DEDICATED TO RESTORING THE AMERICAN

Chestnut Tree

The Pennsylvania Chapter of
The American Chestnut Foundation

Pennsylvania Chapter
The American Chestnut Foundation
PA-TACF
800 East King Street
York, PA 17403-1772
(717) 852-0035
E-mail: operations@patacf.org

Volume 6 Number 2 | Printing of the *Chestnut Tree Newsletter* is courtesy of **The News Printing Company** of Claysburg, PA. Mailing cost of this newsletter is courtesy of **The National Tree Trust,** Washington, DC | September 2001

LARGEST ORCHARD PLANTED IN PENNSYLVANIA

In May this year, we planted PA-TACF's largest hybrid chestnut orchard of 1820 seeds and seedlings thanks to a great co-operative effort between our volunteers and Pennsylvania State University School of Forestry. This orchard is a second source of resistance to the blight called 'Graves'. The project manager for the orchard is PSU's Tim Phelps. Please see his article and additional pictures in the growers corner on page 5.

Fall Meeting in Snyder County

Hosted by Our South Central Region Coordinator, Chandis and Violet Klinger

Our workshops will be the highlight of the October 13th meeting where Chandis will escort us through a multiple-acre wood lot where he has planted chestnut trees in a forest environment. It is an excellent study in silviculture and provides some examples of tree integration into the forests of future blight resistant chestnuts. Chandis will also crank-up his Wood Mizer sawmill and demonstrate cutting techniques. We are happy to have a detailed presentation of furniture making and wood identification by our woodworking expert and cabinet maker **Chris Ditlow.** Fall meeting agenda and details are on **page 8**. **Please join us.**

Expanded Display at the Pennsylvania Farm Show 2002

The Farm show scheduled for January 5-10, 2002 will be twice the size as last year. This expanded booth will allow for more visitors, more volunteer space and adequate room for sales and auction items. There will be periodic presentations at the booth using the Chapter's new multimedia projector. Please come and see this new display or better yet come spend some time with our visitors.

PA CHAPTER'S NEW E-MAIL ADDRESS

The operations office at York, PA has a new address:

operations@patacf.org

Calendar of Events:

September & October	**Harvesting Season**
October 12	**Chapter Board Meeting– Paxtonville, PA**
October 13	**Chapter Member's Meeting– Paxtonville, PA**
October 27 & 28	**TACF Annual Meeting—Chattanooga, TN**
January 5-10	**PA farm Show– Harrisburg, PA**

This Issue:

President Phil Gruszka's Remarks

This newsletter is a communication link between our members and those of us that have volunteered to assist in the planning and daily operations of the chapter. Our members can be very proud of this current board of directors, executive branch and operations coordinator. Each director is responsible for a particular aspect of chapter operations and has a team of action people that have volunteered to get the work done. I am extending a personal **THANK YOU** to everyone that has contributed time, finances and resources to make this chapter vibrant in all that it does.

PA-TACF President Phil Gruszka (left) and TACF Executive Director Marshal Case

The Pennsylvania Chapter of the American Chestnut Foundation (PA-TACF) has some significant differences with the national organization (TACF). Our board has been meeting frequently to address these issues and have been working with designates from TACF to resolve them. This edition of the newsletter begins to address some of the issues that confront PA-TACF. Future editions will contain much more detailed information. We, the board of PA-TACF, intend to keep our membership completely informed, to remain fully committed to TACF and to continue supporting their efforts.

The October chapter meeting is rapidly approaching. Please plan to attend. We may be able to report on the progress that has been made regarding some of these issues. See you at Klinger's.

PA-TACF Re-Registration with PA and IRS

After a full rewrite of the Chapter's Articles of Incorporation and bylaws, they were approved by the Chapter Executive Board and submitted to the PA State Department and the Internal Revenue Service for re-registration. Our name which was the Pennsylvania Society of the American Chestnut Foundation is now The Pennsylvania Chapter of The American Chestnut Foundation (PA-TACF). Our address is now officially 800 East King Street, York. Both PA and IRS have registered the changes and we continue to be a non-profit organization and donations are tax deductible by the IRS Rules of a 501(c)(3) organization.

