FARMING Innovations
Creative solutions to the challenges you face on your farm

Make more cash from solar produce dryer

By Saudha Nakandha

At harvest time, the market is flooded with fruits, vegetables and other fresh produce. During this time, farmers sell part of the produce, and the excess ends up going to waste. One way that farmers attempt to prevent wastage is sun drying of fruits, vegetables and grains. The common method used is exposing the produce to direct sunlight on the bare ground or on a tarpaulin. Though this method is free and used by majority of farmers, it has limitations, explains Robinah Kulabako, an innovator.

"Sun drying using the conventional method exposes the produce to damage by animals, birds and rodents. There is also degradation in quality due to direct exposure to solar radiation, dew or rain, contamination by dirt, dust or debris. Besides, it is laborious, as crops have to be covered at night and during bad weather," Kulabako observes.

It is against this background that Ugandan innovators, led by Kulabako, designed a solar dryer that ensures the quality of dried produce.

"If the farmers embrace the solar dryer, their earnings will double because it is a value added to the produce. A kilogramme of fresh mushrooms, for instance, which goes for sh5,000, costs sh60,000 when dry," she explains.

"In Uganda, we are lucky to have availability of the sun, on which the solar dryer operates. Electricity is expensive if you are to use it as an alternative to solar," Kulabako emphasises.

The poverty level in Uganda, is high with majority of the farmers unable to afford refrigeration services. This inadequacy compelled innovators to invent the rapid solar dryer, which they named, the Kaza sun dryer.

With assistance from Resilient Africa Network (RAN), four innovators came up with the first wooden sun dryer. This dryer, according to Muhammed Siemwanga, one of the innovators, was slow in drying the produce as it took three days. The team has since upscaled the system and it takes only six hours to dry the produce.

The rapid solar-dryer, which is a low-cost innovation, can prevent loss of agricultural produce. According to the director of innovations at RAN, Dorothy Okello, the inadequate storage infrastructure during the harvest time, explains why Ugandan farmers lose billions of shillings annually.

A study, carried out in 2014 by the Uganda Co-operative Alliance and Uganda National Farmers’ Federation, found that more than sh60b is registered by farmers in post-harvest losses annually.

"Within the agricultural sector, there was an issue of post-harvest handling. The rapid solar dryer is an efficient and affordable low-cost solar equipment," Okello says.

How the dryer works

The solar dryer is based on the idea of concentrating solar energy in a controlled environment, to achieve faster and efficient drying of a wide range of agricultural produce. The dryer is a box with a clear plastic top. Farmers place the produce on a heat-absorbent surface or panels made of glass and greenhouse material inside the box. The outside body of the dryer is made of glass and greenhouse protective material, which is resistant to rain.

The technology uses solar reflectors to quicken the drying process. Reflector panels are placed at an appropriate angle and direction to concentrate extra solar radiation, thereby, providing extra heat to the system. The panels are adjustable so as to be positioned according to the sun’s intensity, while offsetting excessive solar heat, hence avoiding over drying. In not less than six hours, about 95% of the water in the produce evaporates, leaving a dehydrated product ready for packing.

Before being loaded into a solar dryer, the fruits, vegetables or any other produce are washed and sliced.

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