

# THE GEORGIA SPROUT

Georgia Chapter  
of

The American Chestnut Foundation

Autumn, 2011

Volume 8, Issue 2

## Anna Johnson to Present the Chestnut Story to the National 4-H Congress

By W. Carroll Johnson—(proud Dad!)

Anna Johnson, an active member of the Tift County 4-H and junior at Tift County High School, recently 'Mastered' (placed 1st) at the 69<sup>th</sup> annual Georgia 4-H Congress, 19-21 July 2011. The topic of Anna's presentation was "The American Chestnut Blight." Anna competed in the Forest Resources and Wood Science category.

The journey to being able to compete at Georgia 4-H Congress begins locally with an activity called "Project Achievement" and then continues to competition at the district level. If the 4-Hers win at the district level, they are qualified to compete at the Georgia 4-H State Congress. In addition, youth prepare a portfolio (basically a resume) of yearly activities related to their project, community outreach, service, and leadership. The project presentation and portfolio are the basis on which youth are evaluated at the Georgia 4-H State Congress. Those who Master at the Georgia 4-H Congress are invited to attend the National 4-H Congress (November 2011 in Atlanta), which is a four day convention for high-achieving 4-Hers from across the country.



Anna spraying fungicides with Ronnie Camp at the Callaway Gardens Orchard in October 2010.

Anna is a member of the Georgia Chapter of the American Chestnut Foundation and has attended annual meetings for the past two years. In October 2010, Anna assisted Ronnie Camp in maintenance of the American chestnut research orchard at Callaway Gardens.

Anna's interest in the American Chestnut Blight is based on her family roots in western North Carolina, where the disease devastated the species. Regular camping trips to Cataloochee Valley in the Great Smoky Mountain National Park and campfire discussions sparked a sincere interest in the disease epidemic and resulting environmental disaster.

Anna and her family are appreciative to the Georgia Chapter of the American Chestnut Foundation for their support and encouragement. Anna plans to continue to support the Georgia Chapter and their outreach efforts.



Anna being recognized as 'mastering' in the Forest Resources and Wood Science category at the Georgia 4-H State Congress, 21 July 2011.

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## The Henry Orchard

By Tim Chesnut

As a boy in Martindale, Georgia (between Trion and Lafayette), octogenarian Ralph Henry remembers collecting nuts from one particular chestnut tree as a youngster in the late 30's. "There were dead trees up the ridges, but to my recollection, this tree was still producing burs when we moved in 1939". He moved a few miles west to Teloga, and recalled a split-rail fence made of chestnut along that property line that crossed over Shinbone ridge.

Now the Henrys live in a place where, literally, "you can't get to unless you're lost, or very determined". They are nestled in the upper reaches of Haywood Valley, against the southern slope of Little Sand Mountain. They're five miles as the crow flies from a four-lane, but the crow will get there twenty minutes before you can. It is there that you will find the Henry Orchard—GATACF's most recent and state of the art backcross and re-search orchard, stewarded by Mr. Henry and his daughter Faye.

Mr. Henry's interest in the chestnut was rekindled from his and Faye's friendship with Little Sand Mountain neighbor, Ted Touchstone. Ted was a retired wildlife biologist with the Georgia DNR and at the time I got involved with the GATACF back in 2004-2005, he hosted an hour long radio show in Rome that had a very devoted and wide-spread following. As a fledgling forestry consultant and a new member of the GATACF, I sought out Ted and convinced him he needed to interview me on his show to talk about forestry and chestnuts. Ted remarked that we never seemed to have enough time to fully discuss "things" on the radio, but he became a big fan and proponent of the chestnut and took delight in educating his listeners that the tree was not gone but was making a comeback. "One of the few ecological success stories to come out of the past twenty five years", he once said. Ted's life was tragically cut short after he suffered a stroke in April, 2010— but from his graces and influence, many people learned the chestnut story, Faye recognizes Ted as playing a major role in her decision to get involved.

