3.2 The 1 kg Challenge: Can Financial Services Help Increase the Use of Fertiliser in Ugandan Farming?

Section 1: Low levels of fertiliser usage in Uganda

Average fertiliser application rate in Uganda is 1 kg per ha. In comparison, mean application rates (kg/ha) are 2 in Burundi, 4 in Sudan, 5 in Burkina Faso, 5 in Tanzania, 8 in Rwanda, 15 in Ghana, 26 in Kenya, 34 in Zimbabwe, 35 in Malawi, and 44 in South Africa. The data clearly show that fertiliser use in many sub-Saharan African (SSA) countries is still far below the target of 50 kg of nutrients per ha set during the Abuja declaration of 2006. Uganda is among the countries with the most severe soil nutrient depletion in Africa. The estimated average depletion rates for nitrogen (N), phosphorus (P) and potassium (K) in SSA are -22, -2.5 and -15 kg per ha per year, respectively, and the equivalent rates in Uganda are -21, -8 and -43 kg per ha per year. This calls for urgent interventions from different stakeholders to reverse the current trend of declining per capita food production and crop yield per unit area of production, due to declining soil fertility and land degradation.

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The cost of fertiliser and the “relatively good” inherent soil fertility in the agricultural areas of Uganda have been cited as reasons for the low consumption of fertiliser in this country. These points are now explored.

The C:P ratios are generally high for cereals\(^6\),\(^7\), and relatively lower for upland rice and legumes\(^8\) because of the higher farm gate price of the latter. The EOR for maize decreased from 47 to 25 kg N ha as C:P increased from 10 to 30; for upland rice 89 to 65 kg N ha as C:P increased from 4 to 10; for beans 27 to 42 kg ha N as C:P increased from 4 to 8; for soybean 25 to 18 kg ha P as C:P increased from 6 to 15; and for groundnut 29 to 23 kg ha P as C:P increased from 4 to 8. The C:P is high compared to USA\(^9\).

The reconnaissance soil surveys of the late 1950’s and early 60’s that covered the whole of Uganda revealed that over one half of the land surface has soils rated as medium\(^10\). That is, “soils which will only yield good crops under good management that is with application of manure, inorganic fertilisers, practising crop rotation and three year fallow”\(^11\).

High cost of fertiliser affects the amount of fertilisers applied because of the low farm gate price of produce, and the high opportunity cost of the money for resource-poor farmers. The cost of fertiliser is well expressed as the cost of nutrient to farm gate price of produce ratio (C:P) or the amount of produce which a farmer has to sell to buy 1 kg of nutrient. Since fertiliser prices are high and the farm gate prices of produce are generally low, farmers have to sell much produce to buy the required amount of nutrients needed to maximize net returns per area of land, or to apply fertiliser at the Economically Optimum Rates (EOR).

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Therefore most soils in the country are of low to medium productivity, mainly due to nitrogen and phosphorus deficiencies. Crops will respond to application of nitrogen and phosphorus fertilisers with increased crop yield resulting in food, nutrition and income security for farmers and consumers. Application of mineral fertilisers is an effective means to reverse soil nutrient depletion, supply nutrients to plants and improve land productivity and has been credited as essential for the sustained increases in per capita food production in Asia and Latin America.

Globally, 46% of the N input for crop production is from inorganic fertilisers with biological N fixation, atmospheric deposition, animal manure and crop residues being other important sources. In addition to high C:P ratios, fertiliser use is low in Uganda because: low fertiliser supply is related to low demand; the false belief of many that Ugandan soils are sufficiently fertile; little emphasis on fertiliser use promotion; inadequate credit availability; and NGOs and ‘organic and environmental groups’ which advocate that “fertilisers spoil soils”. Compounding this problem is the lack of experience and knowledge by farmers, extension workers, other service providers and agro-input dealers on proper fertiliser use. Consequently, many farmers lack the knowledge and skills needed to use fertilisers efficiently.

Section 2: Addressing the high price of fertiliser

Interventions to reduce the fertiliser cost to grain price ratio include: improved fertiliser supply and marketing efficiency; improved technical advice on crop-nutrient-application rate combinations that maximize returns on investment; voucher type subsidies on fertiliser use, improved credit availability, and greater marketing efficiency.

a. **Availability of the right fertilisers, of reliable quality, has to be timely** but fertilisers are not readily available to most Ugandan farmers. The procurement process is long and the time between ordering, to importing, distribution, and eventual purchase by farmers is often a full year with substantial transport, storage, and handling costs. Little fertiliser is supplied to small holders by stockists in rural communities and prices are high. Furthermore inorganic fertilisers have a seasonal demand. If not sold in one season, agro-input dealers have to wait for about six months before they can sell the stock, which ties up operating funds and storage space, and calls for an increase in the amount of capital required to conduct business. Financial support to agro-input dealers may be required to overcome this challenge initially although the problem is expected to diminish with increased fertiliser use and demand, improved economies of scale, more frequent re-supply, and a better understanding of the demand.

