



**Increasing Incidences of K deficiency in Tanzanian soils**  
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African Fertilizer and Agribusiness Partnership



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The AFAP Program

# K status in major agricultural soils of Tanzania



- **Importation:**
  - Lack of domestic manufacturing facilities plus outdated recommendations results in importation of inappropriate fertilizers
  - Importers order in small batches which results in paying high prices on the world market
  - Poor port infrastructure results in high port charges
- **Internal distribution:**
  - Poor road and rail networks result in high transport costs
  - Shortage of warehouses results in inadequate stock
  - Poor access to credit: high interest rates and stiff collateral requirements

# Barriers to the Flow of Fertilizer to the Farmgate (2)



- **Retail:**
  - Few agro-dealers operating next to the farm gate so poor access for farmers
    - Lack of access to credit poses a barrier to entry at retail level.
    - Result: they buy in small, frequent consignments.
  - Retailers lack business management and marketing skills, and technical knowledge.
- **Farm-level demand**
  - Lack of farmer knowledge of the correct use and benefits of fertilizers.
  - Use of inappropriate fertilizers due to outdated fertilizer recommendations.
  - Lack of farmer access to credit.
  - Low returns to fertilizer use due to poor access to output markets and using inappropriate fertilizers because of inadequate soil mapping.

# What are the African farmers looking for to enhance agric productivity?



- Timely availability with the right quantities and ideal for specific crop and soil requirements and at affordable price.
- Proper knowledge on issues related to soil fertility and appropriate fertilizer use (limited extension and agro-dealer services).
- An assured market for whatever surplus they have produced as that will encourage them to continue adapting crop productivity enhancing technologies.



# The AFAP Model

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# What is the African Fertilizer and Agribusiness Partnership?



AFAP is an independent non-profit organization working to establish more competitive and sustainable fertilizer markets in sub-Saharan Africa that can provide African smallholder farmers with the incentive, initiative, and capability to source and use fertilizer to improve crop production, reduce food insecurity, and increase rural incomes.

AFAP is a collaboration between NEPAD, AGRA, IFDC, AfDB, and AGMARK

- 1) High cost of borrowing for all players all along the supply chain and its impact on the cost of fertilizer to farmers;
- 2) An unpredictable policy and regulatory environment.

AFAP has 3 target countries (Ghana, Mozambique, Tanzania) and 2 pilot countries (Ethiopia, Nigeria)

# AFAP in Tanzania



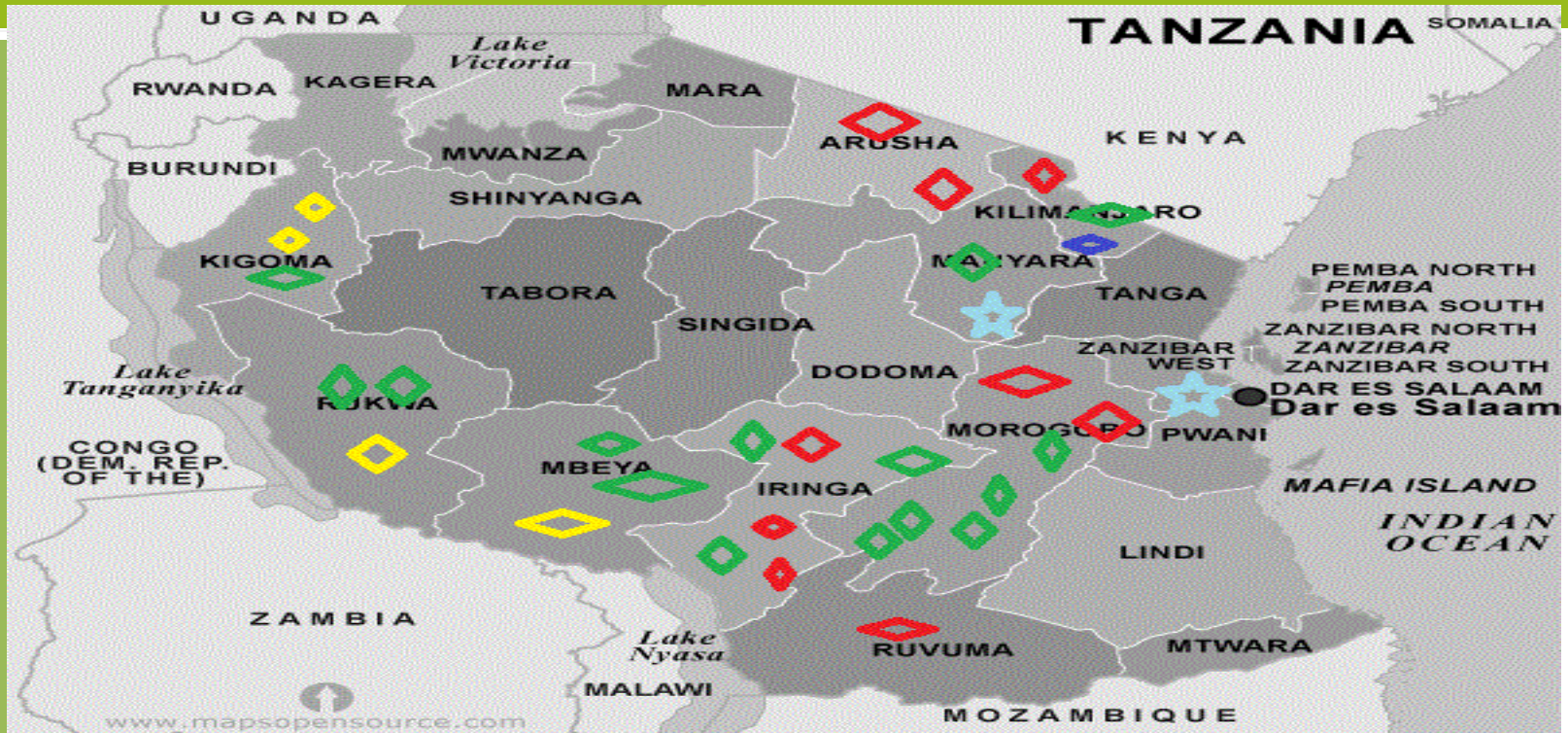
AFAP is working in mainly working in Mozambique, Ghana and Tanzania with few activities in Ethiopia, Nigeria and Ivory Coast.

