



The West Virginia Chapter of The American Chestnut Foundation NEWSLETTER



In the heart of American chestnut's natural range

September 2022

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Summary of Other State Chapter Activities

Presidents of the 16 state chapters of The American Chestnut Foundation continue to meet monthly via zoom. Each month, a representative of one state chapter provides an overview of their chapter's activities.

In June, **Alan Nichols**, president of the New York chapter, stated that the New York chapter is a stand-alone chapter. It does not fall under the umbrella of the national organization. They raise their own money and provide funding to the State University of New York, Environmental College of Science and Forestry (SUNY-ESF). The New York chapter is a 501c3 chapter. The SUNY-ESF work on the transgenic tree was ongoing two years prior to the formation of the NY chapter. New York is divided into 13 districts, and each district has its own director. Members of each district tend orchards, attend fairs and festivals and raise funds. All proceeds go to support SUNY-ESF's work on transgenic research. New York does not have any hybrid trees from TACF. In 1998, they started planting germplasm conservation orchards (GCOs) of pure American chestnut trees with the hope of crossing them with the transgenic tree if/when it is deregulated by the USDA. Some money in the state is used to pay taxes and provide liability/collision insurance for its directors. Allen manages the chapter's Facebook page and he emails/phones members. Allen stated that 5-10 people join the chapter's Facebook page daily. As of December 2021, they had 1,000 members. Allen sends out reminders to all expired members and he calls each and every member, as he finds out this helps with member retention.

New York has three major orchards. In his personal orchard, Allen has 100 trees but only two remain from the original planting. The remainder have died, resprouted and are now flowering. Allen hand-pollinated 1,099 burs last year. He sent the nuts to members; last year he mailed 10 nuts to 700 members at the cost of \$4.50 per bag.

The New York chapter held a fundraiser last year to help support the work of **Dr. Tom Klak** at the University of New England where Tom is working on speeding up the process of producing pollen from transgenic trees. The event raised \$16,000.

The chapter is now in the process of planting nut-producing orchards or NPOs with transgenic trees, under permit from the USDA. The plan is to produce flowering transgenic trees that will be crossed with trees in the GCOs. Allen finds that trees will begin to produce catkins in 5-7 years.

Breeding Strategies Moving Forward

The July meeting featured the Maine state chapter. Their president, **Al Faust**, stated that there are about 50,000 hybrid chestnut trees planted throughout the State of Maine. They use volunteers to help maintain the orchards. They have not planted any new trees the last several years. They are currently in the process of culling dead and non-productive trees. The Maine chapter supplies nuts to Fedco, a private seed company located in Clinton, ME. Fedco sells bare-root seedlings and the Maine chapter gets \$1-\$2 per seedling sold. They do sell some seeds directly to the public; these are all pure American seeds. The chapter also supplies seed to the Soil and Water Conservation District at Presque Isle.

Some Maine chapter members grow their seedlings for 2 years in greenhouses prior to outplanting. The Central Aroostook Conservation office in northeastern Maine has planted several hundred chestnut trees. At the University of Maine in Orono, the freshman forestry classes grow chestnut seedlings as part of their laboratory classes. Dr. Tom Klak at the University of New England in Biddeford, ME uses many graduate and undergraduate students in his work on pollen studies.

Al stated that Maine has many GCOs, so many that he does not know the number. At certain GCOs that have USDA permits, they are pollinating American chestnuts with pollen from the transgenic tree, 'Darling 58'. This is done via controlled pollination.

Eva Butler is Maine's volunteer coordinator. She is actively trying to get younger members to become members of the chapter. She has conducted community building exercises and she has been impressed with the people who are attracted to the mission of restoring American chestnut. The Maine chapter provides a meal after an activity, and she has found that this opportunity to converse after work allows volunteers to feel more connected as they talk after work. Eva is trying to move beyond volunteerism to fundraising, and she is in that transition period now.

