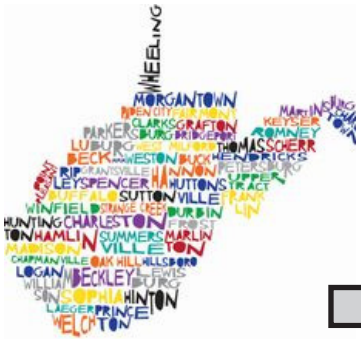

The West Virginia Chapter of The American Chestnut Foundation NEWSLETTER

In the heart of American chestnut's natural range

June 2021

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Chestnut Sticks

The 900 nuts that were potted at the WVU greenhouse in mid-March represented two species and a variety of backcross lines. We potted both pure American and pure Chinese chestnut along with six different backcross lines. After a month, there were quite a number of seedlings that looked like sticks in the pots--tall stems with few or no leaves. **Sara Fitzsimmons**, TACF's Director of Restoration said that she has seen this phenomenon before but she cannot pinpoint a cause. She indicated three possible reasons: (1) tree genetics; (2) infection by *Pythium* or other damping-off fungi; and (3) nuts were frozen during stratification.

Upon closer examination, none of the pure American seedlings exhibited this strange symptom. Only the pure Chinese and the backcross lines were affected. Since the Chinese chestnuts were stratified in Morgantown and the backcross lines in Meadowview, it does not appear that freezing was the issue.

In the photo below, the seedling in the middle is an American chestnut from Hardy County, WV. The seedling on the left is a Chinese chesntut, variety 'Mahogany' while the seedling on the right is a backcross seedling from TACF's Meadowview farm. It appears the issue of "chestnut sticks" may be genetic.

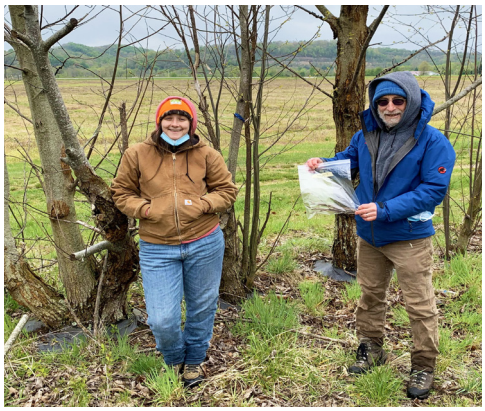
Gentoyping of the Chestnuts at Clements Nursery

The fight to save the Clements tree nursery has been an uphill battle. The Director of the WV Division of Foresty, **Tom Cover,** indicated that the nursery would be permanently closed at the end of May 2021. As the president of the WV chapter, I wrote not only to **Governor Justice**, but also to: the Dean and Director of the WVU Davis College of Agriculture, Natural Resources and Design, **Darrell Donahue**; the Director of the WVU Extension Service, **Jorge Atiles**; The Associate Dean of WVU Extension Service, **Jennier Williams**; the Director of WVU's Division of Forestry and Natural Resouces, R**obert Burns**; and to the WVU Division Director of Plant and soild Sciences, **Sven Verlinden**.

The main issue with closure of the nusery is a lack of funding from the WV Legislature. While the income of the nursery is approximatley $125,000 per year, expenses are $165,000. One of the reasons the nursery loses money is a lack of marketing. Very few West Virginians know the nursery exists. We think with a good marketing strategy the nursery could break even most years.

Thinking the nursery will close, the WV-TACF chapter is concerned about the two orchards of chestnuts that exist at the nursery. The older orchard was planted in the mid-1970s by nuts from large, surviving American chestnuts. On a cold and rainy day in late April, **Mark Double** and **Dr. Joe Golden** of the WV-TACF and **Amy Metheny** from WVU's Plant and Soil from WVU's Plant and Soils Sciences visited the nursery to collect twigs and buds for DNA analysis (genotyping). Eight-to-ten twigs with buds were collected from 10 trees at the nursery and mailed overnight to the laboratory of **Dr. Jason Holliday** at Virginia Tech where the DNA will be analyzed. As of this writing, the DNA results have not been reported.

Pictured below are Amy (left) and Joe (right) sampling trees at the nusery.

