, research institutions, NGOs, private sector and local farmer associations, cooperatives, unions and groups at district level, their interventions are poorly coordinated-this offers a *niche* to FGI to coordinate their initiatives within the framework of promoting SLM.

#### 5.4 Working through and with other actors in the sector

FGI-U will not work in isolation but through Government frameworks, international and local agencies in a collaborative framework to advance the fertile grounds movement. ZOA and IFDC are commended for the initial support being provided. The initiative will in advanced periods work with other institutions on the technical, policy and farmer-centered fronts to make this goal a reality- More food from fertile grounds!



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## Annex 1: Stakeholders Matrix

The following table present the stakeholders in alphabetical order

Stakeholder	Address (Address, Website)	Activities in ISFM	Intervention approach followed
Africa 2000 Network Uganda	Lower Kololo, Plot 70 Bukoto Street, 256 Kampala, Uganda (+256) 414 541 571, (+256) 312 236 218, (+256) 312 236 219 a2n@a2n.org,ug Website: www.a2n.org.ug	-Promote access and utilisation of diverse foods to attain properly nourished, healthy, and active communities. -Encouraging farmers to form groups and associations through which they can easily access genuine markets for their products. -Help farmers voice their concerns and act as advocates on their behalf on policies affecting agriculture.	-Agri-Business development -Food and nutrition security -Policy advocacy and knowledge sharing -Institutional development
AgricNet Uganda Ltd	Pot 163 Ntinda Naalya Road, Mount Olive country Mall , 2nd floor Suite No.8 Kampala Tel: +256 776 808 182, +256 757 495 950 Email:admin@agrinetug.net	AgriNet offers innovative market linkage solutions and services for agribusiness value chain actors including smallholder farmers, traders, and large-scale process and exporters.	AgriNet provides market actors with information and services they need to make their deals happen efficiently
Buganda Cultural and Development Foundation (BUCADEF)	Head office; Annex B Building Bulange Mengo P.O Box 340471 Kampala, Telephone: 0414 271 870 Website: www.bucadef.org	Create and expand income earning opportunities, specifically sustainable agriculture and enterprise development, investment and commercial undertakings.	farmers based agricultural service delivery



Stakeholder	Address (Address, Website)	Activities in ISFM	Intervention approach followed
Eastern Africa Grain Council (EAGC)	Lillian and Pausta Tel: 0776700022/ 0704147110	EAGC is a membership organization of the Grain Value Chain Stakeholders in Eastern Africa. EAGC works in 4 main programmatic pillars including structured trade, marketing information systems, policy and advocacy and capacity building. EAGC runs a robust regional market information system (MIS) that involves data collection across Eastern Africa region. Disseminate information through the Regional Agricultural Intelligence Network (RATIN)	Policy advocacy and capacity building
Economic Policy Research Centre	Plot 51 Pool Road, Makerere University, P. o. Box 7841, Kampala – Uganda. website: www.eprc.or.ug	Provide research based evidence and policy analysis to support the formulation, implementation, monitoring and evaluation of government policies.	Policy research
Food and Agriculture Organisation (FAO)	Plot 88 Buganda Road Wandegeya, KAMPALA PO Box 521, Kampala Telephone: +256-41-4349917 E-mail:FAO-UG@fao.org	-Collects, analyses, interprets and disseminates information relating to nutrition, food, agriculture, fisheries and forestry. -Provides independent advice on agricultural policy and planning. -Provides a setting where rich and poor nations meet as equals to discuss and formulate policies on major food and agriculture issues and negotiate agreements. -Provide technical assistance and encourages an integrated approach, with environmental, social and economic considerations.	-Designs agricultural policies, supports planning, drafts effective legislations and creates national strategies to achieve rural development and hunger alleviation goals.



Stakeholder	Address (Address, Website)	Activities in ISFM	Intervention approach followed
		-Approves international standards and helps frame international conventions and agreements.	
Fusion Consult (U) Ltd	Asiimwe Denis Kangere 8/10. Kampala Road, Kampala Uganda www.fusionconsult.co.ug <a href="mailto:as.@fusioncult.co.ug">as.@fusioncult.co.ug</a>	Fusion Consult is a consulting firm established by three partners with over thirty years combined experience in: (i) Development Planning & Evaluation; (ii) IT & Business Management; and (iii) Statistics. Fusion Consult provides performance improvement support for agencies in the development and management arena	
Go Organic - Uganda	Nampanya Doreen Tel: 0779259951 Organicnetwork.eastafricaATgmail.com	Go Organic was founded in 2012 by ITCOA (International Training Course on Organic Agriculture) alumni. It provides a platform on which to build a sustainable organic network across East African borders. It brings together individuals, companies, students, organizations, institutions to promote organic principles and values.	Promotion of organic principles and values
Grow more seed Uganda and chemicals Ltd (GMS)	21 Luthuli Avenue Bugolobi, Kampala, P.O.Box 5213, Uganda Email: <a href="mailto:growmoreseeds@gmail.com">growmoreseeds@gmail.com</a>	Grow More Seeds and Chemicals is a seed company, which was registered and incorporated in Uganda in 2008. GMS supplies national and international markets for both seed and relief food.	Offers professional services in research, production, importation, distribution and sales of quality vegetable and field crop seeds, relief food, agricultural chemicals, fertilizers, agriculture tools and irrigation equipment.
International Fertilizers Development Centre (IFDC)	Ground Floor, Studio House Plot 5 Bandali Rise, Bugolobi	Increase and sustain food security and agricultural productivity.	Development and transfer of effective and environmentally