Al stated that some people are still wary of genetic engineering and he finds the book, **Code Breaker** by Walter Isaacson, to be of great value. **Code Breaker** is an account of the science of genetic editing, beginning with the discovery of the concepts of evolution and heredity. The book details how bacteria remember a portion of an attacking virus's code and copy it into their own genetic sequence, thus detailing how genetic engineering is conducted naturally. Al stated that once people realize that genetic engineering is happening all the time without human intervention, the thought of using tools to produce a tree that can fend off the chestnut blight fungus is not as threatening.

Back in 1983, the hypothesis was that the back-cross breeding method as outlined by **Dr. Charles Burnham**, would create a chestnut tree with American form and resistance to the chestnut blight fungus. The caveat was that the back-cross method would work if only 1-3 genes were responsible for resistance in Chinese chestnut. Now after nearly 40 years, we have molecular techniques that provided us with a much better understanding of resistance. We now know that resistance is much more complicated than 3 genes; there are 9 or more genes that play a role in resistance. Thus, the original plan in 1983 was that the 4th generation of backcross trees should be 94% American and 6% Chinese. With modern tools, we know that the best we can produce, due to the complexity of the trees' genetics, is a tree that is 85% American and 15% Chinese.

The SUNY-ESF transgenic tree, 'Darling 58' has been under scrutiny by the USDA for several years. TACF was given a date of August 2023 for a decision to be made by the USDA on whether or not 'Darling 58' will be deregulated. It is hoped that the tree will be deregulated and we can begin incorporating 'Darling 58' into a new breeding program that includes both TACF's advance backcross trees and the genetically modified 'Darling 58'.

Over the last several weeks, there have been discussions as to how TACF should move forward in our breeding program if 'Darling 58' is deregulated. What follows is some of that discussion.

One possibility for improving growth habit and resistance together is to use 'Darling 58', the transgenic American chestnut, as a tool to get to a non-transgenic, highly resistant backcross tree. Below is a possible plan.

In this scenario, the 'Darling 58' American chestnut trees (containing OxO) are crossed with TACF's advance backcross B3-F3 trees. (NOTE: OxO refers to the oxalate oxidase gene that breaks down oxalic acid, an acid produced by the chestnut blight

fungus that kills cells in the trees' vascular cambium. The OxO gene came from a wheat plant). This brings in more American chestnut alleles from the Darling trees to aid in growth characteristics and allows further breeding of the Asian resistance genes in the backcross trees. Using the hemizygous OxO trees crossed to B3F3 (or other backcross trees), approximately half the offspring with and half without OxO will be produced. (NOTE: homozygous describes two identical alleles or DNA sequences at one locus and hemizygous describes the presence of only a single copy of the gene). The OxO positive offspring could be used in further backcrossed breeding in a series of generations to B3F3s (or others) in an effort to increase the number and homozygosity of Asian resistance genes while the OxO keeps them alive. Once the molecular markers linked to the Asian resistance genes are fully developed, this would become easier to track. Here is the key to this plan. The OxO minus offspring from each generation could be tested for increased resistance caused by the stacking of the Asian resistance genes and getting homozygous pairs of these genes, without the OxO resistance complicating the testing. Eventually we should produce some highly resistant, non-OxO offspring.

This scenario may seem like it would take a long time, and it will, but not as long as one might think. Using the rapid pollen production method, we have shown you could go through a generation in one or two years. Small stem assays would give a preliminary screen of the seedling offspring. Together, breeding and testing will be significantly shortened.

TACF, SUNY-ESF and other collaborators have taken the first steps of stacking OxO with Asian resistance in backcross trees to see if they can work synergistically, and possibly enhancing resistance even further. These offspring could be the beginning of a process described above.

Scientists at TACF are hopeful Best x Best, 'Darling 58' x wild type, or 'Darling 58' x Best will yield trees with enough blight resistance to survive, reproduce, and compete in the forest. The most direct method to improve blight resistance in the traditional breeding program is to 1). Select the most resistant parents 2). Cross them. 3). Select the most resistant kids. 4). Repeat. Recently, phenotyping for the backcross trees in the ME and MA/RI chapters was conducted. Based