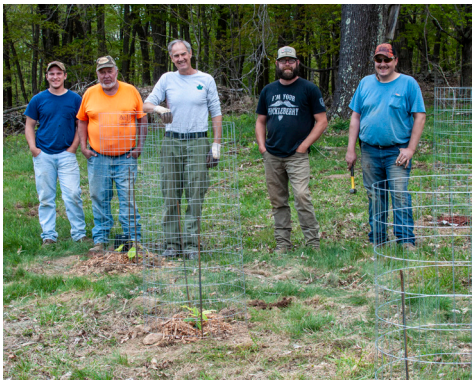


WV Germplasm Conservation Orchards Installed in 2021

Germplams Conservation Orchards or GCOs, are the start of developing West Virginia adapted, blight-resistant American chestnuts. The plan is to install eight GCOS in various parts of the state (Pendleton, Preston, Pocahontas, Upshur and Fayette Counties). Ultimately, each GCO will contain 100 American chestnut trees, 10 trees each from 10 different mother trees. While all of the American chestnut trees that are planted will succumb to the chestnut blight fungus, it is our hope that 30%-50% of the trees will resprout and those resprouts will grow and eventually flower. The flowers from these American chestnuts are the important feature as the plan is to cross TACF's advanced backcross trees or the genetically-engineered (GE) trees from the State University of New York (if deregulated by the USDA) with the trees in the GCOs. Making crosses wtih either TACF's trees or the GE trees will produce trees that have American form, resistance to the blight and adapted to the mid-Atlantic region.

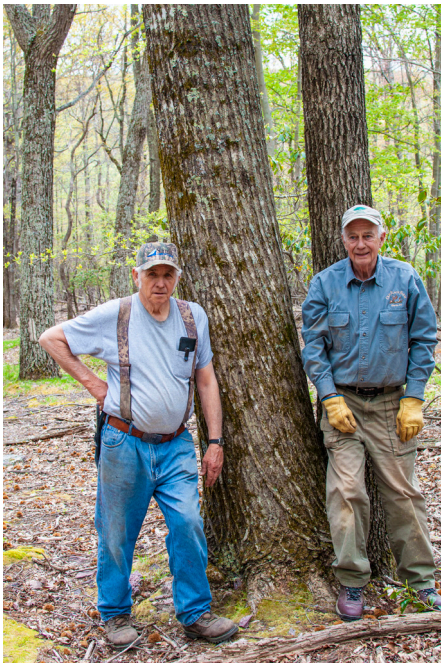
As of this writing, five GCOs have been installed--30 to 50 trees have been planted at each site. The installed GCOs include:

1. Pendleton County. On 15 May, friends and family of **Glenn and Jeanie Riggleman** helped plant 50 American seedlings on their property. The site was nearly 3200', an ideal elevation for American chestnut.



In the above photo, **Jim Bowen** (white shirt), WV forester for Grant and Hardy Counties, and **Bill Mullenax**, Jeanie's brother (orange shirt), assisted with the planting. On this property sits a pre-Civil War house that was constructed of American chesntut, and the logs were hand-hewn as pictured below.

Nearby the GCO, the first installed in West Virginia, stands a large, surviving American chestnut. Below are pictured **Glenn Riggleman** and **Robert Sypolt.** The chestnut tree is the stem on the left.

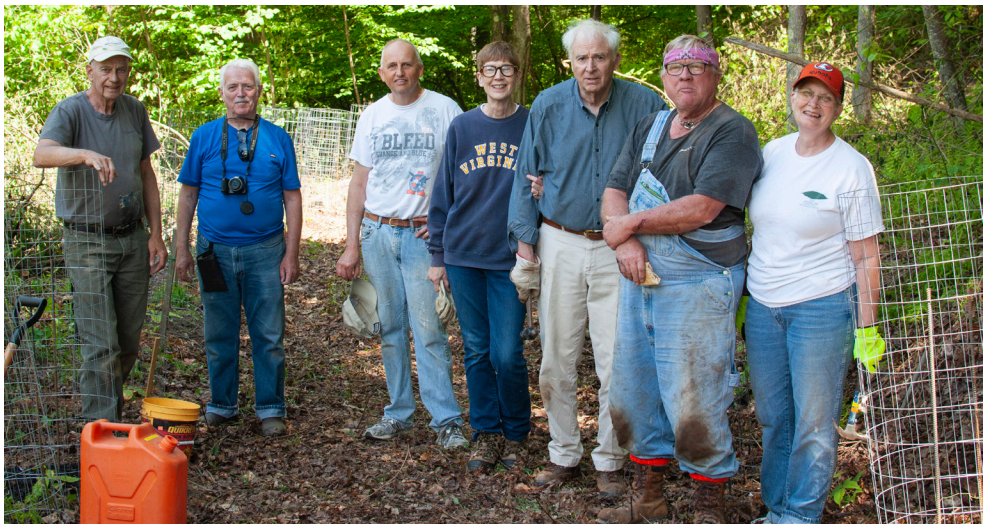


The Rigglemans also are members of the **Chestnut Woods Association** that collectively owns and manages more than 5,000 acres in Pendleton County.