Elections 2001

Two Positions on the PA-TACF Board are up for election. **Ann Leffel's** position of Board Coordinator for Tree Breeding and **Tom Pugel's** position of Board Coordinator for Membership are open. Both incumbents, Ann and Tom, have expressed a desire to remain in those positions for another two years. In accordance with our bylaws, members may nominate to fill these positions. If you have a nominee for either position, please send it to PA-TACF President **Phil Gruszka** prior to the Fall meeting. Elections will be finalized at this meeting on October 13th.

TACF Issues By Ann Leffel

Ann has served 3 years as PA-TACF President, 3 years on TACF Board of Directors, and 7 years on TACF Development Cabinet

The TACF Board of Directors, and the Advisory Science and Development Cabinets meet twice a year to

(Continued on page 3)

PA-TACF Organization Chart

Officers and Board Members Elected by the Membership

President: Phil Gruszka **Past President: Al Eelman**

- Vice President and Next President **Bob Summersgill**
- Board Coordinator Tree Breeding **Ann Leffel**
- Board Coordinator Membership **Tom Pugel**
- Board Coordinator Data Management **Blair Carbaugh**
- Board Coordinator Education **Tracey Coulter**
- Board Coordinator Finance **Lee Saufley**
- Board Coordinator Communications **Greg Yochum**
- Board Member **Alex Day** PA DCNR Rep.
- Board Member **Tim Phelps** PSU Rep.

Action Volunteers and Committees Appointed by the Officers and Board Coordinators

- Region and County Coordinators
- Operations Coordinator
- Chapter Administrator
- Chapter Scientist
- Orchard Manager
- Tree ID Manager
- Supply Manager
- Membership Committee
- Data Manager
- Speaker Program Manager
- Public Education Manager
- Historian
- Treasurer
- Grants Committee Chairman
- Newsletter Staff
- Publicity Person

set the course of The American Chestnut Foundation. Many issues are presented, debated, and decided at these meetings. With the doubling of the membership and the breeding program over a few short years and with the beginning of the planting of the fifth (BC3F2) of the six generations of trees required for the first effort of the breeding program, many issues have arisen that are thought provoking, require much investigation and study, and are viewed differently by those responsible for the science of the project and those who are responsible for financing and operation of the Foundation. These are challenging times and challenging issues.

One question under discussion and being asked by many members is when and how will the first seeds of the first blight-resistant American chestnuts be distributed. The first of the 5th generation (BC3F2) seeds were planted this Spring at Meadowview Research Farms and after selection in the third year, and intercrossing in the fifth and/or sixth year will produce seed of the first blight-resistant trees about 6 years from now. Will they need to be tested? How can they be tested? Where will they be tested? For how many years must they be tested to determine if the resistance will hold up? Will a single backcross in a regional breeding program provide local adaptability? What will we know after 20, 30, -- 70 years of testing that we don't know now?

We may know after 10 years or so and after the 4th backcross, which of the selected breeding trees carry the full complement of genes for resistance from the 'Clapper' B1, the source of resistance, which is the basis of our first breeding effort. After 40 years, or so, we may have some insight on the trees' economic value as timber trees. Surely we know they will have great value ecologically as a mast crop provider for wildlife and for adding diversity to our forestlands.

Must we wait for 40 years for public release? Is our expectation a perfectly blight-resistant perfectly American timber-type chestnut tree? There never was such a chestnut tree population. As in all tree populations, some were superb, some were OK, and some were near worthless. The mission of TACF is not to breed a perfect tree, but to breed a population of trees that can reproduce and sustain themselves. And then to continue breeding, selecting, and improving that population for many years to come.

Meanwhile we are in the midst of advancing other sources of resistance through the same backcrossing and intercrossing methodology. They also will have to go through an evaluation period to determine if the source of resistance is satisfactory and the timber form is good.

Besides testing and seed distribution policy, other large issues being addressed include protecting the genetic materials that are developed by the Foundation, engaging cooperators for this immense project, continuing to examine and update the Strategic Plan, the science, and the governing organization to meet the needs of the mission. Committees have been established and are working to resolve these issues. This project is something that has never before been attempted by a volunteer non-profit organization. Tree breeding requires time and patience. Time and patience will also be required to resolve the many tough issues that face the leadership of TACF. Want to get involved?

PA-TACF Board Position On Germplasm Agreements and Recommendations

By Dave Armstrong, Operations Coordinator

Germplasm Agreements have served to protect TACF's ownership and control of material dispensed country-wide in the chestnut breeding program.

