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. Researchers are working to develop and use decision support systems to improve the management of apple crop loads. Researchers are also looking at artificial intelligent-based computer vision systems to aid in managing and measuring the response to crop load decisions.

At the Ontario Crops Research Centre in Simcoe, Ont., the research team conducted a thinning experiment using metamitron and Accede. The team investigated crop vision technologies and worked with thinning prediction models, including the fruit growth model and carbohydrate model. The researchers

experimented with using the RIMPro weather carbohydrate model. Data analysis and report writing is ongoing and planning for the 2025 growing season is underway.

At Walsh Farms in Berwick, N.S. two thinning experiments were completed over the first field season by using new thinners and industry-standard thinners while also investigating the RIMPro carbohydrate model. Analysis of crop load and fruit quality is ongoing to produce an annual report. For the 2025 field season, the researchers plan to replicate the research activities with different weather conditions to observe changes in treatment effects and comment on the accuracy of predictive modelling.

Michelle Cortens discusses the influence of the fruit thinning products and strategies in a Honeycrisp orchard with Jeff Walsh of Walsh Farms in Berwick, N.S. Photo: Perennia, Nova Scotia

Jeff and Courtney Walsh of Walsh Farms in Berwick, N.S. evaluate the crop load on Honeycrisp trees after implementation of fruit thinning products and strategies. Photo: Perennia, Nova Scotia

Michelle Cortens evaluates Gala apples at the end of August 2024 to compare the efficacy of products and strategies at Walsh Farms in Berwick, N.S. Photo: Perennia, Nova Scotia

Following treatments with fruit thinning products and strategies, the Nova Scotia team counts fruit set and calculates crop load to determine efficacy. Photo: Perennia, Nova Scotia

KEY TAKEAWAYS:

- In 2024, researchers have conducted several in-field apple thinning experiments using metamitron and Accede.
- Researchers investigated crop vision technologies and worked with thinning prediction models including the fruit growth model and carbohydrate model.
- Analysis of crop load and fruit quality will be used to compare the treatments and suggest the accuracy of predictive modelling.