



vineland
RESEARCH & INNOVATION CENTRE

Spring 2015

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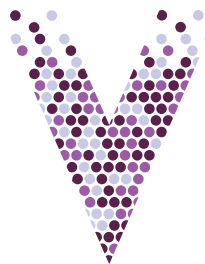
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World Crops Designed for the Ontario Market

Dr. Viliam Zvalo is Vineland's new Research Scientist, Vegetable Production. He brings a wealth of experience in horticulture from both Ontario and Nova Scotia with a focus on alternative local crops. We sat down with Viliam to learn more about his strategy for Vineland's World Crops program.

Q. Tell us about yourself

I was born and raised in Czechoslovakia. Horticulture being my passion, it made sense for me to attend the Slovak University of Agriculture in Nitra, Slovakia and earn my PhD in Agronomy/Crop Science.

In 1997, I moved to Canada and worked for Monsanto Canada in Ontario. I later moved to Perennia in Nova Scotia and became their horticulture specialist. During my stay at Perennia, I received my Executive MBA from Saint Mary's University in Halifax and developed Nova Scotia's sweet potato and oilseed pumpkin industries. I also worked to grow the export market for kale, collard and mustard greens to the U.S.A.

Since last fall, my focus at Vineland has been to investigate field and greenhouse production of world crops and other new crop opportunities for Ontario growers.

Q. What is the future direction of the program?

There has been much work done at Vineland on the World Crops program. My strategy is to develop more efficient production methods for okra and Chinese/Indian eggplant. I plan on evaluating hybrid okra varieties to identify those that perform well in Ontario and to refine agronomic practices such as plant spacing and fertility to support growers. Concurrently, we will run production trials on grafted eggplant, using rootstocks that are resistant to soil pathogens. We will also test varieties of Chinese/Indian eggplant from around the world for production in hydroponic greenhouses.

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Dr. Viliam Zvalo, Research Scientist, Vegetable Production.



Vineland *Connecting for Success* at Ontario Fruit and Vegetable Convention

Vineland's researchers presented their latest findings at the 2015 Ontario Fruit and Vegetable Convention. Vineland creates opportunities by offering growers innovative solutions, from sweet potatoes developed in Ontario for the Canadian market to tender fruits favoured by consumers.

- Dr. Valerio Primomo - Home Sweet Home: Developing Sweet Potato Varieties for Ontario
- Dr. Viliam Zvalo - World Crops: Where Are We Growing From Here
- Michael Kauzlaric - Your Short and Long-Term Tender Fruit Future
- Kimberley Cathline - Long Live Sovereign Coronation: Extending Postharvest Storability

- Travis Banks - Creating Disease Resistance and Valuable Traits in Greenhouse Vegetables
- Dr. Amy Bowen - Consumer Science Targets the Sweet Spot for Apples

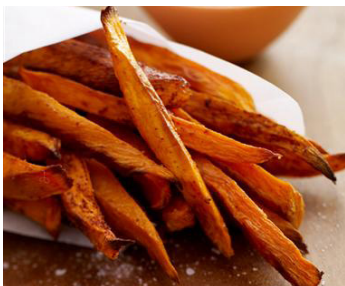
For research updates, visit vinelandresearch.com



Vineland at the Ontario Fruit and Vegetable Convention.



Sweet Potato Fries, Anyone?



Vineland's sweet potato breeding program is moving forward quickly. Last summer, farm trials in Ontario and the Maritimes took place and this winter, sweet potato fries will be

evaluated through sensory and consumer panels. In a partnership with Pride Pak, a processor of fresh vegetables and Niagara College's Research & Innovation Division, five commercial varieties and 14 varieties bred at Vineland will be processed for testing.

Vineland is developing varieties better-suited for the processing and fresh market sectors while ensuring they are still appealing to consumers.

This latest study will help create a preference map to define sensory attributes that drive consumers' liking for sweet potato fries. Consumer preference results will be integrated with agronomic performance and used to guide the sweet potato breeding program.

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Building Vitality of Greenhouse Vegetable Market

Vineland researchers are using bioinformatics and specialized crop populations, containing changes mimicking naturally occurring variances, to introduce valuable traits in horticultural crops tailored to regional growth conditions and with broader consumer appeal.

In collaboration with researchers at the University of Toronto and Agriculture and Agri-Food Canada, Vineland scientists are identifying greenhouse tomato and pepper lines that have increased disease tolerance.

University of Toronto researchers recently identified a gene that when turned off, primes the plant's natural immune system to enhance resistance to a broad range of pathogens. Vineland scientists are searching through their variant tomato and pepper populations to identify plants that have turned off their copy of that gene in order to create new resistance.

In a similar research project, Agriculture and Agri-Food Canada scientists identified botrytis resistance in a variant population of a model research plant. The scientists found which change occurred to create this resistance and now Vineland is using that gene information to look in their tomato and pepper variant populations to find botrytis resistance. In addition to their work on developing new disease tolerance for greenhouse vegetables, Vineland is also working towards developing tomatoes with an extended harvest season and identifying vegetables with attributes desired by consumers.

In nature, each plant seed is created with changes to its DNA resulting, in some cases, in a plant with brand new characteristics. Utilizing 'induced variation', Vineland researchers are able to speed up this natural

process by growing plant populations with thousands of small changes to their DNA. They then identify plants, with new traits of interest, using high throughput DNA sequencing.

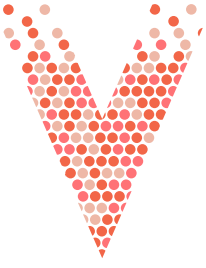
The induced variation technique has been in use since the 1920s and Vineland is working to improve it. As the genomes of more crops are sequenced, Vineland's induced traits can be put to use in other crop plants to benefit growers.

This research is funded through the Growing Forward 2 AgriInnovation Program, with contributions from Genome Canada, Ontario Greenhouse Vegetable Growers and the Ministry of Research and Innovation.

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What's Old is New Again!

Through licensing agreements with the University of Guelph and Agriculture and Agri-Food Canada, Vineland Research and Innovation Centre (Vineland) is now offering growers in-demand nectarine, apricot and plum varieties.

Many tender fruit varieties bred in Ontario decades ago are increasing in popularity. Although peaches are still favoured, nectarines, apricots and plums are seeing increasing consumer demand.

These fruits are also attractive for growers since their average net returns per ton are higher when compared to peaches.

"Although fresh market peaches grown in Ontario continue to be our number one seller in the soft fruit category, we have seen continued demand by Canadian retailers for alternative crops, including Ontario nectarines, plums and apricots," said Joe Dutchyn, manager at Niagara Orchard & Vineyard Corp.

"Our unique climate along with improved practices shared and developed with retail partners has

given Canadian consumers an eating experience that keeps them coming back each season for more of our flavourful treats," said Mr. Dutchyn.

"In order to maintain our competitiveness, our industry must continue its efforts in identifying new and improved cultivars developed or identified as the next new winner for our Ontario producers," said Mr. Dutchyn.

In collaboration with the Tender Fruit Evaluation Committee (TFEC), Vineland is evaluating Agriculture and Agri-Food Canada's peach, nectarine, apricot and pear trees as well as plums, nectarines and apricots from the University of Guelph's breeding program for superior varieties that meet consumer preferences.

In addition, varieties selected by TFEC are available through Vineland for on-farm testing.

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Blue plums - Vibrant.



Apricots - Harostar.