

CORONATINE: A POTENTIAL ABSCISSION AGENT IN CITRUS

L. Pozo*¹, J.K. Burns¹ and C.L. Bender²

¹Horticultural Sciences Department, University of Florida, Institute of Food and Agricultural Sciences, Citrus Research and Education Center, Lake Alfred, FL, USA 33850

²Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, USA 74078

Coronatine is a polyketide produced by *Pseudomonas syringae* that causes yellowing and growth regulator-like effects in plants. In both structural and functional views, it shares similarities with octadecanoid pathway metabolites involved in jasmonate responses, lipid signaling, and abscission. Our research focused on effects of coronatine foliar sprays on abscission in 'Hamlin' and 'Valencia' oranges. Branch applications performed on both cultivars demonstrated that 200 mg.L⁻¹ was the optimal concentration for significant reduction of fruit detachment force and low to moderate leaf abscission (below 20%). Coronatine at this concentration enhanced ethylene production in both mature fruit and leaves; no significant fruitlet or flower abscission was found as a result of the treatment. A similar response occurred when coronatine was applied to entire trees. However, reduced chlorophyll content and slight chlorosis developed during the weeks following the application. Coronatine did not induce chlorosis in new vegetative shoots that developed after compound application; the new leaves appeared green and healthy. Further, branch application studies showed differences in ethylene production between coronatine and other abscission agents such as methyl-jasmonate, 5-chloro-3-methyl-4-nitro-1H-pyrazole and ethephon. The results suggest that coronatine loosens mature fruits and has minimal effects on leaf abscission, making coronatine a viable candidate as a citrus abscission agent.