Background. The PA-TACF was formed in 1994 as a chapter to promote the TACF program of backcross breeding of blight resistant chestnut trees that would be regionally adaptable to Pennsylvania and the Mid-Atlantic Region. The PA-TACF mission also includes promoting education, membership and public relations in this region. Our chestnut-breeding program began at one location and has expanded across Pennsylvania and into Maryland and Delaware with 68 hybrid, American and performance test orchards with over 15,000 trees seeded. With the help, instruction, assistance and coordination of TACF Staff Scientist , **Dr. Fred Hebard**, PA-TACF has the largest breeding program outside the Foundation Research Farm with four generations of hybrid trees planted. PA-TACF chapter participation consists of 815 members, which includes over 200 active volunteers devoting time, money, land, equipment and hard work dedicated to the recovery of the American chestnut tree.

Germplasm Agreement. In 1996, TACF required recipients of TACF chestnut genetic material (CGM) which is defined as nuts, rooted plants, grafted scions, pollen, or other plant materials to sign a germplasm agreement which permits control of the CGM but no transfers. The newer agreements are more restrictive to the effect that TACF will own, supervise and control the CGM that is released.

PA-TACF Position on Germplasm Agreements. After careful review and legal evaluation of the 1996 germplasm agreement and subsequent agreements offered by TACF, the Chapter Executive Board believes that the present germplasm agreement, impedes our ability to achieve the regional mission and places excessive liability on the volunteer and his or her land and discourages volunteer activity. The Board strongly believes that an agreement to control germplasm within TACF should protect TACF's proprietary rights, encourage cooperation, and efficiently advance the mission of returning blight-resistant American chestnut trees to the forests of the U.S.

TACF Assistance. The Foundation is doing several things to help improve these agreements and has given the task to **Herb Darling**, the TACF Vice President for Development.

TACF Board of Directors has appointed a Germplasm Review Committee with **Dr. Paul Sisco** as Chairman and committee members: **Ann Leffel** of PA-TACF, **Judy Dorsey** of the Maine Chapter and **Bruce Wakeland**, Indiana Chapter. The Committee has been charged with evaluating the germplasm question and reporting to the TACF Board at the October annual meeting.

Additionally, TACF President **James Ulring** asked the PA Chapter to develop and present a new agreement that we feel will serve volunteers better.

Our proposal was prepared by our Executive Board and our Legal Counsel, **G. Hopkins Guy III** and is titled TACF Volunteer's Agreement (TVA) which we feel is volunteer friendly, will encourage rather than discourage volunteer participation and acknowledges the proprietary ownership of TACF and provides a license to conduct limited research on the genetic material. PA-TACF is moving forward in coordination with Herb Darling and The Germplasm Review Committee to obtain approval for this agreement.

Summer Events

By Ann Leffel

Two of the most beautiful days of summer were July 14 and 15. They happened to be the two days when PA-TACF hosted Forest Stewardship Volunteers (VIP)s on Saturday, and on Sunday an Open-House for PA-TACF members and friends, at the Brogue chestnut breeding orchard site on **Ann and Bob Leffel's** farm. About 100 people attended each day for presentations, displays, guided tours, and demonstrations. Can't begin to list all the folks who contributed their time, talent, and donations to the events. Set-up, clean-up, parking, and all the other details that make events run smoothly were handled by **Gladden Gingrich**, York County Coordinator; **Beth Brantley**, **Tracey Coulter**, and **Timothy McKechnie**. Speakers and tour guides included **Lee Saufley**, **Dave Armstrong**, **Rance Harmon**, **Craig Keeran**, **Paul Craig**, **Blair Carbaugh**, **Tracey Coulter**, and **Bob Leffel**.

Merle McElwain brought his portable Wood-Miser and demonstrated sawing of reclaimed chestnut timbers that were brought by **Lowell Thomas II,** whose business is dismantling old barns. **Chris Ditlow** demonstrated the use of chestnut in furniture making and crafts. There were neighbors on hand to provide wagon and other transportation for those who needed assistance. The big tent, tables, chairs, sound system, etc. were provided by **PSU Forestry Extension**. The tours included a chestnut trail demonstrating the status of the American chestnut in today's wood lands, American tree orchards, BC3 orchards, inoculation and selection of advanced breeding trees, hybridizing techniques, etc., conservation practices on the farm, and management practices on a small wood lot. Other educational activities and presentations were held all over the state. A special thanks to all who contributed and participated.

