

APPLIED GENOMICS

Fall in love with apples

NATHALIE DREIFELDS

With fall around the corner, the apple season is fast approaching. Combining traditional breeding techniques, genetics and sensory science, a team at Vineland Research and Innovation Centre (Vineland) is developing apple varieties enthusiasts will fall in love with.

As part of the research project, which started in 2011 in partnership with the Ontario Apple Growers, the Vineland team has been sequencing the DNA of 70 varieties of high quality apples from Vineland's Apple Heritage Orchard and modern commercial lines. "Based on our apple sensory profile of attributes such as taste, texture and flavour, we are able to map the human sensory perception and taste experience for apples and identify genetic markers for specific fruit quality consumers prefer," said Dr. Daryl Somers, Vineland's Research Director, Applied Genomics. "These markers are used to accelerate Vineland's breeding program by focusing on varieties that meet consumers' preferences."

There are currently more than 4,000 apple trees planted for evaluation at Vineland's research farm. These trees are the progeny of crosses based on apple quality and plant adaptation. An additional 9,000 apple seedlings planted earlier, will be budded onto root stock this month. They were selected, using DNA



fingerprinting, for sugar/acid balance, firmness and better storage potential. The goal of the project is to plant a total of 25,000 trees for evaluation over the next few years.

In a consumer study, Vineland researchers also investigated consumer preference using 20 of the most distinct apple varieties within the original pool of 70. "We determined 89 per cent of consumers prefer fresh red apple flavour while 11 per cent of consumers are more interested in fresh green apple flavour," said Dr. Amy Bowen, Research Program Leader, Consumer Insights.

Vineland's Heritage Apple Orchard,



Daryl Somers, (L) Vineland's research director for applied genomics, explains progress in breeding new apples with sensory characteristics that consumers will love. **CEO Jim Brandle (R)** has long advocated for agronomic research to be broadened to consumer preference research as a field-to-table strategy for introducing new fruits and vegetables. Photo courtesy of Trevor Eggleton, Canadian Horticultural Council.

established in 1967, offers 100 unique apple varieties from the past (as early as the 1500s) to the present originating from North America, Europe, Asia and Oceania. The apple varieties show a strong level of diversity in characteristics, such as astringency, fruit size and flavour, perfect

for incorporating into a robust research breeding program.

Nathalie Dreifelds is communications and public relations advisor, Vineland Research and Innovation Centre.



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