b. Very important is **good technical advice** on fertiliser use as the optimal choice of combinations of crop-nutrient-application rate can greatly increase net returns on fertiliser use. NARO conducted research for six crops and developed a decision tool for optimizing net returns on fertiliser use. This needs to be accompanied by support of enhanced awareness of the potential for increased profitability and productivity through fertiliser use as a component of integrated soil fertility management. Such awareness can be created through various means including demonstrations and field days, farmer field schools, various media activities, agricultural programmes at schools and colleges. This will result in increased demand for fertilisers which will drive increased efficiency in supply.

c. **Subsidization of fertiliser** use may be considered, at least as an interim measure, to enhance capacity for fertiliser use. The aim of a fertiliser subsidy would be to strengthen the private fertiliser supply chain by creating more demand for fertiliser and enabling supply to become more efficient. Therefore, a voucher system that helps farmers buy fertiliser at the market price is preferred to offering a separate subsidised fertiliser supply system.

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d. **Inadequate financial capacity** is a major obstacle to fertiliser procurement by smallholders who have little purchasing capacity and little access to finance except maybe at high interest rates (above 26%). Banks are still reluctant to lend to smallholder farmers due to perceived risks associated with agriculture. Improved credit might be linked to increased storage capacity and community marketing. Commodity prices fluctuate greatly, being low at harvest and during seasons with bumper harvests. Unfortunately there is currently little buffering of prices due to lack of storage infrastructure and supportive policies.

Consequently farmers usually sell much of their produce immediately after harvest when prices are generally low in order to meet immediate financial need. Profitability can be considerably increased by storage and delaying marketing until prices improve, and by group marketing. Credit can be provided, with the stored produce as collateral, to enable farmers to meet immediate expenses and to have money for fertiliser purchase. This may be most successful if done on a community basis. Support to farmer groups for construction of storage facilities, group marketing, and access to credit is needed.

e. **Improved storage** is one part of increased efficiency marketing but good roads, current market information and projections, linking of farmer groups to traders and processors are also important.

**Section 3: The fertiliser supply chain operating in Uganda**

The fertiliser supply chain consists of importers/wholesalers, stockists/dealers and agro-input dealers. Smallholder farmers procure fertilisers mainly from three sources: importers/wholesalers, distributors and institutions that support out-grower schemes (Figure 2).

There are 12 - 15 importers of fertilisers to Uganda, eight own user importers, mainly for plantation/cash crops and, 1269 retailers. Smallholder farmers use less than 1% of the total imported fertiliser (Figure 2 on next page), which is indeed a small market.

**Importers/Wholesalers**

These are mainly based in Kampala and Mbale with only 2 or 3 in Masaka. An important feature of the fertiliser marketing system in Uganda is that importers function primarily as brokers importing fertilisers only after tendering for and being awarded a contract by the commercial/estate crop growers. Due to market risk and high cost of credit, importers do not maintain significant inventories of fertiliser for resale. The vast bulk of what these importers sell is moved on directly to the large commercial estates and out-grower schemes. The importers do not intentionally target the smallholder market; it is the excess that trickles down to the smallholders. As noted above, fertiliser wholesaling is mainly concentrated in Kampala; virtually all fertiliser sold outside Kampala is sold on retail basis. The absence of a geographically dispersed wholesaling backbone is thus a debilitating feature in Uganda’s fertiliser market.

**Own user importers**

These are mainly commercial tea, sugar, tobacco, flower and rice growers. They typically procure fertilisers directly, either from Europe or South Africa, where they have established trading houses, or from large suppliers in Kenya. Occasionally, they put out tenders for supply by domestic firms. Part of the fertiliser is given, on credit, to farmers participating in their outgrowers schemes, deducting the money when smallholder farmers sell their produce to the respective companies. Their estimated market share is about 30%.

**Retailers**

There are only about 1269 input retailers in the country who sell fertilisers. Most retail shops are one-person enterprises sited in small stalls, and may include sales of fertilisers and other agricultural inputs (e.g. seeds, pesticides and

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garden tools), as well as non-agricultural trade items. Retailers are a potential link between fertiliser importers, dealers and users, but only very small quantities (less than 1%) pass through this channel.

Section 4: Financial services and the fertiliser industry

Improved financial services to the different players along the fertiliser supply chain will enable them to increase fertiliser stocks year round. The common feature of the fertiliser market as discussed earlier is for importers to wait for guaranteed markets before they can place an order, which usually includes a slight surplus amount that ends up on the open market to be purchased by smallholder farmers. The main reason given by the different players is lack of sufficient capital, high interest rates and low fertiliser demand in the country.

