



## India-Uganda Collaboration on Fertilizer use by Farmers In Uganda



Kasande Glorious\*

### Introduction

A landlocked country in the east-central Africa, situated north and northwest of Lake Victoria, Uganda has a total area of 236,040 sq km (91,136 sq mi), of which 36,330 sq km (14,027 mi) is inland water. It extends 787 km (489 mi) north-north-east-south-south-west and 486 km (302 mi) east-south-east-west-north-west. Bounded on the north by Sudan, on the east by Kenya, on the south by Tanzania and Rwanda, and on the west by the Democratic Republic of the Congo (DROC), Uganda has a total boundary length of 2,698 km (1,676 mi).

### Population

According to Uganda National Housing and Population census 2014, Uganda Population was 34.6 million people. Annual population growth rate between 2002 and 2014 censuses was 3.0 per cent. In 2014 population density was 173 persons per square kilometer. Sex Ratio was 94.6 per cent in 2014.

### Economy

Uganda is agriculture based; employing over 80 percent of the population in agriculture and generating 90 percent of export earnings. Coffee is the main export crop, with tea and cotton, being other agricultural products. The country also has mineral deposits of copper and cobalt, which contributed to 30 percent of export earnings during 1960s, although the mining sector is only a minor contributor to the economy lately. In 2008, Uganda officially declared that it had oil reserves in the Albertine region; this oil is due for mining and processing and the process commenced in 2017.

### Background of Agricultural Sector

Agricultural sector is the most important sector in African economy. Firstly, more than 70 percent of the active population of the sub-Saharan Africa is employed in agriculture. Secondly,

---

\* Senior Researcher, Praid Consultants Ltd., Uganda

it contributes more than 46 percent to gross domestic product (GDP), and thirdly, it is the main source of foreign exchange earnings.

In Uganda, agriculture sector contributes in following ways: Agriculture is and will, in the medium-term, remain central to Uganda's economic growth and poverty reduction. It employs nearly 80 percent of the population, contributes approximately 25 percent to the Gross Domestic Product (GDP), and generates 40 percent of country's exports. The sector's role is well articulated in Uganda's long-term development aspirations in Vision 2040, which envisions transforming Uganda from a predominantly peasant and low-income country to a competitive upper-middle-income country. Achieving this would require enhancing production and productivity within the sector through the use of productivity-enhancing technologies such as use of fertilizers. It is the source of raw materials for the industrial sector through forward and backward linkages with the service and industrial sector (NDP, 2010). Therefore, development programmes, key policy players, governments and researchers need to put into consideration the agriculture sector as the backbone of the Ugandan economy.

Despite contributions of the agriculture sector, agricultural development remains a challenge in Uganda with a little attention to the challenges facing in the sector. There has been a noticeable decline in food production, increase in poverty level, higher malnutrition and vulnerability to shocks (Government of Uganda, 2011). The above challenges are owing to the following reasons – limited land for cultivation due to high population pressure (Arellane and Lee, 2003), insecure land tenure system that has limits farmers from acquiring land for cultivation (MAAIF, 2010), poor climatic conditions (Ajayi, 2009), low soil fertility (Mugwe, Thomas, Isaac, and Minde 2009). These need to be addressed to enhance crop production to fight food insecurity.

### **Declining Soil Fertility**

Low soil fertility has become a matter of concern by development workers, researchers and soil scientists, and it has been identified as a major constraint to food production in Uganda.

Adoption of soil fertility technologies appear to be the most appropriate way of enhancing declining soil fertility in the country (Maria and Yost, 2006). Fertilizer refers to any substance containing one or more recognized nutrient(s) used for plant nutrition, and is designed for use or has value in promoting plant growth (National Fertilizer Policy, 2016). The Agro Ecological Zones (AEZ) of Uganda are characterized with low organic matter and nutrient contents (Maria and Yost, 2006). The problem of low organic matter in the soil and declining soil fertility have worsened by limited or no use of external inputs such as use of organic and inorganic fertilizers.

The related Abuja Fertilizer Summit 2006 Declaration recommended that African countries should apply at least 50 kg of nutrients per hectare by 2015 to attain and sustain the Comprehensive Africa Agriculture Development Programme (CAADP) target of 6 percent annual growth in the sector (African Union, 2006). Uganda is far from achieving this target and its losses of soil nutrients remain one of the highest in Africa. To reverse the situation, the Government must address the constraints of the development of fertilizer sub-sector.