Bob Leffel explains inoculation, selection and the culling process in his BC3 advanced hybrid orchard

AG Progress Days at Penn State University

This was the second year for the PA Chapter's participation at AG Progress Days. It was held on the 14, 15 and 16 of August and the weather was great; except for the last day. We placed the chestnut display outside using our EZ Up shelter. It worked well and served to familiarize large crowds about the loss and recovery of the American chestnut tree in Pennsylvania. On the last day, heavy wind gusts battered the display, luckily without damage, and torrential rains hit as we disassembled the exhibit.

AG Progress Days 2001

Even with all that, AG Progress Days was a success. We saw countless visitors with our dedicated volunteers who were: **Curt Lytle, Phil Gruszka, Fred Priebe, Tom Pugel, Les McCurdy, Tracey Coulter, Chandis and Violet Klinger, Don Franks and Shawn Wood** the Centre County Coordinator. Special thanks to **Bob Summersgill** who was there from start to finish and fought the high winds and rain at the end. We also sold cutting boards donated by **Chris Ditlow** and some American chestnut seedlings bringing in $465 for the Chapter breeding program.

Tim Phelps provided wagon rides from our Ag Progress Display site to the large PSU/PA-TACF Chestnut planting nearby. Tim also conducted presentations at the planting site.

The Grower's Corner

Tips on and Experiences of Planting, Pollinating, Harvesting and Nut Storage from around Pennsylvania

Techniques for the PSU Chestnut Planting

By Tim Phelps

A third backcross (B3), fourth generation hybrid chestnut orchard was established this spring at Penn State near the main site for the College of Agricultural Sciences yearly agricultural event better known as Ag Progress Days. The orchard got off to a slow start, but with the patience, hard work, and perseverance of several PA-TACF volunteers and Penn State personnel over 1,800 seeds were planted. The slow start was due to the site's rocky soil that made drilling holes for planting seed and setting stakes for tree shelters very difficult. Once that task was tackled though, planting the seed went rather smoothly. There were anywhere from one to twenty people helping out at any one time, but all-in-all the orchard took about three weeks to complete, with planting taking six of those days.

Holes were drilled to a depth of about six inches with a four-inch auger bit attached to a modified chainsaw to facilitate planting. Since planting did not get under way until mid-May, most seed already had a radicle (primary root) emerging. By drilling the holes and supplementing the soil with potting mix, planters were better able to protect the emerging root and orient it in such a manner as to encourage optimal root setting. The moistened potting mix also helped in adding much needed moisture to the soil that resulted from the unseasonably dry spring.

Over 80% of the planted seed had shoots emerging from the ground less than a month after planting. Many individuals were over three-feet tall and still growing as of the end of August. As with all hybrid test orchards in the breeding program, accompanying the B3's were soon to be "check trees" consisting of F1 hybrids, Chinese, and native PA American chestnuts.

Data such as heights, diameters, and tree form will be collected on all trees during each growing season to examine superior families, as well as individuals. Once the trees are big enough in diameter, they will be inoculated with multiple strains of the blight and tested for resistance by comparing with "check trees" whose resistance levels are known. Another study will examine the effect of tree shelter width on plant growth. It has been suggested that the smaller diameter tubes inhibit growth, so the study will hopefully find out to what degree size influences growth.

At the recent Ag Progress Days event, held Aug. 14-16, many attendees were able to see what TACF's breeding program was all about by taking a wagon tour of the orchard. The orchard's close proximity to the event made it an excellent showcase for the program, as well as the Pennsylvania Chapter's effort in restoring what many in the PA agricultural community know to be a legendary and majestic tree worthy of being re-established in Penn's Woods as the "King of the Forest". Anyone wishing to learn more about this orchard, or any of the other research being conducted on chestnut at Penn State can contact **Tim Phelps** at (814) 865-7228; or, email: phelpst@psu.edu.

Bob Summersgill plants nuts and adjusts tree shelters at the PSU Chestnut planting of one of the 1820 holes.

Tim is a forest technician at the PSU Forest Resources Department and serves as a member of the PA-TACF Executive Board as our representative from PSU.