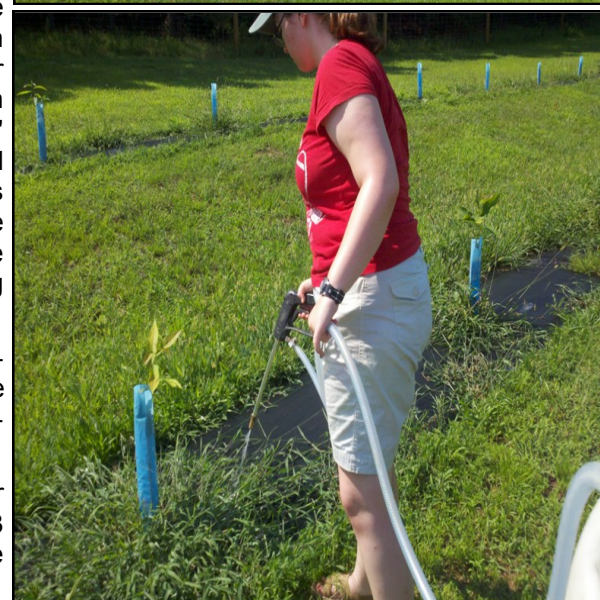
After a fortuitous and galvanizing tour of Meadowview, Faye pulled the string and contacted Dr. Cipollini. By early 2010, the orchard site had been tested and a GA Specialty Crop Grant secured by Mark Stoakes a year later to fund this (and other orchards) for up to three years. By early March of 2011, just under two acres of land had been cleared and cleaned, a 10' fence installed, a well dug, and pumping and irrigation installed. By the end of the same month, nearly 400 trees of various cross and backcross lines were planted. The top two pictures picture show Dr. Cipollini and Faye Henry planting the nuts in the blue tubes. The next picture shows the site in early July and the bottom picture shows Abby Chesnut carefully spraying herbicide around the tubes to knock back unwanted weeds.

Many people helped with the planting, including many Berry College students, our own interns, member and non-member volunteers and Rome Area Master Gardeners (a list of helpers can be seen on the GATACF webpage, [www.GATACF.org](http://www.GATACF.org)).

As you can see, the chestnuts are already poking out of the tubes after only 3 months of growth, but we also have had a lot of mortality. About 1/3 of the trees have died. We will replant the empty spaces, and keep the orchard at full capacity.

The Henrys' have also planted some chestnuts up the ridges in areas that were recently clear-cut. These will be watched and studied and data gathered will be utilized in part to assist the GATACF with our restoration plantings. In fact, it is speculated that a portion of the Henry property may be ideal for one of our initial ventures into this next step of the chestnut recovery program.

The GATACF thanks all the people who have helped with the Henry Orchard!



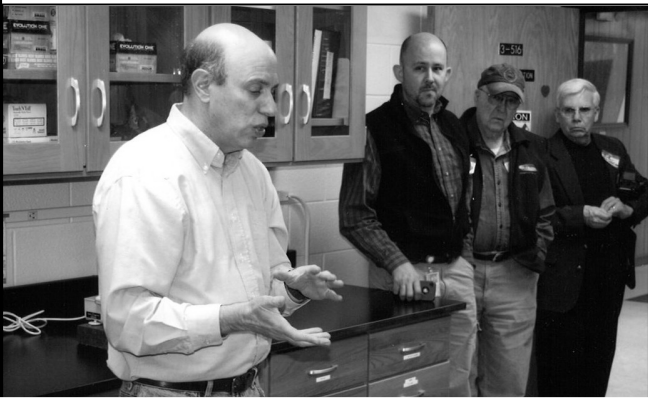


## President's Message

By: Joe Nicholson



Dr. Cipollini discusses the chestnut restoration process with an attendee during the Rome Restoration Event



ABOVE: Dr. Scott Merkle explains his work extracting chestnut DNA during his lab tour at the GA-TACF Annual Meeting;

BELOW: A few of the clonal seedlings Dr. Merkle has been successful in propagating. Work is difficult and returns low (for now) but the work will be vital in carrying the TACF vision forward.



You have found a challenge and a reward in trying to restore the American chestnut tree to the Eastern Forests of the United States. For about 28 years the challenge has been to capture the Chinese blight resistant genetic material from some of the three Chinese chestnut trees (*Castanea*) and maybe (*Castanopsis*). (The GA Chapter began testing this spring to see if (*Castanopsis delavaya*) will cross with Chinese, or American, chestnut trees as another source of blight resistant genes.) Other challenges have been weather, disease, pests, and a volunteer workforce.