The fertilizer market remains underdeveloped and fragmented, and has persistent gaps in legal and regulatory frameworks; thus, the need is for a policy framework that harmonizes and streamlines operations of all actors in the fertilizer subsector. Secondly, because of different challenges in accessing fertilizers, the government of Uganda should consider having policies encouraging country to make collaborations with other governments/countries in fighting the challenge of low fertilizer -use by farmers. There are governments, like Indian government, having friendly foreign policies. Uganda can go into a 50-50 partnership with them whereby the collaborations allow easy access and utilization of fertilizers.

### **Essential Use of Fertilizer for Increased Crop Production**

Recognition of the use of fertilizers as the most viable mechanism for bolstering soil and general agricultural productivity cannot be over-emphasized. Its potential impacts include: reduced

malnutrition, high income from high yields, and contribution to export strategic agricultural commodities. To enhance agricultural productivity towards the CAADP target, the Abuja Fertilizer Summit (2006) declared that all African countries should increase their fertilizer application levels to at least 50 kg of nutrients per hectare per year by 2015 (African Union, 2006). The most limiting nutrients in Uganda soils are nitrogen and phosphorus. A recent study on Uganda recommends raising phosphorus nutrient to at least 200 kg of nutrients per hectare per year. Ugandan soils were renowned for their high fertility. The depletion of soil nutrients is continuing at an exponential rate, not recorded elsewhere in the world. Uganda loses approximately 80 kg of nutrient per hectare per year through top-soil erosion and nutrients' depletion through harvested crop biomass. Given the high population that depends on agriculture and growing population pressure, if no action is taken, the soils are likely to lose more nutrients. This will result in worsening nutrient imbalances, since only limited deliberate efforts are being made to replenish soil nutrients by using organic, inorganic and bio-fertilizers to sustain and enhance soil fertility and increase food and other crop production. Of the estimated losses of 80 kg of nutrients per hectare per year, farmers are adding only between 1 and 1.5 kg, recording Uganda the least fertilizer use country in the whole world. This rate is below the average of 8 kg per hectare in Sub-Saharan Africa (SSA). As a result, soil fertility decline is one of the binding constraints to agricultural growth in Uganda. Recent studies have revealed that the major challenges that contribute to low use of fertilizer (organic, inorganic and bio-fertilizers) are related to enabling environment, supply and demand factors.

The enabling environment of the fertilizer sub-sector is affected by, amongst other factors, volatility in exchange rate, commodity pricing, marketing, trade and tariffs, financial arrangements, regulatory functions, and research and extension. For example, the importation of inorganic fertilizers is a capital-intensive venture. Importers and agro-dealers as well as farmers lack access to affordable finance to facilitate fertilizer trade and use. High interest rates (over 20 percent) and stringent collaterals act as disincentives to fertilizer market development. Uganda is a signatory to the East African Community (EAC)

*zero-rated* tax on fertilizers. However, fertilizer imports attract 6 percent withholding tax (WHT) and sales in excess of US\$1 million. Whereas the importers and agro-dealers are entitled to reclaim this tax when they submit their annual tax returns, this does not happen in practice. Instead, the tax is passed on to the farmers, thus further raising price of fertilizers. On the supply side, importers trade not only in small lots due to limited capital but also from far-off places such as Ukraine, Turkey, and China. This, coupled with the high transport cost from Mombasa to Kampala, inevitably further increases the price of fertilizers to farmers. In addition, range of the fertilizer products available in the market are limited. This limits farmers' choices based on the nutrient requirements in different circumstances. Smallholder farmers lack capacity and knowledge on how to replenish lost soil nutrients. There are also challenges associated with the limited awareness of the value and use of fertilizers, low purchasing power, poor supply of fertilizers, and prevalence of counterfeit/fake fertilizers that are not detected by farmers. There is also a myth that Uganda's soils are fertile (as recited in the National Anthem), and do not require fertilizers, while still others have the erroneous perception that fertilizers "spoil" soils.

The current high rate of nutrient depletion with very low replenishment rates is likely to threaten Uganda's food security, income security and export competitiveness. On the one hand, this is due to demand-depressing effects of unfavorable price incentives aggravated by several factors, such as affordability (mainly for smallholder farmers), counterfeit fertilizers on the market and a general lack of information about the availability and cost of fertilizers. On the other hand, the limitations of the supply side include low levels of private investment in fertilizer distribution, which may be due to high transportation costs, attributed to inadequate infrastructure and high cost of financing. Currently, the emerging input markets remain underdeveloped and fragmented, and access to inputs, especially fertilizers, is a challenge for smallholder farmers. Developing a phosphate industry in Tororo is one of the core projects identified in NDP II and NAP and represents a long-term strategy to address availability of fertilizers in Uganda.