2. Sutton Dam (Braxton County). The second GCO installed in 2021 was in conjunction with the U.S. Army Corps of Engineers at the Sutton Dam. A group of volunteers from the Army Corps, the WV Department of Natural Resources, West Virginia University and the WV-TACF planted 50 American chesnuts on 20 May. Pictured in the next column are some of those who assited with the planting of the Sutton Dam GCO. From left to right are: **Mark Clark, Seth McCoy, Harrison Jenkins, David Rexroad, Gabby Dean, Jimmy and Linda Jenkins and Amy Metheny**.

The connection with the U.S. Army Corps of Engineers is through WV-TACF Board of Director's member, **Jimmy Jenkins** (pictured above, third from the right). The son of **Jimmy and Linda Jenkins** is **Harrison Jenkins** (pictured above, third from left), a U.S. Army Corps of Engineers employee. Sometimes site selection is all about finding good parners. WV-TACF is grateful to the U.S. Army Corps of Engineers for their willingness to partner with TACF. The site at the Sutton Dam has a nice slope and good Gilpin soil. Hopefully, the trees will thrive there.

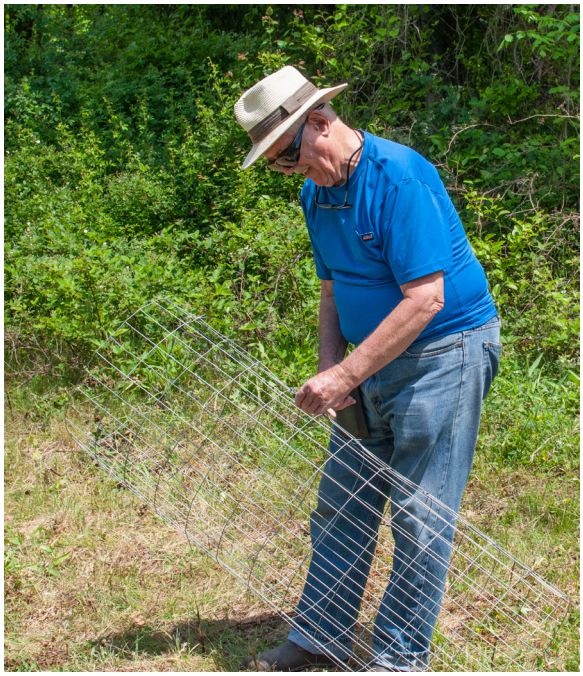
3. Terra Alta (Preston County). The third GCO site was outside Terra Alta about 2100 feet in elevation. Those assisting in the planting were all WV-TACF members. Pictured below (l to r) are **Robert Sypolt, Scott Burnworth, Kyle Ellinger, Nora and Bill MacDonald, Sam Muncy and Mindy Double.**



This site is quite different from the others in that is in a partially wooded area. The other sites are in open grass fields. It will be interesting to see if the trees respond differently to the varying sites.

At each site, holes are dug, 2"x4" wire caging is cut into 5' sections, trees are planted, mulched with newspaper and wood mulch and the caging is then secured in place with 4' rebar.

Pictured below is **Scott Burnworth** from Westover securing one end of the wire fencing to the opposite end to make a cage. At each GCO site, 100' rolls of wire fencing are cut into 5' lengths. Each section is then secured in place using the cut ends to make a cage.