on the genetic analyses of the phenotype data, about 3% (200 trees) were selected out of ~ 6000 the trees that were phenotyped and genotyped. The selections have blight resistance scores of > 40 on the 0 = average American chestnut to 100 = average Chinese chestnut and an average of 85% American chestnut genome inheritance. In other words, we are selecting for above-average resistance with high degree of American chestnut ancestry. This year, each region was asked to make three crosses among their most blight resistant backcross trees. Next year, we will compare the blight resistance of these Best x Best progeny to 'Darling 58' in small stem assays that we conduct at Meadowview and Penn State. It will be interesting to directly compare Best x Best and 'Darling 58' outcrossing approaches. We are also exploring whether crossing OxO with our most resistant backcross trees gives greater blight resistance than Best x Best in the breeding program or when OxO is crossed with wild type American chestnuts. Of course, we will eventually want to plant these trees into long-term orchard and forest trials to put them to the test in the real world over the longer time frames.

New Mid-Atlantic Coordinator Hired

A replacement of Tom Saielli has been hired, **Brianna Heath** is TACF's new Mid-Atlantic Regional Science Coordinator. Brianna is a 2019 graduate from the University of Lynchburg in Virginia. Brianna's first day was August 8. We are excited to work with Brianna in her new role.



Brianna Heath

Collect American Chestnuts This Fall

The success of West Virginia's GCOs (germplasm conservation orchards of pure American chestnut) is totally dependent on our members to collect chestnuts in the fall. While we are still a few months away from nut fall, be on the lookout for burs in pure American chestnut trees. For those who collected nuts in the the past, chestnuts can be collected from the same trees, as fertilizing pollen in 2022 is different than that in 2021. Ideally, we want to expand some already-established GCOs and initiate additional plantings. We cannot do either if members don't collect chestnuts this fall.

Rowlesburg Chestnut Festival

The **Rowlesburg Chestnut Festival** is set for Sunday, October 9, 2022 at the Szilagyi Center, the historic Rowlesburg High School (Preston County). Events will take place from 9:30 am until 7:30 pm. Events in the Rowlesburg Park will take place all day and include: roasted chestnuts; chestnut seedling sale; chestnut furniture; art and crafts vendors; and the Avian Conservation Center Appalachian bird exhibit. The WV-TACF chapter meeting will be held from 11:30 am - 1:30 pm on the 2nd floor of the Szilagyi Center. The public is welcome. Beginning at 3:00 pm, there will be two scientific talks, also on the 2nd floor of the Center. **James Bowen**, a landowner assistance forester with the WV Division of Forestry will talk on 'Natural Hypovirulence', followed by **Rob Eckenrode** (Lead Forest Carbon Credit Analyst) who will talk about 'Carbon Credits'. *Masks are not required but encouraged.* The gala banquet will commence at 5:30 pm in the Szilagyi Auditorium where **James and Terra Bowen** will be crowned, 'Mr. and Mrs. Chestnut'. A dinner features Madrigal singers and savory chestnut dishes. The dinner speaker is **Dr. Timothy Weaver** who will talk on 'Chestnut Lumber in Rowlesburg Homes'.



Preston High Madrigal Singers

Recap of TACF's Summer Board Meeting

Twice a year, TACF's national board convenes. On 4 August, the summer board meeting met via Zoom and below is a brief recap of the meeting's highlights.

