Following the rising cost of chemical fertilizers, James Byakatondo decided to adopt new organic fertilizers on his three acres of land in Kayonza, a district in Eastern Rwanda.

Latest estimates show that fertilizer's prices have broken new records as global supplies are hit by multiple factors including reduced supplies from Russia and Belarus.

With the new prices – which are subsidised by the Government – local farmers have to pay Rwf.900 per kilo of DAP fertilizers from Rwf.480 while NPK's price increased to Rwf.713 from Rwf.620, and Urea fertilizer rose from Rwf.564 to Rwf.880.

"I experienced a low harvest caused by lack of enough money to purchase sufficient agricultural inputs like fertilizers to give my land the needed nutrients," Byakatondo said.

Agriculture experts explain that for most modern agricultural practices, fertilization focuses on three main macro nutrients: Nitrogen (N), Phosphorus (P) and Potassium (K) with occasional addition of supplements like rock dust for micronutrients.

Traditionally in Rwanda, fertilization is mostly coming from natural or organic sources: compost, animal manure, human manure, harvested minerals, crop rotations and byproducts of human-nature industries.

Di-ammonium Phosphate popularly known as DAP is another preferred fertilizer in Rwanda because it contains both Nitrogen and Phosphorus which are primarily macro-nutrients and part of major essential plant nutrients, according to the ministry of Agriculture.

Beyond the chemical fertilizer, Rwanda also distributes to farmers the Urea fertilizer aiming to provide plants with nitrogen to promote green leafy growth and make the plants look lush.

To increase his output for the next harvest, the 53-year-old Byakatondo from Kabayizi, who grows maize, beans, bananas, and coffee has switched to affordable alternatives.

“I now prefer organic fertilizers, other than being affordable, adding nutrients and microorganisms to the soil,” he adds.

The Food and Agriculture Organization (FAO) has warned that since Russia is the world’s biggest exporter of fertilizers, its war with Ukraine has disrupted shipping and driven up prices for natural gas, a key ingredient for fertilizer manufacturing.

For farmers like Joseph Nsengiyumva from Rwinkwavu sector in Kayonza, the rise in prices has prompted him to move from potato to maize planting because potatoes need a lot more fertilizers.

“Season A 2023 has started, but we are facing a problem of insufficient inputs. We are planting corn because growing potatoes is expensive. We can’t cope with the rising prices,” he notes.

Farmers in Kayonza preparing cost-effective manure

Agriculture experts in Rwanda have also warned that the rising prices and shortage of fertilizers will have consequences on vulnerable community farmers. Adding that farmers should switch to alternatives such as organic fertilizers or composite manure.

Emmanuel Mwizerwa, an Agronomist in Kayonza district says that the price of imported industry fertilizers is rising suddenly making it too expensive for some smallholder farmers to purchase.

“To bridge the gap, we’re advising rural smallholder farmers who can’t afford the rising prices to turn to animal manure or trench compost to increase crop yields,” he said.

On the other hand, farmers have also been urged to register with ‘Smart Nkunganire System’ a supply chain scheme to be able to benefit from government

subsidies.

At his three acres of land in Kiramuruzi Sector, Gatsibo district, Gustave Kamali, a mixed farmer says that the rising price of fertilizers has forced him to rethink.

“The situation is getting difficult, fertilizer prices have more than doubled, following last year’s surge. We’ve heard that the soaring prices are driven by exchange rates and supply disruptions caused by sanctions in Russia,” he pointed out.

Kamali who is concerned says that he normally buys urea, diammonium phosphate (DAP), and NPK fertilizers, but since the beginning of this year he can’t afford to buy enough because of the increase in prices.

Fertilizers which take up 40 per cent of costs, are central to farming in Rwanda because they increase farm productivity, at times doubling or tripling it.

Kamali observes that buying NPK is costing him almost Rwf.900 per kilogram, to cater for an acre of land; the 62-year-old says he needs around 60-70kilograms even though the government has subsidized the price is still too high.

“I have changed to organic manure since; I kept a huge dump of organic fertilizers in my backyard which I used in the last season and plan now to use 200 kilograms of manure to expect a good harvest,” he underlined.

chemical fertilizers applied on the plant

Samuel Harerimana, a farmer in Nyamirama sector, Kayonza district says that he is not affected by rising prices of fertilizers because he makes his trench compost in the backyard.

