



THE BUR

Volume 23, No. 2

Newsletter of the New York State Chapter of The American Chestnut Foundation

Fall 2017

Transgenic American Chestnut Distribution

The Plan Evolves, Still Members First, Then Others

By John Neumann, TACF-NY Secretary

Since the founding of our chapter in 1990, we have been most fortunate to enjoy a productive partnership with the American Chestnut Research and Restoration Project of the State University of New York College of Environmental Science and Forestry (SUNY-ESF) centered in Syracuse, NY. SUNY-ESF is the oldest and most distinguished institution in the United States that focuses on the study of the environment.

Working together for more than a quarter century, TACF-NY and SUNY-ESF have focused on developing transgenic American chestnut trees that carry blight-resistance. Years of biotechnology research and hard work followed. We looked forward to the day when we could begin distributing these trees to our members and then to others. In 2015, we announced the success of this effort. Our “Darling” American chestnut trees (named after chapter founder, first president and now president emeritus, Herbert F. Darling, Jr.) are proven to be blight-resistant.

So why haven’t we begun to distribute them to our members and others?

Even though our Darling trees are 99.999% pure American chestnut, because they carry the oxalate oxidase enzyme that confers blight resistance, they are considered to contain a PIP (Plant Incorporated Protectant) and therefore are regulated by the EPA (Environmental Protection Agency). Given that the gene was added by the natural genetic engineer, *Agrobacterium*, it is regulated by the USDA (U.S. Department of Agriculture). Regulatory review by the FDA (Food & Drug Administration) is voluntary, but since the American chestnut produces a food and feed crop, we will also seek their

review and approval as our part of our due diligence to the restoration.

A number of years ago, when our chapter and SUNY-ESF began considering the ways and means of distributing transgenic trees for restoration, we decided that the first round of distribution would be offered to our long-time chapter members who had contributed years volunteer work and support for this project. We also recognized the contributions of those members who did not live long enough to have transgenic trees. The offer would be extended to their families. Next, newer chapter members would be offered transgenic trees. After that, our trees would be distributed to other individuals, organizations and agencies who wanted them.

At that time, the thinking was that the most efficient form of distribution was transgenic chestnut seeds. The nuts could be more easily shipped, and at far lesser expense, than seedlings. However, further research at SUNY-ESF has shown that it is difficult to determine if the nut actually carries the blight-resistance, without harming the integrity of the seed. Other forms of distributing transgenic chestnut material needed to be considered.

On July 24th, TACF-NY president Allen Nichols and other directors met with SUNY-ESF’s American Chestnut Research and Restoration Director Bill Powell and several of his team on the SUNY-ESF campus in Syracuse. Updating distribution plans, as well as other subjects were discussed.

While the principles of earlier distribution planning were honored, in light of further

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**The American Chestnut Foundation
New York State Chapter**

302 Bateman Road
Laurens, NY 13796

http://www.acf.org/Chapters_ny.php

Founded in 1990, the New York State Chapter (TACF-NY) is the oldest chapter of The American Chestnut Foundation, Inc., a non-profit 501 (c) (3) membership organization. TACF-NY, in partnership with the State University of New York College of Environmental Science and Forestry, is working to restore the American chestnut tree to our eastern forests by developing truly blight-resistant American chestnut trees through biotechnology. Membership information may be found on the back page of *The Bur*.

Officers

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Linda McGuigan – Editor

John Neumann – Contributing Editor

President's Message



As we approach the end of the year, everything looks like it is coming together as planned. We had a great demand for nuts from people who wanted to plant mother trees this spring, with over 7,000 nuts distributed. Many were first time planters who wanted to help with chestnut restoration. After receiving their nuts, they became members of the New York chapter. In just the month of May, our membership increased over 5%. Many thanks to everyone who planted trees and encouraged others to join our restoration program.

The day is fast approaching when we will be distributing blight resistant material to our members. Some questions still remain to be answered.

