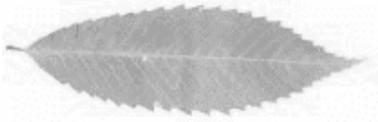


# Canadian Chestnut Council (CCC)

...on the Chestnut Trail



NEWSLETTER # 39

October 2005

<http://www.uoguelph.ca/~chestnut>

In this issue: - Recipes...Annual General Meeting...Historical Review...Meet Your Directors...and more!

## Autumn Chestnut Recipes

Try these recipes for American chestnuts; great for the fall season!

### Chestnut Ice Cream

Custard:

1 cup roasted, shelled and skinned chestnuts  
3 cups whole milk  
1-1/3 cups heavy cream  
6 large egg yolks  
1-1/2 cups packed dark brown sugar  
1/4 teaspoon salt  
1 four-inch strip of orange peel, grated  
1 teaspoon vanilla

Finely chop chestnuts, cook with 1-1/4 cups milk at bare simmer in large heavy saucepan, uncovered, stirring occasionally, 15 minutes. Puree in blender till smooth.

Bring cream and remaining 1-3/4 cups milk to simmer in heavy saucepan and remove from heat.

Beat together yolks and brown sugar in large bowl with mixer at high speed, till thick and pale and mixture forms a ribbon when beaters are lifted.

Whisk 1/3 of hot cream mixture into yolk mixture; then whisk yolk mixture into remaining cream mixture.

Whisk in chestnut puree and salt, and add orange peel. Cook over moderately low heat, stirring constantly, to 77 degrees C; do not boil.

Immediately pour custard through a fine sieve into clean metal bowl; stir in vanilla. Set bowl in larger bowl of ice and cold water; cool custard, stirring occasionally. Chill, surface covered with waxed paper, till cold (3 hours or more).

Freeze custard in ice cream maker; then transfer to an airtight container and put in freezer to harden.

Sauce:

1 cup heavy cream  
6 ounces (1 cup) fine quality bittersweet (not unsweetened) chocolate, finely chopped  
2 tablespoons unsalted butter  
3-4 tablespoons Grand Marnier

heat; remove from heat.

Add chocolate and butter, whisking till smooth.

Whisk in Grand Marnier.

Serve ice cream with sauce. Makes about 3 liters.

### Chestnut Fennel Soup

2 cups roasted, shelled and skinned chestnuts  
1 shallot, chopped  
2 leeks – white and pale green parts only – chopped  
3/4 stick (6 tablespoons) unsalted butter  
2 tablespoons dry white wine  
1/2 fennel bulb (aka anise), stalks and core discarded, bulb coarsely chopped  
1 cup chicken broth  
2-1/2 cups water  
1/4 cup half-and-half

Coarsely chop chestnuts; reserve 1/3 cup for garnish.

Cook shallot and leeks in 2 tablespoons butter in 5-quart heavy pot over moderate heat, stirring till softened. Add wine; simmer till almost all liquid is evaporated, about 1 minute. Stir in fennel, broth, chestnuts (less garnish) and water; simmer, covered, 20 minutes.

Stir in half-and-half; cool mixture slightly.

Puree mixture in batches in a blender till smooth, transferring to a bowl. Return soup to pot and bring to simmer, thinning with water if desired. Season with salt and pepper.

While soup is re-heating, heat remaining 4 tablespoons butter in a 25-cm heavy skillet over moderately high heat till foam subsides. Sauté reserved chestnuts with salt and pepper to taste, stirring constantly till crisp and butter is browned (about 4 minutes).

Serve soup topped with chestnuts and drizzled with browned butter. Makes about 6 cups.

Bring cream to bare simmer in heavy saucepan over moderate

## Editorials

### The Canadian Chestnut Council

*The CCC is a scientific and charitable organization with the mission to restore the American chestnut. All its officers volunteer their services both in the field and at the desk. The CCC annual meeting, the web site and this Newsletter dispense information to generate support for saving and restoring this once-important forest tree.*

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We lost a 100-year-old sugar maple tree the end of September. A night wind threw down 1/2 of it across the gravel drive, denying egress as if to emphasize the tree's importance.

