



The West Virginia Chapter of The American Chestnut Foundation Newsletter *January 2020*

RECAP OF FALL EVENTS

IN THIS ISSUE: PLANTINGS AT SBR AND OAK HILL; ARTHURDALE CHESTNUT; BECKLEY MEETING; OPINION ARTICLE; WHY AMERICAN CHESTNUT?; IN MEMORIA; CHESTNUT PLANTINGS IN WV; UPCOMING MEETINGS

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Happy New Year

Warm wishes to you as you enter not only a new year but a new decade. We can all hope that the decade of the 2020s will bring about a blight-resistant chestnut tree, either from traditional breeding or from molecular techniques. The American Chestnut Foundation began in 1983 and we have discovered a great deal in 37 years. Advances over the last decade bode well for a successful outcome. Thank you for your membership in the WV chapter.

Summit Bechtel Reserve Planting



Planting at Summit Bechtel Reserve

A group of 22 volunteers gathered in October at the Summit Bechtel Reserve in Fayette County to plant 60 backcross chestnut seedlings. **Sam Muncy**, treasurer of the WV-TACF chapter, and former Boy Scout, organized the planting.

The planting was adjacent to the Console Bridge that is one of the focal points of the 10,000-acre scout site.

Oak Hill High School Planting

A variety of chestnut seedlings were planted in November at the outdoor classroom at Oak Hill High School in Fayette County. The 17 seedlings represented several sources—WV tree nursery in Clements, WV, backcross seedlings from TACF, and American chestnuts from Virginia and Tennessee. One of the drivers of this project is **Keith Richardson**, president of the New River Gorge master naturalists. Richardson, along with fellow WV-TACF members, **Steve Swank, Dr. Lewis Cook, Robert Sybolt and Rick Sybolt** spearheaded the planting. Holes were dug, seedlings planted and cages were installed to prevent deer predation. The outdoor learning area is part of the Fayette County Capital Planning program in conjunction with the School Building Authority of West Virginia.



Dr. Lewis Cook and Keith Richardson plant trees at Oak Hill High School.

Arthurdale Chestnut Tree

Tom Radabaugh from Arthurdale, WV in Preston County, has a wonderful 12-foot-tall chestnut that he tends. This tree produced several bags of chestnut this fall.



Tom Radabaugh of Arthurdale shows off his Preston County American chestnut.

November Meeting in Beckley

Mark Double presented an hour-long talk to members of WV-TACF from southern WV. The meeting was held at the Raleigh County Public Library and 12 individuals were in

attendance. After Double's talk, there was an hour for discussion and questions. Topics of discussion centered around TACF's 3BUR program of: (1) breeding; (2) biological control; and (3) biotechnology.



Some of the group who attended the Beckley meeting.

Fort New Salem, Harrison County

Sam Muncy from WV-TACF, was one of many vendors in period costume at the Fort New Salem's *Spirit in the Mountains*, a nationally recognized celebration of the historic and cultural folkways of the Scotch – Irish, English, and German settlers in West Virginia. This celebration blends the seasonal customs of these settlers into a panorama of music, foods, and heritage skills, along with the life styles that represent the diversity of beliefs and traditions of the season. Visitors witness a domestic setting representing family customs of ethnic origins, reflected in the preparation of special foods, making of decorations and methods of celebration. Heritage skills are demonstrated in the community's blacksmith shop and Old Kitchen. Modern interpretations of heritage crafts are also for sale from local craftspeople located in several of the Fort's buildings.

Fort New Salem is a representative frontier log house settlement of nineteenth-century North Central Western Virginia/West Virginia. The village of over 18 relocated log structures was created as an

extension of the Salem International University campus. Since December



Sam Muncy roasting chestnuts at Fort New Salem.

2005, Fort New Salem has been under the private ownership of the Fort New Salem Foundation, Inc. It is a living history outdoor museum interpreting the history, crafts and lifestyles of the area. The settlement is surrounded by tree covered hills and takes its visitors into another lifetime when work and leisure activities reflected the values and traditions of the community and the Appalachian culture of her people.

