Apple Crop Load Management: Enhancing Thinning Predictability and Tree Response Through Advancements in Modelling and New Precision Thinning Products, Strategies and Technology

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This research activity is aimed at thinning flowers or fruits on overloaded apple trees using new chemical thinners and technologies. Following the first year of trials, the research teams are repeating and refining tests this year to evaluate how the strategies work under different environmental conditions.

This year, the weather conditions in both study locations were unusual and will contribute valuable information about temperature extremes. In Ontario, the cool conditions during early fruit development made chemical thinning atypical, and in Nova Scotia, above-average temperatures suggested a risk of overthinning.

At the Ontario Crops Research Centre in Simcoe, Ont., the research team is conducting thinning experiments using single and sequential sprays and tank mixes of metamitron and ACC (Accede 40SG). They are also investigating computer vision technologies and have worked on using thinning prediction models including the fruit growth and carbohydrate models. The team is currently conducting an experiment using RIMpro's weather carbohydrate model and BreviSmart decision support software.

This past spring at Walsh Farms in Berwick, N.S., the amount of flowering on trees in response to last year's thinning trials was assessed. Treatments were then repeated from last year on Honeycrisp and Gala trees using varying rates and new chemistries. The research team monitored the forecasts and final predictions made by the decision support systems RIMpro and BreviSmart. Specific attention was paid to the predictive ability of the models and the regional limitations.

Cold and cloudy conditions in spring 2025 slowed the rate of fruit growth after flowering in southern Ontario causing chemical thinners to not work as well.

Measuring fruit size on trees in southern Ontario in spring 2025.
Photos: John Cline

KEY TAKEAWAYS:

- Researchers are conducting an experiment using RIMpro's weather carbohydrate model and BreviSmart decision support software at the Ontario Crops Research Centre and at Walsh Farms in Nova Scotia.
- In Ontario, single and sequential sprays and tank mixes of metamitron and ACC are being evaluated for efficacy in thinning Gala and Ambrosia apple trees.
- In Ontario, computer vision technologies and predictive models are being tested for their ability to improve crop load management.

Measuring the size of fruit on trees in southern Ontario in spring 2025. Photo: John Cline