



BACKGROUND

CARE, with funding from the Government of Canada through Global Affairs Canada, implemented the Typhoon Haiyan Reconstruction Assistance (THRA) project to establish sustainable and resilient economic activities in focus value chains (VC) that involve the most vulnerable households.

In the cassava value chain, CARE collaborated with the Philippine Center for Post-Harvest Mechanization (PhilMech) of the Department of Agriculture; the University of the Philippines Industrial Engineering Club; engineering fabricators and local farmer groups to come up with efficient design of dryers for cassava chips.

It was PhilMech who came up with the original concept of a *papag dryer* with a UV plastic cover when consulted by the Fatima Multi-Purpose Cooperative (FMPC) on the problem of drying cassava chips.

In Leyte, the weather is erratic and unpredictable; sunny in the morning and sudden rain in the afternoon. The elevated and covered papag dryer was the solution to prevent the cassava chips scattered on the drying bed from getting wet when it rains.

While the papag dryers provided immediate solutions to drying issues, it did not solve to eliminate the attack of molds resulting in low recovery and poor quality of dried chips. The UPIEAid team and engineering fabricators assisted in developing a modified papag dryer but it only resulted in minimal improvement in drying time, quality and recovery.

In search of solutions, the project conducted technical studies and prototyping for improved dryer model. From the old system of sun drying on the ground with and without drying mats to the introduction of simple and modified papag dryers, the task of improving these methods of drying was left to the ingenuity of CARE, FMPC and the cassava farmers.



CASSAVA TUNNEL DRYER

An innovation in the drying system, the tunnel drying concept was originally used for copra (dried mature coconut meat), a semi processed product from coconuts for further processing into oil. The pit-type copra dryer was commonly used by farmers. The National Coconut Research Center at the Visayas State University has developed a mechanical copra tunnel dryer.

The cassava tunnel dryers were designed, constructed and tested in cooperation with Dayhagan Farmers Association and Cogon Farmers Association. Two prototypes were developed - one with mechanical blower and the other one without a blower. Each has a furnace designed to use bio-mass fuel such as rice hull, excess stalk of cassava, coconut husk and fuel wood.

The tunnel drying efficiency is remarkably better than the papag dryer because the drying process that takes 4-6 days using papag dryer can be completed in 4-6 hours with the tunnel dryer.

The testing conducted in Barangay Dayhagan, Ormoc, Leyte showed that 400 kgs of cassava piled at 2 inches thick can be dried to 13% moisture in 6 hours with 4 hours continued firing of the tunnel dryer achieving an average temperature of 45 degrees Centigrade and manual tumbling every 30 minutes. The heat is distributed by a blower into the tunnel which rise up to the steel drying bed passing through the cassava chips and causing moisture to evaporate in the open sided drying house. The recovery rate (weight of resulting dried cassava from the initial weight of wet/fresh cassava) was high at 62% compared to the papag dryer with recovery of 40%. The resulting dried chips are of high quality and without molds.

The development and use of the cassava tunnel dryer helps farmers particularly women in increasing productivity. Drying has become easier and less stressful for women. They are also able to save time and do other tasks. Women become confident about the quality of their products translating to higher income.



Farmers in Barangay Dayhagan, Ormoc chip cassava for drying



The heat comes from fire that is being evenly distributed inside the dryer by a mechanical blower



Drying of cassava now only takes 4-6 hours



A mechanical cassava tunnel dryer was established in Barangay Dayhagan, Ormoc

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