AFAP operates in **11** regions in Tanzania which are grouped into 3 zones namely;






- Northern zone (Arusha, Kilimanjaro and Manyara regions)
- Southern Highlands Zone A (Iringa, Morogoro, Njombe and Ruvuma regions)
- Southern Highlands Zone B (Mbeya, Rukwa, Katavi and Kigoma)
- As at July 2015, **33** projects have been approved in Tanzania:
- **18** projects for credit guarantee
- **13** projects for warehouse construction
- **1** for warehouse purchase loan guarantee
- **2** for Blending (ETG and Minjingu)
- **1** application (LSS) for blending is in the pipeline

NB: Six fertilizer supply companies have entered a contract with AFAP to supply all hub agro-dealers with fertilizer using AFAPs credit guarantee facility.

# Locations of AFAP Projects in Tanzania-2015



**Key:**

- Credit guarantee projects 
- Warehouse construction projects 
- Recently approved APC 
- Warehouse purchase loan guarantee 
- Blending projects 



## 2014/2015 Season -Achievements



- 29 hub distributors supported by AFAP
- 40,521.46 tonnes of fertilizers have been sold under AFAP assistance
- 1,466.09 tonnes of seeds were sold by AFAP supported agro dealers
- 407 demo plots have been established to train farmers on proper usage of fertilizers.

## Achievements Conti.....



- Hub agro dealers used a network of 422 trustworthy/active rural agro dealers and reached about 580,000 small holder farmers
- There are 13 construction projects (matching investment) whereby four (4) warehouses have been completed, one (1) was purchased through AFAP matching grant assistance, eight (8) are still under construction.

## Achievements Conti....



- All 14 warehouses have a total storage space of 50,018 tonnes
- Five warehouses which are complete (including one purchased) have a total storage space of 22,728 tonnes

# Responsibilities of Benefiting Hub Agro Dealers



- In return to AFAP support the beneficiaries are committed themselves to perform the following
- Demand creation activities
  - ❖ Conduct demonstration plots
  - ❖ Leaflets
  - ❖ Radio programmes
- Involvement in output Market
- Provide transportations service to rural agro dealers
- To provide fertilizer on credit to both farmers and rural agro dealers
- Ensure timely availability, affordability and accessibility of fertilizer

# OTHER AFAP SUPPORTED ACTIVITIES



- AFAP and IITA have entered in an MoU with AFAP given a task of promoting the use of bio fertilizer in soya beans and common beans
- The bio fertilizers involved are
  - ❖ Legume fix
  - ❖ Biofix
  - ❖ Nitrosua

and these have been proved to be effective in increasing productivity as confirmed by MAFC and SUA

- Dissemination fields will take place at the following places
  - Mbeya region (Mbeya rural and Mbozi Districts) - Common Beans
  - Ruvuma Region (Namtumbo District) – Soya Beans
  - Tanga Region (Korogwe District) – Soya Beans and Common Beans
  - Morogoro region (Kilosa District) – Soya Beans

# Agricultural intensification through fertilizer use



Agricultural intensification is inevitable now because the population keeps on increasing. For instance, in 1961, Tanzania's population was about 9 million people and is expected to be 50 million BUT the land area is still the same: 940,000,000 square meters.