During the Spirit of Christmas event, each cabin holds a unique display from candle making to ornament construction to a puppet show.

Sam Muncy gave visitors a chance to taste hot roasted chestnuts, cooked over an open fire. Sam stated that more than 75% of visitors had never tasted a chestnut. Sam had paper brochures about the American chestnut that he folded to make a pouch that was filled with hot roasted nuts. Sam worked the festival all four days, held over two weekends in late November/early December. **Sam and Sharon Reeves Cottrill** deserve our thanks for taking the time to spread the word about chestnuts and

provide visitors a taste of hot roasted nuts. Sam also has planted several backcross American chestnuts at the Fort, along with an information panel.

Sam and Sharon were not the only WV-TACF members to volunteer in the fort as early pioneers. **Carla Kesling**, from Harrison County, also appeared in period costume. She volunteered in the fort apothecary.



Carla Kesling in period costume at the fort.

Should we or should we not and how long should we take? The controversy of the transgenic American chestnut tree

An editorial by Dr. Lewis Cook, WV-TACF member, Fayetteville

I see no need to review the significance of the effort to re-establish the American Chestnut tree for any reader of this publication. Over the past few decades more and more attention has been given to the dream of once again having that magnificent gift of nature back in a healthy and thriving state. The question, here, is about the process of trying to do that.

Multiple attempts have been made to save the American Chestnut (AC). Initially, just after the dying of the trees was

recognized, many trees were simply cut down to isolate the spread. Fungicides and even nuclear radiation were attempted as a treatment without success. In 1990, intercrossing (crossing the apparently more resistant trees together) was attempted; again, without apparent benefit. In the 1970's, backcrossing began and continues today. Much of that work was done by researchers at Concord University at Athens, WV and at Virginia Tech.

Bill Powell and Charles Maynard began a new effort 30 years ago. In 2009, they published a paper in BMC Plant Pathology providing the results of identifying over 40,000 genes from *Castanea dentata* (AC) and *Castanea mollissima* (Chinese Chestnut) trees which could contribute to blight resistance. They determined that DNA from Chinese chestnuts implanted into AC did appear to help some. They also determined that a gene from wheat was even better. This identified DNA sequence produces an enzyme, oxalate oxidase (OXO), which breaks oxalic acid into water and hydrogen peroxide. This process is common in many plants including poplar trees, rice, sorghum beets, beans, bananas and many other plants that are consumed by humans on a regular basis. OXO does not kill the fungus, *Cryphonectria parasitica*. This fungus damages the surrounding tissue of the AC by producing oxalic acid. That damaged area allows the fungus to spread into that compromised area, where it produces more oxalic acid. This vicious cycle leads to enough

damage to kill the tree. Interfering with that process increases the resistance and survivability of the tree. The same approach has been taken with other plants such as peanuts, soybeans and poplar trees, but those modified plants are not on the market, yet. The transgenic AC tree has not been approved by Federal agencies.

The concern about this genetic modification is considerable in today's world. Such changes are feared by the public and require approval by at least three agencies- USDA, EPA and FDA. The process of this approval is long, arduous and very costly. It is estimated that it will take several years to complete. That approval has been so cautious and responsive to ill-informed ideas that progress is unnecessarily stymied.

Some published concerns:

- **Unknown unexpected negative consequences.** Of course, this could always occur, but it does not seem reasonable to never move ahead out of this fear.
- **It will not really make any difference. There are too many other things like climate change, monoculture, bad logging practices, invasive species, other potential diseases, human development into forested areas, etc.** Again, this appears to have some legitimacy but not a reason to avoid the attempt.
- **Once planted, we cannot go back if bad consequences occur.** This may be overly pessimistic.

- **This is all being done because of the “greed of industry.”** If this becomes a commercial success, it only verifies its need.

- **There may be health impacts, such as breathing the pollen and eating the nuts.** This is not quite clear as a concern. It must be the assumption that the change in the genome may be more allergenic.

- **Once out, the GMO trees will grow everywhere and landowners will have no choice about what grows on their land.** This is true. That happens as a universal occurrence. It assumes a threat of the unknown.