Q. Will the short run demand outstrip our ability to supply all members with blight resistant seedlings?

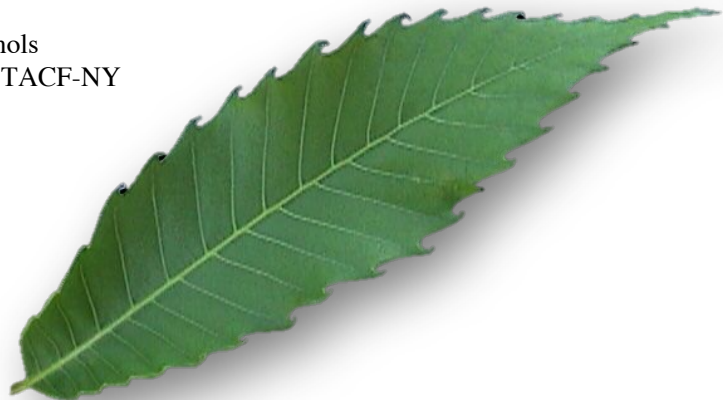
A. We will strive to satisfy our members' desire to repopulate the forests with American chestnut trees while maintaining the highest scientific standards.

Q. Will it be more efficient to distribute pollen instead of nuts?

A. Supplying blight resistant pollen from SUNY-ESF's blight resistant trees may be a better option for some members. The ability to hand pollinate a mother tree would allow the tree to produce blight resistant nuts several years faster than planting a blight resistant seedling adjacent to it. The article by John Neumann on page one has more details on the options that will be available.

If anyone has questions feel free to ask. Rest assured that whatever options are offered, our number one goal is, and will be, to produce genetically diverse, blight resistant nuts as soon as possible.

Allen Nichols
President, TACF-NY



Chestnut Distribution

Continued from page 1

SUNY-ESF research, we discussed details not previously considered. Seedlings, scions, and pollen each have an easy assay to determine blight-resistance, and could be produced by SUNY-ESF. Members could choose which form of transgenic material they would like to receive.

Dr. Allison Oakes, a postdoctoral research associate in the Dept. of Environmental and Forest Biology at SUNY-ESF, provides a description of the three options:

Seedling: a small potted seedling, 6 to 8" tall, pre-tested for the oxalate oxidase gene that confers blight resistance. Note that the seedling should be planted near a wild-type mother tree as it takes two trees to produce viable nuts. Male catkins can form under sunny conditions in 3 to 7 years while female flowers begin to form approximately 2 years after catkins are first seen.

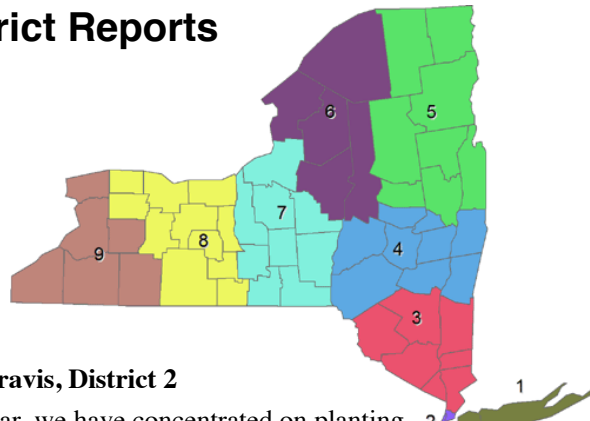
Scion: a dormant stem or bud that can be grafted onto an existing American chestnut. If the grafted scion is in full sun, it will eventually form catkins that can pollinate female flowers on the original tree. If it is the only pollinator, half the offspring will contain the oxalate oxidase gene that confers blight resistance. There is an easy assay to determine which ones have blight resistance once the nuts have grown into seedlings.

Pollen: enough pollen to pollinate 30 or more female flowers on a wild-type American chestnut mother tree. If the female flowers were not exposed to pollen from other chestnut trees, approximately half the nuts produced (45 or more) will contain the oxalate oxidase gene that confers blight resistance. There is an easy assay to determine which ones have blight resistance once the nuts have grown into seedlings. This requires more work, but under optimal conditions may produce up to 45 blight resistant seedlings (similar to the single seedling above).