Odocoileus virginianus and Castanea dentata

or, **Of Mice, Deer and Man's Delight**

by: Blair Carbaugh

Planting a chestnut seed is quite easy. Growing a chestnut tree is often a laborious task complicated by its food value to wildlife. Mice and voles can be deterred by use of a short tube staked into the soil. It is the very popular white-tailed deer which presents the greater challenge. Here in the central Susquehanna Valley we have found that fencing individual trees works for us. A woven wire, four foot high fence in eleven foot lengths, hooped and staked provides adequate deer protection

A 330 ft. roll of fencing makes 30 hoops of eleven feet. This "protector" is approximately 3.5 feet in diameter (see picture). The outer twigs of a two to four year chest-

(Continued on page 6)

nut tree will be nipped by deer but the central leader is protected. We place the protector with the smaller fence holes on top to keep deer from reaching through. This protector also keeps those antlered individuals from damaging the tree during velvet removal. A 330 foot roll of fence costs about $100.00. Thus each protector costs about $3.10. They are easy to move if laid flat and stacked in the eleven foot lengths. At each tree I make the protector from the cut fence pieces. The pieces have been cut half way between the perpendicular fence strands which leaves a short piece of wire to use to close the hoop protector. DO NOT get overzealous with securing all those ends! I only do the top and bottom plus one in the center. These are only a partial twist around the first perpendicular strand. Sometime in the not too distant future I will want to move them to another tree. I want to be able to grab the two ends and pull apart to do so. I find that two stakes, well driven, not only holds the protector in place but also helps keep the loop together. I appreciate the fiberglass stakes because you can more easily slide the fence up and down to do chores (water, weed, fertilize) than with the wooden stakes. Each plantation is different. You will need to calculate your costs for your site. Remember an effective deer exclosure has to be at least eight feet high with substantial posts to secure it. Good luck! May all your chestnut trees be tall, straight and never succumb to the blight.

Deer exclosure with a tree shelter over the tree. The wire and shelter are supported by stakes.

Gathering of the Nuts

It's here! Harvest time! New sources of PA American chestnuts! That is the challenge! In order to incorporate as much diversity as possible into the breeding program, we are always seeking nuts from trees that have not been previously collected from. We plant these throughout the state, in orchards of members. The trees will be used in the breeding program when they begin to flower. There are nut bearing trees in most of, if not all of, the 67 counties of PA. Representation from every county is desired to increase the diversity of the gene pool. The chapter is especially in need of open-pollination nuts from the westernmost counties, and the northeastern counties.

You can help us out by harvesting nuts before the squirrels get them. Once you locate a tree with those prickly burrs, keep an eye out for when the first ones fall. When the fertile (plump, not flat) nuts inside have turned or are turning brown, it is time to harvest. We need a minimum of 15 nuts from each tree, more if you are so inclined. Remove burrs from the tree. Keep the nuts from each tree separate and label them. Store the unopened burrs in a dark, cool, dry, rodent-free location. Many of the burrs will open during the next 10 days. As the nuts are released from the burs, soak nuts in 120 degree water (no hotter) for 20 minutes to kill the weevil larva. Place nuts from each tree in separate perforated plastic bags and store in refrigerator. Label nuts from each tree with collectors name and telephone number, location of tree, date of harvest, seed count and any other pertinent information. After 10 days, open all the burrs and place the nuts in the appropriate bag. **DO NOT FREEZE.**

PA-TACF Harvesting Again

As soon as harvest is complete send to Ann Leffel, 13275 Laurel Rd., Brogue, PA 17309 by priority mail or bring them to our fall meeting. Enclose leaf and twig samples of each tree for verification of identity as an American chestnut. Harvest begins about September 25 in the southeastern part of the state. Tree location forms with all the needed information are available from PA-TACF, York office. The chapter also furnishes TACF with about 1000 seed per year for seed kits and seedling sales. It's a great time to walk in the woods.

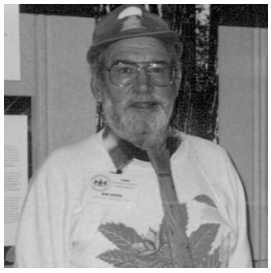
ORCHARD GROWER'S SUPPLIES

Due to a generous grant from the National Tree Trust, the Chapter has funds available to purchase orchard supplies for the hybrid and American orchards within the breeding program. Each year we need things like Miracid® (30-10-10) fertilizer, 20-10-10 granular fertilizer, RoundUp® herbicide and insecticide for orchard maintenance. Some of these items are available in bulk from a local dealer and we must order them before the end of the year. Please contact the operations office no later than December 1st to discuss an order for the 2002 growing season.

