

Controlled Storage Conditions Reduce the Postharvest Losses of Big Onion (*Allium cepa*) Selection “Dambulla Red”

* Samarasinghe¹, Y.M.P., Kumara¹, B.A.M.S., Marasinghe¹, C.K., Kumara¹, K.P.L. and Wijewardane¹, R.M.N.A.

¹National Institute of Postharvest Management, Research and Development Center, Anuradhapura, Sri Lanka

*Corresponding E-mail: priya.samare@gmail.com

Postharvest loss of big onion is considerable and one of major issues which adversely affects food security in Sri Lanka. One of major reasons is improper storage conditions where, mainly due to harvesting coincides with rainy season or harvest just before rainy season. Hence, storage of harvested onion is critical in rainy weather where high relative humidity prevails during second inter-monsoon and *Maha* seasons. Temperature (T) and relative humidity (RH) should be controlled to reduce postharvest loss of big onion during storage period. Therefore, this experiment was conducted to evaluate the effect of controlled temperature and relative humidity on postharvest loss of big onion during storage period. Ambient storage (AS) (partially rainy day: 30.05±1.48 °C, 79.31±3.76% RH; Sunny day: 33.99±1.86 °C, 57.06±8.88% RH) and controlled storage (CS) (27.15±0.41°C, 70.57±7.3% RH) were used as treatments with complete randomized design with three replicates (150 kg each). Onions were harvested from selected fields in Anuradhapura district, Sri Lanka and subjected for shade curing. Physiological weight loss (PWL), Rotten percentage (RP), Sprouted percentage (SP), Total soluble solids (TSS), Total color difference (TCD) and Total postharvest loss (TPL) were recorded for six weeks period. No significant differences ($p > 0.05$) were observed for PWL and TCD between treatments. PWL of onions in AS and CS were 9.32±1.38 and 9.16±0.94% respectively. However, there were significant differences ($p < 0.05$) observed for TSS, SP and for RP between treatments. RP of onions were 8.09±0.19 and 5.46±0.17% in AS and CS respectively. There was significant difference ($P < 0.05$) observed for TPL after the storage period where, 24.85±1.04 and 19.45±0.92% in AS and CS respectively. It can be concluded that the control storage conditions (27.15±0.41°C, 70.57±7.3% RH) could be used to reduce the postharvest losses of big onion during storage. However, temperature and relative humidity should be optimized with further experiments.

Keywords: Condiments, Onion Storage, Postharvest Life, Shelf life