

EFFECT OF HARVEST MATURITY, PACKAGING TECHNIQUE AND STORAGE
TEMPERATURE ON POSTHARVEST LIFE OF WINGED BEAN (*Psophocarpus
tetragonolobus*)

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Winged bean (*Psophocarpus tetragonolobus*) which is a tropical legume that grows quickly is disease resistant and high in protein. A high post harvest loss of winged bean pods occurs during peak seasons under ambient conditions due to use of improper harvest maturity. Therefore this research was carried out with the objectives to determine best harvest maturity and to study the effect of packaging techniques and storage temperature on the postharvest life of winged bean. The research was done during 2008 *yala* season at the Institute of Postharvest Technology, Anuradhapura. The day time temperature and RH varied within the range of 28-30 °C and 65-85% respectively. Pods of 6 days after flowering (6 DAF) up to 15 DAF of winged bean variety SLS 44 were harvested. Best harvest maturity was determined based on pod length, pod circumference, pod weight, pod firmness, moisture content, Titratable Acidity (TA), pH and Total Soluble Solids (TSS). Pods of the selected best maturity stage were packed in Passive Modified Atmosphere Packaging (PMAP), Shrink Wrapping (SW) and kept under ambient temperature as well as at 15 °C to select the best packaging technique and storage temperature for winged bean. Pods without packaging were kept under ambient temperature and 15 °C as control treatments. PMAP was done using 25 × 12 cm, 200 gauge LDPE bags. SW was done using 18 × 13 × 4 cm Styrofoam boxes wrapped by SW films. Each package was consisted of 50 g of winged bean pods. Throughout the storage period physiological weight loss (PWL), firmness, color, pH, TSS, Ascorbic acid content, disease Frequency (DF) and Visual Quality (VQ) were measured at three days' intervals. Based on physico-chemical parameters, 10 DAF stage was selected as the best harvest maturity. During storage study, PWLs ascended respectively in treatments kept in PMAP, in SW and without packaging. PWL was greater in treatments kept under ambient temperature than in treatments stored at 15°C. Treatments stored in PMAP and SW at both storage conditions were significantly different with treatments stored without packaging at both storage temperatures in terms of pods firmness, TSS, ascorbic acid content, moisture content and color. The pH in each treatment did not show significant difference. Highest DF was observed in SW at 15°C while least DF was recorded in treatments without packaging under ambient conditions as well as at 15°C. In terms of VQ, there were no significant difference among PMAP and SW treatments at both storage temperatures and they had better VQ than pods stored without packaging. PMAP and SW were better for winged bean than without packaging. PMAP performed well in order to prolong the postharvest life of winged bean up to 24 days and storage

at 15°C showed better results than storage under ambient conditions. Eventually it is suggested to disinfect pods before packing and to modify temperature coupled with packaging technique in order to develop a consumer packaging for winged bean.

Key words: Winged bean, Best harvest maturity, PMAP, SW, Postharvest life