It is a terrible loss. The tree provided shade, a beautiful canopy, shelter for countless birds and some small animals, and a link for the farm to three centuries.

This tree was planted in the late 1890s, when the farmers on the road were persuaded to plant maples. The road is known as The Maples Road. The road junction and hamlet 2 km north is named The Maples. The trees even gave their name to a nearby school.

Physically, the tree must have been 25 meters tall and 90 cm in diameter. There are hundreds of maples along the road still, all old and about to fall. Although there will be several full cords of firewood from this one, we would much prefer the living tree.

Grandfather owned a mixed farm north of Trenton, Ontario. The house was heated exclusively by a wood stove that also cooked the meals and heated the water; firewood was a vital product of the woodlot. Elegantly framed and prominently displayed on the kitchen wall was a sketch that had been removed from a magazine; it showed a majestic elm standing proud of the forest and was entitled "The Lady of the Woods."

We have planted some 16,000 tree seedlings of about two dozen varieties on this small farm. Every tree that fails to survive – and there have been many – creates a sense of loss, whereas those that thrive warm the soul. This fondness for trees must be inherited – or is a love of trees born in us all?

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Recipes for American chestnuts are rare. We trust that some readers will try those on the front page and let us know what they think of them. Given enough interest, we will search out others.



## 18<sup>th</sup> Annual General Meeting is 5 November

The annual meeting of the Canadian Chestnut Council will be held Saturday, 5 November, at the Agricultural Centre near Woodstock, Ontario.

Members of the CCC, and their friends, are encouraged to attend. Members of the general public interested in the chestnut restoration program are welcome as well. Bring a box lunch, or partake of the free light refreshment provided.

Registration starts at 10:30 am. The general meeting will begin at 11:00 with a short business session, when the work of the CCC over the past year will be summarized and directors will be elected.

Several CCC directors are elected each year for a term of three years. Those persons seeking election or re-election will submit to a general vote during the meeting. Nominations are invited, either in advance by mail or from the floor during the meeting. If you are willing to attend about six meetings a year (usually at one of the planting sites) and engage in field work or other CCC activities, please seek nomination from an acquaintance and compete; we can use fresh ideas!

Guest speakers Dr. Bill MacDonald and Dr. Brian Husband will describe their work. Dr. MacDonald (Treasurer, the American Chestnut Foundation (TACF)) will report the researches undertaken by that organization. As chestnut blight research is in many respects more advanced in the USA than in Canada, this presentation should be educational.

Dr. Brian Husband from the University of Guelph, aided by graduate student John Gerrath, will describe their chestnut studies. They have been engaged in a chestnut tree survey in Ontario and related activities.

There will be a display of chestnut artifacts and photos of the planting sites. Extra copies of the Newsletter will be available. The Treasurer will be present to receive membership applications, renewals and donations. The meeting should adjourn by 4:30.

The meeting site, the Agricultural Research Centre, can be reached by driving to the northwest corner of Woodstock, then north on County Road 59 about a mile to near the junction with County Road 17. The entrance is south of the junction, on the east side of the road.

**Map of the Woodstock area, showing roads to the Research Centre.**

# Historical Review of the Chestnut Blight and Restoration Efforts

Chestnut blight, or chestnut bark disease, is caused by the fungus *Cryphonectria parasitica*, which was introduced into North America from the Orient. Blight was first observed in 1904, attacking chestnut trees in the Botanic Gardens of New York City.

The fungus enters wounds in the bark and spreads rapidly in the cambium, an actively growing layer of tissue just under the bark. When the cambium layer is killed all the way around a twig, branch, limb or trunk, it is called girdling. The infected area is often referred to as a canker, an unsightly blemish on the smooth bark of a young chestnut tree.

All attempts to control this devastating disease by chemical treatment or good hygiene (including burning trees around infected sites) were unsuccessful. Despite all human efforts the blight swept on, often spreading 35-50 miles per year.

By 1924, blight had entered southern Ontario, crossing the US/Canada border in the Niagara area. By 1926, the fungus had spread throughout the entire range of the American chestnut in eastern North America. All chestnut trees of any significant size were either dead or dying by 1950.

