Propagation trays play vital role in producing healthy trees, study finds

January 7, 2020, TORONTO – Growers who are looking to give trees their best chance need to return to their roots, according to new findings from Vineland Research and Innovation Centre (Vineland). Healthy trees depend on healthy roots and an ongoing study shows propagation trays can have a permanent impact on root development and growth.

The five-year study, led by Vineland's Dr. Darby McGrath, analyzes the health and growth of trees propagated in five different trays, including the RootSmart™ system, and planted in the field in 2017. Findings from a recent dig of the two-year-old trees show root defects occurring in propagation trays were persistent and resulted in permanent defects including circling roots and root ball development.

"Our analysis showed that, for better or worse, propagation trays play a big part in healthy root development," explained Dr. McGrath. "In most cases, we found roots had been obstructed and misdirected by the walls of the tray during propagation, resulting in lasting defects that can impact tree health and mortality over the long term. However, for growers who are eager to improve root development, we were thrilled to find trees propagated using RootSmart consistently produced more optimal root systems."

Dr. McGrath's work builds on a growing body of evidence that is helping growers understand what an ideal nursery-produced root system should look like. "Our findings support the research of others in our field, who suggest that the goal of root management in nursery is to produce straight roots extending outwards radially from the trunk without misdirection downwards, upwards or around the container."

Analysis shows the RootSmart propagation system consistently produces many of these desirable traits.

- Black Cherry and Eastern Cottonwood trees had more horizontal structural roots
- The horizontal structural roots of Eastern Cottonwood were on average one and a half to two times better radially distributed
- Black Cherry and Eastern Cottonwood trees had fewer total root defects detected in the field
- Black Cherry and Eastern Cottonwood trees had fewer downward deflected structural roots

Designed by Vineland in partnership with A.M.A. Horticulture Inc., the RootSmart propagation system features a unique wall-less, bottom-less design to help prevent root defects during propagation. After four years of research and development, including ongoing grower input, the RootSmart propagation tray was introduced to the market in 2018.

"We started trialing the RootSmart system in 2018 and have seen a big difference in root quality and overall tree health," said Joe Klassen, Manager of Purple Springs Nursery (PSN), an innovative, science-based tree grower in British Columbia, Canada, that focuses on growing trees that thrive in an urban setting. "This propagation system sets a new high watermark for our industry and Purple Springs is proud to be an early promoter of this innovation."

Vineland's findings underscore the importance of propagation trays for both propagators and finishing growers, who invest years in producing trees and stake their business on quality.

"As a finishing grower, you want to make sure the trees you plant are worth the upfront investment and will last their full life cycle," said Rick Bradt, Managing Director of A.M.A. Horticulture Inc. "You can take all the right steps to manage the stock you receive but you can't go back and fix the roots. It's important to work with your propagator to ensure root quality from the start, when it really counts."

"If roots are the foundation of your business, take time to inspect them," says Dr. McGrath. "If roots are descending or beginning to circle, these are telltale signs of deflections. Although different species have different root topologies, what you want to see in finished propagation liners is evenly spaced branching roots with tips facing outward."

Dr. McGrath and her research team have assembled a quick guide to help get started with the RootSmart propagation system. To learn more, visit rootsmart.com.

About Vineland

With a highly-skilled research team, oversight from an independent Board of Directors, engagement from an international Science Advisory Council and collaboration with 86 global partners including a Stakeholder Advisory Council, Vineland's goal is to enhance Canadian growers' commercial success through results-oriented innovation. We are an independent, not-for-profit organization funded in part by the Canadian Agricultural Partnership, a federal-provincial-territorial initiative. For the latest on our research and innovation, visit www.vinelandresearch.com.

About A.M.A.

A.M.A. Horticulture Inc. is a dynamic, solutions-focused supplier that has been serving the horticulture industry since 1982. Our team of industry experts understands emerging trends, opportunities and pain points. We work alongside our customers to deliver innovative, custom solutions and cutting-edge products that improve growth and profitability. Visit www.amahort.com to discover how we can deliver solutions for your success today.