Ontario Tree Fruit Innovation and Technology Roadmap

Mechanical Blossom Thinner

Evaluating New Technologies

	Feasibility and cost	Implement	Labour Reduced	Changes in production	Training for staff	Impact on risk of COVID-19 Transmission
Identified Technology	low, medium, high	easy, medium, challenging	% estimate	easy, medium, hard	none, medium, high	none, low, medium, high
Mechanical blossom thinner	low-medium	medium	35-40	medium	medium	high

Current Status - The mechanical blossom thinner removes flowers at blossom time. This replaced the labour-intensive process of hand thinning and reduces costs of production. Thinning trials were conducted in the spring of 2009 during bloom for both apples and peaches in Pennsylvania and Ontario. The blossom thinner is a single bar with 54 nylon strings that rotate at high speeds. As the spinning nylon strings make contact with the tree and blossoms, it is nonselective in removing a percentage of the blossoms. The amount removed is determined by the tractor speed and rotation speed of the nylon strings.

Feasibility of Implementing – Penn State Co-operative Extension trials indicated that this equipment could do 13-14 acres per day at the low tractor speed of 1-2 mph. It saves 35-40% of thinning costs and improves fruit size earlier in the season. Approximately 40 to 70% of blossoms were removed for peaches at bloom time using the mechanical blossom thinner. The cost to implement is low to medium and could be a 1 to 2-year payback if enough acres could be thinned in the spring. Implementing has been slow and could be accelerated if orchards were trained to a spindle type system with a thin wall of fruit. Many growers are reluctant to use a mechanical blossom thinning; especially apple growers concerned about damage done to the spurs which could lead to prime infection conditions for the disease Fire Blight. Tender fruit growers in Ontario are hesitant to remove 50% or more of the blossoms in case there is a late spring frost. There is a short window to use the blossom thinner, since peach trees must be pruned before the grower uses the mechanical blossom thinner. Peach growers prune late compared to other crops to prevent the spread of peach canker.

Impact on Labour – It is estimated that growers using mechanical blossom thinning technology save 35-40% in labour versus hand thinning the crop.

COVID-19 Mitigation Risk – The benefits of mechanical thinning help to reduce labour for thinning fruit, as such this technology helps lower the risk of COVID-19 exposure and transmission for growing operations. With less fruit on the trees due to the blossom thinner, less workers are needed to do the follow-up thinning.

Need for Change, Research and Training – Implementation would require training and a specialized set of skills for the operator of this equipment. There may be differences for tractor speed and rotation RPM for the thinner between crops and cultivars.