



7.1.1.4 **Mwanaidi Kiya (2002). The influence of maturity stage at harvest on post-harvest quality and shelf life of tomato (*Lycopersicon esculentum* Mill.). (Supervisor: Dr. M. Mataa).**

This study was designed to determine the influence of maturity stage at harvest on post harvest quality and shelf life of fresh market tomato (*Lycopersicon esculentum* Mill). The study was conducted at the University of Zambia in 'the 2001/2002 farming season. Two common cultivars, Rodade and Flora Dade and one new cultivar, Nemo-netta were evaluated. The tomatoes were picked at six maturity stages, mature green; breaker; turning; pink; ripe and over ripe. Compositional and sensory characteristics were investigated to determine the rate of change of quality relative to maturity stages. Three analyses (at harvest, at five days, and at ten days of storage) were done. Storage (storability) duration at different maturity stages was evaluated at four days interval up to twenty days. Disease scores were recorded on a weekly basis for three weeks. The experimental design was a split plot with two factors replicated three times. Both

total soluble solids and reducing sugars decreased in mature green fruits for Rodade and Flora Dade and in turning fruits for Nemo-netta. An increased titratable acidity was found in mature green fruits for Rodade and Nemo-netta and for the breaker stage in Flora Dade. At the ripe and over ripe stages there were higher rates of infection in Nemo-netta probably due to higher sugar content and lower titratable acidity as compared to other two cultivars. Fruit firmness decreased consistently with advance in maturity stages for all cultivars, while the fruit colour increased. The flavour and overall acceptability were significantly lower in mature green fruits for all cultivars. Fruits harvested at mature green, breaker and turning stage had no disease infection and had longer higher shelf life irrespective of the cultivar. Fruits harvested at the ripe and over ripe stage were best in quality at harvest and therefore ideal for immediate consumption. The ripe fruits had higher rates of infections and had significantly lower shelf life or all cultivars. The storage was influenced more by reducing sugars and titratable acid content than firmness. Stage of maturity and storage time are important factors that affect the quality and shelf life of tomatoes, and must be carefully controlled if commercial production is attempted.