Dave Armstrong (717) 852-0035 or operations@patacf.org

New Breeding Methodology

By: Dr. Bob Leffel, Chapter Breeding Program Scientist



CYTOPLASMIC MALE STERILITY
Potential Methodology for Breeding Blight-Resistant, Timber-Type Chestnuts??

Utilizing Cytoplasmic Male Sterility (CMS) as methodology for breeding blight-resistant, timber-type chestnuts may offer some great advantages. The only controlled crossing required will be for the American x Chinese (A x C) F1 crosses: a few seed per A x C cross should be sufficient. Donor and recurrent parents selected for regional adaptation should yield locally adapted trees! Seed production for each backcross (BC) generation will be by open-pollination in isolation. This can increase seed-set about ten-fold and eliminate hundreds of days of labor as compared to controlled crossing. As many sources of regionally adapted resistance as available may be used, establishing a germplasm pool of multiple sources of disease resistance if such exists. Larger numbers of trees in BC generations may be required, but inoculations will be required only subsequent to selection for male-sterility or male-fertility. Sib-mating will be eliminated in all but the BCnF2 intercrosses because the female trees utilized produce no pollen.

Male sterility is the absence or non-function of pollen in plants. CMS is caused by the interaction between a nuclear gene(s) and the cytoplasm. CMS is often found in the progeny of interspecific crosses, where the nuclear gene(s) of one species is put into the cytoplasm of another species. We can usually assume that cytoplasm is inherited from the female parent only, via the egg cells. Thus inheritance of CMS would be maternal. In plant breeding, we always express the crosses as female x male (♀ x ♂). When reciprocal crosses [crosses in which the sources of male and female flowers are reversed, e.g., C x A vs. A x C] differ, we attribute the difference to cytoplasmic factor (s).

Burnham (1), summarizing past results of interspecific hybridization in *Castanea*, cited unpublished data by Jaynes indicating frequent occurrence of male-sterile trees and occasional female-sterile trees in interspecific hybrids: "male sterility in a few trees was said to be cytoplasmic". Shi and Hebard (2) reported that in their breeding program at Meadowview VA all F1 progenies of C x A were male-fertile but all F1 progenies of A x C were male-sterile: "In order to confirm the role of cytoplasm in inducing male sterility, reciprocal crosses need to be carried out using the same parent trees. ---- We propose that the male sterility of *C. dentata, C. mollissima,* and their hybrids is controlled by both nuclear and cytoplasmic factors." Reinterpretations of past data and more recent experimental data at Meadowview reported by Sisco (3) also indicate that C x A F1 hybrids are male fertile but A x C F1 hybrids are male sterile (the catkins produce no anthers). Thus it appears that a C dominant nuclear gene(s) in A cytoplasm results in CMS. If this phenomenon holds true (and it must be confirmed), it can revolutionize chestnut breeding!!

The male sterile A x C F1 hybrids have A cytoplasm. If male-sterile F1 trees are then used as females (as they have to be, since they don't produce pollen) for backcrosses to American trees, all of their progeny will have A cytoplasm as well. The BC1 generation will segregate for both male sterility and male fertility. BC1 individuals can be either heterozygous for the nuclear gene(s) involved (male sterile), or homozygous for the A nuclear gene(s) (male fertility restored). Subsequent BC generations can offer the opportunity to select for either male sterility or male fertility, i.e., male sterility can be selected for, to facilitate further backcrossing to A's, and eliminated in preference to male fertility when intercrossing of screened BC's is desired. The gene(s) from the C parent in A cytoplasm is dominant, thus male sterile trees are immediately identified by lack of anthers.

