

# Spray with plant growth regulators at full bloom may improve quality for storage of 'Superior Seedless' table grapes by modifying the vascular system of the bunch

Yanina Guzmán, Beatriz Pugliese, Carina V. González, Claudia Travaglia, Rubén Bottini and Federico Berli

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## Abstract

The quality traits of table grape most appreciated by the consumers are berry size, bunch architecture, and freshness appearance (especially after post-harvest cold storage). Loss of bunch freshness reduces the value and selling potential for the market. Application of plant growth regulators (PGRs) may improve quality, particularly in seedless cultivars that naturally set compact bunches with small berries. PGRs as auxins and gibberellins are involved in fruit set, growth, development and ripening processes, including vascular tissues differentiation. This study aimed to determine if the combination of auxin indole-3-butyric acid (IBA) and gibberellic acid (GA<sub>3</sub>) improve quality attributes of 'Superior Seedless' bunches. Field grown vines were sprayed at full bloom, with 20 mg L<sup>-1</sup> IBA and 20 mg L<sup>-1</sup> IBA +10 mg L<sup>-1</sup> GA<sub>3</sub>, to evaluate their effects on bunch quality at harvest and post-harvest (after 60 d of cold storage; 0 °C and 95 % RH). IBA + GA<sub>3</sub> treatment produced looser bunches with larger berries as compared to Control. Total vascular bundle area (xylem and phloem) and rachis hydraulic conductivity were increased by IBA + GA<sub>3</sub>. As well, IBA + GA<sub>3</sub> improved rachis and berries firmness, also freshness appearance after 60 d cold storage. In conclusion, a single spray of IBA + GA<sub>3</sub> at full bloom improved quality and cold storage capacity of 'Superior Seedless' table grape, but it is not clear if GA<sub>3</sub> or the combination of IBA and GA<sub>3</sub> contributed to the observed effects.