

## **Modification and performance enhancement of evaporative cooler for preservation of vegetables**

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Large quantities of fruits and vegetables are wasted at small to medium scale dealer's points due to lack of cold storage facilities. Therefore, provision of proper storage facilities to preserve fruits and vegetables helps to decrease the losses and increase dealer's income. The Research and Development Centre of the Institute of Post Harvest Technology, Anuradhapura undertook a study for the modification and performance enhancement of a previously developed Evaporative Cooler by the Department of Agriculture Engineering, University of Peradeniya (patent No:12535) in the view of improving the shelf life of vegetables and fruits. The evaporative cooling device has been constructed from materials available at the rural level. It uses the principle of evaporative cooling and allows water to flow into porous brick walls of the chamber. Evaporation of this water from the wall surface exposed to the atmosphere results in the reduction in temperature and increase relative humidity within the chamber. Also passage of water towards the interior surface causes increase in the relative humidity. During the current study an Evaporative cooler was tested for its capacity, performance, temperature, relative humidity, operational cost and shelf life by percentage weight loss, percentage wilting, change in firmness, colour change and microbial spoilage using vegetables as the raw material. The result showed that the average capacity of the evaporative cooling device is 75 kg of vegetables. Temperature inside the evaporative cooling device was 5 to 7 C° less than the atmospheric temperature and the relative humidity was 90 to 95%.Among the different vegetables tested average reduction weight loss was 12%, and average reduction in wilting was 10%for all vegetables except leafy vegetables. The shelf life of vegetables stored in the evaporative cooling device increased by three times compared to ones stored under atmospheric conditions. The operating cost of the evaporative cooling device was very low and it is Rs.0.07/Kg/Day.

Modified evaporative cooler device is suitable for small and medium scale vegetable sellers and farmers to be adopted as a method of extending shelf life of vegetables.