A major forest tree had been destroyed, and the species was considered virtually extinct. Only a few old people can recall the extent of its imminent doom.

Soon after recognition of the blight in 1904, US scientists suggested that the causal fungus had been introduced to North America, probably on nursery stock. As early as 1876, Japanese chestnut nursery stock had been imported into the USA. By 1900 a large number of Japanese chestnut seedlings had entered the US and were being distributed by nurseries.

In 1912 a Plant Quarantine Act was passed in the USA to reduce the chance of such a catastrophe happening again. Canada promulgated a similar law.

Justification of the Quarantine Act was provided when blight was found in native chestnuts in China (1913) and Japan (1915). The fungus was shown to be the same as that occurring in America.

It was later established that Japanese chestnut and some strains of Chinese chestnut had a good resistance to the fungus.

**All chestnut trees of any significant size were either dead or dying in Canada by 1950.**

The fungus was found to move throughout an

infected area in the form of spores carried by wind and rain. The spores also adhere to the feet, feathers, fur, etc of the many animals, birds and insects that make contact with the cankers. In addition, fungal spores are shot into the air in rainy weather and are a major source of infective material.

## A Blight Parasite Offers Hope

A Naturally occurring parasite in the form of a virus inside the causal fungus has given scientists hope for some degree of blight control. The virus reduces the capacity of the virulent fungus to cause disease: it slows the rate of fungal growth. A weakened strain of the fungus is referred to as a hypovirulent fungus.

In North America, treating cankers with hypovirulent fungal strains has not given a desirable degree of blight control equivalent to that obtained in Europe. However, using hypovirulence as a bio-control agent has prolonged the life of infected trees in Ontario and in parts of the USA. During the last 25 years much scientific research has centred around this potential method of blight control, and it continues today.

## Blight Resistance Breeding Programs

Resistance to blight occurs naturally in the Japanese chestnut and in certain strains of the Chinese chestnut. In the early years after the blight had shown its destructiveness, US plant breeders were convinced that breeding for resistance was a sound option for saving the chestnut. Early hybrids, however, had only moderate resistance to the blight. By 1950, for reasons that are not totally understood today, the breeding program was discontinued.

In the 1980s, the previous results were re-examined, and at the University of Minnesota it was deemed expedient to pursue a breeding program once again.

Today the American Chestnut Foundation (TACF) is well advanced in its blight resistance breeding program.

In 2001, the Canadian Chestnut Council decided to direct a major effort toward blight resistance breeding.

The pollen from two advanced breeding lines was obtained from the Connecticut Experiment Station, thanks to Dr Sandra Anagnostakis. Pollen from these moderately resistant lines was used to pollinate American chestnut "mother" trees in Ontario. Harvested hybrid nuts were planted (2002-4), and they have yielded more than 1,500 hybrid seedlings.

The seedlings were planted at two nursery sites

made available to the CCC for the purpose: Onondaga Farms (Tim Horton's Children's Foundation) near St George, Ontario, and Riverbend Farms at Calton (near Aylmer), Ontario.

A special CCC Newsletter, published in August, showed the work being carried out at the nursery sites by volunteers – both young and old - eager to help.

When it was established that at least two genes were responsible for blight resistance, a **backcross** breeding program was begun by TACF. This method was championed by the late eminent Charles Burnham of the University of Minnesota.

That approach incrementally increases the percentage of American chestnut genes in the hybrids. Simultaneously, while retaining the resistant genes, it reduces the number of undesirable characteristics inherited from the Asian chestnuts (parents, grandparents, etc). A final cross of the hybrid trees carrying moderate resistance (**intercrossing**) should yield some offspring that receive copies of both resistance genes from both parents. This should yield a final product with resistance equal to that of the Chinese or Japanese parents but with the stature of an American chestnut tree.

### **Why Blight Resistance Breeding Offers a Viable Means of Restoring the American Chestnut**

Newer achievements in Science build upon previous successes! Achievements in one field offer hope of a similar nature in another. So it is with breeding chestnut trees.