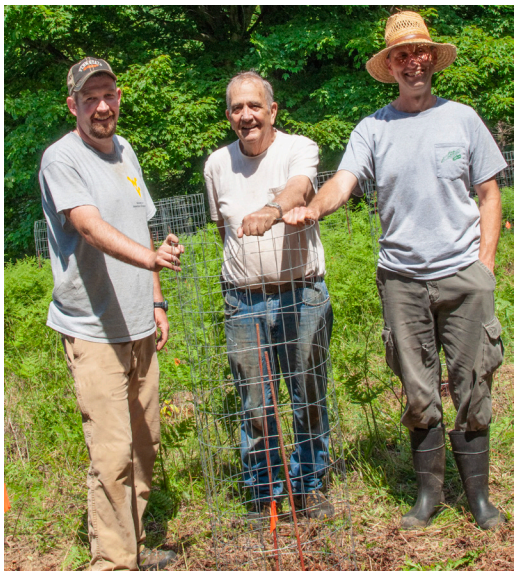


4. University Forest (Preston County). A small group of WV-TACF members, and staff and studnets from West Virginia University installed a GCO at a site not far from Coopers Rock State Forest in northern Preston County. This site was planted in Red Pine during the CCC days in the 1930s. The tops of the pine had begun to die and the stand was cut and left fallow.

Pictured above are: **Angie Macias, Dr. Madison Brown, Nora and Dr. William MacDonald, Shelby Meador, Scott Burnworth, Mindy Double, Molly Sherlock, Rachael Gaddy and Amy Metheny**. This photo was taken just a few minutes before it started raining heavily. There is nothing like a good wet soaking to keep one humble! While plans are made for non-rain days, Mother Nature determines the weather.

5. Queens (Upshur County). The last spring GCO to be installed was in southern Upshur County about 15 miles south of Buckhannon outside Tallmansville in the village of Queens. The GCO was planted on land owned by the **Middle Fork Club**, an organization founded in 1950 by a group of Methodist Ministers.

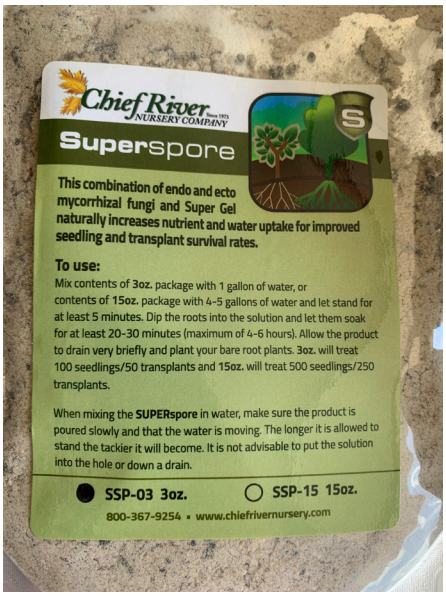
This GCO offers another unique site in that the chestnuts were planted in the midst of a active red pine plantation. The soil at the site is obviously acidic, a need for chestnut. **Dr. Brian Perkins** of WV-TACF assisted **Dr. Walter Eiker,** Middle Fork Club homeowner and **Chris Cartwright**, forester, along with **Mark and Mindy Double**, planted 30 native American chestnuts at the Middle Fork Camp site. Pictured below, left to right, are Chris Cartwright, Dr. Walter Eiker and Dr. Brian Perkins.



The MIddle Fork Club currently has about 25 members who have homes on this rural site. Some of the homes built in the 1940s and 1950s were constructed of American chestnut. Thus, it only seems fitting that a GCO be established on a site that has such rich history relative to American chestnut.

Mycorrhizae Trial

The newsletter editor's 50-tree chestnut orchard in Marion County, utilzed, for the first time, a slurry of mycorrhizal fungi in the hope that the chestnut seedlings will perform better with the additive than without. Mycorrhizae are fungi that form a symbiotic relationship with plant roots. The fungi secure much needed nutrients for the tree, like phosphorous. In turn, the tree supplies carbohydrates and a secure home for the fungi. While I am not advocating any product, the product I chose was from Chief River nursery in Grafton, Wisconsin. The product they sell has both endo- and ecto-mycorrhizae, meaning the fungi colonize the outside of the root (ecto) or penetrate the root intracellulary (endo). When a 3 oz. packet of the product is added to a gallon of water, a thick gel forms. The plants are soaked in the gel for 20-30 minutes prior to planting. I have had poor luck getting chestnuts established on our family farm site, so I am curious to see if the trees not only survive but thrive.



Chief River did not list the genus and species of the mycorrhizal fungi. I am guessing they added "generalist" fungi that interact with a variety of hardwood species. If interested in a mycorrhizal additive, an internet search will yield many companies that offer similar products.

Spotlight on a WV Chapter Board Member

Jerry A. Legg, Jr.

"When I was a teenager, I would dig up small American chestnut trees sprouting from old root systems and try to transplant them in a place where I could better care for them."

