Abstract

The effect of seven packaging materials (transparent perforated and non-perforated high-density polyethylene (HDPE) bags, black perforated and non-perforated low-density polyethylene (LDPE) bags, nylon gunny sacks, khaki bags and net bags) on post-harvest quality of tubers from three potato cultivars was evaluated. Data were collected on time and percentage of sprouting, weight loss rates and percentage tubers with greening and rotting. Packaging significantly reduced weight loss and rate of tuber greening but increased the rate of sprouting and decay incidences. Non-perforated PE bags were the most effective in reducing weight losses, recording losses of 0.7 to 0.9% after 32 days in storage while unpackaged tubers had weight losses of 11 to 12%. Tuber rotting was highest (60 to 66% of the tubers) in non-perforated PE bags. Greening was faster in non-packaged tubers recording 55 to 100% after 2 weeks in storage and showed high cultivar differences, but did not occur in black bags, whether perforated or non-perforated. Sprouting was complete by week 3 in all tubers packaged in non-perforated HDPE bags irrespective of cultivar. Although the non-perforated HDPE bag packaging prevented weight loss, its positive effect was counteracted by the high incidence of rotting and sprouting. Amongst the different materials evaluated, perforated low-density black PE bags were the best method for ware potato packaging due to low sprouting, reduced weight loss, low rate of tuber greening and reduced rate of tuber decay compared to other packaging materials. The study also indicated that the interaction between cultivars, packaging and storage period also affected shelf life of ware potatoes under ambient tropical conditions.