PA-TACF produced 11 reciprocal F1 crosses and an additional 8 A x C F1 crosses in Year 2000, utilizing 15 PA-A, 10 PA-C and 1 PA-Japanese (J) chestnut trees. Several 2001 plantings were seeded with F1 crosses and seed from a diverse collection of PA-A chestnut trees, at locations isolated from other chestnuts. We plan to check for and eliminate male fertile F1's prior to pollination, and allow male sterile F1's to be pollinated by the PA-A chestnuts, producing BC1's. This will establish a germplasm pool with multiple sources of resistance to chestnut blight. Subsequent backcross generation(s) will utilize seed from different sets of PA-A trees. All seed will be produced by open-pollination with adequate isolation from other sources of pollen. With sufficiently large populations via open pollination, it may be possible to produce blight-resistant, timber -type chestnuts with only two generations of backcrossing as suggested by Borlaug. Practice stringent selection in large BC1, BC2, and BC2F2 populations for resistance to blight and for American chestnut characteristics. This can also eliminate some of the requirements for test crossing and progeny testing, i.e., treat resistance to blight as a quantitatively inherited character. Backcrossing utilizing CMS may be the solution to the vast challenge of breeding locally adapted, blight-resistant, timber-type chestnuts!

1. **Burnham, C.R., P.A. Rutter, and D.W. French**. Breeding blight-resistant chestnuts. Plant Breeding Rev. 4: 347-397. 1986.

2. **Shi, Yan and F.V. Hebard**. Male sterility in the progeny derived from hybridizations between *Castanea dentata* and *C. mollissima*. J. Amer Chestnut Found. 11: (1) 38-47.1997

3. **Sisco, Paul H**. Cytoplasmic male sterility resulting from interspecific crosses in chestnut (*Castanea spp.*). Forest Tree Genome Workshop and IUFRO Working Party on Genomics. San Diego CA. 14 Jan 2001.

Pennsylvania Chapter
The American Chestnut Foundation
800 East King Street
York, PA 17403-1772

Nonprofit Organization
U.S. Postage Paid
York, PA
Permit No. 238

The Chestnut Tree Newsletter **Address Service Requested**

Autumn Member's Meeting - October 13th
At Paxtonville, Snyder County (near Middleburg)
Hosted by Chandis and Violet Klinger
At the Paxtonville United Methodist Church

We will have a silent Auction—so please bring your chestnut crafts and other items for the auction. The proceeds help support the PA-TACF operations.

Agenda

8 am to 9 am Reception, Coffee and Donuts
9 am Introductions and President's Remarks

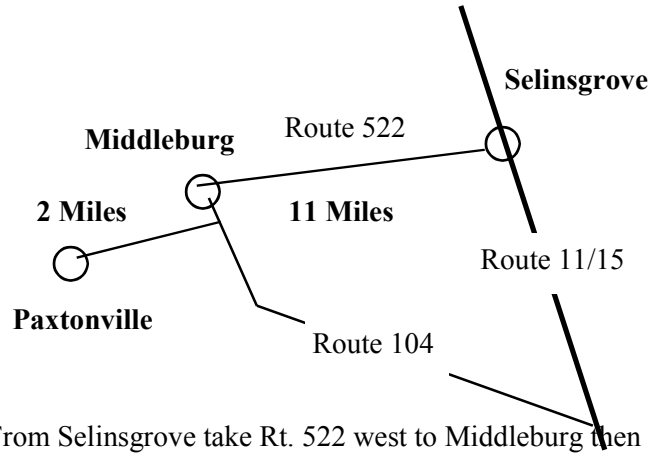
- American Tree Inventory in PA, Tracey Coulter
- Cabinet Maker and Member, Chris Ditlow Historical Furniture Making
- Breeding Program, Bob Leffel

11:30 to 12:30 Catered Lunch ($5 donation requested)

12 :30 to 2:30 and 2:30 to 4:30
Workshops: Chandis's Orchard Techniques and Plantings
Sawmill Demonstration
Basic Chestnut Presentation and Tree Identification
Chestnut Wood Identification

4:30 to 5:00 Board Member Elections, Suggestions, Questions and Auction Winners
5:30 Dutch treat Dinner at the Country Tavern featuring a Seafood Buffet

DIRECTIONS and MAP



From Selinsgrove take Rt. 522 west to Middleburg then left on Rt 104 South. Go 1/4 mile and turn right (just before the SUNOCO station) onto the Paxtonville Road. Go to Paxtonville and turn right at Main Street. Go one block to the United Methodist Church—Parking Lot on the right.

Accommodations

Selinsgrove Comfort Inn, (570) 374-8880
Shamokin Dam Hampton Inn, (570) 743-2223
Phillips Motel, (570) 743-3100
Shamokin Dam Inn, (570) 743-1111

Additional Information

Chandis (570) 837-0457 email: vikling@sunlink.net