

The Effect of Interspecific Peach Hybrid Rootstocks [K119-50 (*Prunus salicina* x *P. dulcis*) & P30-135 (*P. persica* x *P. salicina*)] on Peach (*P. persica* L. Batsch cv 'Flavorcrest' and 'Loadel') Scion Nutrient Concentrations and Fruit Quality

By

GREGORY MICHAEL FERRARI

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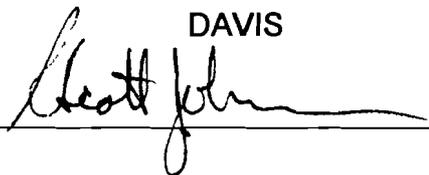
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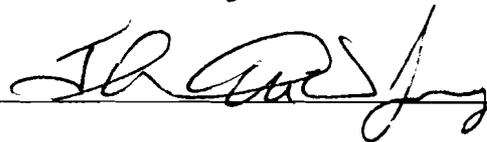
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Abstract

The effect of two interspecific peach hybrid rootstocks [K119-50 (*P. salicina* x *P. dulcis*) & P30-135 (*P. persica* x *P. salicina*)] on scion (*P. persica* L. Batsch cv 'Flavorcrest' and 'Loadel') nutrient concentrations was compared to that of the standard peach rootstock Nemaguard. The hybrid rootstocks had a significant effect on scion nutrient concentrations. Trees grown on Nemaguard had higher leaf concentrations of N and K, while the hybrid rootstocks had higher leaf levels of Ca, Mg, Zn, and Mn. Ca concentrations were of particular interest because of implications for fruit quality. Ca nutrient concentrations were approximately 46% and 37% higher than Nemaguard for leaf (2.58 %) and fruit (259.65 ppm) samples, respectively.

A series of experiments were conducted in 2002 and 2003 to test for improvements in fruit quality and disease resistance. Fruit quality parameters including weight, diameter, firmness, soluble solid content (SSC) and titratable acid (TA) were measured. The hybrid rootstocks had some minor effects on fruit quality, but these differences did not appear to be related to their Ca status.

Rates of fruit softening were calculated with the use of a non-destructive impact sensor ('Sinclair Internal Quality Firmness Test'; SIQ-FT, Sinclair Systems International, LLC, Fresno, CA) and no differences were found in flesh softening rates regardless of Ca status. Disease resistance was tested through inoculations and monitoring of *Monilinia fructicola* and *Botrytis cinerea* development on fruit. Again the hybrid rootstocks had some minor effects on disease development, but they did not appear to be related to their Ca status.

Half of the trees in the experimental blocks were treated with K_2SO_4 in an effort to manipulate scion nutrient concentrations. K fertilization significantly increased leaf K concentrations, while decreasing concentrations of Mg and Ca. K fertilization was associated with a significant reduction in *Monilinia fructicola* incidence in 2002.

In contrast to previous studies, the increased Ca concentrations imparted by the hybrid rootstocks did not improve fruit quality (Eaves & Leefe, 1962; Abdalla & Childers, 1973; Wojcik, 2001) or increase disease resistance (Singh et al., 1982; Conway et al., 1987; Wojcik, 2001). Either Ca concentrations for Flavorcrest and Loadel on Nemaguard were sufficiently high that further increases in Ca concentrations did not improve fruit quality or Ca concentrations for the hybrid rootstocks were not high enough to cause improvements in fruit quality or reductions in disease.