The rewards are that our volunteer work has room for lots of our members to get involved on many levels - planting your own pure American chestnut trees for fun and as possible gene pools, helping plant our orchards, searching for nut-producing, wild, American chestnut trees, stewarding wild trees, collecting pollen from wild trees, collecting chestnuts each September from wild trees, pollinating hybrid trees at the Virginia orchards, and providing financial support for orchards and all the projects of GATACF. Helping test some of our latest BC3F3 chestnuts can be rewarding, too.

On March 22, GATACF held a newspaper and TV press event near Macon when we planted four trees donated by Dr. Joe James of South Carolina in a demonstration orchard at Charlane Plantation, the home of Chuck and Rose Lane Leavell. These are 4 trees that show blight and ink disease (*Phytophthora cinnamomi*) resistance. TACF staff coordinated and attended this event along with Joe James and myself.

Special thanks to Kathy Patrick, Erin Coughlin, Martin Cipollini, and others who planned the Rome Restoration Event on May 6th. The food, music, presentation, and auction were great with about 30 people in attendance. We gained more than 10 new members at the event.

Our April 2 annual GATACF meeting in Athens was attended by about 35 people who were treated to presentations by Scott Merckle and Martin Cipollini. Scott gave a tour of his labs and the Horticulture Farm where we have one of our chestnut orchards.

Mark Stoakes is chairing our committee to plan our Atlanta Restoration Event at the Carter Center with former President Jimmy Carter as our key evening speaker on February 16, 2012. Please help invite prospective members to the event and help secure items for our fund raising auction at the event. Please contact Mark (mstoakes@hotmail.com) if you would like to serve on the committee, or help him plan the event.

Contact me if you would like to help harvest wild American chestnuts on September 14, 17, or 18. (Joe.nicholson@att.net)

Since leaving Georgia in December 2010, past chapter President Donald Davis has gotten settled in Washington, DC where he now serves as the "Governmental Affairs" representative for The American Chestnut Foundation.

As an unpaid TACF volunteer, Don tells us that he "attends meetings with government agencies like the Appalachian Regional Commission and the USDA's Natural Resources Conservation Service and informs them about TACF's current work." He is actively involved in seeking funding sources from these same agencies and works closely with Bryan Burhans to make sure that TACF's federal partnerships are current and ongoing. Burhans told us "that TACF is truly fortunate to have such a passionate TACF volunteer to help us with our government relations. Dr. Davis' incredible professional background and dynamic personality represents TACF well in Washington, DC. As an organization, TACF is now able to further develop crucial partnerships with our many federal partners."

Don also tells us he has started writing "an environmental history of the American chestnut," a book that will utilize new archival materials he has uncovered at the Library of Congress, including data from the 1930 agricultural census and material from historical newspapers. In fact, Don recently won a Bell Scholarship to conduct chestnut research at the Forest History Society archives at Duke University later this month. He hopes to finish the book early next year and is currently seeking a publishing contract from a major university or commercial press. If you wish to correspond with Don regarding his chestnut research or TACF consulting work in Washington, you may contact him at ddavis@acf.org.



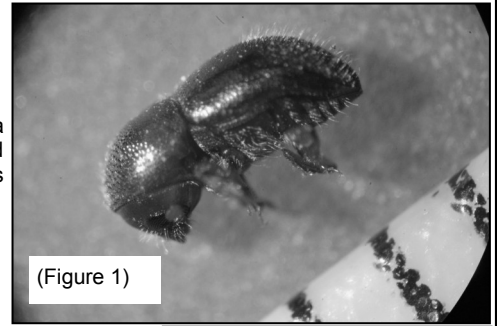
Joe



## The Granulate Ambrosia Beetle (*Xylosandrus crassiusculus*) in GATACF Orchards

Erin Coughlin and Sam Watkins

The granulate ambrosia beetle (GAB), *Xylosandrus crassiusculus*, formerly known as the Asian ambrosia beetle, is a tree-boring beetle species native to the subtropics of Africa, India, Sri Lanka, China, Japan, and South Eastern Asia (Cote 2008). The GAB is a small, reddish-brown beetle no larger than a few millimeters (See figure 1). Despite its small size, this beetle can do a great deal of damage. This species was first discovered in the Southern United States in the mid 1970's and has created serious problems for some native tree species (Cote 2008). In particular, the GAB is highly destructive in fruit and nut orchards. The GAB is a serious problem in orchards because it has been known to attack trees that seem to be perfectly healthy (Reding et. al. 2010), while most other beetles attack trees under stress. These beetles are primarily found in the Southern United States, but have been discovered as far north as Indiana.