Africa is still using very little fertilizer where the majority of the countries are using between 8 and 25 kg of nutrients per ha (Tanzania has moved from 8 kg to 19.3 kg).

# Potassium fertility status in Tanzanian soils



- For about five decades, Tanzanian and East African soils were taken to be having sufficient levels of potassium, hence K application was almost non-existent.
- Recent soil analysis carried out in many parts of the country have indicated that K is limiting in many agricultural soils in Tanzania and most prevalent deficiency symptoms have been in maize, rice, cassava, fruits and vegetables.

# First National Potassium Symposium in Tanzania



With emerging K deficiency in almost 60 percent of the Tanzanian soils (this could be more with more intense soil mapping done), a national potassium symposium was convened. It was jointly organized by AFAP, IPI and Mlingano Agricultural Research Institute. The theme of the Symposium was: ***Potassium for Sustainable Crop Production and Food Security*** and was held in Dar-es-salaam between 28-29 July, 2015 where about 60 scientists attended.



# Trends continued.....



## **Areas that were covered included:**

- Potassium distribution in the soils of Tanzania
- Role of potassium for sustainable crop productivity in Tanzania.
- Trends of potassium levels in the soils of Tanzania.
- Formulations and packages of potassium based fertilizers.
- Economics for potassium based fertilizers for sustainable crop production.

# Efforts to produce fertilizer blends containing potassium



## Minjingu Mines and Fertilizer Company

### Minjingu Mazao

N: 10%  $P_2O_5$ : 20% S: 5% CaO: 25% Zn: 0.5% B: 0.1%  
MgO: 2.0%

### Minjingu Nafaka

N: 9%  $P_2O_5$ : 18% K: 5% S: 5% CaO: 25%  
Zn: 0.5% B: 0.1% MgO: 2.0%

***NB: Minjingu hyper phosphate alone contains  $P_2O_5$   
27-29% CaO 36-38% MgO 2.5%***

## Fertilizer blends initiative .....



### **Yara Tanzania Ltd**

- Yara Mila Cereal: NPK 23:10:5 +Mg, Zn and S
- Yara Mila Java: NPK 22:6:12 + S, Mg & Zn (coffee).

### **Polyhalite trials with Sirius Minerals**

Sirius, a UK based company, is carrying out validation trials with polyhalite in various NPK formulations alone and in other formulations including Sulphur as a K source in maize and tobacco crops. Sulphur is now emerging as a serious deficient nutrient in Tanzania.

## Fertilizer blends initiatives.....



### **Other blending initiatives in pipeline**

- Export Trading Group
- Live Support Systems

## Potassium resources in Africa



- Africa is expected to be one of the main potash producers despite present low K use (< 1 mil tonnes). These include:
- Danakil Depression in Ethiopia and Eritrea where potash deposits are at depth of between 50 and 300 meters underground. The mineral reserve at Colluli in Eritrea stands at 347 million tons and is said to be the shallowest evaporite deposit in the world (16 – 140 meters) allowing for open cut mining.
  - Other potential potash deposits are in Congo Republic, Niger, Morocco, Libya, Egypt and Tunisia.

# Issues that need to be addressed to enhance fertilizer use in Africa



- Harmonize standards within Regional Economic Communities (RECs) and between RECs.
- Encouraging investors to bring in their technologies and resources by having ideal and predictable policy and regulatory issues.

# What needs to be done to scale out new findings on alternative potash sources?



- Provide this information to respective country based scientists and other stakeholders along the fertilizer value chain. This will encourage Governments to invest in identifying potential potassium silicate minerals and produce alternative potash for farmers use.
- Respective countries should identify these K silicate minerals and make use of these resources by:
  - Identifying plants that can effectively utilize the inherent soils and
  - Invest in mining of the silicate minerals to be applied in suitable soils (chemical and physical properties).

## What needs to be done continued



- Pioneers of this technology should provide a technical backstop to interested countries and where possible assist in looking for prospective investors.
- Convene a multi national stakeholders meeting where all players will be involved.



# AFAP ABILITY IN SCALING OUT TECHNOLOGIES



- AFAP has a strong agro-dealer network in the countries they are working, thus many institutions coming up with new technologies related to fertilizer use, engage AFAP (eg IITA and IDRC on scaling out technologies to enhance legume production in Tanzania using bio-fertilizers).

In the countries where AFAP is working, AFAP has established itself as a key link between the private sector and the public sector.



**Thank You.**

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