During the last century several agricultural crops were saved or their value to mankind was enhanced by applying genetic methods in plant breeding. The most renowned achievement in North America was the defeat of rust epidemics in cereals.

After the rediscovery of Gregor Mendel's laws of inheritance operating in plants, at the beginning of the 20<sup>th</sup> century, plant breeding advanced from an art to a science. Step by step, it was discovered that resistance to many diseases could be obtained by crossbreeding. Moreover, a giant step was taken when it was discovered that resistance to disease could be combined with other desirable characteristics.

About 1916, during World War I, wheat flour for bread-making was in very short supply. The rust fungus had taken its toll in the great plains of North America. Plant scientists had very few guidelines to lead them away from an approaching wheat disaster.

When the rust resistance of standard wheat varieties failed, it was not known whether rust resistance

existed in any other species. Remedial programs were hurriedly put into effect.

Fortunately, during the last 80 years much has been learned about how Mendelian genetics can be applied to produce desirable new cultivars. Wheat breeding solved the rust problem.

It has been known for more than 60 years that resistance to chestnut blight exists in the Orient. The challenge is to transfer that resistance from Asian chestnuts to a chestnut of the American tree's stature.

One of the hurdles in doing this is the time factor; time is money! In cereals, the fruiting stage enabling hybridization is reached in a few weeks. In chestnuts, it requires at least five to seven years. Research is under way to try to shorten this period.

It is too soon to predict how successful the blight resistance breeding program will be for chestnuts. At the moment it seems highly possible to return a hardwood tree like the chestnut of yore to our forests and woodlands. CD McKeen



**Murray Alward, Manager of Riverbend Farms, shows what can be done with hybrid American chestnuts. The tree on the right is 1-1/2 years old; the others were grown from nuts planted five months ago.**

## Another Large Chestnut Becomes Blight Victim

A large American chestnut tree in the Ancaster Conservation Area is dying from the blight.

The tree has been under observation for nearly 20 years. Three years ago its diameter at breast height (DBH) was 68 cm (27 inches). In March of last year a substantial branch fell from its upper crown and was found on the ground near the base of the tree. Such breakage has been found to be an early sign of blight infection in large trees.

This past August, the tree was revisited. There was no evidence of blight on the lower quarter of the trunk. Higher up the trunk and into the crown, however, many epicormic shoots (signs of blight) were seen and there were cankers within the crown.

The tree has reached a height of over 25 meters (80 feet), and has a diameter at breast height of just over 74 cm (29 inches). The lumber content of this tree is estimated at over 1,500 board feet. - CD McKeen

## Trees Have Many Uses

After decades of benign neglect, trees are beginning to be valued for at least part of their worth to humanity.

Trees embellish landscapes. Strategically located near a house, they lend character to the building. Artists have long recognized that a group of trees, or even a single tree, complete a landscape. Moreover, they often constitute the most attractive feature of a painting or photograph; they provide background.

### **CHESTNUT TREE USES:**

Doors and window frames

Dye                      Fence posts

Fence rails              Firewood

Food                      Furniture

Leather tanning

Summer cooling shade

Winter windbreak

...

In recent weeks and months, it has been interesting to read that energy corporations are offering landscaping tips to save money and the environment. Whether it be a few shade trees to bring relief from the intense rays of summer sun or tall windbreaks against cold winter blasts, Mother Nature can help us, we are told.

Coniferous (evergreen) trees offer their greatest value during winter months. Deciduous trees serve different purposes in winter and summer: they cut down on heat gain in dwellings from the summer sun, while loss of leaves in winter lets sunlight into the home to maximize solar warmth and light. These two features are often not assessed for their monetary values.

Mature trees are harvested for other uses. Lumber is still a basic component of the housing industry, a business that drives much of our economy today.

Among deciduous trees, the American chestnut held an important place because of its many uses. The tannins extracted from its bark were used to treat leather for the harness industry. Tannins also made the wood resistant to rot, giving it a use in fencing for posts and rails. The annual nut harvests, providing nutrition for humans and wildlife, was a cornucopia of the autumn season. Indoors, chestnut wood made beautiful furniture, trim, structural timbers, etc.