- **Transgenic trees have not been planted in all of the varying habitats and climates. The effects on other plants and animals, over the long term, is in question.** Again, this is true, but if used as a limiting factor, very little to foster improvement would be attempted.

Multiple studies have been done to ascertain environmental impact. No negative consequences have been identified thus far. Leaf litter was a concern since many organisms use it, but it appears to be safe from that aspect. It has also been determined that OXO activity disappears with the death of the leaf. The concern about negative consequences to bees and frogs has been evaluated and ruled out.

Of course, the consequences of any manipulation of nature should be evaluated. Many apparently beneficial developments have occurred that ended up with hidden and often

significant negative consequences. It must be recognized that the natural processes of our Earth present random and more or less adaptive or detrimental changes constantly. That is the basis of diversity. Admittedly, many of those changes appears not to have been totally beneficial. We have little control over all of that. Certainly, we have more control of the research done by the scientific method and scrutiny of evaluators. The benefits we could gain from that process far outweighs the random changes in nature. We should not be frozen in the fear of change or the lack of knowledge of the science involved. The fear of “GMO” is driving the process to the point of our being denied, or least delayed, benefits of our ability to manipulate nature’s unfortunate experiments.

Sources: Chapter 2, Biotechnology for Forest Health? -The Test Case of the Genetically Engineered American Chestnut by Lead authors: Rachel Smolker, Biofuelwatch, and Anne Petermann, Global Justice Ecology Project, April 2019, Produced by: The Campaign to STOP GE Trees, Biofuelwatch and Global Justice Ecology Project.

GMO could bring back the American chestnut. But should it?, *The Christian Science Monitor*, April 24, 2019, Eoin O'Carroll Staff writer.

The Most Controversial Tree In The World, *Pacific Standard*, Rowan Jacobson, July 24, 2019.

To save iconic American chestnut, researchers plan introduction of genetically engineered tree into the wild, *Gabriel Popkin*, Aug. 29, 2018.

Why American Chestnut?

Michael Doochin, former chair of TACF’s Board of Directors

When Europeans arrived in eastern North America, they found a seemingly inexhaustible treasure in our land and its forests and wildlife. Since then, the primeval majesty of that landscape has been compromised, with many of its key forest species now in severe decline. There is no more suitable metaphor for that lost Eden than the distinctive American chestnut tree that was destroyed by an imported fungal blight early in the last century. The loss of this tree was catastrophic. With its demise, a dominant feature of the earlier forest was gone. And now there are few people alive who remember the living tree. Thankfully, an ambitious effort to preserve the original character of the American forest is underway through the rescue of the American chestnut tree, the energetic anchor in a range so vast it stretched from Maine through Mississippi. As its name implies, our country’s chestnut tree was uniquely American, playing a central role in the ecology, economy, and culture of Appalachia and adjoining regions. A dominant species and competitive in multiple environments, it sometimes reached enormous sizes. Because of its rot resistance, chestnut barns and homes have endured for decades. Its use for tannin supported an entire industry. Its wild-collected nuts, sold and distributed into big-city markets, were an important cash crop in rural areas. Since the demise of

the American chestnut also spanned the Great Depression, the loss of this invaluable food resource, with its nutritious nuts for humans and wildlife alike, was a particularly devastating tragedy. Just as the tree's history and the stories that surround it are remarkable, so is its future. Unlike many other species, the chestnut tree is able to grow on an estimated one million acres of scarified land that has been abandoned after surface mining. Because of its size, rapid growth, long life, and decay resistance, if the chestnut were returned to its former ecological role it could contribute substantially to carbon sequestration. The food available to humans and wildlife from a mature American chestnut tree is 3 to 5 times more abundant, and much more nutritious, as that from oak trees of a comparable size. When restored, its prolific nut production may help take wildlife pressure off existing crops. The restoration of this American icon is a key to restoration of the ecosystem of our temperate forests, long-term sustainability, the struggle against global climate change, and an enhanced quality of life along its range. The chestnut is a paradigm for the hope that exists for all threatened species. The American Chestnut Foundation (TACF) has played the lead role in rescuing the American chestnut through its innovative breeding and genetics research for more than three decades. Our long-term goal is for nature to take over and create self-sustaining populations, with blight resistant trees growing stronger with each succeeding generation. More than just