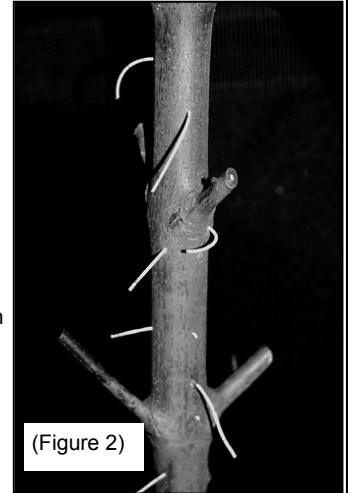


(Figure 1)

This beetle attacks the cambial tissue of young trees by boring into the heartwood, and creating galleries in which they lay eggs and introduce a fungus, *Ambrosiella spp.* (Hopkins and Robbins). The fungus decomposes the tissues of the tree stem, creating a food source for the ambrosia beetle larva. An ambrosia beetle infestation can be identified by the presence of small, fragile strands of boring dust—known as frass tubes—protruding from the main stem (See figure 2). Damage usually occurs on the main stem close to the ground. Trees of 3 inch DBH or less are typically attacked and severe infestations lead to wilting, dieback, and eventual death (Cote 2008). The first emergence of this species typically occurs during late March or early April, and peak activity has been found to be during both spring and fall months (Reding et. al. 2010, Cote 2008), with activity dropping off somewhat in the hotter months of the summer. Emergence and peak activity, however, can vary from location to location and from year to year (Mizell and Riddle 2004). In GATACF orchard at Berry College, Ambrosia beetle infestations were first discovered in mid-April.

The Georgia Chapter experienced infestations of granulate ambrosia beetle this spring in four orchards across the state. The infestations were discovered in the Berry College Backcross orchard in Rome, the UGA Mountain Research orchard in Blairsville, the UGA Backcross Orchard in Watkinsville, and have been reported in Tom Pachinger's backcross orchard near Armuchee in previous years. The ambrosia beetle infestations affected about 40% of the Berry College orchard, 20% of the Watkinsville orchard, and nearly all trees in the Mountain Research orchard in Blairsville.

The treatment of the Berry College orchard was applied under the direction of Dr. Martin Cipollini. The infested trees were cut down at the base of the tree and taken offside for burning, however chipping works too. This method ensures that the ambrosia beetles cannot carry out their breeding cycle and "re-infest" the orchard after the next life cycle. The stumps and all uninfested trees were sprayed with a synthetic pyrethrin (permethrin), and the stumps were also sprayed once with a systemic fungicide. Chestnut trees produce "root suckers," which are a special adaptation that allows new trees to grow directly from the roots if they are still intact. After the infested trees had been removed, resprouts began to grow vigorously from the stumps (Figure 3). Once the resprouts began to reach heights of 6 ft or greater, they were pruned back to only a single stem so that the root system would not allocate energy unnecessarily. All trees and resprouts in the orchard were treated with insecticide once right after the removal of infested trees, and once again two weeks later.



(Figure 2)

As a preventative measure, ethanol-baited traps were constructed to monitor the ambrosia beetle populations in the Berry College orchard. These traps would help respond to future infestations by indicating the presence and abundance of ambrosia beetles in the orchard. The traps were constructed using 2 liter plastic bottles with 3x4" windows cut out along the sides for the bugs to enter (See figure 3). Ethanol (corn liquor or moonshine!) lures (a plastic bottle with a cotton wick) were placed between two windows inside of the trap. The bottom of the trap was filled with soapy water to catch and preserve the insects. Every week since the initial infestation, the contents of the traps have been collected, sorted and counted. A working ratio of ambrosia beetles to total insects helps us determine the general abundance of the beetles and the potential for an infestation. If there is a significant spike in the ratio, we know it is time to spray the orchard with insecticide to prevent another infestation. In June, we observed a spike in the ratio of GAB to other insects from 9% to 23%. In response to these observations, we treated the entire orchard with the pyrethrin insecticide.



