

INNOVATION



Visitors at NARO check out the biodegradable Kaveera. These kind of Kaveras can easily decompose



Twesigye (centre) shows one of the bags as other researchers from NARO look on

NARO STARTS PRODUCING BIODEGRADABLE

By Wilson Manishimwe

The Government has for long taken notice of the dangerous effects of polythene bags (*kaveera*) on the environment. When littered or dumped in landfills, they take hundreds of years to decompose, posing a threat to soil fertility. Burning them as a way of disposal also causes environmental pollution.

As a result, some countries have banned *kaveera* altogether. In Uganda, there have been several attempts to have them banned. However, many times the public, including the manufacturers of polythene bags, claim not to be ready for change and the Government has ended up reversing the ban.

In the meantime, some innovators have built capacity to develop alternative packaging materials, majorly using bags made out of paper,

In a bid to end soil pollution and environmental degradation, NARO has started making biodegradable polythene bags



Most Kampala neighbourhoods are littered with Kaveera

sisal, fibre and polythene which have more than 30 microns. Recycling and reuse has also been encouraged, but still, these have failed to displace the seeming addiction to *kaveera*.

In light of these challenges, what if there was a way to continue using a form of *kaveera*, but one which is biodegradable? The National Agricultural Research Organisation (NARO) has started making polythene bags that when disposed of anywhere, are capable of decomposing and turn into manure in the soil.

The biodegradable bags look like *kaveera* in every way, except that they are made using cassava peelings and maize bran at NARO's laboratories in Kawanda, Wakiso district.

During the launch recently, Dr Stephen Kashub

QUANTITY OF CASSAVA

It takes 30g of cassava to make one polythene bag. In most cases, about 300kg of cassava, which cost about sh240,000, are used to make 10,000 bags.

Twesigye, a research scientist at NARO, said unlike the non-biodegradable polythene bags that do not decompose, the newly made bio plastics decompose into manure once they are thrown away.

"Soon we shall start using compost waste materials while making the polythene bags, hence further reducing on the money spent in garbage collection by city authorities," he said.

Twesigye said when the bio-degradable polythene bags are dumped in a compost pit, they take three weeks to decompose. When they are dumped in an open place during the wet season they take only one month. In an open place during the dry season, these bags will take three months to disintegrate and become part of the soil.

BIO-DEGRADABLE POLYTHENE

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He said globally, over 322 metric tonnes of non-biodegradable plastic materials are manufactured and of those, about 73% goes

Farmers in Dokolo work as

HOW THEY ARE MADE

- 1 Twesigye says cassava peelings and maize bran are dried and hit to turn them into powder form.
- 2 The powder is then mixed in water with glycerin and a derivative of vegetable oil is added. The purpose of the vegetable oil derivative is to make the material water-resistant/non-permeable, whereas glycerin makes them flexible.
- 3 Twesigye notes that the mixture is thereafter heated at about 25 degrees Celsius using any container, depending on the numbers of polythene bags that one wishes to get. The heating continues until the mixture dries up.
- 4 This material is what is used to create the bags through conventional methods.

PLASTICS

to East Africa. He, however, attributed their continuous use by people to the absence of low cost and eco-friendly alternatives.

WHAT NEMA SAYS

Daniel Babikwa, the director of district support and co-ordination at National Environment Management Authority (NEMA) noted that the Government loses a lot of money in treating diseases such as malaria resulting from stagnant water caused by polythene bags.

He is optimistic that such diseases will reduce. "KCCA spends over sh10b per year in removing garbage from drainage channels and collection of garbage from the city to the landfills. With this new innovation, the costs are likely to reduce," Babikwa said.

WHAT PEOPLE SAY

Kephas Nuwakunda, the head of food and bio-science agro-business at NARO, said the increasing population in urban areas has culminated into poor disposal of waste, including non-biodegradable plastics.

"With this, we intend to reverse the impact of plastics in Uganda through commercial production of bio-degradable plastics, which when disposed of anywhere, will rot. We need co-operation from different stakeholders so that we fight environmental degradation," he stated.

Sosim Twesiga from FARM Uganda, a company that processes cassava into flour in Kiryandongo district, hailed NARO for the initiative. He said once the biodegradable plastics are embraced, lost soil fertility will be restored.