

Genetics

Research

Indigenous Resources

GMO Bill: Only 10% crops conserved - NARO

By Christopher Bendana

Dr John Wasswa Mulumba, the head of the Plant Genetic Resources Centre and curator at Entebbe Botanical Garden, has said the centre currently lacks the resources to collect and conserve all the plant genetic resource in the country.

In an interview with *New Vision*, Mulumba revealed that the centre has only managed to collect and conserve only 5-10% of the plant genetic biodiversity, mainly in the seeded crops.

The revelation comes at a time when President Yoweri Museveni is concerned with the likely loss of indigenous genetic biodiversity such as the indigenous Ankole cow and indigenous crops such as sorghum, millet and beans. The President recently raised his concern in a letter to the Speaker of Parliament, Rebecca Kadaga, on what might befall indigenous seeds if genetic engineering technology was adopted after Parliament passed the National Biotechnology and Bio-safety Bill 2012.

The President consequently declined to sign the Bill and instead returned it to Parliament.

In the letter, the President tasks the National Agricultural Research Organisation (NARO) and the agriculture ministry with working out a plan, which he refers to as Noah's Ark where all our indigenous materials for plant and animals will be kept uncontaminated by any genetically modified organisms (GMOs) for future use if there is a crisis within the modernisation efforts.

"We welcome genetically modified seeds. However, to be on the safe side, the genetically modified seeds just in case, they turn out to have a problem. There should therefore, be no cross-pollination between the GMO seeds and our indigenous seeds," the President's letter read in part.

"The law, therefore, should clarify that greenhouses will be used to imprison the pollen of the GMO seeds or distances should be stipulated so that there is no mix-up."

Genetic engineering in the country has mainly been developed by NARO. Critics claim the technology will contaminate the ecosystem by



A researcher at the biotechnology lab conducting research on GMO in bananas. Photo by Agnes Nantambi

outcompeting indigenous species and thus making smallholder farmers depend on multinationals.

On the other hand, proponents argue that most indigenous varieties have already been lost through farmers' selections of hybrids that fetch higher prices and loss of habitats due to population pressure.

"Many seed banks across the world have been constructed through the Consultative Group on International Agriculture Research (CGIAR) where scientists share germ-plasm."

"Many of the local indigenous crops have been banked in seed banks in the developed world that have better facilities.

Mulumba said the centre in Entebbe has managed to conserve some of the most consumed foods such as maize, sorghum, beans and finger millet.

Reacting to the President's concern about loss of indigenous genetic resources, Mulumba said genetic modification technology would only be adding to the already existing pressures - habitat loss mainly caused by increased extensive agriculture and human settlement.

"Every time you release a variety, you put those existing at risk," he said. "Farmers will move away from it. That means it will end up completely lost." He said the centre had already drafted a national policy on plant genetic

resources for food and agriculture which was still at the agriculture ministry and if implemented it would address many of the current challenges.

Mulumba said he was waiting for communication from the ministry. "It would have provided the necessary infrastructure that would have ensured our resources are not contaminated or stolen," he said.

He said there was need to build the right infrastructure, including establishment of gene banks in different ecological zones and modern facilities such as tissue culture where plant cells are stored at set temperatures.

He revealed that the centre has already constructed community seed banks in Kabwohe, Nakaseke and Kabale and a new one was being constructed in Hoima.

All is not lost

Apart from the seed crops at NPGC in Entebbe, other collections such as bananas were conserved at the Mbarara Zonal Research Development Institute.

He, however, highlights the challenge of pests and diseases when crops were conserved in their natural form.

"We had conserved yams and sweet potatoes in the natural form, but we lost them to pests and diseases," he said.

NARO independent institutes have also been doing their own conservation. Dr Godfrey Asea, the director at the National Crops Resources Research Institute (NaCRRRI) Namulonge and a maize breeder said NARO is engaged in long-term conservation. He said NaCRRRI had already saved most of the landraces of cassava and sweet potatoes using tissue culture technology.

He also explained that there is a requirement under the Seed Act to provide a distance of between 200-400 metres between GM and non-GM crops, a distance he said pollen can not move beyond. Besides, apart from crops such as maize that are cross-pollinated, much of the GM research in Uganda is on vegetative crops such as bananas and cassava that do not require seeds to reproduce.

The country has also made significant conservation efforts in the livestock sector.

Dr Charles Lagu, the director general at the National Animal Genetic Resources Centre and Data Bank, said the centre has conserved over 2,000 Ankole cattle at its Nshaara Ranch, in Mbarara district and 1,000 Mubende goats at Sanga in Kiruhura district. He added that the centre was also conserving the cattle through freezing embryos at -19°C and explained that these can last centuries.

Dr Swidiq Mugerwa, the director at the National Livestock Resources Research Institute Tororo, said they have 200 grass collections conserved.