Scientists at the National Agriculture Research Organisation with partners explaining to stakeholders the vegetable species farmers are growing in many parts of Central Uganda which requires cold room chains to be preserved for a long period of time without getting wasted. PHOTO CREDIT: LOMINDA AFEDRARU.

Rural cold chain room cuts losses for Uganda vegetable farmers

Lominda Afedraru

Cold chain rooms are crucial for preserving agricultural produce by maintaining optimal temperature and humidity, which significantly extends shelf life and reduces waste.

They help slow down bacterial growth, prevent spoilage and preserve nutritional value, ensuring that perishable items such as fruits, vegetables and dairy products reach consumers in good condition.

Cold storage also allows for better inventory management, enabling farmers and distributors to handle peak production periods and distribute goods more evenly throughout the year.

In Uganda, the adoption of cold chain rooms is relatively high among dealers in fresh fish for local and export markets.

However, two scientists are changing the narrative about cold chain rooms in the country, extending the technology to vegetable preservation.

Hadijah Nantambi, a graduate of technology and industrial development, and Sylvia Namazi, a plant breeder, conceived the idea of a low-cost efficient rural cold storage in 2020 when they were students at Makerere University.

The two scientists observed that the fresh vegetable spoilage in major markets in Kampala and its surroundings were alarming. They decided to write a concept note which they presented for funding to development partners to set up a solar-powered cold chain room.

Namazi's student research focused on the amount of waste realised from vegetables in the markets of Uganda and what possible solution to reduce the same.

She observed that farmers normally took their stock of vegetables to the market expecting to sell it all the same day.

However, when they failed to do so, they either covered the remains with paper boxes or left them in the open to go to waste.

To market their innovation, the two women registered a company, Ecolife Foods, and in 2021 applied for a grant to Interchurch Organisation for Development Cooperation based in the Netherlands.

They won 10,000 euros, which they used to construct a 20 cubic-metre walk-in solar powered cold chain in Wakiso District, east of Kampala.

They started off serving 15 farmers who would harvest and deliver tomatoes, cabbages, sweet pepper, Nakatti and eggplants on a daily basis.

With storage facility gaining traction, Namazi and Nantambi decided to apply for another grant to Resilient Africa Network, which advanced to them 5,000 US dollars.

The facility has been moved to Luwero District, about 150 km from Kampala, with the aim of serving over 100 farmers.

More partners have since come in to help improve the facility in Luwero.

UK-based Smart Villages Research Group (SVRG) supported the construction of 20 cubic-metre facility in 2023, with funding from Efficiency for Access Coalition.

The director of SVRG Dr Bernie Jones said: "We have worked together with Ecolife Foods and tested a low-cost local technology-driven cold storage solution for fruits and vegetables."

He noted that the initial solution reached the finals of the Global LEAP Off-Grid Cold Chain Challenge.

The structure, called an eco-room, is constructed using bricks and cement but the two cavity walls have terephthalate (PET) bottles, which act as an insulation.

It is operated with power generated from a solar panel mounted on top of the roof which is stored with high-capacity batteries.

The cooling stem is connected to a thermostat, which enables automatic switch off in case the room attains the required temperature.

Tropical fruits and vegetables require maximum temperature of 10-13 degrees Celsius.

The Ecolife Foods facility serves about 200 farmers currently.

Some farmers take their produce to be kept at the facility overnight for an agreed fee depending on the volume.

Green pepper is among vegetables delivered by farmers at the cold room facility for storage. PHOTO CREDIT: LOMINDA AFEDRARU.

Cold storage reduces the rate of decay and spoilage by slowing down bacterial growth and enzyme reactions, which are accelerated by warmer temperatures.

By preserving produce for longer periods, cold storage helps to reduce food waste, a significant problem globally.

Farmers can harvest produce during peak seasons and store it in cold rooms, releasing it gradually to the market throughout the year, avoiding glut and shortages.

Controlled temperatures help maintain the nutritional content of perishable goods, ensuring they retain their health benefits.

Properly designed cold rooms can minimis e the risk of cross-contamination between different products, enhancing food safety.

By controlling temperature, cold storage helps prevent the growth of harmful bacteria that can cause foodborne illnesses.

Reducing waste and spoilage translates to higher profits for farmers and distributors.

Cold storage also enables access to wider markets, as produce can be transported over longer distances without significant quality degradation.

Modern cold rooms are designed to be energy-efficient, minimising energy consumption and environmental impact.

Uganda's Ministry of Agriculture has entered into partnership with European Union, under the phytosanitary project, for a cold room capable of storing 50 tons of agricultural produce.

The construction of the facility, which will be used will store fresh fish, beef and horticulture exports, is underway at Entebbe International Airport.

Agricultural Business Initiative (aBi) Development, which supports market-driven enterprises, is also funding a solar-powered cold room that is under construction at the airport.

The facility will handle up to 30,000 metric tons of horticulture exports annually.