The wholesalers and retailers are poorly financed, and because of the significant fluctuation of fertiliser prices and low profit margins, importers/wholesalers have been unwilling to extend credit to retailers for small purchases of fertiliser. This compounds the problem of fertiliser availability for the smallholder sector. Therefore with improved

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16 Adapted from Uganda Fertiliser Strategy, 2006. MAAIF
financial services through credit guarantees and improved access to credit at favorable terms, the importers and dealers will procure more fertilisers both in terms of quantity and types year round, which will result in better efficiency in the fertiliser supply chain.

The types of investments required include:

a) Capital investments and working capital are required by importers and dealers/wholesalers to construct warehouses to enable them to import and maintain sufficient fertiliser stocks and types year round. Currently in-country stocks are not sufficient to meet the demand due to the uncertainty in the market and lack of storage, which has discouraged adopters because there are times when they need fertilisers but the fertiliser is not available. The types of financial products required include credit guarantees and Letters of Credit. It is important that the importers have at least over 200 metric tons of fertilisers at any time and more as use increases.

b) For agro-dealers, stockists and retailers, access to season-long loans at affordable rates or Credit Guarantee Schemes between them and the national importers will enable them to stock enough fertilisers. It is important that this group should stock at least 50 metric tons of fertilisers.

c) Special loan arrangements, calling for careful loan product design are required to enable farmers to purchase fertilisers. Such resulting loan products could involve collaboration between farmers, farmer groups and dealers.
It could also mean that NGOs, Government agencies, NAADS, and Cooperatives could organize and link farmers to the agro-dealers in order to help ensure efficient access to fertilisers.

d) Investment in fertiliser re-packaging facilities to 2, 5, 10, and 25 kg bags is needed because some farmers cannot afford the 50 kg bag common on the market. This will also require policy interventions because currently re-packaging of agro-inputs is not allowed by law, yet legislation and regulations are supposed to be for the benefit of consumers – in this case, farmers.

e) Investment by the Government in Quality Control facilities is urgently required to ensure that farmers get value for their money.

Section 5: Is soil testing essential before investment in fertiliser is made?

NARO fertiliser research shows a high probability of response to fertiliser usage, even without soil testing and that soil test results are not highly predictive of response to fertiliser. With the current state of soil degradation in Uganda due to nutrient mining, poor soil management and non-use of external inputs, soil analysis is not necessary for highly profitable fertiliser use, especially for nitrogen and phosphorus which are the two most limiting nutrients in Ugandan soils. It is well established that crops respond to application of the two nutrients across Uganda. Optimum rates for these nutrients are available. However soil analysis is necessary to determine if application of other nutrients such as potassium, magnesium, calcium and trace elements is likely to be profitable.

Furthermore, the cost of analyzing one soil sample for texture, pH, organic matter, available phosphorus, exchangeable potassium and magnesium at National Agricultural Research Organisation's (NARO) National Agricultural Research Laboratories – Kawanda is currently Uganda shillings 20,500 and several samples may be needed per farm due to variability in soil type, land use history, past management and topographic history. This becomes very costly for small holder farmers.

In short, yields and net returns can be greatly improved with nitrogen and phosphorus use based on official research results and without soil testing on individual farms17. Eventually a detailed soil survey is needed for Uganda to enable farmers, planners and investors to have more detailed soil information.

Section 6: Policy issues

Liberalization Policy

Uganda’s liberalization policy has created room for the private sector to trade in fertiliser with minimum interference from government. Traded volumes are increasing and the potential for economies of scale is being realized. The Uganda government is committed to support private sector-led development in the fertiliser markets through non-distortion policies to promote smallholder demand and facilitate efficient supply by removing taxes on fertilisers except 6% withholding tax. The draft National Fertiliser Strategy recommends going further, by waiving the withholding tax on fertilisers completely.

Regulatory Framework

The regulatory framework for fertilisers in Uganda is currently embedded in the Control of Agricultural Chemicals Statute, 1989. However the existing Agricultural Chemicals Regulations (1993) do not specifically address the fertiliser issues, boiling down to:

i. Import fertiliser dealers having to undergo unnecessary certification training on safe use and handling of a wide array of agrochemicals, in order to acquire an import permit and license.

ii. Delays in issuing licenses; there is only one licensing officer in the country, based at
the office of the Commissioner for Crop Protection in Entebbe.

iii. Lack of an appropriate regulatory body for overseeing the fertiliser business, and advising on appropriate import requirements, and quality control at import wholesale and distribution levels.

Therefore there is a need to address the above constraints within the existing policies.