MODIFIED LOW COST EVAPORATIVE COOLING DEVICE BY INSTITUTE OF POST HARVEST TECHNOLOGY

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A low-cost evaporative cooling device constructed by Institute of Post Harvest Technology (IPHT), Anuradhapura to store fruits and vegetables, which is a double walled cooling device was constructed locally by clay bricks, river sand etc. with a shelter. The drip irrigation system was used to saturate this device but ineffective. Hence evaporative cooling device has been now modified by IPHT. Objective of this study was to evaluate and compare the performance of modified evaporative cooling device with original design.

Temperature and relative humidity (inside and outside of the store) were measured in two hour intervals during day and four hour intervals during night time. Throughout the experiment brinjal sample was tested under ambient and modified evaporative cooling device conditions. The weight losses due to shriveling, ripening, microbial spoilage and physiological activities were measured in two days intervals.

The modified evaporative cooling device showed a significant temperature reduction of 7-9 ^{0}C at 90 % RH. Shelf life of brinjal was extended up to 21 days and freshness was not changed. In ambient and normal conditions shelf life was 7 days and 14 days respectively, though freshness was a low. Significantly low physiological microbial spoilage, ripening and shriveling weight losses were recorded in the modified device compared to ambient and normal condition. The total weight losses and operation cost of brinjal in the modified device were 21% and Rs 0.1/kg/day respectively. Therefore modified design is suitable for the small and medium scale evaporative cooling device.

Key words: Brinjal, Evaporative cooling device, Shelf life, Shriveling, Temperature and relative humidity