- **Barb Tormoehlen** and **Paul Wingenfeld** provided a summary of TACF's finances. As of 30 June 2022, income was \$2.9M and expenses were \$2.78M. Due to the volatile market in 2022, there were unrealized losses of about \$535,000.
- **Lisa Thomson**, President and CEO commented on reorganization and promotions on the staff. **Brianna Heath** has been hired at the new Mid-Atlantic Regional Science Coordinator (RSC). **Sara Fitzsimmons** has been promoted to Chief Conservation Officer. **Kendra Collins**, the RSC for New England is now the manager of all RSCs. **Shana Zimnoch** has been promoted to the Director of Donor Engagement. **Ciera Wilbur** is the new nursery manager, and **Cassie Stark** is the new lab manager at the Meadowview Research Facility in Meadowview, VA.
- **Bruce Levine** (University of Maryland), is the chair of the chapter's committee. Bruce stated that the chapter's committee is in the process of being trained on the aspects and use of social media from members of **Marketing Outpost** in Asheville, NC. Training will consist of: social media basics (Facebook and Instagram); building chapter awareness; and membership drives and volunteerism.
- **Betty Allison**, chair of Promote-in and Outreach, informed the group that TACF's documentary film that has been in the works for several years will have its debut on Earth Day, 2023. A trailer of the film will be shown at The American Chestnut Symposium in Asheville, NC, held 30 September-2 October at The Crowne Plaza Hotel and Resort in Asheville. One of the goals of her committee is to create and produce a comprehensive collection of videos that can be used for education and outreach. Next year, 2023, will be the 40th anniversary of TACF.
- **Dr. John Scrivani**, president of the VA chapter, is the chair of the Restoration Committee. They have been working on the logistics of ramping up pollen production of the transgenic 'Darling 58' tree. Members of his committee are planning on regional efforts to incorporate local genetics in TACF's trees so there is adaptability in each region. Plans for seed orchards of 'Darling 58' are in the works. Intellectual property discussion is part of his committee as SUNY-ESF actually 'owns' the 'Darling 58' tree. What legal aspects must be taken to ensure TACF can use 'Darling 58'? If 'Darling 58' is deregulated by the USDA, how will the tree be deployed across the landscape and how will TACF meet the demand for trees and/or pollen? TACF needs a 'Master Restorationist' to help answer these questions.
- **Dr. Debby Delmar**, chair of the Science and Technology committee, stated that the

Learning About Social Media

data garnered by TACF's science staff has proven to be invaluable. Her committee fully appreciates the question, 'what happens the day after the USDA has made its decision on deregulation of 'Darling 58'. How does TACF respond if the tree is deregulated or not?

- **Jules Smith**, TACF's Director of Communications, reported on the development of a new logo for TACF. Jules stated that the current logo, while useful, needs to be updated with a more vibrant look. This has not been a rushed effort, and Jules hopes TACF can roll out a new logo at the national meeting in the fall of 2023 to celebrate TACF's 40th anniversary.

Seedling Requests for 2023

In the fall of each year, the WV chapter puts in its request for the most advanced backcross nuts for its members. While American chestnut seedlings are distributed to any interested party, we ask that those receiving TACF's backcross nuts/seedlings be members of the WV chapter. If you are interested in receiving backcross nuts and/or seedlings, please inform Mark Double of your wishes and he will add your name to the list. He will then inform the Meadowview Farm of our order. Use the chapter email: WVachestnut@acf.org to place your request.



For those of us in our retirement years, we were not born in the age of smart phones, Facebook, Twitter and Instagram. The old adage, 'you can't teach an old dog's new tricks' is very appropriate for me at the age of 70. In the Zoom meetings (another task I had to learn), chapter presidents have been informed that each chapter needs to get its message out via social media. While I created a Facebook page for the WV chapter, I only post news and pictures as events happen. For our chapter, that usually is a span from March through June when seedlings are growing and then planted across the state. Chapter presidents have been provided a tutorial by **Marketing Outpost**, a full-service marketing strategy company in Asheville, NC. We were told that we need to make posts (text and/or photos) 2-3 times per week. The hierarchy of content on Facebook (from most viewed to least viewed) is: videos (less than 1 minute); carousel (more than one photo); 1 image; text. Marketing Outpost informed us that once a chapter Facebook page is up and running, a chapter social media manager can expect to spend 1-2 hours per week posting and answering questions. As of August 2023, the WV Facebook page has 209 followers and we have reached 2,060 individuals. The article on this page asking for members to submit articles will go a long way in getting out our story to members, not only in the WV chapter, but also on the national level. If you have photos of your trees or a single tree, send them to: WVachestnut@acf.org and we can add to our social media accounts!

"He that plants trees loves others besides himself."

Dr. Thomas Fuller, British Physician (1654-1734)

ARTICLES WANTED

If you have an article that you would like to contribute to the WV chapter newsletter, please contact Mark Double, newsletter editor at: WVachestnut@acf.org

Members enjoy hearing stories of other members. Please feel free to include photos as well.

O Chestnut Tree

Words by John Neuman, 2004

Tune: *O Tannenbaum* (Old German)

O chestnut tree! O chestnut tree!
You fill our lives with beauty.
O chestnut tree! O chestnut tree!
We glory to restore thee.

