

Abstract

Modified atmosphere (MA) packaging was examined at laboratory and commercial scale to study effects on quality attributes and storage life of fresh pack Washington asparagus. All small MA packages tested also improved quality of early and mid-season harvested asparagus. However, asparagus from a late season harvest developed severe tiprot in both MA and nonpackaged asparagus. Fresh weight loss averaged 2% for all MA packages and from 8-20% in nonpackaged asparagus. Toughness measured by shear force was slightly less for packaged versus nonpackaged asparagus. Sensory analysis or taste tests found a preference for MA packaged over nonpackaged asparagus based on a sweeter and more flavorful taste. The sweet taste may be due to the low respiration rate of MA asparagus, which allows concentration of sucrose in spear tips. Commercial application of hot water treatment (HWT) was simulated by immersing 14-28 lb crates of asparagus in 48°C water for 5 minutes and storing at 2°C for 13-18 days. HWT were partially successful in slowing deterioration of quality in asparagus. Fresh weight loss was 7% in HWT asparagus and 20% in untreated after 13 days storage in low relative humidity (65%) condition. Severe stem wilt (droopy/limp stems) occurred within 5 days of treatment, either from the HWT or from low relative humidity during storage. In a second study, HWT-asparagus was stored under a well-perforated plastic bag, which maintained a higher level of relative humidity. HWT-asparagus lost only 2% and untreated lost 7% fresh weight plus stem wilt was absent. Relative humidity continues to be one of the primary factors in retaining overall asparagus quality regardless of the type of treatment. HWT-asparagus had a significantly lower respiration rate than untreated asparagus when stored at 20°C. Therefore, HWT may have greater application to circumstances where abusive storage conditions prevail such as the market shelf, where in some instances, temperatures periodically reach 20°C