

Abstract:

Modified atmosphere packaging (MAP) trials are generally performed in laboratories under very controlled conditions. Conditions on-farm are generally less controlled due to changes in room load and heat exchange when loading and unloading rooms. As the permeability and performance of MAP films is highly affected by temperature, MAP films were tested for performance under on-farm conditions. Three sweet cherry cultivars were stored for 2, 4 and 6 weeks in an on-farm cold storage facility. Temperatures ranged between 1 and 3 °C. Three MAP films composed of polyolefin with oxygen permeabilities of 3000, 7000 and 16500 ml×m⁻² (24 h at 23 °C) were evaluated. The test films were compared to the grower's standard practice of packing the cherries in an unsealed, non-permeable but perforated bag. The cherries were pre-cooled prior to packaging. MAP improved the storage quality of all three cherry cultivars, although results were quite variable. Weight loss was highest for the control, ranging from 0.45 to 5.5%. Weight loss was significantly lower for the MAP packaged fruit (0.02 to 0.7%) with minimal differences between films. Overall, the MAP films with the lowest oxygen permeabilities produced the best results. These films modified the atmosphere to within the recommended oxygen and carbon dioxide levels for extended controlled atmosphere storage. For 'Hedelfingen' cherries, MAP reduced decay by 50% and significantly increased firmness. Decay was reduced by 85% in short-term storage (14 day) of 'V-690616'. Stem loss was also reduced in this cultivar but there was no effect on firmness. MAP moderately reduced stem loss and decay for the cultivar 'V-690618'.