DESIGN, CONSTRUCTION, AND PERFORMANCE EVALUATION OF EVAPORATIVE COOLER FOR SUSTAINABLE REFRIGERATION OF AGRICULTURAL PRODUCE

A Project Study

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By:

Babayen-on, Aldrin John

Frondosa, Kryzzha Pearl

Pableo, Rommel Zyl

Segunla, Nicolite

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Aldrin John B. Babayen-on, Kryzzha Pearl T. Frondosa,

Rommel Zyl L. Pableo, Nicolite S. Segunla

ABSTRACT

Due to the high inclination to rot of agricultural produce, fruits and vegetables are stored at lower temperatures. Reducing the environmental temperature has multiple methods. However, acquiring storage with cool or controlled atmospheres is expensive. Evaporative cooling is a renowned system with means for efficiency and economical use in increasing relative humidity and reduction of temperature.

In this study, basic concepts, principles, and methods of evaporative cooling are applied on the preservation of agricultural produce, such as fruits and vegetables. The device fabricated is made from locally available materials, namely, sand and water. Other materials are aluminum and stainless steel. There are two main devices, the pump and the blower.

The system was successfully fabricated and tested, with the results obtained verified to be accurate, with little margin of error. Despite the system functioning according to its purpose, limitations are to be observed in order to maintain a fully functioning device.