“I won’t be buying fertilizers because it’s expensive, for the last two years I’ve been using trench compost since it is affordable, easy to apply, and enhances soil productivity,” he said.

The 45-year-old underlines that it is not a new concept; you only dig a hole or trench meters deep in a garden depending on the size of your land, at least “6-7” away from the nearest plant then bury food or animal waste and green plant materials in a hole or trench.

He explains that the trench is filled slowly with biodegradable substances, weeds, dry leaves, grass, maize stalks, waste droppings from animals, and household materials like home-made beer and plant materials, both dry and green then its left to decompose for a while, usually four to five weeks.

After a period the decomposed (rotten) material or heap produces heat or smell

giving up steam. A better combination should be adding animal and other waste to the compost. And, as the organic matter in the trench rots, it adds good plant food to the soil.

Furthermore, the compost can be made from droppings from all types of domestic animals like rabbits, goats, sheep, and chickens among other things collected from fields. But trench should be excluded from plastic products, and pesticides because they are bio-grade and can be detrimental to organisms in a variety of ecosystems.

Trench compost is very safe and cost-effective as it only involves the use of readily available recyclable resources which don’t harm people, soil, and the environment.

Jean Baptist Harorimana, a farmer from Kabarondo sector, Eastern Province also observes that compost fertilizer is multi-nutrient and can best be applied frequently and at low rates throughout the growing season.

However, he adds that, to get the much needed quantity of compost manure for one hectare of land, around 4-5tones is recommended which is expensive and most times it is not possible to make.

Other farmers like Samson Byiringiro from Ngoma points out that, one of the challenges for composite is the process of making it, if the right components are not mixed, the quality will affect crop growth unlike industry fertilizers.

John Murenzi, an agricultural expert in eastern Province working for Rwanda Development Organization, a local NGO that trains farmers how to make fertilizers says that, chemical differs from composite fertilizers in terms of quantity of harvests.

“Chemical fertilizers contribute high quantities of produce to be harvested than compost, for instance if a farmer in this region applies DMP and Urea when planting maize on one hectare, s/he can harvest around 4.5 to 5 tones a season,” he reveals.

John Murenzi (third from left), an agricultural expert helping farmers to make compost fertilizers

However he warns that if the same farmer is financially constrained to buy the same quantity of chemical fertilizers in the next season, the harvest drops significantly.

Murenzi adds that compost contributes to soil structure by adding nutrients which are required by the crops to grow.

In April this year, Rwandan Prime Minister Edouard Ngirente observed that fertilizer prices rose significantly on the global market because of various factors which include Covid-19 that affected the supply chain.

He also said that the government is subsidizing fertilizers in order to help farmers

access chemical fertilizers at a relatively low cost amid rising prices.

Eric Nyiruburanga, One Acre Fund field manager, says that they train farmers to improve soil fertility by making natural compost.

“By creating their compost and then using it during planting, farmers can return much-needed nutrients to their fields. This enriches the soil and results in improved yields.” He points out.

While the Rwandan government has increased the budget for fertilizer subsidies from Rwf.5 billion in 2018-2019 to Rwf.13 billion in 2021/2022 fiscal year, farmers like Harerimana think that the government should instead consider replacing the chemical fertilizer subsidy with a program promoting organic fertilizers.

According to the Rwanda Agriculture and Animal Resources Development Board (RAB) report, Rwanda’s annual demand for fertilizers was at 53,000 tonnes as of 2019.

Under the first phase of the National Strategy for Transformation (NST1) which runs from 2017 to 2024, Rwanda targeted to use an average of 75 kilograms of fertilizers per hectare by 2024.

Faustin Vuningoma, the Coordinator for Rwanda Climate Change and Development Network (RCCDN) notes that, It’s possible to eliminate chemical fertilizers, but requires investing in organic fertilizer manufacturing.

Organic farming, and eco-farming in a broader sense, is becoming increasingly popular in many countries including Rwanda amid growing concerns for food safety.

Rwanda has been promoting sustainable farming to transform the agriculture cluster from subsistence to agribusiness in a country where agriculture remains the main economic activity with 70% of the population engaged in the sector.

Although organic fertilizer can be more costly in a short term than synthetic, according to Dr. Patrick Karangwa, the Director General of RAB, its advantage is that they contribute to reducing the need for pesticides and the overall nitrogen, phosphorus and potassium requirements.

“But the level of nutrients present in organic fertilizer is often low,” observes Dr. Karangwa.