Once more for healthy nature's good,
Your sweet gifts and your lasting wood.

O chestnut tree! O chestnut tree!
Once more the forest king shall be.

Congressional Cemetery Chestnut Festival

One of the newest board members of the Virginia chapter is **Anna Sproul-Latimer**. Anna is not a scientist, but a founding partner and president of Neon Literary, a book publishing company. A lifelong Washington, DC resident, Anna previously worked as a literary agent, foreign rights director and development editor for Ross Yoon Agency. She is a graduate of Columbia University and Oxford.

Anna frequently walks in the Congressional Cemetery in Washington, DC (about 1 mile from the U.S. Capitol), and she noticed chestnut trees growing in the cemetery. She found out that the trees were TACF's backcross trees planted by Tip O'Neill's children about 10 years ago. Tip was the 47th speaker of the U.S. House of Representatives from 1977-1987. Anna then asked the cemetery staff if they were aware of the backcross chestnut trees that were planted on the grounds. The cemetery staff was neither aware of the trees nor of the story of The American Chestnut Foundation. Further conversation led to the first chestnut festival put on by the Virginia chapter. One of Anna's goals as a new board member is to try and attract younger members to TACF. To that end, she hopes the cemetery festival will attract young congressional staffers to the event. Anna's goal is to have 1,500 people attend the event.

The Congressional Cemetery is an historic place with graves of J. Edgar Hoover, John Phillip Sousa, Cokie Roberts, Dolly Madison, Matthew Brady (Civil War photographer), and Tahzay, son of Apache Chief Cochise, among the many notable names. The Congressional Cemetery is open to the public from dawn until dusk. Cars are not allowed to drive in, but visitors are welcome to walk around the grounds and explore the history that is there.

The cemetery hosts outdoor movies on a regular basis and about 30% of their annual operating budget comes from their dog walking program. The cemetery staff is interested in planting additional backcross trees along with signage, so awareness of the goals of TACF can go a long way in promoting our message to those in the Washington, DC metro area. The festival will be held, Sunday, October 23 from 11:00 am-3:00 pm at 1801 E Street, NE, Washington, DC.

Anna is still looking for vendors as the festival was put together in a short timeframe. If you are interested in selling articles, trees, books, Anna will be pleased to have additional vendors. She also requests that TACF members from all 16 state chapters attend and help educate the folks who attend. Anna's contact information is: **Anna@neonliterary.com**.

USDA Multistate Chestnut Project

Since 1982, scientists who work on chestnut have gathered annually to share data on their respective areas of expertise. The multistate project falls under the umbrella of the USDA, and 25-35 members attend annually. Faculty members from universities, graduate students, federal and state employees and an occasional foreign scientist attend the meetings. Members of the group take turns hosting the meeting, and the 2022 meeting was hosted by former TACF Mid-Atlantic Regional Science Coordinator, **Tom Saielli**. Tom agreed to host the meeting two years ago in Charlottesville, VA, but the last two meetings (2020 and 2021) were virtual due to the Covid-19 pandemic. Finally, 2022 allowed for an in-person gathering. The two-day meeting concluded with a tour of the Lesesne State Forest in Roseland, VA (Nelson County). Approximately 12,000 hybrid chestnut seedlings were planted at the Lesesne State Forest between 1969-1975. Most of the trees were grown from open-pollinated seed of the best hybrid trees available at the time based on tree form and apparent blight resistance. Seed was collected from 46 different trees, with much of it derived from selections of the breeding efforts at the Connecticut Agricultural Experiment Station in New Haven, CT. Some of the trees were grafted using American scion and Graves' rootstock and two of the largest American chestnuts in the eastern U.S. are in the orchard, now about 60' tall. Below is a brief summary of some of the presentation and pictures of some of the trees in the Lesesne State Forest.