Stakeholder	Address (Address, Website)	Activities in ISFM	Intervention approach followed
	P.O. Box 75391 Kampala, Uganda, <a href="http://ifdc.org">http://ifdc.org</a>		sound crop nutrient technology and agribusiness expertise.
International Food Policy Research Institute(IFPRI)	Plot 15, East Naguru Road, P.O. Box 28565 , Kampala, Uganda Tel: +256-414-285-060/064 Fax: +256-414-285079 E-Mail: <a href="mailto:Ifpri-uganda@cgiar.org">Ifpri-uganda@cgiar.org</a>	-Ensuring sustainable food production -Transforming agriculture	Research on policies, investments, and programs that contribute to a productive, sustainable and resilient agricultural and food system.
International Institute of Tropical Agriculture (IITA)	15 East Naguru Road, PO Box 7878 Kampala, Uganda Tel: +256414285060 / +256752787812 Email: <a href="mailto:p.vanasten@cgiar.org">p.vanasten@cgiar.org</a> , Website: <a href="http://www.iita.org">www.iita.org</a>	IITA is a non-profit organization that was founded in 1967. It is governed by a Board of Trustees, and supported by several countries. IITA is one of the world's leading research partners in finding solutions for hunger, malnutrition and poverty.	IITA works with partners to enhance crop quality and productivity, reduce producer and consumer risks, and generate wealth from agriculture.
Mercy Corps Uganda	Robert Okello Omach 0771-612625	Improve poverty and food insecurity using community-led and market-driven approaches in the country's most vulnerable areas.	Helps rural farmers increase productivity and promote health and nutrition.
National Organic Agricultural Movement of Uganda (NOGAMU)	Plot 957 Galukande Close, Muyenga, Off Tank Hill Road. P.O. Box 70071, Kampala. Tel: +256 312 264039, +256 414 269 415 Email: <a href="mailto:organictradepoint@nogamu.org.ug">organictradepoint@nogamu.org.ug</a> <a href="http://www.nogamu.org.ug">http://www.nogamu.org.ug</a>	- Promotes local and export marketing of organic products from Uganda through market linkages, market information services and organic market promotion. -Builds and enhances capacity at various levels within the organic sector and thus offers a range of services in the areas of training, research and extension. -Increases the application of organic and other standards to promote organic certified production in Uganda.	-Offersmarketing, training, focused group services -Application of organic standards



Stakeholder	Address (Address, Website)	Activities in ISFM	Intervention approach followed
National Water and Sewerage Corporation	P.O. Box 7053, Kampala	Provision of organic fertilizers	Service provision, Partnerships and collaborations
NCBA CLUSA International Uganda Conservation Farming Initiative	Plot No. 25 Luthuli Rise, Bugolobi, Kampala Kampala- Uganda, P.O.BOX 7643 clusauganda.co.ug +256414505523	The Cooperative League of the United States of America (CLUSA) Uganda aims to improve food security for smallholder farmers through implementing the Uganda Conservation Farming Initiative (UCFI) funded by the American people through the United States Department of Agriculture (USDA).	Conservation farming
Participatory Ecological Land use management (PELUM)	Plot 155, Kira Road, Kamwokya, Kampala – Uganda Tel:  +256-414-533973 pelumuganda@pelumuganda.org	-PELUM Uganda is a network of Civil Society Organizations that have chosen to work together to improve the livelihoods of the poor. -PELUM Uganda works to improve the livelihoods of small-scale farmers and the sustainability of rural communities through the fostering of ecological land use management. -Undertakes research and demonstration projects; and advocates for policies that better support small-scale farmers.	Share skills and knowledge about good practices and techniques through a broad network of likeminded organizations
Plan for the Modernisation of Agriculture (PMA) Secretariat	Plot 39-A Lumumba Avenue Mukwasi House, 3rd Floor P. O. Box 5675 Kampala, Uganda Tel: +256-41-252263/4 Or 321780 • Fax: +256-41-41-252263 Email: Pma@Pma.Go.Ug	Ensuring that policies formulated are adhered to encourage the private sector increase their investments in fertilizer importation and businesses.	Policy direction and guidance to the agricultural sector
Uganda National AGRO-Input Dealers Association- UNADA	National Secretariat Plot 16A, Martyrsway UNEB Road Ntinda	-Fosters growth of efficient and cost effective input distribution network that reach all farmers in Uganda.	Partnerships and collaborations



Stakeholder	Address (Address, Website)	Activities in ISFM	Intervention approach followed
	P.O BOX 7634 Kampala Tel:0312-293475/ 0414-251677 Email:unada@unada.org		
UNFFE— Uganda National Farmers Federation (UNFFE)	Plot 27 Nakasero Road, Kampala, P.O. Box 6213 Kampala, Uganda, Phone: +256-414-340249 /230705	-Lobbies and advocates for farmer friendly agricultural policies; -Builds and develops capacity of farmer organisations to render effective services; -Increases farmers accessibility to income opportunities and agricultural information	Deliver agricultural advisory services; Influence agricultural policy through lobbying and advocacy; Promote agricultural shows and trade fairs
USAID	USAID/Uganda U.S. Mission Compound-South Wing, Plot 1577 Ggaba Road PO Box 7856, Kampala, Uganda <b>Phone</b> : +256 0414 306 001	-Make agriculture, forestry and fisheries more productive and sustainable; -Enable inclusive and efficient agricultural and food systems.	The Global Climate Change Initiative.
ZOA International	Plot 2245, Kalema Drive/Diplomat Road, Muyenga, Kampala P.o Box 28154, Kampala Tel: +256 773399425 Email:pga@zoa.ug	-Focuses on food security, economic development and civic education.	-Partnerships and networks -Livelihood recovery and community rehabilitation