(Figure 3: Resprouting after cutting due to Ambrosia Beetle outbreak at the Blairsville Orchard)

Our plan is not only to continue monitoring the Berry College orchard, but also to encourage other orchard stewards to monitor their GATACF orchards for ambrosia beetles for years to come. This will be important because this beetle has recently become a serious threat to chestnut orchards in the Southeast US and may continue to be a problem in the future. Our other objectives include solidifying our ability to identify the different species of ambrosia beetle found in our traps, and developing a better understanding of the life cycle and emergence of the granulate ambrosia beetle in this region in order to prevent future infestations in GATACF orchards.

We would recommend that all GATACF orchard stewards monitor their trees for GAB infestation starting in the early spring and continue into the fall months. Also, it is advisable to treat your trees with insecticide as a preventative measure during GAB emergence and peak flight. Look for these warning signs:

- Small boring holes in the bark of your trees.
- Frass strands (refers to the fine strands of boring dust) protruding from the main stems of your trees.
- A significant increase in the number of GAB's found in ethanol baited traps.

If you discover an ambrosia beetle infestation in your GATACF orchard, take the following actions to prevent re-infestation:

- Cut down all infested trees at the base and spray with a systemic fungicide.
- Remove, burn, (or chip) infested trees and treat all other non-infested trees with a round of insecticide after removal and once again two weeks later.
- If possible, begin to monitor ambrosia beetles in your orchard with the use of simple ethanol-baited traps

If you have questions about how to treat or prevent an ambrosia beetle infestation, or how to monitor ambrosia beetles in your orchard, please contact Erin Coughlin, GATACF Intern, at [erin.coughlin@vikings.berry.edu](mailto:erin.coughlin@vikings.berry.edu).





**Georgia Chapter Officers, Board of Directors and Committee Chairmen**

**Joe Nicholson**  
President

Joe.nicholson@att.net

**Tim Chesnut**  
Vice President

Program/Publicity Chairman  
Tim@ChesnutForestry.com  
706+936-0699

**Tom Pachinger**  
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Board Member

**Mary Belle Price**  
Honorary Board Member

**UPCOMING EVENTS and ANNOUNCEMENTS:**

**GATACF Atlanta Restoration Event**

**MARK YOUR CALENDARS!!! FEBRUARY 16, 2012**

**CARTER CENTER, ATLANTA, GEORGIA**

**(DETAILS TBA)**

**Contact Mark Stoakes (mstoakes@hotmail.com) if you would like to help with the event!!!!**

**Call for Board Members!!!!**

**We must elect at least 3 new board members in 2012!! Any GATACF members who would like to be considered to serve on the GATACF board beginning 2012 are asked to notify Joe or Tim, before the end of October.**

**We need to “BRANCH OUT”**

**The GATACF finds ourselves “concentrated” in NW Georgia. We really need to establish more activity in the Northern, Northeastern, Atlanta Metro, Western and Central Georgia areas. We need members to head up these “sub chapters” and work to organize restoration events, or set up talks and meetings. If you are in one of these areas, and are interested, please email Joe or Tim.**

**An Idea...**

**Please ask Georgia Power and Electrical Membership Corporations near you to help find new nut-producing American chestnut trees along their power lines.**

**FIND A TREE?** Go to our website, [www.GATACF.org](http://www.GATACF.org) and click on the “how can I help” tab. There you will find detailed instructions on how to identify a tree, phone numbers of who to call, and how to submit a sample for verification. You can also call a board member to help out! Contact us and we’ll get you materials to help you, your scout troop, your hiking buddies or even your dog to ID the Trees!



