BY 2017, 77% OF FARMERS WERE GROWING IMPROVED CASSAVA VARIETI

Improved crop varieties enhance food security

By Prossy Nandudu

Without food, any country is doomed. A food crisis can trigger starvation, migrations from rural to urban areas and breed anger among the populace, hence a spiral of insecurity if not addressed in time.

That is why a body such as the National Agriculture Research Organisation (NARO) which falls under the Ministry of Agriculture Animal Industries and Fisheries (MAAIF) is crucial. It is the research arm of government responsible for coming up with solutions to various challenges that stem from agriculture.

NARO conducts research through its research stations and institutions spread across the country. These include the National Crop Resources Research Institute (NaCRRI) based in Namulonge, National Agricultural Research Laboratories – Kawanda, National Fisheries Resources Research Institute, National Forestry Resources Research Institute, National Livestock Resources Research Institute, National Semi Arid Agricultural Research Institute and the National Coffee Research Institute.

New Sorghum varieties

Dr G. Lubadde, a plant breeder, and head of the Dry Lands Cereals Research Programme at NaSARRI-NARO explains that sorghum is now the second most important cereal after maize, replacing finger millet.

He adds that it has replaced finger millet in terms of area of production and amount produced. The increased importance is due to increased usage of sorghum as a food security crop and source of income for small-holder households living in drought-prone areas of Uganda, explains Lubadde.

In addition the crop cops well with challenges of climate change thus reducing the risk to loss.

Despite being fit for meeting challenges of climate change like unpredicted drought, the available varieties such as SESO1 and SESO3, have not been doing well due to disease and weed constraints such as striga weed, smut, ergot, sorghum midge, shoot fly and stem borer.

That is why researchers decided to embark on research since there was no super variety to counter all constraints, researchers decided to develop many varieties with unique attributes in order to counter the challenges.

The new sorghum?

Lubadde explained that sorghum varieties have a broad adaptability and can do well in low land and medium altitude environments, characterised by adequate rainfall and semi-arid conditions. They also perform relatively well under low fertility and striga infested soils.

However, each variety has unique attributes. NAROSORG1 has cream grains, good for making composite flour and lager beer hence on demand for the brewing industry. While NAROSORG2 has red grains and suitable for blends well with other starchy materials such as cassava for food in addition to having minimal bird damage.

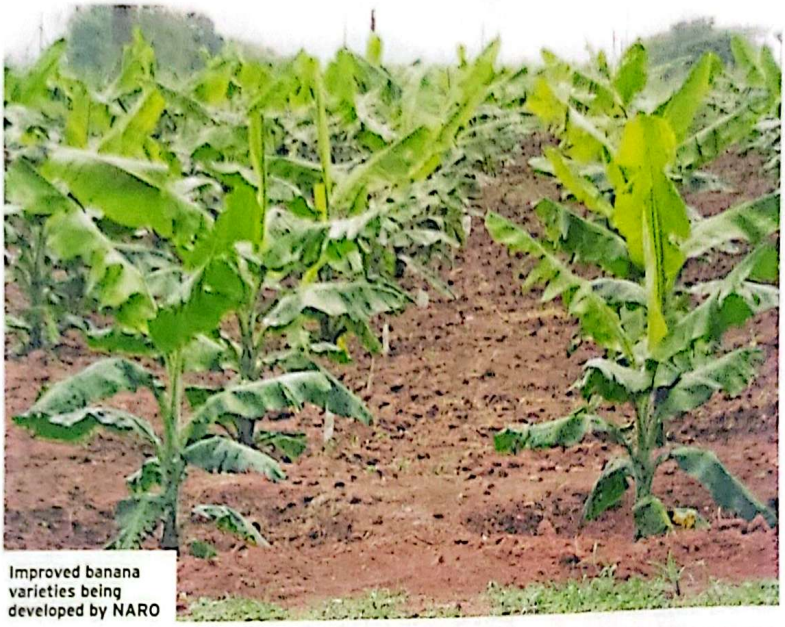
NAROSORG3 has chalky white grains, resistant to sorghum midge in addition to giving high forage yield and having minimal bird damage while NAROSORG4 has brown grains like SESO3 but resistant to covered kernel smut disease and matures relatively early.

Yield per hectare

NAROSORGUM 1 yields between 3,000-3,200kg, matures within 110-120 days and Stays green at maturity.

NAROSOGHUM 2 yields between 2,700-3000kg and matures within 100-110 days.

NAROSORGHUM yields 33,000kg and matures within 110-120 days and has a high root mass.



