

ONTARIO APPLE GROWERS' TOUR

Vineland's quest for the next Canadian apple starts with 20,000 unique trees



Daryl Somers, (L) research director, applied genomics, Vineland Research and Innovation Centre, is greeted by Charles Stevens, chair, Ontario Apple Growers (OAG) after a presentation on the apple breeding program. Part of the research funding comes from OAG. More than 200 growers were on the July 5 apple tour. Photos by Glenn Lowson.

KAREN DAVIDSON

Vineland Station, Ontario – For the most part, apple breeding is left to other powerhouse countries but Canada's vastly different apple growing regions demand a cold-hardy variety. It's going to take years to develop a home-grown variety that's not only practical in high-density production systems and storage, but offers a distinctive taste for consumers.

That's exactly what Daryl Somers is searching for at the Vineland Research and Innovation Centre (Vineland). Since 2011, there's been thoughtful progress with 20,000 trees now budded on 13 acres. At the July 5 Ontario Apple Growers' tour, the research director in applied genomics was quick to point out that growers will notice wide diversity in the blocks – not the consistency they are used to in their home blocks planted to a handful of varieties. Each tree is unique.

"It's going to take 10 years just to get a good look at the trees," says Somers. "Last year was a milestone in examining 300 of the first fruiting trees. What enormous differences! We tasted everything from disgusting bitter fruit to beautiful, juicy, crisp, white-fleshed fruit. Some even had a licorice taste."

After five years of research, only one per cent made the first cut. These precious three trees were chosen because of their tasting notes in the Just-About-Right (JAR) zone of sweetness, acidity and texture. One of Vineland's strengths is its consumer sensory panel. Amy

Blake explained how most consumers prefer a sweet-tasting apple while a small percentage enjoy a greener-tasting apple. The breeding goal is not necessarily to breed an apple that tastes the same as those already in the market.

What growers viewed this summer was the test one orchard consisting of 20,000 individual and different apple trees. They also saw the first three selections, still in pots about three feet tall and replicated into eight clones of each. DNA markers are used to select and enrich the test one orchard with trees that have the best potential for longer storage, the right sugar-acid balance and firmness. DNA markers are also used to select for scab resistance but the real disease-resistance testing will come in the test two orchard.

Breeding is a risky business. Researchers can go faster in the early years, however the risk is in developing a tree with fruit that tastes superb but may have fruit with poor storability.

"There's a lot of biology that we still don't understand," admits Somers.

At this stage, Vineland will be reaching out to Agriculture and Agri-Food Canada colleagues in Kentville, Nova Scotia and Summerland, British Columbia where post-harvest analysis can take place. The seeds are being sown for a national apple network, a mix of entities that can strengthen the research program. When the Vineland apple breeding program is more mature and the pipeline is full of potential new varieties, there should never be a gap where there isn't

a new variety to assess.

Parallel to Somers' program, Vineland's technology scout Michael Kauzlaric is searching the world for apple varieties that might thrive here in Canada. To date, he's discovered more than 50 varieties from the U.S., Europe, New Zealand, Scandinavia and Australia that might have a chance in terms of flavour, yield and disease tolerance. These varieties are planted in Vineland's test block and additional trial sites across Canada are being established. The idea is to find if there's a buy-in from the industry and a niche market for any of these varieties in the current Canadian mix.

"A lot of variety owners have never tested in Canada so they're excited to move forward on that path with Vineland," says Kauzlaric. "The reward could be great because within five years, an apple could be commercially launched, and within eight years, it could get onto the Canadian market."

Cathy McKay, OAG chair of the research committee and a former director of the Summerland Varieties Corporation, is close to the ground on these recent developments. "There is no instant gratification," says McKay. "We're all looking for a winner, but it takes patience."

OAG has been involved with partial funding of the apple breeding program, enabling Vineland to leverage more government funding.

"I'm quite impressed with the program," says McKay, noting that it was started from scratch. "There are a lot of skills (at Vineland)."

Improving organic matter in apple orchard soils

DEANNA NEMETH

Applying local composts and mulches is a good soil management strategy for Ontario apple orchards. Low cost composts could include composted manures or municipal composted greenbin or yard waste. Mulches could include green manures.

In early July, the Ontario Apple Growers toured Art Moyer's apple orchard in Grimsby, atop the Niagara Escarpment that his family has farmed since 1947. Moyer understands the need to replenish the soil, and uses a combination of hay and legume green manure crops and composted poultry manure.

On Moyer's farm, Deanna Nemeth, also presented on how to improve orchard soils with soil amendments.

What does a safe application rate look like?

If a manure analysis is not available, a safe application rate for mature apple trees is to apply no more than seven tonnes / ha of poultry manure, 40 tonnes / ha of cattle manure or 35 tonnes / ha of hog manure.

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