

# The Canadian Sweet Chestnut

-Newsletter of the Canadian Chestnut Council-

Issue # 66 - March 2017



<http://www.canadianchestnutcouncil.org>

---

---

**Council Mission** - to help restore the American Chestnut to the areas of Canada it once occupied.

## **Current Priorities**

- 1) Breeding resistance
- 2) Breaking Isolation / Establishing Gene Nods
- 3) DNA Analysis
- 4) Hypovirulence
- 5) Survey of existing Chestnuts in the wild

## **In this issue:**

- Dr. Alan Dale brings us up to date on the Breeding program
- Dr. Dragan Galic provides an overview of the Breaking Isolation / Gene Nod initiative
- Beth Fraser reports on the 2016 Annual general meeting held Oct. 15, 2016
- Ron Casier includes some excerpts from Chair's Fall 2016 message

## **Breeding Resistance program by Dr. Adam Dale**

In 2001, the Canadian Chestnut Council embarked on a program to breed blight resistant American chestnuts adapted to Ontario containing at least 90% American chestnut of Canadian origin within 20 years. With support from the Ontario Trillium Foundation, first phase (2001-2004) of the Canadian Chestnut Council program 1) obtained plants, seeds and pollen of American hybrids that are known to be moderately resistant to chestnut blight, 2) identified Canadian parents at diverse locations throughout the province, and 3) hybridized the selected Canadian parents with the American hybrids and started to plant trees from these hybridizations at two sites. Pollen of the three American trees used was given to us by Dr. Sandra Angnostakis of the Connecticut Experiment Station, and Mike Nemoroski and Dragan Galic travelled the Province to pollinate the Canadian trees in situ.

In the second phase (2004-2007) the hybrid chestnuts developed in the first phase were planted and maintained at two sites Also, within this program the Canadian Chestnut Council, hybridized existing Canadian parents to obtain trees that are Canadian in origin.

By 2007, the Canadian Chestnut Council had 767 trees originating from hybrids between Canadian trees and trees, partially resistant to chestnut blight, supplied by the Connecticut Agricultural Experiment Station. It also had 681 trees originating from hybrids of Canadian trees of unknown resistance/susceptibility to chestnut blight. These trees are housed at the Tim Horton Onondaga Farm, St George, Ontario and Riverbend Farms, Aylmer, Ontario.

From 2007 through 2013, we have been inoculating these trees with two strains of *Cryphonectria parasitica* (UG1128, less virulent, and UG546V, virulent) to estimate their resistance to the disease. Results have indicated that our two populations, one derived from pollen of resistant Connecticut trees and one derived from pollen of Canadian trees have reacted similarly, as have the trees from the two sites. This has been supported by grants from the Species at Risk Stewardship Fund. (Ontario Ministry of Natural Resources).

From the inoculations, we have been able to identify trees which would be suitable as parents. These were trees that had smaller lesions in both of two years, based on inoculations on branches over 15mm diam. Parents were selected at both Riverbend and Onondaga Farms (Dale and Galic, 2013). The trees selected originated from eleven Ontario mother-trees, and three of non-Ontario origin.

Each year from 2009 we have been hybridizing selected parents to produce seed for the second generation. These included crosses where both parents were of Canadian origin and others where both parents were hybrid trees. These trees are housed at the Tim Horton Onondaga Farm, St George, Ontario, Riverbend Farms, Aylmer, and Casier Farm, St. Thomas, Ontario and we have planted over 10,000 trees in the second generation. This last year, was the first time we successfully inoculated the trunks of about 250 trees. The initial results show that, as expected, there is a large range of resistance-susceptibility in the population.

In 2012, we surveyed our surviving trees for the weight of the nuts. We found nuts varied from 1.5-7 grams, a five-fold range with 1-6 nuts per burr. Again, the two populations were similar. This was supported by the Canadian Agricultural Adaptation Program of the Agricultural Adaptation Council.

In the next few years, we will complete the crosses of the selected first generation trees and inoculate as many of the second-generation trees as we can. So, hopefully, by 2021, we will have found some American chestnut trees with sufficient resistance to be able to move to the third generation. Then the challenge will be to repopulate the forests in Ontario.