I was born in Charleston, WV and have lived most of my life in in Pinch, WV. My father was building contractor and my mother a registered nurse. My father was born in Summersville, Nicholas County and my mother was born in Camden-On-Gauley, Webster County. So my WV roots run deep. My family enjoys hunting, fishing, hiking, gardening and other outdoor activities. Growing up I spent most weekends in the spring or fall at our family camp in Nicholas County. My fondest memories growing up were spent at the camp with my uncles and cousins. This is where I first developed an interest in the American chestnut around the age of 15. I also have a brother, Michael, who lives in Winfield with his family. I went to Herbert Hoover HS in Falling Rock WV and graduated in 1983. I then went to West Virginia University and graduated in 1988 with a degree in Physical Education and Health. My first year of teaching was at East Bank HS. The following year I taught at Marmet Junior HS. I then spent a couple years substituting and working for my father. During this time I attended Marshall Graduate College and earned a degree in Special Education. I then started teaching full-time at Clendenin Middle School where I also coached football, track, basketball and served as athletic director.

Then in 1998 I started teaching and coaching at Herbert Hoover HS. I currently teach Drivers Education but have taught physical education and special education during this time. I earned a master's degree in Athletic Coaching Education from West Virginia University in 2008. Then in 2010, I earned a teaching certificate in Drivers Education from Longwood University in Farmville, VA. During my time at Herbert Hoover, I have been an assistant football coach, head boys basketball coach, head boys and girls track

coach and served for several years as athletic director.

When I was a teenager, I would dig up small American chestnut trees sprouting from old root systems and try to transplant them in a place where I could better care for them. This proved to be futile due to the limited amount of root system that was available to be dug up and the issue of chestnut blight. I did manage to get a few trees to live for a year or two. About same time, I started reading everything I could find concerning American chestnut. This was made much easier later with the internet.

Sometime in the mid-1908s the ***Charleston Gazette*** had an article in the outdoor section about two new organizations, The American Chestnut Foundation and the American Chestnut Cooperators' Foundation, working to develop a blight resistant American chestnut. I immediately joined both organizations and have continuously supported TACF since and was a member ACCF until a few years ago. If you are not familiar with ACCF, they work exclusively with all-American crosses.

Around 1995 I obtained some pure American chestnut seed from ACCF and started my first orchard. One of the nuts I received was a 'Clapper-Floyd'. Most of you are familiar with the old 'Clapper' line (named for USDA chestnut breeder, Russell Clapper) which are used in some of the TACF's breeding lines. 'Floyd' was a large surviving American chestnut found in Virginia. At one time I had about 15 trees growing in this orchard but slowly over time chestnut blight claimed most of them. I have tried several things over the years to keep trees alive including mud packing. Today in this orchard I have four trees left, three pure American chestnut and the one 'Clapper-Floyd'. All are heavily cankered and have numerous sprouts, but they continue to survive.

I currently have two more orchards. One on an old reclaimed strip mine site. It currently has seven surviving B3F3 hybrids. The other is located in an old field I cleared a couple years ago. It currently has 16 surviving B3F3 hybrids. The trees were started from the latest backcross seeds obtained from TACF. My goal is to continue to nurse the trees along to hopefully be a seed source in the future when other more resistant lines or the transgenic trees are available to cross-pollinate. All three orchards are located on my farm in Nicholas County. I hope to one day have American chestnut trees growing in the entire valley where my farm is located.

I enjoy working, listening and seeing other people who have the same common goal of restoring the American chestnut to the Appalachian forest. It has especially been enjoyable to meet several people that I for years read about their research in breeding, biocontrol and biotechnology. While there are still many hurdles to cross, I am hopeful the American chestnut will one day be restored to our forests.

WV-TACF Chapter Meeting, April 10, 2021 Teleconference Meeting Minutes

•The meeting was called to order by President Mark Double.
•Roll call for the Board of directors was done.
•The minutes from the October 10, 2020 meeting were reviewed by everyone. A motion to approve the minutes was made and passed by a voice vote.

Treasurer's Report
• The Treasurer's report was distributed and read. The chapter has a balance of $71,470.22, $38,573.05 of this is the Waddell gift balance, as of December 31, 2020. The Treasurer's report was approved as read by a voice vote.

