

## RESPONSE OF SIX CITRUS GENOTYPES TO PROHEXADIONE-CA

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### ABSTRACT

Control of vegetative growth is a significant problem in commercial production of Florida citrus, suggesting that use of PGRs to manage growth may be desirable. Citrus is now planted at high densities to enhance early production, but this often increases the cost of containing vegetative growth as plantings mature. In many orchards, this aggressive pruning results in lower mature yields than were realized prior to containment pruning. In addition, competition between vegetative growth and fruit development appears to sometimes compromise fruit set in parthenocarpic cultivars. The GA biosynthesis inhibitor Prohexadione-Ca (P-Ca) has been approved for use in several fruit species, in the formulation Apogee. In two greenhouse experiments, P-Ca was examined for effects on six citrus genotypes ('Duncan' grapefruit, 'Sun Chu Sha' mandarin, *C. macrophylla*, *C. aurantium*, 'Swingle' citrumelo, and 'Smooth Flat Seville'). Potted seedling trees were sprayed with 500 ppm (a high rate used to test maximum likely efficacy) P-Ca plus 0.05% Silwet with or without pH adjusted to 3.5 using citric acid. The initial sprays were made on 24 July, 1998 and 7 July, 1999.

In experiment 1 (Fig. 1A), only a double application of P-Ca at 4-week intervals reduced shoot growth by three months after application, with a 38% reduction in shoot length across all genotypes. In experiment 2 (Fig. 1B), all P-Ca treatments reduced shoot growth in the first three months after treatment, with a 40% reduction across all genotypes from a double application of pH adjusted P-Ca at 4-week intervals. While two applications of P-Ca were numerically superior to a single application, these differences were seldom statistically significant.

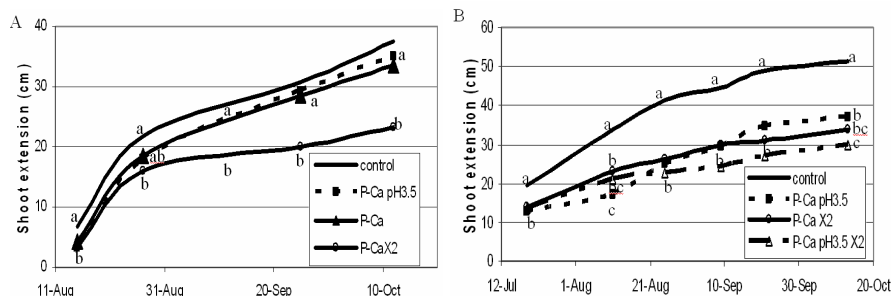


Fig. 1. Effect of Prohexadione Calcium (P-Ca) on shoot growth across six Citrus genotypes.

No significant genotype x treatment interaction was found in either experiment, when all genotypes were included in the assessment. When data for individual genotypes were assessed, 'Duncan', 'Swingle', and *C. macrophylla* showed significant P-Ca induced growth suppression in experiment 1, while all genotypes except 'Smooth Flat Seville' demonstrated growth suppression in experiment 2.

These results demonstrate that P-Ca has the potential for suppressing growth of citrus. It remains to be seen whether reducing a single flush significantly reduces annual growth, or whether there is economic value to transient shoot growth reduction. Suppression of the spring flush may merit consideration since it competes most with fruit set, but is not the primary flush contributing to flowering in the following year.

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