preventing environmental destruction, TACF is restoring a natural legacy for our grandchildren. And, perhaps that gift will propel them to become stewards of a better world. When Europeans arrived in eastern North America, they found a seemingly inexhaustible treasure in our land and its forests and wildlife. Since then, the primeval majesty of that landscape has been compromised, with many of its key forest species now in severe decline. There is no more suitable metaphor for that lost Eden than the distinctive American chestnut tree that was destroyed by an imported fungal blight early in the last century. The loss of this tree was catastrophic. With its demise, a dominant feature of the earlier forest was gone. And now there are few people alive who remember the living tree. Thankfully, an ambitious effort to preserve the original character of the American forest is underway through the rescue of the American chestnut tree, the energetic anchor in a range so vast it stretched from Maine through Mississippi. As its name implies, our country's chestnut tree was uniquely American, playing a central role in the ecology, economy, and culture of Appalachia and adjoining regions. A dominant species and competitive in multiple environments, it sometimes reached enormous sizes. Because of its rot resistance, chestnut barns and homes have endured for decades. Its use for tannin supported an entire industry. Its wild-collected nuts, sold and distributed into big-city markets,

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stronger with each succeeding generation. More than just preventing environmental destruction, TACF is restoring a natural legacy for our grandchildren. And, perhaps that gift will propel them to become stewards of a better world.

Reprinted from TACF's website

Stratification

Many WV-TACF members have chestnuts in cold storage (stratification) awaiting germination in late winter/early spring. If you have not checked your nuts lately, now is a good time to take them out of the refrigerator and look for mold. If the nuts are still in good condition, great. If mold is evident, take the nuts out of the bag and wash them in a 10% Clorox solution (9- parts water to 1-part Clorox). Soak the nuts in the Clorox solution for about 15 minutes. Do not rinse with tap water but allow the nuts to dry on a paper towel. Replace your potting mix with new and return the nuts to the refrigerator.



Chestnut with radical.

Radicals should begin to appear any time from February to April, depending on the temperature of the refrigerator. You can leave the germinating nuts in bags but don't wait until the radicals become entangled. At that point, it is difficult to separate nuts without breaking off the radicals.

In Memoria

Dr. Dennis Fulbright

**Written by Dr. William MacDonald,
WV-TACF Advisory Board Member**

The chestnut community lost a long-time enthusiast, **Dr. Dennis W. Fulbright**. A California native, he became a Michigan resident when he joined the Michigan State University faculty. His research interest was sparked by the many chestnut groves that dotted the state. In some areas, infected trees were recovering from blight, not unlike what had occurred with European chestnut in Europe. Dr. Fulbright along with undergraduate, graduate and research assistants unraveled many mysteries that accounted for the unique recovery of chestnut from blight in Michigan. Over the years, he was involved in USDA research and various international chestnut groups. His enthusiasm for the species did not stop with science. Fulbright was instrumental in organizing the Michigan Chestnut Grower's Cooperative—an initiative that provided leadership among the small and large growers to help them with cultivar selection,



Dr. Dennis Fulbright

harvesting technology, and marketing. His enthusiasm was contagious and resulted in a significant chestnut grower community in Michigan.

Dr. Fulbright will be remembered as a humble, gentle man with a warm and likable personality. Some in West Virginia may remember Dennis as he was a keynote speaker several years ago at the Rowlesburg Chestnut Festival. He will be sorely missed but long remembered.

Update on Chestnut Plantings in the State of West Virginia

As of 2019, the newsletter editor knows of 50 sites where backcross or American chestnut trees have been planted in the state. If you know of other sites in WV where backcross chestnuts have been planted, please contact: Mark Double (mdouble1@hotmail.com), so the list can be as complete as possible.

