Objectives and Rationale

Prohexadione-calcium (Pro-Ca) is used as a cost-effective technique to reduce vegetative growth. In our growing conditions, there are concerns that regrowth of 'Fuji' after a second or third Pro-Ca application may have a negative effect on return bloom. This study aims to investigate the effect of Pro-Ca application on return bloom, regrowth, yield alternation and crop load in 'Fuji' apple trees.

Methods

Experiment 1: 'Fuji' Akifu® on M.793 rootstocks planted at 1.25 m x 4.0 m at Vastrap were randomly selected and allocated to Pro-Ca treatment according to the tree row volume (TRV). Experiment 2: 'Fuji' Kiku® on M.793 rootstocks planted at 1.8 m x 4.5 m at Cortina Farms were randomly selected and treated with Pro-Ca treatments according to the TRV.

Key Results

The effect of Pro-Ca application on shoot growth: The application of 100 g/ha Pro-Ca at full bloom, followed by 1250 g/ha at 4 WAFB and 1250 g/ha at 6 WAFB resulting, in a total dose of 3500 g/ha was the most effective treatment in suppressing shoot growth in both experiments. *The influence of Pro-Ca application on fruit quality traits:* Experiment 1: The fruit on Pro-Ca treated trees were firmer than on untreated treated trees. Experiment 2: Fruit colour was improved with Pro-Ca application. *The influence of Pro-Ca on crop load and fruit yield:* The application of Pro-Ca did not have a significant effect on crop load and fruit yield on both experiments.

Discussion and Key Conclusion

Shoot growth was suppressed by the application of Pro-Ca. The application of 100 g/ha Pro-Ca at full bloom, followed by 1250 g/ha at 4 WAFB and 1250 g/ha at 6 WAFB resulting, in a total dose of 3500 g/ha was the most effective treatment in suppressing shoot growth. Shoot regrowth occurred in all the Pro-Ca treated trees but not in the control trees. Fruit crop load, fruit yield and fruit quality were not affected by the application of Pro-Ca.