To help American chestnut restoration succeed, the distribution of our transgenic materials will need to be a self-sustaining project. That means that the actual cost of producing and shipping the seedlings, scions, and pollen will need to be passed on to the individual, organization, or agency receiving it. The replacement cost would generate additional transgenic material. This would be done on a non-profit basis.

As we draw closer to the time when the long awaited distribution can begin, additional details will be determined. The Bur will keep you informed.

District Reports



Dale Travis, District 2

This year, we have concentrated on planting 2 mother trees. We have replenished those that were winter killed in the Harlem Valley Rail Trail planting. This will also be documented in their soon to be erected Education Building. They now have twelve mother trees with a descriptive sign beside the rail trail. The NYC Parks Department planted ten mother trees in a newly refurbished park on Randalls Island. No public description has been planned as of yet, awaiting to see how they survive their first winter. Several other individual plantings have also taken place around the city with more in the works. What we now are all hoping for is the release of the resistant trees!

Allen Nichols, District 4

This year, 2017, has been busy but very fulfilling. Over 7,000 nuts were distributed for the mother tree program and TACF-NY's membership has grown. I gave presentations at the local library, the local college, the Gilbertsville Sportsman club, and for the foresters from the NY Power Authority. I also had booths at the Deposit Lumber Jack festival, the Catskill Forest Festival, and at both of the local fairs in Otsego and Delaware County. A special thanks goes to Ron Anderson for helping at the fair in Morris.

I am trying two fungicides on trees in my orchard and have seen some positive results. One of the more exciting projects is grafting, with good preliminary results grafting American chestnut onto Red Oak! If this turns out to have long term success, it could be a great avenue for restoring blight resistant American chestnut trees back into the forest.

District 1 – Enrico Nardone, EGNardone@Seatuck.org

District 2 – Dale L. Travis, dale@daletravis.com

District 3 – Frank Munzer, MunzerFrank@gmail.com

District 4 – Allen Nichols, fajknichols.75@Gmail.com

District 5 – Emmett Hoops, emmett.hoops@gmail.com

District 6 – Peter S. Pike Sr., northernpiker1@aol.com

District 7 – Roy Hopke, SnowHawke1@gmail.com

District 8 – Paul Ackerman, trapman1@netzero.net

District 9 – William A. Snyder, wasnyderhort@gmail.com

Remembering Michael Webb

A True Champion of the Transgenic American Chestnut

By James Donowick, TACF-NY Director



Photo courtesy of Sara Fitzsimmons

When SUNY-ESF and TACF-NY announced the world's first transgenic blight-resistant American chestnut trees in 2015, it marked a quarter century of research and hard work. While we look ahead to the distribution of transgenic seedlings, scions and pollen, we remember devoted TACF-NY members who did not live to see this dream become a reality. One such TACF-NY dedicated member was Mike Webb. Mike was not a resident of New York, but because of his interest in science and his specific belief in biotechnology and our transgenic project, he joined the New York Chapter in the early 1990s and actively supported our mission for the rest of his life. He understood the science intellectually, was interested in the practical research problems that ESF was overcoming and said our chapter was a friendly bunch. He traveled long distances to participate in every chapter meeting and national meeting. Although Mike was by nature a quiet man, he did speak with conviction and authority to defend science, and to promote the transgenic chestnut. Mike was also a talented and forward thinking individual in his occupation. We quote *The Bur*, Vol. 5, No. 2 - Fall/Winter 1995, page 3: "A donation of \$5,000 from Dupont was designated by Michael J. Webb, a DuPont employee. As a reward for suggesting an innovative idea at the DuPont Speciality Chemicals facility in Niagara Falls, Mr. Webb was allowed to select any 'cause' of his choice to receive a \$5,000 contribution. Mike sent DuPont's \$5,000 check to us with a letter saying in part "I hope this donation will bring us closer to the revival of the American chestnut as a thriving species." His last TACF-NY Annual Meeting was in October 2014. Although Mike was terminally ill, and despite physical discomfort, he attended with the assistance of his brother. He said he was content in knowing the transgenic American chestnut would work. Mike passed away less than a month later. Michael N. Webb is remembered as a true champion of the transgenic American chestnut.