1. WVU Agronomy Farm (Monongalia)
2. University Forest (Preston)
3. Coopers Rock (Preston)
4. "Old Hemlock" (Preston)
5. McGrew House, Kingwood (Preston)
6. Waddell Orchard at Preston Co. H.S. (Preston)
7. Green Valley (Preston)
8. The Woods Resort, Hedgesville (Berkeley)
9. Bell Hill, Rowlesburg (Preston)
10. Szilagyi Center, Rowlesburg (Preston)
11. Jennings Randolph Lake (Mineral)
12. Aurora (Preston)
13. Griscom (Preston)
14. St. George (Tucker)
15. Tygart Lake (Taylor)
16. John Sypolt (Barbour)
17. Alpha Natural Energy (Boone/Kanawha)
18. Reeds Creek (Pendleton)

19. Grassy Knob (Pocahontas)
20. Bartow (Pocahontas)
21. Hermitage at the Holy Cross (Wayne)
22. Upper Sawyer (Webster)
23. Anjean-Meade WestVaco (Greenbrier)
24. Rupert (Greenbrier)
25. Dorie Miller Park (Greenbrier)
26. State Fair Grounds (Greenbrier)
27. Mt. Lookout (Nicholas)
28. Beckley YMCA (Raleigh)
29. Summit Bechtel Reserve (Fayette)
30. East Lynn Lake (Wayne)
31. State Capitol (Kanawha)
32. Glenville (Gilmer)
33. Fort New Salem (Harrison)
34. Kingsford Charcoal Plant (Tucker)
35. West Liberty University (Ohio)
36. Black Castle (Boone)
37. North Surface Mine (Logan)
38. Endurance Surface Mine (Boone)
39. Twin Falls State Park (Wyoming)
40. Cowen (Webster)
41. DuPont, Parkersburg (Wood)
42. MacArthur (Raleigh)
43. Elkins (Randolph)
44. Fayetteville (Fayette)
45. Alderson (Monroe/Greenbrier)
46. Enon (Nicholas)
47. Parsons (Tucker)--GCO
48. Sutton (Braxton)
49. D&E campus (Randolph)
50. Oak Hill (Fayette)

There are reports that all chestnut trees at site #26 (State Fair Grounds) were removed. If anyone can confirm this, please contact the editor: (mdouble1@hotmail.com).

Upcoming Meetings

February 29, 2020 Berkeley Springs, Morgan County Extension Office, 80 War Memorial Trail, Suite C, 11:00 am

April 4, 2020* Spring WV-TACF meeting, Waco Center, Glenville State College, Glenville, WV (Park behind Waco center on the left-side of the building. An open-door stairwell will lead to 2nd floor classroom), 1:00 pm

May 13, 2020 Berkeley County, sponsored by Potomac Valley Audubon Society, (no venue yet), 7:00 pm

***Pre-meeting tour on April 4 @ 10:00 am.** At the **Alice and Rick Sypolt farm**, we will look at a site that was planted using tree shelters in the spring of 2011, planted to sawtooth oak and American chestnut. At the red-light intersection (Routes 5/33) in downtown Glenville (at the McDonalds restaurant), turn left on Route 5 and travel 3.88 miles toward Grantsville. The number 3888 is on the mailbox as well as a sign for Old Place Farm (on right-side of road). If you pass a park on the left, you have gone too far. Meet at the house and travel up the driveway to the top of the hill to the planting. If anyone is late, come up and join the group. Lunch will be on your own at the local diners prior to the 1:00 pm meeting at the Waco Center.

Interesting Chestnut Facts

from softschools.com

- Chestnut flowers cannot be self-pollinated. Since the flowers are fragrant, they attract insects that transfer pollen from one tree to another.

- Chestnut and wheat contain the same amount of carbohydrates. The level of starch is 2-times higher in chestnut than potato. Chestnut is also rich in vitamin C, vitamins of the B group and minerals such as potassium, iron and magnesium.
- Chestnut has a high amount of tannins making it a valuable species for tanning leather products.
- Chestnut trees produce more fruit when they are subjected to colder winter temperatures.
- The lifespan of a chestnut is dependent upon the species. Some trees can survive 200-800 years in the wild.

WV-TACF Officers

(Elected in October 2019)

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