### **Breaking Isolation / Establishing Gene Nods by Dr. Dragan Galic**

Goal - Maintain, Conserve and Enhance the Genetic Diversity of the American chestnut in its 'Original range'

The objective of the project was to break the sexual isolation of existing American chestnut trees and establish nodes of different American chestnut families. The American chestnut is a not self-compatible species: pollen from a tree cannot pollinate burs on the same tree. The breaking isolation plantings should allow for natural propagation of the isolated tree and enhance the genetic diversity of the species. This has been achieved by planting seven to ten grafted saplings from different American chestnut families within pollen dispersal distances from existing trees. We used grafted saplings, because grafts set catkins in the following year, some even in the grafting year. To date, we have

planted 261 grafted saplings for the purpose of breaking isolation at 31 locations in six counties. As the source of terminal buds for the grafted trees we used 30 different American chestnut families. To preserve the American chestnut genome ex situ we have established three nodes with 26 different American chestnut families. The three pod locations are the Catfish Creek C A, Upper Thames River C. A. and the Thames Talbot Land Trust. All trees used for this project will be DNA tested to ascertain if they are pure American chestnut.

**The Annual General Meeting - October 15th, 2016 by Beth Fraser**

There was a good crowd with lots of delicious snacks and a big variety of door prizes including a table of handmade wooden wreaths, canoe paddles and framed wood burnings made out of American Chestnut (of course). A big thanks to John, Bradley and Christine for creating.....



Chestnut Informational Display

Handmade American Chestnut door prizes.

In addition to updates on existing priorities provided by our contracted researchers, attendees heard from guest speakers Dr. Danijela Puric-Mladenovic ( MNRF, Science and Research Branch, Natural Heritage Information Centre - Assistant Professor Faculty of Forestry, University of Toronto) spoke on the historical presence of the American Chestnut in the Ontario Landscape  
Garth Pottruff, (Owner Grand River Rafting Company – Forester, Outdoor Educator, Team Builder, Raconteur) provided a history of the First Nations in the Grand River Valley.

**Excerpts from the Chair's Message from Autumn 2016**

The council has had a very busy summer with our American Chestnuts....Hypovirulence, which the council had investigated 25 years ago, has been reopened as a renewed possibility to help combat the blight. Three possible hypovirulent chestnuts were discovered in the 2014 survey and are under investigation. The Breaking Isolation project is moving steadily forward with 15 new sites. Providing cross pollination partners for our isolated chestnuts will preserve the genome of the native trees and increase the biodiversity. Coupled with this project is the expansion of our Nut Production and Gene Pods of native trees with three conservation authorities.....

Sincerely Yours in Restoration of the American Chestnut – Ron Casier

**Want more information:**

Website - [www.canadianchestnutcouncil.org](http://www.canadianchestnutcouncil.org)

Contact - Mr. Ron Casier - 519-631-5279 <[ron@amtelcom.net](mailto:ron@amtelcom.net)>

Council Directors – Chuck Beach, Ron Casier, Tim Casson, Gord Chinnick, Adam Dale, Doug Fagan, Beth Fraser, Stan Furman, Dragan Galic, Kathryn Harrison, John Hill, Adam Koziol, Ali Rahemi,, Christine Vey. Rylan Zimny

**Save the Date !!!!!!!**

**2017 Annual General Meeting - October 21st, 2017.**

**CCC Leaf Recipients January 1, 2016 - January 1, 2017**

<b>White Leaf (\$30 - \$99)</b>	<b>Green Leaf (\$100 -\$249)</b>	<b>Bronze Leaf (\$250 - \$499)</b>
Neil Castagna Bernie Vandebelt Alison Gibson Thomas Lovie John Drain David Aislie Nancy & Alex McPherson Brenda Dolling Anthony & Susan Careless Eunice Simpson Keith & Monica Johnston Sandra Short Robin Cunningham John Hill Tom Welacky Adam Dale Doug Fagan Jocelyn Clarke Cherish Elwell	John Hotchkiss David Catt John McManiman Peter Rice Gerald Young Chuck Beach Peter Smith Charles Hooker Brenda & Bruce Elliot Bryon Bishop Norfolk Field Naturalists Christian Schroeder Dragan Galic	Dorothy McLeod Ron Casier Terry & Candace Anderson  <b>Silver Leaf (\$500 - \$999)</b>  Kerry Margetts William Barnett Peter Bergen  <b>Gold Leaf (\$ 1000 + )</b>  Southwest Woodlot Assoc. William G. Lord Trustee