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Reducing Agricultural Post-Harvest Loss by Developing a Cost-Effective Cold Storage Facility

GRANTEE: University of the Philippines-Los Banos Foundation, Inc. (UPLBFI)

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INDUSTRY PARTNER: CleverHeat, Inc.

COLLABORATING PARTNERS: Benguet State University (BSU)

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CONTRACT AMOUNT: PHP 3,999,775 (Approximately USD83,500)

Prolonging shelf life of agri products

On average, 42% of vegetable harvest in the Philippines is wasted due to spoilage. This imposes a challenge to food security, as well as to the welfare of small-scale farmers. The spoilage can be prevented by storing the produce in a cold storage warehouse. However, rental fees for such facilities are very expensive, in addition to the high cost of electricity and refrigeration.



Spoiled vegetables in a major marketplace in a province in the Philippines

The project aims to decrease the agricultural postharvest losses in Benguet by developing a cold storage facility with low operational cost through the deployment of a non-electric refrigeration system. This non-conventional refrigerator uses heat to directly create a cooling effect, where heat is mainly sourced by burning biomass gas extracted from vegetable scraps and peelings through a biodigester. When the biomass gas supply

is insufficient, the system is backed-up with liquefied petroleum gas (LPG) to avoid operation disruption. The project also wants to explore the feasibility of using solar heating to allow the cold storage facility to operate without the intensive use of electricity, significantly lowering operational cost.



The research team presents their project to STRIDE

The non-electric cold storage facility will offer affordable rates to small-scale farmers. Through this project, small-scale farmers will increase their productivity and:

- Reduce their product spoilage percentage;
- Avoid price compromise due to fear of spoilage if their produce is not sold; and
- Avoid economic disadvantage when the (fluctuating) market price is not favorable.

Also, vegetable peelings and spoiled products will not go to waste since the biodigester will utilize these for fuel.

This pilot-scale project will be deployed in La Trinidad, Benguet, where most of the vegetable producers of Mountain Province converge. Once feasibility of the pilot-scale project is established, large scale implementation will be in the works to expand impact and coverage of beneficiaries to farmers in both the grid and off-grid areas.