

The Canadian Sweet Chestnut

-Newsletter of the Canadian Chestnut Council-

Issue # 69 – December 2017



<http://www.canadianchestnutcouncil.ca>

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 Nodes
- 3) DNA Analysis
- 4) Survey of existing Chestnuts in the wild

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- Highlights - The Annual General Meeting – Saturday, Oct. 21st, 2017
(Chair's Remarks. Guest speakers - Dr. William McDonald, Garth Potruff,, Priority Updates)
- Summary of Breeding Program Review – Tom Welacky, Chair, CCC Science Committee

Highlights - Annual General Meeting – Saturday, Oct. 21st, 2017

Chair's Remarks

A warm welcome to members, guests and visitors to the 29th AGM of the Canadian Chestnut Council. Another eventful year for the CCC has passed with some wins and losses.

Gil Henderson, a tremendous supporter and benefactor of the council passed in his 91st year. Gil was responsible for providing the first land for our current breeding program which has grown into over 12000 trees on site. His legacy continues today with the wonderful and generous co-operation of the Tim Horton's Onondaga Farms. Gil will be sadly missed by the Canadian Chestnut Council
Dr. Adam Dale, who has been the lead scientist on our blight resistance breeding program for 16 years has stepped down as the council's Principal Investigator. We greatly appreciate Adam's contribution and service to the council in his role as Principal Investigator and acknowledge his dedication to the American Chestnut recovery. Adam remains with the council as a director.

The council greatly appreciates Dr. Brian Husband for stepping forward as the Interim Principal Investigator for the current year until a new permanent Principal Investigator can be arranged. At this junction in the breeding program, the Science Sub-committee called for a review of the program with

the support of the board. This review will summarize the breeding program to see what we have accomplished, where we are and what we need to do to go forward. It promises to be a useful tool for selecting an appropriate new Principal Investigator and providing the successful candidate a good base and understanding of the task ahead. Dr. Duane Falk has been the lead on compiling the review in co-operation with the Science Sub-committee.

Our outreach program to the public has continued with participation in Carolinian Canada Coalition's "Go Wild, Grow Wild" Expo in London; American Chestnut presentations to various organization such as the Norfolk Woodlot Association in Simcoe; and most recently at the 10th annual Carolinian Forest Festival at Springwater where 2000 grade 6 & 7 students participated in the "Chestnut or Chest Not" activity. This involve the students performing four soil tests to determine the suitability of the site for an American Chestnut out planting.

It has also been an eventful year in the greenhouses and fields for the council. Today you will hear firsthand reports on the various on-going projects from our dedicated lead scientists and researchers. In Addition, Dr. William MacDonald, Plant Pathologist at West Virginia University will share his knowledge and expertise on Hypovirulence in the American Chestnut.

It promises to be a great program and I hope you enjoy and learn from the presentations and are as enthusiastic about the afternoon as I am.

Ron Casier, Chair

Dr. William McDonald – Professor of plant pathology at West Virginia University. Dr. McDonald provided an update of his work utilizing hypovirulence to combat chestnut blight. He noted that the fungus has 6 specific genes that must be compatible for the virus to be effective.

Garth Pottruff – owner Grand River Rafting Company – spoke about the evolution of the Grand River Rafting Company and the programs it offers and the ones it hopes to offer in the future

<https://www.grandriverrafting.ca/>



Dr. McDonald (l) and Gord Pottruff (r) presented with chestnut paddles by John Hill

Christie Lovat – McGill University – provided overview of her laboratory micropropagation of American Chestnuts – more on this in the next issue of the CCC Newsletter.

Updates on Current CCC Priorities were provided by Tom Welacky and Dr. Dragan Galic

Review of Breeding Program, Science Committee (Tom Welacky)

Preamble - With Dr. Adam Dale stepping down as the Chief investigator of the Breeding for Resistance Program, the Board of Directors felt it was timely to commission a review of the Program to better inform the interim and future chief investigator of our results to date and suggestion for the future. Dr. Duane Falk was selected to undertake this review. In the following report, Tom Welacky, our Science Committee Chair, provides an update on the Science Committee and a summary of Dr. Falk's report.

Update (Tom Welacky, Chair, Canadian Chestnut Council Science Committee)

The members of the science subcommittee have been meeting on a regular basis, usually in April and again in December, to review activities of the CCC breeding and field projects as well as new projects. Our main purpose is to contribute to the reviews and evaluation of the CCC science projects.

2017 involved establishing a Breeding Program review for Chestnut Blight Resistance by writing up an outline of the objectives and expectations and procuring outside reviewers to provide independent input on the breeding program since the last review of 2002-2007. Dr. Duane Falk, retired Cereals Breeder, volunteered to lead the Breeder program review and the agreement was finalized and contracted at the April meeting.

In December, the committee reviewed the final Breeder Program report by Dr. Falk. The final Breeder Review report by Dr. Falk was accepted by the Science committee. The Breeding Program report was very comprehensive and detailed in addressing the 6 objectives and related questions that were put forward by the committee to identify breeding program progress and results obtained since the last review. Dr. Falk provided information on each of the objectives and made recommendations based on his working knowledge of breeding methods.

The committee began discussion of the individual recommendations. Due to limited time, the committee was able to address only a few items related to Dr. Falk's review.

The previous 2009 review reported that the recurrent selection breeding method proposed by Adam Dale at the time was the best method to capture genes that might have resistant genes to chestnut blight using the proposed tree branch inoculation method. The major scientific theory identified in 2009 report was the possible presence of either dominant resistant genes or recessive resistant genes in the American Chestnut.

In his report, Dr. Faulk points out that from the breeding progress to date, in both the CCC chestnut breeding program and the American Chestnut Foundation breeding program, there are no clear detectable evidence of dominant resistant genes and as a result only a random grouping of minor

resistant genes provided a higher level of tolerance or less susceptibility. As a result, trees that are less susceptible to the blight will have few or no recessive genes and only trees with an adequate number of recessive genes would provide some physical (phonological) indication of less susceptibility. Based on the difference between assertions concerning the presence of dominate vs recessive gene theories in 2009 compared to the present breeding program review, the committee focused on Dr. Falk's recommendations. Dr. Falk indicated that we need to pre-screen material at an early tree growth stage using more sensitive and efficient screening to identify crosses with resistant genes that may have been missed due to the bark core inoculation screening with strains of virulent blight. Duane pointed out that our present disease assessment methods may be too aggressive resulting in not being able to detect trees with less resistant genes. Duane recommended the early disease assessment method(s) as a tool to pre-screen trees that can be identified for the presence of resistant genes thus reducing the number of susceptible trees in the nurseries for future field testing. Our most recent meeting reviewed past year inoculation results focusing on lesion development of F1 and F2 trees. The general consensus was that a considerable number of trees died after inoculation as expected in the F2 crosses, while a large percentage survived with little lesion growth and some lesions decreasing in size. It was agreed that repeated monitoring of F2 lesions was required in 2018. All agreed that the committee should meet again in mid to late January to continue the Breeder report review. Consensus was to ask Greg Boland and Terry Anderson to provide reviews on early pre-screen methods for chestnut blight for pre-screening trees. In addition, Dragan Galic and Adam Dale were asked to provide a short list of the least susceptible crosses from the F2 and F1 generations from the past, with detailed data analysis describing each measurement parameter.

Annual General Meeting – Oct. 20, 2018

*mark your calendar

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