**One Vision - One Voice - One Tree  
Many hands - Many hours - One Tree**

*The American Chestnut Foundation is a 501(c)3 non-profit organization headquartered in Asheville, NC. It has nearly 6,000 members and chapters in 17 states. The demise of the American chestnut tree due to chestnut blight has been called the greatest ecological disaster of the 20<sup>th</sup> century. TACF was established in 1983 with the sole purpose of restoring this majestic tree to its native forests in the eastern United States. Today, TACF’s research farms encompass nearly 160 acres and more than 60,000 American and Chinese chestnut trees which are part of its national breeding program. For more information about TACF or volunteering to help restore the American chestnut, visit our website at [www.acf.org](http://www.acf.org)*

**National Headquarters**

160 Zillicoa Street, Suite D  
Asheville, NC 28801  
828+281-0047

**Email: CHESTNUT@ACF.ORG**  
**Website: WWW.ACF.ORG**

*The Georgia Sprout* is a publication of the Georgia Chapter of the American Chestnut Foundation.

Tim Chesnut—Editor  
(706) 936-0699

Tim@ChesnutForestry.com  
[www.ChesnutForestry.com](http://www.ChesnutForestry.com)

Hard Copies Published by:

Fast Printing and Copies  
1019 Broad St NE.  
Rome, GA 30161



## Breeding for Phytophthora Root Rot Resistance in American Chestnut

—Dr. Martin Cipollini

On Friday June 22, a meeting of American Chestnut Foundation (TACF) scientists and invited attendees from southern TACF chapters was held to discuss strategies for breeding for *Phytophthora* root rot (Prr) disease in American chestnut. Prr is caused by *Phytophthora cinnamomi* (Pc), an exotic pathogen quite different from the fungus *Cryphonectria parasitica* (Cp) that causes Chestnut blight. Attendees met at the University of Tennessee – Chattanooga's (UTC) Holt Hall at the invitation of William White, the Southern Regional Coordinator for TACF and Hill Craddock of UTC. Attendees first heard morning presentations by Fred Hebard (TACF), Paul Sisco (Carolinas-TACF), Inga Meadows (Clemson University), and Joe James (Carolinas-TACF). A roundtable discussion with the intent of discussing breeding strategies took a good part of the afternoon. The following is a synopsis of each of the speaker's presentations, followed by an attempt at summarizing a tentative consensus on the approaches TACF and the southern chapters might take to incorporate selection for Pc resistance in their breeding programs.

### Fred Hebard

Dr. Hebard emphasized that Prr has been present in the SE for 200 years, so it is not a new problem. It may have wiped chestnut more or less out of the coastal plain and the piedmont prior to the arrival of Chestnut blight in the early 1900's. The causative agent, Pc, is sensitive to periods of freezing, therefore is presently limited somewhat by latitude and elevation. However, being spread primarily by human activities, Pc may spread further north and into the mountains. Global warming and climate change may exacerbate the problem. Because American chestnut is completely susceptible to this pathogen and is invariably killed to the roots, it is a problem that cannot be ignored. Just as is the case for Cp resistance, Asian chestnuts (esp. Chinese chestnut) are known to harbor resistance genes for Pc.

Dr. Hebard's solution, in a nutshell, is to finish the Cp resistance program, then spread Pc resistance to Cp resistant trees by identifying and adding trees known to carry Pc resistance to "seed orchards" (program described in greater detail below). A good percentage of the progeny of these orchards should carry both Pc and Cp resistance, with only a small loss in the diversity of American chestnut genes within the population. According to Dr. Hebard, the minimum criteria for success are: a population of trees with both Cp and Pc resistance, and a broad base of American genes.

### Paul Sisco

Dr. Sisco's main thesis was that we need to know more about the genetics of resistance to both Cp and Pc before knowing exactly which route to take. He furthermore suggested allowing chapters to pursue additional avenues within their breeding programs (other than to continue solely with the current objective of creating B3 or B4 lines from at least 20 pure American trees in each state). Finally, he encouraged everyone to be as clear as possible in setting the expectations of growers, cooperators, and others only minimally knowledgeable about the breeding program.

Dr. Sisco's recommendations can be summarized as follows:

Continue to screen B3s and B4s for Pc resistance using "James' type" tub tests, field tests, or using molecular markers.

Follow Dr. Hebard's plan for establishing seed orchards to produce trees with both Cp and Pc resistance.

