Abstract

Onions are a major vegetable crop world-wide. However, little is known of the appropriate temperatures, humidities and postharvest treatments needed for the long term storage of many important onion cultivars, especially those intended for dehydration. This study investigated the effect of storage temperature and relative humidity (RH) and various postharvest treatments such as modified atmosphere, fungicide, antioxidant, $CaCl_2$ and phorone dips on the storage life of Southport White Globe (SWC), White Spanish (WS) and Early Lockyer White (ELW) onions, and on dehydration characteristics of SWG cultivar, were investigated.

Overall, this study shows that a temperature of °C and a RH of either 60 or 70% was the most suitable storage regime for SWG as well as WS and ELW onions. The three onion cultivars can be stored at 0°C for up to 6 months with minimal sprouting, rotting, rooting and discolouration. The proportion of sound ELW, WS and SWG onions stored at °C for 6 months was 100, 90.6 and 68.3%, respectively. The next best storage regime is 30°C and 60% RH, with rotting a major constraint. The intermediate temperatures were found to be highly detrimental to the quality of the onions during storage, with sprouting being the major concern. Rooting was not a major problem except when stored at intermediate temperatures and high humidity.

This study also shows that many postharvest treatments such as the application of phorone, antioxidants, hot water treatment, calcium and atmospheric modification, which are known to be effective in extending the storage lives of various fruit and vegetables, were inappropriate for the quality maintenance onions intended for long term storage. It is conceivable, however, that the treatments, and hence their effectiveness on onions, may be improved with improvement in treatment application techniques.