James Donowick is a long time member of our TACF-NY Board of Directors. For many years, he teamed with his now deceased dad, John Ellis (also a TACF-NY Director) in supplying American chestnut material needed by ESF from their forested farmland in Windsor NY. This includes the Ellis tree, which plays an important role in ESF research. To see the birthplace and last sprout from the Ellis tree, give Jim a call at 607-467-6039.

Edwin Hubbard's Diary October 1914, Crumhorn Mt.

By Cindy Hubbard



Edwin Hubbard lived on Crumhorn Mt, Town of Maryland, and was 18 at the time of the diary.

- Oct 3 - Not much doing. Went chestnutting this noon.
- Oct 9 - Went to school today. Chestnut are very very thick this year.
- Oct 10 - I picked up chestnuts today. Went up town tonight – had 47 pounds sold at 5 cents per lb. Been a fine day.
- Oct 11 - Not much doing today. Watching tree. Keeping away pickers. A fine day.
- Oct 12 - I picked a few chestnuts this a.m. Took them up town. Got 3 cents per lb had 12 lbs. Picked up a little over a peck this pm.
- Oct 13 - I took 18 lbs of chestnuts up to Hubbard at Schenevus this am as there was no school.

The American Chestnut Research and Restoration Program at SUNY-ESF



Erik Carlson

Recently I have used leaf inoculation assays to test for blight resistance in several lines of transgenic American chestnut that express oxalate oxidase (OxO) under the control of a wound-inducible promoter. These transgenic lines only express OxO when there is damage to tree tissue, which we hypothesize will trigger canker formation to resist infection. The advantage of this system is that it would limit the OxO protein to only sites of infection and reduce the amount of OxO in parts of the tree that don't need it - such as in the chestnuts! One line of these trees that was tested showed increased resistance during the leaf inoculation assay. This line will move forward in the research process and be tested with a stem inoculation assay, which is performed when the trees are a little older.

In addition to my research with the wound-inducible promoter, I am also exploring the possibilities of implementing the now famous CRISPR/Cas9 genome editing tool. The hope for this research would be to

use CRISPR to edit a gene already present in the American chestnut to make it more similar to the gene we use in our other genetically engineered trees (OxO). This could potentially result in a blight resistant tree without the use of any foreign genes. The American chestnut gene is currently being researched with engineered yeast cells in order to understand how it works in a much more expedient manner than if it were being tested only in chestnut.

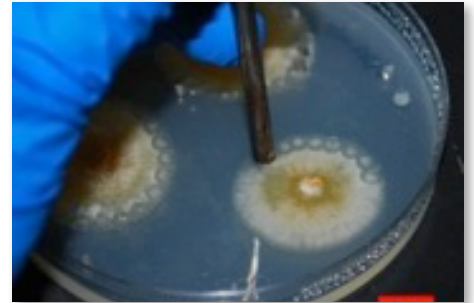


Hannah Pilkey

I am a new graduate student to SUNY-ESF's chestnut team. This summer, I collaborated with fellow grad students, Dakota Matthews and Vern Coffey, to develop a method of collecting, dehydrating, and freezing chestnut pollen. My project this fall will be focused on rehydrating our stored pollen and checking the pollen's viability. It is important to find an effective way to store viable transgenic pollen, so it can eventually be distributed and crossed with other American chestnuts. This is a crucial step in maintaining genetic diversity during the restoration effort. I am excited to begin my research with American chestnuts!

Leaf assay

Photos courtesy of Andy Newhouse



Cryphonectria parasitica grown on a nutrient medium.



Wounding of the chestnut's mid-vein.



A plug of fungus put on the wound site.



After 3 to 7 days, dead tissue is measured and compared to Chinese and American chestnut controls.

