

Ontario Tree Fruit Innovation and Technology Roadmap

Vacuum Harvesting

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
Vacuum harvesting	unknown	challenging	30-50+	medium	medium	high

Current Status – Currently, there are research trials and pilots of vacuum harvesting technologies in apple producing areas including Washington, U.S., and New Zealand. One type of vacuum harvest technology uses a self-propelled platform which has two individually operated hydraulic workstations with controls giving pickers on the platform maximum tree access and allowing the entire tops of trees to be picked from one side in plantings from 8’ to 14’ high. With the vacuum system, apples are placed into a small, lightweight bucket-style inlet with no apple-to-apple contact all the way into the bin. This technology is more like a harvest-assist machine and allows for the elimination of ladders and bags for harvest. Some vacuum systems can bolt on to an existing harvester and can go anywhere growers are using platforms currently.

Feasibility of Implementing – Thinner, more uniform, fruiting walls lend themselves more easily to vacuum harvesting technologies. Some providers are offering this technology as a custom harvest solution model with a cost-per-bin type fee. This solution would provide the machine, support, operator, and maintenance services. Quality standards would be a significant consideration when considering the feasibility of implementing this technology.

Impact on Labour – This harvest-assist technology means that pickers only need to pick. It would increase labour productivity and efficiencies by saving time during the actual harvest process by reducing the need for pickers to climb ladders, walk back and forth, and eliminates the time it takes for pickers to turn around to empty harvest bags into bins. The goal of this technology is to make fruit harvesting faster while achieving the same or better-quality metrics as those achieved through hand harvest.

COVID-19 Mitigation Risk – One of the potential benefits of vacuum harvest technologies is to increase labour productivity and efficiencies and overall reduce labour requirements for harvest,

as such this technology would help lower the risk of COVID-19 exposure and transmission for growing operations.

Need for Change, Research and Training – The need for operational/process changes, research and training for growing operations would likely be substantial to implement vacuum harvesting technologies. Capacity for speed of harvest and monitoring the quality of fruit harvested may be challenging.

With some vacuum harvesting solutions being developed as “pick and play” technology to be attached to pre-existing platforms this technology would not be as challenging to implement in comparison to full robotic harvesting. Some providers are offering this technology as a custom harvest solution model and would provide the machine, support, operator, and maintenance services.