Abstract

Studies were initiated to establish the best condition for maintaining the quality of fresh blueberries using different storage technique (low-pressure and alternate CO_2 storage) and to evaluate the establishment and early growth of eight cultivars in northern Mississippi. Blueberry cultivar 'Tifblue' was hand harvested in 2000 and 2001 and stored at 4°C. Fruit exposed to various CO_2 concentrations (0.035%, 15%, 20%, 25%, and 40% CO_2) alternated with normal CO_2 atmosphere (0.035) in eight-hour cycles during the entire periods (42 days) of the experiments. Berry weight loss was reduced at 15% to 2% CO_2 . Juice pH was not affected. Soluble solid concentration (SSC) and SSC/TA ratio increased with time in storage and was lowest under 15 to 25% CO_2 treatments. Titrateable acidity (TA) was lowest under 15 to 25% CO_2 compared to 40% CO_2 and the control. Berry firmness and appearance were higher under 15 to 25% CO_2 . Berries exposed to 20% CO_2 or higher had the least decay incident. CO_2 concentration at 15 to 25% delayed ripening, indicating increased shelf-life.

Blueberry cultivar 'Premier' was hand harvested in 2000 and 2001. The low-pressure storage (LPS) treatments conducted in a growth chamber at 4°C. 22-quart pressure cookers were utilized as low-pressure chambers. The desired pressures were maintained by continuously evacuating of humidified air using a Belt-drive vacuum pump. Control fruit were held in the same room under normal atmospheric pressure on adjacent shelves. Berries stored at 1.0 atmospheric pressure lost less weight, were firmer, developed less decay, and did not show any shriveling with storage time (28 days). Juice pH increased with storage time but was lowest at LPS treatments. SSC increased with storage time but was lowest at 1.0 atmospheric pressure. TA was highest when fruit was stored at 0.3 atmospheric pressure due to the high moisture loss.

Two years of field study were conducted at Pontotoc Ridge-Flatwood research and Extension Center to evaluate early growth and establishment of eight blueberry cultivars. Plant survival averaged 91% and 70% for the first and second growing season, respectively. 'Blueridge' and 'Premier' had the highest plant height in the first season. In the second growing season, 'Premier' had the highest plant height. 'Blueridge' bloomed earlier than other cultivars.