Andy Newhouse of the State University of New York (SUNY) gave a presentation on the development and regulatory review of the transgenic American chestnut for restoration. The transgenic work at SUNY started in 1989 by William Powell and Chuck Maynard. Andy pointed out that American chestnut is not an endangered species, but it is functionally extinct due to the chestnut blight fungus. The oxalate oxidase (OXO) gene, obtained from wheat and inserted in the DNA of American chestnut, breaks down oxalic acid into hydrogen peroxide and carbon dioxide. The insertion of this gene presents no harm to humans or the environment. The transgenic tree, 'Darling 58' is currently under review by three federal agencies: USDA/APHIS; EPA; and FDA. Proposals for deregulation were submitted to: USDA/APHIS in January 2020 (expected decision Aug 2023) EPA in September 2021 (expected decision December 2022) FDA in October 2021 (expected decision Spring 2023)

Transgenic trees have been planted at SUNY in Syracuse, NY under permit from the USDA. The trees are now several years old and natural infections have started to develop. They are also conducting some trials with artificial inoculations of a virulent strain of the chestnut blight fungus. There is a sharp contrast to infections on transgenic trees compared to identical trees that do not contain the OXO gene. An example is seen below in a photo from Andy Newhouse with the transgenic tree on the left and a non-OXO tree on the right. Canker sizes are drastically different, showing the positive effect of the OXO gene.



The 'Darling 58' is not patented. William Powell was adamant from the beginning that this transgenic tree not have a patent, so it can be used by everyone. There is current discussion as to how to best control its use. SUNY is happy for landowners to plant trees on their property, but they do not want commercial operations to make money off of the 30-year's worth of research that has been conducted at SUNY. Under investigation is putting 'Darling 58' under the **Plant Variety Protection** act that will not allow people to propagate or sell the trees. There is currently discussion

with New York nurserymen who may be able help grow and distribute seedlings in the future. The facilities at SUNY are not sufficient to grow thousands of chestnut seedlings.

Since there are so many genes in Chinese chestnut that work together for resistance to the chestnut blight fungus, there is no one gene that can be inserted to confer resistance.

Tom Klak from the University of New England reported on the production of producing transgenic pollen under high light. Tom reported on three projects.

1. Field pollination in July 2022 was greatly impacted by a severe drought in coastal Maine (all the way down to Massachusetts). Many trees in his 6-year-old germplasm conservation orchards have died due to lack of water. The drought also has heavily impacted nut production negatively. A new USDA permit was obtained so they could pollinate 2,000 American trees (6-10-years old) with transgenic pollen. Pollination is conducted using pollen that has been adhered to microscope slides. They can pollinate 10-20 flowers per slide.

2. A common garden study (planting exactly the same plants at different locations) was planted in conjunction with SUNY and Meadowview, VA. More than 550 trees were planted and tree tubes were removed in July 2021 to allow the trees to grow more laterally. They experienced a massive mouse invasion that girdled a lot of trees. By leaving tree tubes on in 2022, there was no mouse damage. Tom uses 40" x 40" black plastic mats around all his trees (purchased from Plantra, Inc).

3. Pollen production under high light is all done in the greenhouse as growth chambers are too expensive. He has found that any transgenic tree can produce copious amounts of pollen. They are producing catkins and pollen and storing pollen in the freezer that can be shipped to cooperators if 'Darling 58' is regulated by USDA/APHIS.

Jared Westbrook, Chief Scientist at TACF's Meadowview farm, reported on multiple paths to success for American chestnut restoration. One measure of success is flowering and seed production. Jared expects large gains in blight resistance from Best X Best crosses. The plan is to outcross 'Darling 58' if it is deregulated to increase the diversity and minimize inbreeding. Chestnut divergence data was conducted at Virginia Tech and data show that chestnuts in China

have been evolving with the chestnut blight fungus for 23 million years. That explains resistance in Chinese chestnut, as it has evolved for millions of years with the fungus.

Jared showed that when chestnut trees are inoculated with the chestnut blight fungus, there are about 10,000 genes that are altered due to infection by the fungus, but they are not able to ascertain which genes are important for blight resistance. This shows how complicated resistance is in chestnut.

Hannah Pilkey from SUNY reported on chestnut breeding and outcrossing. She has been working with frozen and fresh pollen and found that fresh pollen is 70-80% viable while frozen pollen is only 30-40% viable. Using both frozen and fresh pollen, the SUNY group pollinated 14,308 flowers in 2022 and she expects 8,000-10,000 nuts this fall. Currently, there are more than 20 people at SUNY working on the chestnut project. This does not count the 10-12 undergraduate students who assist.

