

## OPTIMIZING COLD STORAGE TEMPERATURE FOR PALEE F1 BITTER GOURD

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Cold temperature storage is one of the best methods to maintain the qualitative and quantitative properties of bitter gourds (*Momordica charantia* L.). The experiment was conducted to optimize the cold storage temperature for *palee* F1 bitter gourd variety by using two-factor factorial complete randomized design. Four cold storage temperatures ( $6 \pm 2^\circ\text{C}$ ,  $8 \pm 2^\circ\text{C}$ ,  $10 \pm 2^\circ\text{C}$ ,  $12 \pm 2^\circ\text{C}$ ) were evaluated together with the ambient temperature ( $30 \pm 2^\circ\text{C}$ ) storage. Weight Loss Percentage (WLP), colour, firmness, pH, Total Soluble Solids (TSS), Total Chlorophyll Content (TCC), Ascorbic Acid Content (ACC) and Total Phenol Content (TPC) were determined in two and four days interval for the ambient and cold temperature storage respectively. The fruits stored at  $6^\circ\text{C}$  had 18 days of storage followed by 16 days of storage at  $8^\circ\text{C}$ . In  $6^\circ\text{C}$  had significantly lower WLP ( $16.06 \pm 0.4\%$ ) at 16 days compared to  $8^\circ\text{C}$  ( $19.43 \pm 0.4\%$ ).  $L^*$  and  $a^*$  values were significantly lower at 16 days of storage life in  $6^\circ\text{C}$  ( $35.35 \pm 3.02$  and  $-10.73 \pm 0.58$ ) compared to  $8^\circ\text{C}$  ( $35.56 \pm 3.02$  and  $-10.31 \pm 0.58$ ) and  $b^*$  value was significantly higher in  $6^\circ\text{C}$  ( $16.73 \pm 1.51$ ) compared to  $8^\circ\text{C}$  ( $16.58 \pm 1.51$ ). At 16 days of storage, firmness, pH, TSS and TCC were significantly higher at  $6^\circ\text{C}$  ( $54.26 \pm 4.04$  N,  $5.75 \pm 0.01$ ,  $5.6 \pm 0.06$  and  $9.05 \pm 0.02$   $\text{mgL}^{-1}$ ), in comparison to the storage at  $8^\circ\text{C}$  ( $30.03 \pm 4.04$  N,  $5.64 \pm 0.01$ ,  $4.1 \pm 0.06$  and  $5.34 \pm 0.02$   $\text{mgL}^{-1}$ ). Significantly lower AAC and TPC ( $0.00773 \pm 0.0002$   $\text{mgL}^{-1}$ ,  $0.0316 \pm 0.0001$   $\text{mgL}^{-1}$  respectively) were observed at  $6^\circ\text{C}$  compared to  $8^\circ\text{C}$  ( $0.0079 \pm 0.0002$   $\text{mgL}^{-1}$ ,  $0.032 \pm 0.0001$   $\text{mgL}^{-1}$ ) of storage for 16 days. The results indicate that  $6^\circ\text{C}$  is the optimum cold storage temperature for *palee* F1 bitter gourd due to lower WLP, higher firmness, TCC and extended storage period.

**Keywords:** Bitter gourd, Cold storage, Firmness, Total phenol content, Weight loss