New York State Chapter of The American Chestnut Foundation, Inc. 27th Annual Meeting Oct. 20 & 21, 2017

SUNY-ESF, 408 Baker Hall, 1 Forestry Dr., Syracuse, NY 13210

Meeting Agenda



Friday (10/20) – *Genesee Grande*

6:00 pm Dinner – On your own
Meet in lobby to discuss dining options

7:30 – 10 pm Harvest Exchange (Concierge Lounge)

Saturday (10/21) – *408 Baker (SUNY-ESF)*

8:00 am Registration
Become a member or renew membership
Coffee, tea, Danish
Silent Auction/50:50 - all day to 4:45 pm

9:00 am Welcome & President's Report by Allen Nichols

9:15 am Annual Meeting Minutes by John Neumann, Secretary

9:20 am Treasurer's Report by Fran Nichols

9:30 am Election of Officers and Directors by John Neumann, Nominating Committee Chair

9:35 am District Director's Reports
District 1 Enrico Nardone
District 2 Dale Travis
District 3 Frank Munzer
District 4 Allen Nichols
District 5 Emmett Hoops
District 6 Peter Pike
District 7 Roy Hopke
District 8 Paul Ackerman
District 9 William Snyder

10:00 am Coffee and Roasted Chestnut Break

11:00 am Science Reports – SUNY-ESF Staff & Students



12:00 pm Lunch (catered by American Food and Vending)

1 - 3 pm Field Tours - The Lafayette Road Experiment Station has changed. We've expanded many of our plantings, including our transgenic seedling plot. Come see seedlings from the Darling 54 and Darling 58 lead events. While you're there, check out where our new lathe house will be built.

3:15 – 3:55 pm - Session 1 Workshop

4:05 – 4:45 pm - Session 2 Workshop

4:45 pm Announce winners to silent auction/50:50

5:00 pm Afternoon session closes

6:00 pm Dinner :
1060 Restaurant
at the Genesee Grande
1060 East Genesee Street
Syracuse, NY 13210
1-800-365-HOME

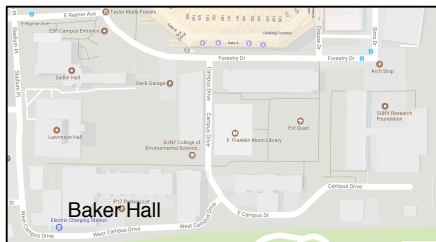
After Dinner Closing Remarks by Allen Nichols, President

SUNY-ESF

www.esf.edu

408 Baker Hall, 1 Forestry Drive,
Syracuse, NY 13210

To register for the October meeting,
go to <http://www.cvent.com/d/4tqjm8/4W>
or mail a check (\$50 registration fee plus \$35 for dinner) to:
SUNY-ESF, ATTN: 2017 Chestnut Meeting, ESF Outreach,
1 Forestry Dr., 235 Gateway, Syracuse, NY 13210



Directions to ESF (<http://www.esf.edu/maps/>)

Using Smartphone App or GPS?

Address for campus entrance: 1000 Irving Ave., Syracuse, NY

From Points South of Syracuse:
Take I-81 N to exit 18 for East Adams Street (follow signs)
Turn right onto East Adams Street at the end of the exit ramp
Proceed two blocks to Irving Avenue
Turn right onto Irving Avenue
Follow Irving Avenue to the end

The ESF campus entrance is on your left, next to the Carrier Dome
From Points North of Syracuse:
Take I-81 S to exit 18 for East Adams Street (follow signs)
Turn left onto East Adams Street
Proceed two blocks to Irving Avenue
Turn right onto Irving Avenue
Follow Irving Avenue to the end
The ESF campus entrance is on your left, next to the Carrier Dome

From Points East of Syracuse:
Take the New York State Thruway (I-90) west to exit 36 for I-81 S
Take I-81 S to exit 18 for East Adams Street (follow signs)
Turn left onto East Adams Street
Proceed two blocks to Irving Avenue
Turn right onto Irving Avenue
Follow Irving Avenue to the end
The ESF campus entrance is on your left, next to the Carrier Dome

