



Agricultural scientists from Uganda display the industrial products they are processing at the Food Biosciences and Agro Business Research Center at Kawanda in Uganda. Photo Credit: Lominda Afedraru

Uganda going bananas for ethanol, hair braids

By Lominda Afedraru

THE banana is widely popular for its food value, including fruits, cooked dishes or flour in confectionery industries.

In Uganda where more than 75 percent of farmers grow the crop, Matoke, cooked from green banana, is the staple food.

Scientists in Uganda and other countries in East Africa have therefore been breeding banana mainly to improve its fruit yields.

But now they are looking into ways of obtaining industrial products such as ethanol and fibre for processing hair braids from banana stems as well.

At Uganda's National Agricultural Research Laboratories (NaRL), reputed for its banana research, they are adding value to the East African highland banana by processing bioethanol products, hair braids, banana lint as well as banana starch for pharmaceutical industries from banana stems.

Ethanol production

Yusufu Mukasa, a food chemist at the Food Processing Technology and Incubation Centre at NaRL in Kawanda, said his team of scientists have been working with farmers over a period of two years on a project to process ethanol from banana stems.

Most farmers in the country's banana-growing Central and Western regions grow East African Highland banana varieties namely Naroban

6H and 7H, M9, Nakitembe and Nakabululu.

Mukasa said they are trying out a number of scientific processes, including those used in countries such as India and others in South Eastern Asia where a lot of banana is grown.

They obtain the feedstock – uprooted banana stems -- used in ethanol production from the local farms.

These are then transported to the production facility at NaRL where they are washed and classified.

"It is then crushed into pieces, left to dry and mixed with sorghum or millet in drums where it is left to ferment for a period of 6-24 hours depending on the brewing system.

Thereafter ethanol is extracted and packaged for industrial use,” Mukasa said.

The scientists have gone ahead to refine the ethanol for hand washing for prevention of Covid-19 and conducted demonstrations with farmers in Kasese District to explore its potential use in alcohol production.

They also intend to work with brewery industries to produce ethanol in large volumes for commercialisation.

Starch extraction

Apart from processing ethanol, Mukasa and team are also extracting banana starch from banana fingers for industrial use.

The process involves peeling, washing, crushing and drying the banana fingers in the oven under a regulated temperature to obtain the banana powder.

The required volume of banana powder is mixed with water and a solution of sodium bisulfite ion, a food preservative.

The liquid suspension of the resulting mixture is then centrifuged to separate the crushed banana finger material and the white banana starch will settle at the bottom.

Mukasa said the main target is to use the starch for blending pharmaceutical products produced within the country.

Hair braids

Dr Jimmy Tindamanyire, a laboratory manager at NaRL, said that scientists at the institute have been working with the private sector players involved in processing braids for hair plaiting from way back in 2020.

This is after realising synthetic fibres have their own challenges yet braid processed from banana fibre is soft.

There are already existing industries in Kampala where these banana



*A scientist displays banana starch processed from the banana plant.
Photo Credit: Lominda Afedraru*

braids are processed, packaged and sold in a number of marketing outlets.

Banana lint

Another product which the scientists have begun working on is processing banana fibre and refining it into lint for processing clothes.

This research is still at the laboratory level and already scientists have achieved the white colour they expect just like the colour for cotton lint.

Incubation

Elizabeth Kakhasa, a food scientist at NaRL, said the institute has the potential to develop even more innovations, citing its status as the centre for banana breeding not only in Uganda but the entire East Africa.

The necessary food processing machines have been installed at the institute's Food Processing Technology and Incubation Centre.

The centre has brought on board a number of young entrepreneurs interested in food processing.

Once they acquire the required knowledge, they are expected to start their own food processing companies.