Steve Jeffers from Clemson University reported on results of oomycete fungicides he tested against Phytophthora root rot (PRR). Much work has been done on the 'other chestnut disease', PRR. Steve found that two systemic fungicides, Aliette and Reliant, were both very effective at controlling PRR. There were many other presentations, but due to space limitations, summaries of those reports will not be presented in this newsletter.

The field trip to the **Lesesne State Forest** showcased some amazing chestnut trees. The field trip consisted of three stops: (1) Hybrid trees from the Connecticut Ag. Exp. Station; (2) American orchard; and (3) the Thompson grafted tree. While the Lesesne State Forest is off the beaten path, it is a worthwhile trip to see some truly magnificent trees.



Sara Fitzsimmons next to a hybrid chestnut from CAES planted in 1968.



Bruce Levine in front of a 37-year-old pure American chestnut tree.



One of many superficial cankers in a 37-year-old chestnut tree.



An American chestnut with numerous superficial cankers.

The field trip at the Lesesne State Forest began in the nearly half-mile-long orchard of trees from the Connecticut Ag. Exp. Station. This planting began in 1968 and the trees are large, as seen on the photo on page 8 with Sara Fitzsimmons. Interestingly, the chestnut trees are now beginning to be outcompeted by the Yellow poplar in the stand. In several areas, the Yellow poplar was clearly topping the chestnut trees. Sara indicated that the hybrid CAES chestnut trees are mostly Chinese, and they have simply stopped growing.

The second area was a stand of pure American chestnut. These trees are now 37 years-old and simply magnificent. There are numerous areas on each tree that have 'scruffy bark' indicative of chestnut blight cankers, but the infections are very superficial and there are no signs of the chestnut blight fungus on the bark as seen in the photos on the previous page.

There were a few younger trees in the American orchard that showed flagging in the crown, indicative of infections, but the trees were surviving. **Fred Hebard**, former chief scientist at TACF, told the group that in his experience, trees such as the ones with the 'scruffy bark' were infected with debilitated isolates of the chestnut blight fungus. No one has sampled cankers on these trees to test whether or not the isolates are debilitated.

The third area of the tour was a group of trees that were grafted onto irradiated root stock. In the 1950-1960s, **Albert Dietz**, a chemist with Pittsburgh Plate Glass in West Virginia, read an article written by **Ralph Singleton** who was working on President Eisenhower's concept of '**Atoms for Peace**'. Singleton's article featured mutant breeding. Reading of the mutation experiment, Dietz sent Singleton two quarts of American chestnuts that had been collected on the Blue Ridge Parkway. The seeds were Cobolt 60-irradiated at the Brookhaven National Laboratory and planted at various locations around the country. The strategy was a 'scatter-shot' approach in that irradiation of many nuts might result in mutations and confer blight resistance if the resistance trait was heritable. Some of the irradiated trees were planted at the Lesesne State Forest. All of the irradiated trees died, but

remained alive via shoots. One one of those rootstocks, Gary Griffin at Virginia Tech grafted a scion from a large surviving American chestnut from Appomatox County, VA. The result was a tree referred to as the **Thompson Tree**, pictured below. The tree has two trunks and neither show signs of chestnut blight infections.



Tomato Fest

The Berkeley-Jefferson Extension Master Gardener Association held their 2022 Tomato Fest on August 13 at the WVU Kearneysville Tree Fruit Reserach Education Center. The day was sunny with a slight breeze and that helped attract many visitors. Part of the 2022 Tomato Fest featured an American chestnut display by **Linda and Bernie Coyle**. The Coyles supplied banners, TACF brochures, American chestnut seedlings, sprigs of Chinese chestnuts with burs, a shelf made of chestnut wood, and copies of the *Chestnut Magazine*.

According to one of the festival directors, the chestnut booth garnered a lot of interest. Many thanks to Linda and Bernie for spreading the word about TACF and the WV chapter.



Photo credit: Getty images