Title Application of abscisic acid (ABA) at veraison advanced red color development and maintained postharvest quality of 'Crimson Seedless' grapes

Author Celia M. Cantín, Matthew W. Fidelibus and Carlos H. Crisosto

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Abstract

'Crimson Seedless' is a popular table grape cultivar, but in warm-climates, its fruits often fail to develop adequate red color, even after they have been treated with ethephon. Application of abscisic acid (ABA) may improve color more effectively than ethephon, but its potential effects on postharvest quality must be considered before recommending its use on table grapes. Therefore, we compared the postharvest quality attributes of grapes treated preharvest with 250 μL L^{-1} ethephon, the current industry standard, to that of grapes treated with 150 or 300 μL L^{-1} ABA, or nontreated. Treatment with either ethephon or 150 μL L^{-1} ABA allowed grapes to be harvested 10 d before nontreated fruit, and fruits treated with 300 μL L^{-1} ABA attained marketable quality 30 d before nontreated fruit. Early harvest was possible because the treatments induced more rapid coloring of the grapes, and though total yield was not affected by any plant growth regulator (PGR), all PGRs doubled packable yields by improving the color of the grapes. ABA-treated grapes were characterized by superior appearance both in berries and clusters' rachises compared to ethephon-treated and control grapes. Other quality attributes such as firmness, berry weight, decay incidence, and shatter remained unaffected among treatments. Therefore, ABA is an effective alternative to ethephon for enhancing the color and maintaining postharvest quality of 'Crimson Seedless' grapes.