Accordingly, the National Agriculture Policy (NAP) envisions “a competitive, profitable and sustainable agriculture sector” with the objective of promoting food and nutritional security and improving household income. Among the complementary actions by other supporting sectors, NAP, for example, underscores that the Ministry responsible for mineral development shall promote investment in local manufacturing of fertilizers to increase access to the quality and affordable fertilizers necessary for increasing agricultural production and productivity.

Within the NAP framework, MAAIF has developed the ASSP with the mission of transforming the sector from subsistence to commercial agriculture. One of the four priority objectives of the ASSP is, “increasing access to critical farm inputs”, within which enhancing access to and use of fertilizers for all categories of farmers is a strategic intervention.

### How Uganda promotes science

Uganda is working in collaboration with other international organizations and governments. These include Uganda collaboration with ASARECA, International Fertilizer Development Centre (IFDC), International Institute of Tropical Agriculture (IITA), Private Sector and CSOs to advocate for and pursue harmonization of fertilizer related policies and regulations in EAC. The National Agricultural and Research Organization of Uganda developed the Fertilizer Optimization Tool (FOT) which has of recent attracted international attention. The FOT helps farmers to make informed decisions based on the available resources like land, money, and type of crops to be cultivated. This tool was tested and found applicable and efficient in promoting fertilizer -use among farmers. The tool is currently being implemented in East and Central parts of Africa.

### The need for International collaborations

The people especially the youth need to have a strong orientation for science and technology, right from childhood to have solutions to future problems of science and technology. The young should take science and innovation courses right from the primary level. The aspect of innovation in India is considered a great priority in promoting science and technology. The Indian government has a strong example of

the countries, which have invested in research and innovations for science and technology. Uganda should likewise have such priorities to develop innovative technologies; and empower both government and private sectors in research and development institutions like the NARO, Universities, and private sectors. There is a need for the government of Uganda to improve budget on science and technology and innovations to promote research and development for good technology innovations in the country.

There is also need for the government to create strong international collaborations in dealing with the cost and in availability of fertilizers, especially nitrogen fertilizer, given its key role in improving crop production. Governments, like that of India, have developed a number of soil fertility management nitrogen inclusive technologies. The Ugandan government can collaborate with the Indian government.

### References

- African Union. 2006. Declaration of the Abuja Food Security Summit. Accessed on January 10, 2018 from URL:[https://www.fanrpan.org/archive/documents/d00188/AU\\_Abuja\\_declaration\\_Dec2006.pdf](https://www.fanrpan.org/archive/documents/d00188/AU_Abuja_declaration_Dec2006.pdf)
- Ajayi, Oluyedde Clifford. 2009. “User acceptability of soil fertility management technologies”. *Journal of Sustainable Agriculture* 30(3): 21-40.
- Arellanes, Peter and David Lee. 2003. “Determinants of adoption of sustainable agricultural Technologies: Evidence from the Hillside of Honduras”. Proceedings of the 25th international conference of agricultural economists (IAAE) *Journal of Agricultural Economics*: 693-699
- Government of Uganda. 2011. *Uganda Nutrition Action Plan 2011-2016*, accessed on January 12, 2018 from URL: [https://www.unicef.org/uganda/Nutrition\\_Plan\\_2011.pdf](https://www.unicef.org/uganda/Nutrition_Plan_2011.pdf)
- Jayne, T.S., Minde, I.J. and Argwings-Kodhek, G., 2002. *Perspectives on Agricultural Transformation: A View from Africa*. Nova Publishers.
- MAAIF. 2010. *Development strategy and investment Plan*, accessed on January 12, 2018 from : [http://www.fao.org/fileadmin/user\\_upload/drought/docs/Agriculture\\_DSIP%20Uganda1.pdf](http://www.fao.org/fileadmin/user_upload/drought/docs/Agriculture_DSIP%20Uganda1.pdf)
- Maria, R.M. and Yost, R., 2006. A survey of soil fertility status of four agroecological zones of Mozambique. *Soil science*, 171(11), pp.902-914
- Government of Uganda. 2016 National Fertilizer Policy. Accessed on January 12, 2018 from URL:[https://ugandarefugees.org/wp-content/uploads/National-fertilizer-Policy-for-Uganda\\_launched-on-June-5-2017.pdf](https://ugandarefugees.org/wp-content/uploads/National-fertilizer-Policy-for-Uganda_launched-on-June-5-2017.pdf)
- Government of Uganda. 2010. *National Development Plan 2010-2015*. Accessed on January 10, 2018 URL: <http://npa.ug/wp-content/themes/npatheme/documents/NDP2.pdf>