

The effect of gibberellin on firmness and storage potential of peaches and nectarines

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Abstract

Gibberellic acid is one of the most widely used plant growth regulators for manipulation of fruit development and ripening. It has been shown to retard the rate of fruit softening in a number of different fruits. Melting flesh peaches and nectarines are climacteric fruit which undergo rapid ripening, particularly the early season cultivars. The fruits soften quickly after harvest, leading to losses in the marketing chain from bruising and over-ripeness. Gibberellic acid was given to four early cultivars and their rate of softening after harvest was followed. Two cultivars, 'Sun Snow' (nectarine) and 'Swelling' (peach) received 25 and 50 mg L⁻¹ gibberellin 12 and 24 days before harvest, respectively. The control fruit lost about 50% of their firmness after 3 days at 20°C, while gibberellin treated fruit decreased 20%. After 5 days at 20°C, however, all fruits had similar firmness. Two cultivars, 'Yuval' (nectarine) and 'Oded' (peach) were sprayed with 50 mg L⁻¹ gibberellin at the end of pit hardening. Their softening and ripening was monitored after harvest and after 3 weeks of storage at 4°C. The gibberellin treated fruits softened more slowly after harvest, similar to the cultivars treated with gibberellin close to harvest. Examination of the cell wall components of control and gibberellin treated fruit showed that the latter had more cell wall material and a larger proportion of cellulose in the cell walls than the control fruits. These differences may play a role in the slower softening of gibberellin treated fruit.