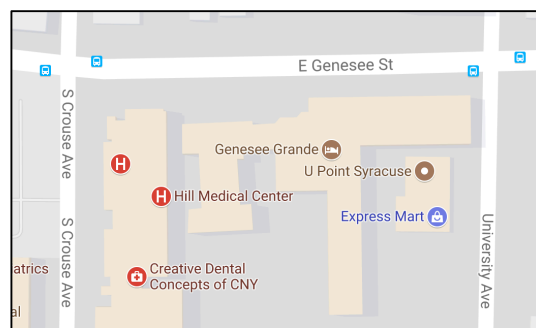
From Points West of Syracuse:
Take the New York State Thruway (I-90) east to exit 36 for I-81 S
Take I-81 south to exit 18 for East Adams Street (follow signs)
Turn left onto East Adams Street
Proceed two blocks to Irving Avenue
Turn right onto Irving Avenue
Follow Irving Avenue to the end
The ESF campus entrance is on your left, next to the Carrier Dome

Genesee Grande Hotel

<http://www.geneseegrande.com>

1060 East Genesee Street,
Syracuse, NY 13210
315-476-4212

To make your room reservation, call the Genesee Grande
(315) 476-4212 and ask for the American Chestnut
Foundation rate. Reservations must be made prior to
September 22, 2017 to receive the rate of \$119 per night.



Directions to Genesee Grande

From Points South of Syracuse:
Take I-81 N to exit 18 for Adams St towards Harrison St
Continue onto Almond St
Turn right onto E Genesee St
Destination will be on the right

From Points North of Syracuse:
Take I-81 S to exit 18 toward Harrison St/Adams St
Keep right at the fork, follow signs for Harrison Street
Merge onto Harrison St
Turn right onto S Townsend St
Turn right onto E Genesee St
Destination will be on the right

From Points East of Syracuse:
Take I-690 W to exit 13 for Townsend St toward Downtown
Turn left onto N Townsend St
Turn left onto E Genesee St
Destination will be on the right

From Points West of Syracuse:
Take I-690 W to the Interstate I-81 S exit toward Binghamton
Merge onto I-81 S
Take exit 18 toward Harrison St/Adams St
Keep right at the fork, follow signs for Harrison Street
Merge onto Harrison St
Turn right onto S Townsend St
Turn right onto E Genesee St
Destination will be on the right



THE BUR
 The American Chestnut Foundation
 New York State Chapter
 C/O Fran Nichols
 302 Bateman Road, Laurens, NY 13796

Cut here ✂



Become a member of The New York State Chapter of The American Chestnut Foundation at
<http://acf.donorshops.com/products/joinnow.php>
 or fill out the following Membership Application and return to:

The American Chestnut Foundation Inc.
 50 North Merrimon Avenue, Suite 115, Asheville, NC 28804

Enclosed please find my \$40 membership in support of TACF-NY. I would like to make an additional \$_____ gift to the New York State Chapter and/or \$_____ to the SUNY-ESF American Chestnut Research and Restoration Program. Total amount enclosed: \$_____

All memberships to TACF include TACF publications, a car decal, membership to one of the state chapters as well as opportunities to participate in local chestnut activities. Visit www.acf.org or call (828) 281-0047 for more information.

Name: _____

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Check enclosed Please bill my credit card (Visa/MasterCard/Amex/Discover) This is a gift

Please make check payable to The American Chestnut Foundation

Name on card: _____ Card #: _____

Exp: ____/____ CVV# _____ Signature: _____

NY Chapter membership includes the Newsletter *The Bur*. The NY Chapter helps guide research at SUNY-ESF and maintains plantings to keep the American Chestnut gene pool. TACF & TACF- NY Chapter are 501 (c) (3) non-profit organizations. Except for the membership services portion of your contribution (valued at \$15) your gift is tax deductible to the full extent allowed by law.