Title Improvement of 'Crimson Seedless' grape colour by abscisic acid treatment

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Abstract

'Crimson Seedless' is a high quality, red, table grape cultivar, which may fail to develop adequate red colour in warm climates. In addition, most bunches contain some green berries when the rest of the bunch has become red. Abscisic acid (ABA) is a plant hormone that increases in grape berry skin at the onset of maturation and is involved in the regulation of anthocyanin accumulation. A commercial formulation, S-ABA (ProTone®), was sprayed in a vineyard at concentrations of 100, 200 and 400 mg L^{-1} at the beginning of veraison, alone or together with 500 mg L^{-1} ethephon. In laboratory experiments 200 mg L^{-1}, 400 mg L^{-1}, or 600 mg L^{-1} were applied to detached berries by allowing uptake through the pedicel. In the vineyard, application of S-ABA affected berry colour, changing the berry colour of the control (29.9 h°) to a darker red in a concentration dependent manner. Ethephon alone enhanced berry coloration to a lesser extent. Ripeness attributes (soluble solids content, titratable acidity, firmness, and berry size) were not affected by S-ABA treatment. Anthocyanin accumulation in berries treated with 400 mg L^{-1} S-ABA was almost double that of control berries, although the anthocyanin composition was similar. Green or breaker stage detached berries developed red colour after uptake of S-ABA through the pedicel. Detached berries may, therefore, serve as an efficient system with which to test the effects of S-ABA and its interactions with other factors which influence colour development.