Improved banana varieties being developed by NARO

Challenges faced by researchers

Challenges in food production that NARO has been addressing include pests and diseases, changes in weather, as seen by prolonged droughts, poor yields, taste, soil fertility, nutritional purposes, exports, tolerance to drought, pests and diseases and food security among others.

Some of the diseases being addressed through research are both fungal and bacterial. These include cassava brown streak diseases, banana bacterial wilt, fusurium wilt for apple, bananas, maize stalk borer, maize lethal necrosis, coffee wilt, fruits flies and recently the fall army worm, the African worm and cassava mosaic, among the many.

Information from NARO indicates that researchers have come up with various crop varieties to deal with pests and diseases and also withstand the changing weather patterns.

The released varieties include cow peas, beans, maize, bananas, coffee, cassava, sweet potatoes, sorghum, millet, rice, groundnuts among others. From the National Semi-Arid Resources Research Institute (NaSSARI), they have come up with new cow pea and sorghum varieties.

According to Dr Martin Orawu, a plant breeder and geneticist at the National Semi-Arid Resources Research Institute (NaSARRI), there is low cow pea production and productivity in the cowpea growing regions.

This is due to pests and diseases, drought, low yielding varieties and lack of improved varieties.

This has been, made worse to the extent that at farmers' level, they can hardly attain yields of 500kg per hectare.

That is why scientists in the Dry Land Grain Legume Programme at NaSARRI are developing and releasing new improved cowpea varieties. Orawu says research was aimed at increasing improved cowpea varieties which are high-yielding, resistant to major diseases and also possess other desirable attributes in order to meet the diverse farmer's needs.

He says the new varieties are early maturing, tasty both the leaves and grains when cooked, are high yielding, tolerant to drought, resistant to disease, have bigger seed and are white seeded.

Some of the cow pea varieties that have been released include NAROCOWPEA1 where a farmer can harvest between 2,038-2,154kg per hectare. These mature quite early with in a 75 days.

NAROCOWPEA2; yield ranges between 1,899-2,066kg per hectare maturing wthin76 days.

NAROCOWPEA3 yields between n 2024-2200kg per hectare with maturity period of 75 days.

NAROCOWPEA4 yield ranges between 1991-2154kg per hectare, has a maturity period of 76 days.

NAROSORGHUM 4 yields 2[illegible] 2500kg, matures within 90-[illegible] days, meaning it can dodge [illegible] of climate change.

Districts suitable for the new varieties include Bukedea, P[illegible] Kamuli, Bugiri , Tororo, Budaka, Butaleja, Mayuge, Busia, Kumi, Ngora, Serere, Kaberamaido, Amuria, Katakwi Lira, Apac, [illegible] Amuru, Pader, Gulu, Kitgum [illegible] Zombo, Arua, among others.

Bean programme at NaCRRI

Beans rich in iron, zinc have been developed by NARO to respond to the nutrition challenges among the population especially the growing children and expectant mothers.

These include NARO BEAN 1, NAROBEAN 2 and NARO BEAN [illegible] and all these are bush beans.

Dr Stanley Nkalubo, the head of the bean programme at NaCRRI says other beans include NABE 15,NABE 16, NABE 17,NABE 18,NABE19, NABE 20, NABE 21,NABE 22, NABE 23. All the above are early maturing to help reduce vulnerability to drought due to moisture stress for better productivity.

Under the root crops

By 2017, 77% of the farmers were growing improved cassava varieties. The average yield of improved cassava ranges between 20 to 45 tonnes per hectare, compared to 9.5 tonnes per hectare of most land races. Currently pro vitamin A carotenoids rich cassava is being developed.

Under cereals, new varieties for maize and rice have been developed.

NARO has released stress tolerant maize varieties which have increased the national average from 1.8 to [illegible] metric tonnes in the last five years.

These include NARO maize (6 UH5530). This yields 6 to 7 tons per hectare. Its resistant to disease that attach maize and matures between 120 to 126 days.

The second one is NARO maize (UH5556). It is tolerant to the lethal necrosis diseases, yields 9 tons per hectare, stays green when it is dry and matures in 140 days. The third variety is Maize 57 (UH5557), it is said to be very stable in drought and low fertility. Yield s about 6 to 7 tons per hectare and matures between 125 to 130 days.

Rice

Varieties released so far are early maturing, and drought tolerant. The five varieties are NaMCH 5. These mature in 110 days after planting. The average yield is [illegible] tonnes per hectare. Of these 40,000 hectares being grown by commercial farmers. This kind of seed is already available from multipliers.

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