

Title End of day harvest delays postharvest senescence of broccoli florets
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Abstract

Broccoli heads were harvested at different times of the day (sunrise, midday and sunset) and then stored at 20 °C for 5 d. The samples harvested at sunset showed the lowest loss of colour and chlorophyll degradation, those picked at dawn had the highest degreening, whereas heads harvested at midday showed an intermediate behaviour. As broccoli shelf life is mainly determined by external appearance and surface colour, harvesting heads at the end of the day instead of in early morning can extend their shelf life by 1 d, when stored at 20 °C. Samples harvested at sunset also had the highest levels of total soluble and reducing sugars, antioxidants and phenolic compounds during storage. However, at harvest, samples obtained at different moments had the same levels of chlorophylls, soluble sugars, antioxidant and phenolics; whereas the starch content was clearly different among samples. Those harvested at dusk had higher starch levels than those harvested at sunset. We hypothesize that starch degradation produces single sugars whose presence delays senescence in samples harvested at the end of the day. This fact was corroborated by providing an exogenous supply of glucose or sucrose to samples harvested in early morning, which also showed a delayed senescence by maintaining higher levels of chlorophylls, antioxidants and phenolics. Our results suggest that starch accumulated during daylight delays senescence in broccoli and helps to maintain better postharvest quality and nutritional parameters.