Allow chapters to make F1s, and BC1s and BC1F2s from good F1 trees already tested for Pc resistance or found flourishing in Pc infested orchard sites (note: on this thought Dr. Hebard expressed concerns that wholesale redirection could potentially "derail" chapter breeding programs; see the roundtable discussion points listed below).

### Joe James

Dr. James emphasized first that Pc is not a fungus but an oomycete, widely distributed as an introduced pathogen from Asia. The genus contains between 250-450 species and has only been known for about 100 yrs. Pc was probably introduced to the U.S. about 100 yrs before Cp. It apparently wiped out trees in lower elevations in the southeastern U.S. long before Cp arrived to "finish the job".

Since engaging in "tub tests" designed in collaboration with Dr. Sisco, Dr. Hebard, Dr. Jeffers, and others, he has discovered American chestnut and Chinkapin trees to be 100% susceptible to Pc. Chinese chestnuts are 100% resistant, and most BC trees tested so far have been susceptible. In his tub tests (in which seedlings are inoculated in controlled fashion with Pc) a "0" ranks as no evidence of root infection and a "3" ranks as totally dead, with partial resistance lying between these two extremes. In his experience, if an infected seedling lasts three full seasons, it will live indefinitely in the face of Pc infestation. He terms these "long term survivors" and has a number of these trees (representing various stages in the TACF breeding program) in his orchard. Identifying lines carrying Pc resistance and selecting for this feature is the only real solution other than to directly insert Pc resistance genes via genetic engineering (a process still in its infancy).

### Inga Meadows – Clemson (Jeffers' lab)

Inga Meadows hails from Steve Jeffers lab at Clemson University. She spoke on the distribution and detection of Pc in southeastern U.S. forest soils. She emphasized that, as an exotic pathogen spread primarily by human activity, the distribution of Pc can be very unpredictable.

For example, in one experiment, she took soil samples in grids comprised of nine separate 2.4 X 2.4 m plots (each comprised of 81 contiguous 30 x 30 cm quadrants). At both scales, distribution with an "infested" orchard was random. Some plots were entirely "Pc free" and patterns within infested plots were random. Pc was not evenly spread throughout the orchard in space, and as it turns out, it is also not consistently detectable in any given spot over time.

One important point is that Pc can be present in soils even when Prr is not seen in trees (the "organism" is not the "disease"). Healthy individuals can be infected and can spread Pc to other areas or even maintain Pc when environmental conditions eliminate it from the soil proper.

Based in part upon these observations, she suggested that southern chapters ought to develop strategies to avoid spreading Pc around to uninfested orchard and field sites.

### Round-table discussion:

To begin the round-table discussion, moderator Hill Craddock first asked Dr. Hebard to better explain some points about his general plan. It begins with a seed orchard with B3F3 or B3F2 trees shown to carry resistance to Cp. Some of these trees will have also been shown to be resistant to Pc ("resistant" trees), but most will be known or suspected to be susceptible to Pc ("susceptible" trees). Resistant trees will be planted in a pattern to assure maximal out-crossing to adjacent susceptible trees. The offspring would then be selected for Pc resistance by planting to a Pc contaminated orchard, by tub tests, or by molecular markers. Some American genes will be lost in the process, but not too many.

Dr. Sisco rounded up the discussion by emphasizing several points, while agreeing mostly with Dr. Hebard's plan. He emphasized again the volunteer nature of chapter breeding programs and the need to keep up the morale and involvement of collaborators. There is a risk that the genetics of both Cp and Pc resistance may NOT be as simple as the current breeding program assumes. As molecular technology becomes cheaper, F1s, B1s, etc. could be generated by chapters and screened for Cp and Pc resistance. F1s already exist as possible new sources of both Cp and Pc resistance within chapter orchards (some generated expressly for this purpose and others generated to serve as orchard controls). It is important for all chapters to provide an inventory of all trees currently alive in their orchards, so TACF knows what is available to work with.



## Leavell Tree Farm Helping to Re-Establish American Chestnut

By: Caryn Grant, Macon Telegraph (excerpted)

BULLARD, GA -- Moments after planting a group of young trees behind his Charlane Plantation home, Chuck Leavell was already thinking of future generations of another kind of tree -- his family tree.