So the importance of the CCC's courageous efforts to restore the American chestnut can be readily justified. May each of us do what we can to support this effort!  
- CD McKeen

## Meet Your Directors

John Hill was born on a farm and became familiar with the work involved at an early age. His many chores included horse management, which – as with many other farm boys - grew into a love of the animals. He says that “Young boys and girls today – and Onondaga Farm campers - cannot imagine horses being used to do farm work such as plowing and cultivating fields.”

John was the farm manager for 30 years for Gil and Molly Henderson, who owned Onondaga Farms and five years ago deeded it to the Tim Horton Children’s Foundation. During the past five years he has been farm manager of the Tim Horton’s Onondaga Farms children’s camp.

John has a wide knowledge of farm operations. He is an excellent organizer and knows how to plan so that all farming operations are completed on time and efficiently.

This Director has also been an apiarist – bee-keeper – for many years. He understands the nature and importance of crop pollination by bees – a crucial aspect of controlled plant breeding. He applies technology to maintain a healthy and active apiary.

In his spare(!) time, John constructs wooden artefacts in his workshop. His American chestnut products are works of art, as those who have attended

the annual CCC meetings can attest. If anyone has unused chestnut lumber, John would like to hear from them.



The extensive CCC hybrid chestnut nursery located on Onondaga Farms is a source of pride to John, and he takes much pleasure in maintaining the trees and in teaching the camp children how to do so. He is an asset to our organization. CD McKeen

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## AMERICAN CHESTNUT SITE RECORD

*Castanea dentata*

The CCC wants to know where the chestnut trees are.

You can help by submitting any of the listed information you can provide.

Owner’s name, telephone, e-mail:

Street or rural address, township, county, province:

GPS or other location data:

Number of American chestnut trees:

Other environmental data:

**Send to any CCC director. Thanks!**

# The Green Belt Movement

The April 2005 issue of the CCC Newsletter contained an account of the achievements of Wangari Maathai, most recent winner of the prestigious international Nobel Prize for Peace. Dr Maathai is the first woman from Africa to be so honoured. She is a native of Kenya in central Africa. She was granted this high honour for her contribution to sustainable development, democracy and peace.

Her recent book, entitled "The Green Belt Movement," published by Lantern Books, New York (2004) is very readable on the history of her struggles and successes.

Dr Maathai combines science, social commitment and active politics. More than simply protecting the existing environment, her strategy is to secure and strengthen the very basis for ecologically sustainable development.

In 1970 she founded the Green Belt Movement, where for more than 30 years she has mobilized

poor women to plant 30 million trees. These efforts have dramatically transformed the rural landscape in many parts of Kenya. Her methods have been adopted by many other countries in Africa and elsewhere.

Protecting forests against desertification is a vital factor in the struggle to strengthen the living environment of our common Earth.

Through education, family planning, nutrition and the fight against corruption, the Greenbelt Movement has paved the way for development at the grassroots level.

Dr Maathai's book is written in clear and simple language. She details how many types of opposition to her program have been overcome to achieve her successes. We, young and old, can all profit from diligent and careful study of her story.

Planting trees signifies hope for the future.

- CD McKeen

## Membership

Membership fees and donations are tax deductible.

### Membership Renewal:

Annual subscription = \$15.00      \$

**Donations** in excess of the annual subscription will be recognized in the Newsletter in the following categories (Requests for anonymity will be honoured):

Gold Leaf:	\$1,000 or more
Silver Leaf:	\$500-\$999
Bronze Leaf:	\$250-\$499
Green Leaf:	\$100-\$249
White Leaf:	Less than \$100

**Donation:** \_\_\_\_\_ \$

**Total enclosed:** \_\_\_\_\_ \$

**Make all cheques payable to the  
Canadian Chestnut Council**

**Comments:**

## Volunteers

We need your help! As our program grows and our activities expand, we very much need the talents and skills of our members. If you would like to contribute your skills, please tell us. We start pollinating in early summer!

**I'm interested in** (check all that apply):

Membership  
 Publicity  
 Fundraising  
 Library research  
 Field work  
 Other:

**Return your completed form to the Secretary:**

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