Regional Science Coordinator's Report
• Tom Saielli gave an overview of recent activities. He gave an update on the Darling 58 tree, transgenic chestnut tree developed by the State University of New York. APHIS issued a permit to begin cross pollenating trees to make the second generation of transgenic trees. This will enable pollen to be available for breeding by the time the Darling 58 tree is deregulated. It will be 2-to-3 years before the Darling 58 tree might receive regulatory approval. A second open comment period will be forthcoming relative to comments by members of the general public to USDA-APHIS as to their thoughts on the approval to deregulate the tree. TACF has been using aerial imagery to try to locate surviving American chestnut. TACF is still working on Phytophthora root rot resistance screening. Tom gave a presentation on root stooling, a method to get young chestnut sprouts to root. He also gave an update on the cross-breeding program between American and Chinese chestnut. He also encouraged people to kept looking for chestnuts.

Old Business

• 900 nuts were plotted on March 13 at the WVU greenhouses by WV chapter members.

• Clements State nursery. Letters to WV state legislators and to Governor Justice were sent in an effort to keep open the nursery. An article in the June 12 edition of the ***Charletson Gazette***, reported that **Tom Cover**, Director of the Division of Forestry, made the decision to permanently close the Clements tree nursery.

Mother Tree Report

• Melissa Thomas-Van Gundy gave report on Mother trees. She is still looking for more trees and looking for volunteers to help her measure trees.

Membership Committee

• 152 members in the WV chapter, as of September 30, 2020.

New Business

• Bolgiano Property in Randolph County. TACF national executive committee does not want to keep the property due to liability issues and would like to sell it.

• Chestnut orchard at the Clements nursery was discussed. This orchard is supposed to be resistant American chestnut, but the records are not good on where the trees came from. A subcommittee was formed comprised of **Mark Double, Lewis Cook and Joe Golde**n, who would travel to the nursery and look at the chestnut orchard. It was decided to get genetic testing done on the trees to see if they are pure American chestnuts, and if so get seed or scion from them to plant in GCO's.

Mark Double agreed to write a letter the WV Secretary of Commerce (**Ed Gaunch**) to get information on the future of the land operated by the nursery.

•Rowlesburg Chestnut Festival – a motion was made and passed to provide $2000 to the festival.

•Germplasm Conservation Orchards (GCO's)-Mark Double said 170 nuts were collected from three mother trees last fall. These seeds will be used to establish germplasm conservation orchards, at Franklin (Pendleton County), Sutton Dam (Braxton County), Terra Alta (Preston County), University Forest (Preston County) Tallmansville (Upshur County), a site in Pocahontas County and two sites at the Summit Bechtel Reserve (Fayette County).

•Next meeting will be held at the WV Chestnut festival, on **Sunday, October 10, 2021**.

Respectfully submitted,

J**eff Kochenderfer, WV-TACF Secretary**

Commonly Asked Questions from TACF's Wesbite

What is the survival rate for potentially blight-resistant chestnut?

Survival of any tree has a lot to do with proper site selection and care. When planted on appropriate sites (well-drained, slightly acidic soil with good access to sun), stock of potentially blight-resistant chestnuts has initial survival rates similar to native chestnuts. Long-term survival will require both blight-resistance and recovery of American traits for competitive ability and adaptation to our environment, which we are still evaluating. Our members can help with the testing by reporting back on the performance of their trees.

How are potentially blight-resistant chestnuts being tested?

Testing of potentially blight-resistant chestnuts is conducted primarily using progeny testing at our Meadowview Research Farms, as well as in partnership with cooperators assisting in a formal, rigorous testing program. We are also developing genomic tools to help better assess this generation of chestnuts by identifying genetic markers for resistance. In addition, we ask any member with potentially blight-resistant plantings to report back regularly on the performance of their trees.

Does TACF have other goals beyond breeding blight-resistant American chestnut trees?

TACF is continuing its breeding program to make further gains in disease resistance and forest competitiveness, as well as forest health and restoration in general. In addition, we are working to incorporate resistance to Phytophthora root rot, conserve native American chestnut germplasm, educate the public, and collaborate on many other projects to support the overall restoration of the species.

Chinese chestnut is resistant to chestnut blight. Why can't you just take the resistance genes from the Chinese chestnut and put it into the American chestnut through gene splicing/biotechnology?

One of the main roadblocks to this approach is that we have not yet isolated the genes for blight resistance from the Chinese chestnut. Until the gene(s) for blight-resistance from Chinese chestnut can be identified, other genes will need to be used. In conjunction with SUNY-ESF, our New York Chapter has been working for over 20 years to try and insert a gene that would confer blight resistance into American chestnut, and they are having good success.