"It's my vision that our grandchildren will bring their children out here and play up underneath these chestnut trees, and hopefully many, many more that we'll plant in the years to come," the Rolling Stones keyboard player said. The four American chestnut trees, donated by The American Chestnut Foundation, were planted at the home of Leavell and his wife, Rose Lane, as part of a tree demonstration site to develop an American chestnut tree resistant to disease that nearly wiped out the species decades ago.

"We depend on forests for air, clean water, wood products. We are absolutely dependent on those trees," said Bryan Burhans, president and CEO of the American Chestnut Foundation, who attended Tuesday's tree planting. "Although we have good healthy forests and we're sustainably managing our forests now, there's still a lot of forest health issues that we're facing."

Many of those issues stem from the introduction of non-native exotics, he said. The chestnut blight and ink disease are both examples of problems that were brought in from other countries, eventually causing harm to plants native to the United States.

At one time the American chestnut made up about a quarter of eastern forests, said Joe Nicholson, president of the Georgia Chapter of the American Chestnut Foundation.



Joe James (SC-TACF), Bryan Burhans (Pres and CEO of TACF), and Joe Nicholson (GATACF Pres) with Chuck Leavell and his wife, Rose Lane.

Forests from Florida and Mississippi all the way to Maine were home to the tree until the blight -- an Asian fungus to which the American chestnuts had little resistance -- was discovered in 1904 and wiped out virtually all of the species, he said. By 1950, about four billion trees had been destroyed.

Without "cute, cuddly panda bears or cute, cuddly grizzly bears," the message of forest conservation is often lost among the numerous preservation efforts competing for attention, Burhans said. "Our charismatic mega-flora is the American chestnut."

The organization has been working for years to breed a tree resistant to chestnut blight and ink disease. The ink disease is known as root rot because it attacks the roots of trees, turning them black and killing them.

To create a resistant tree, scientists at the Chestnut Return Farm in Seneca, S.C., bred a Chinese chestnut, which is naturally resistant to the blight, with an American chestnut. Of 350 chestnuts planted the first year, only 25 trees lived, said Joe James, who runs the South Carolina operation.

The offspring of the surviving trees were then bred with other pure American chestnuts, and with each generation the Chinese genetics are decreased by 50 percent. The trees are then infected with the blight fungus in hopes of weakening the virus and helping the trees survive.

The breeding process is an intricate one, taking the organization 30 years to get to the point where it is today, but Burhans said the group is now at a turn in the road. Scientists hope that the genetically bred trees will grow to breed with each other naturally once planted in places such as Leavell's Twiggs County home, rebuilding a strong American chestnut population that can withstand disease.



Joe Nicholson with Chuck Leavell and his wife, Rose Lane and one of the four American chestnuts planted on the Leavell Property

"We're not talking 100 years," James said. "With any luck, within 15 years, there could be a pretty significant nut distribution across the South."

Leavell called the American chestnut "an iconic tree for our history and one of the most versatile and useful trees that America has ever known," he said, noting that he and his wife have a passion for trees and forests.

"Chuck, he's the real deal," Burhans said. "He's obviously a talented musician ... but his passion is also forestry. He has a lot of expertise and he has helped the conservation community tell our story about forest conservation and the need to manage for healthy forest lands."

Leavell, who has also played with the Allman Brothers Band, said his "ah-ha moment" came when it occurred to him that his musical instrument was made from trees. "That just led to a self-education journey to learn, and I'm still on that journey trying to learn as much as I can about trees and forests and biodiversity and other aspects of the environment," he said.

"All trees, no matter what the species, are renewable resources," Leavell said. "It's important that we do all that we can to recognize all of the things that the forest gives us. And if we take care of the forest, the forest will take care of us."



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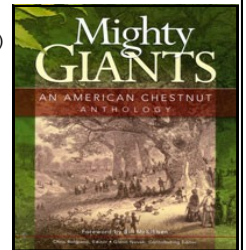
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Georgia has approx. 114,000 acres devoted to pecan production, but less than 40 devoted to chestnut (Chinese or hybrids.) Per capita chestnut consumption in the U.S. is approximately 0.1lbs. Should domestic consumption rise to 1lb. per capita, the U.S. would need over 100,000 acres of mature producing trees to meet that demand. That industry could be worth \$600 to \$800 million annually!!!

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