



Apple Crop Load Management: Enhancing Thinning Predictability and Tree Response Through Advancements in Modelling, New Precision Thinning Products and 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. The 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. experimental treatments were applied to apple trees last spring. Throughout the growing season measurements of apple fruit growth and development were taken. Fruit was harvested in September with further data analyses happening during the winter.

At Walsh Farms in Berwick, N.S. a trial site with Gala and Honeycrisp apples was set up at a grower's orchard with the site and research activities led by Perennia. Throughout the thinning season decision support systems, RIMPro and BreviSmart, were monitored for accuracy. Thinning treatments were applied to full trees at the target fruit sizes. Fruit load of blossom clusters and the final number of fruits per cluster following natural and treatment-induced fruit drop were recorded. The research team also reported the time it took to hand-thin apples to the desired crop load.

To date it was found that the decision-support tool RIMPro's model predictions were only as reliable as forecasted. While the predictions fluctuated the models did give insights into the thinning process. The chemical thinners had notable activity in trials and throughout the industry and further evaluation will be completed this winter.



TOP: Initial counts of apple blossoms on May 15, 2024 at Walsh Farms in Berwick, N.S.

ABOVE: Apple blossom on trees at Walsh Farms in Berwick, N.S.

Photos: Michelle Cortens





Initial fruit sets on apple trees at Walsh Farms in Berwick, N.S.

Photo: Michelle Cortens



Ambrosia flowers at bloom on an apple tree at the Ontario Crops Research Centre in Simcoe, Ont. Photo: John A. Cline

KEY TAKEAWAYS:

- The response of apple trees to experimental chemical thinners and thinning models is being evaluated.
- At the Ontario site, there was excellent bloom, heavy fruit set, and good growing conditions.
- At the Nova Scotia site, there was a good bloom and influence of chemical thinners. Model predictions were monitored and appeared to offer good insight but practical limitations were noted.

