

Chestnut Tree

The Pennsylvania Chapter of The American Chestnut Foundation



The American chestnut tree (*Castanea dentata*) was the most important hardwood tree in Pennsylvania at the turn of the century. Our task is to return this great tree to our forests through the backcross breeding program.

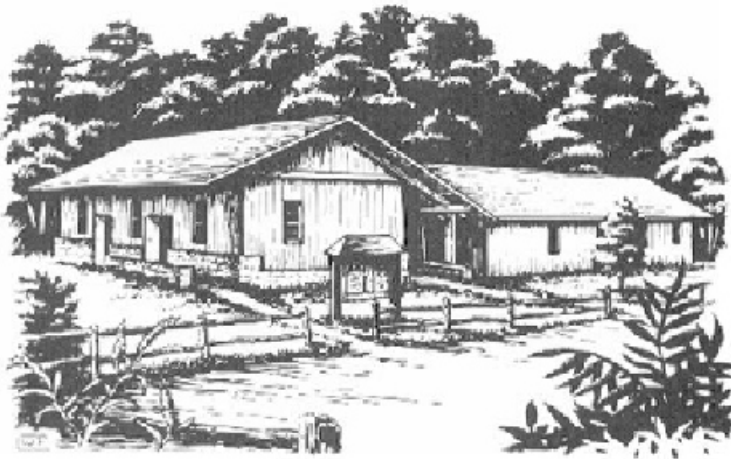
Volume. 4 No.2

Printing of the *Chestnut Tree Newsletter* is courtesy of The News Printing Company of Claysburg, PA
Mailing costs of the newsletter are from a grant by the Allegheny Power Company

December 1999

Western Region Hosts Pennsylvania Chapter Member's Meeting at Powdermill

The Powdermill Nature Reserve of the Carnegie Museum of Natural History near Rector, PA was the setting for our autumn meeting. On Saturday, November the 13th, 62 members and guests enjoyed a beautiful fall day at Powdermill where they participated in presentations and workshops. The theme of the



Powdermill Nature Reserve, Rector. PA

meeting was "Member Involvement". Members were encouraged to contribute ideas, questions, comments and help focus on the direction of the chapter.

We were pleased to welcome a number of guests from other states: **Susan and Gerry Cormier**, **Mike and Ann Meixsell** of Massachusetts; **Dr. Phil Gordon**, President of the Connecticut Chapter; **Dr. Greg Miller**, Empire Chestnut Company, Ohio; **Carl Mayfield** and **John Hoffman** of Virginia; and **Ruth Bates**, writer from West Virginia.

Board member, **Ann Leffel** made a stimulating slide presentation of the chestnut story and the PA Chapter's very aggressive backcross breeding program.

We were privileged to have **Dr. Paul Sisco**, Staff Geneticist of TACF, Meadowview Farms, VA who presented an outstanding class on molecular genetics and how this rapidly developing science can help the American chestnut backcross breeding program. Paul has the special ability to explain genetics in easily understandable terms. Genetic markers can provide methods for identifying and selecting for American characteristics and blight resistance early in the tree's life reducing the numbers of trees to be grown from generation to generation. Paul also

emphasized the need for funding for genetic research and encouraged members to contact their representatives in congress to support this funding.

Dr. Bob Leffel, PA Chapter scientist reviewed the fall harvest of hybrid chestnuts and our requirements for planting locations in the spring of 2000. Bob's report is published on page 6.

After a great lunch of baked chicken and all the trimmings, Bob Leffel and Paul Sisco jointly conducted a workshop that permitted them to develop their subjects more completely and have questions and comments from the participants.

Our TACF and Chapter historian **Dr. Bill Lord** conducted a workshop about the 1911 chestnut blight commission and some measures attempted in those days to stop this devastating fungus. His article on this subject appears on page 5.

In late afternoon, we drove a few miles to **Bob Summersgill's** chestnut farm and toured a 4th generation hybrid chestnut orchard. Bob reviewed his method of planting and maintaining this orchard and the frustration of preventing deer destruction. Then we walked up the hill to Bob's American orchard and the wild American chestnuts in the forest nearby. In these woods, he showed us select examples of surviving wild American chestnuts at various stages of growth and blight infection.

Later that evening, we had our traditional Dutch treat dinner at a local restaurant.

It was a super day and will be a challenge to top in our spring meeting which will be at PSU Campus, Mont Alto near Chambersburg, PA on April 8, 2000. Put it on your calendar.

Let's Go to the Pennsylvania Farm Show in January 2000!!

Please volunteer for the Farm Show by calling Dave Armstrong at the York office (717) 852-0035 or e-mail: pachapter@acf.org. The dates are **January 8th** through **January 13th**. If you like talking about chestnuts and hearing stories from around the country, this is your opportunity!

NOTICE - All Pennsylvania Chapter Members:

The PA-TACF executive board recently approved a reorganization of the officers and board in an effort to increase efficiency and accomplish more tasks in the chapter. We need your vote on these changes. A ballot is available on page 7 for your use. By using this ballot, you can save the chapter money so we do not have to do a separate mailing to you. Thanks for your participation.

The Pennsylvania Chapter of The American Chestnut Foundation

800 East King St. York, PA 17403
(717) 852-0035 E-Mail: pachapter@acf.org

Officers

President: Al Eelman, Chester County
610-358-1077, FAX: 610-358-9308

Vice President: Dan Heacock, Perry Co.
717-957-2733, FAX: 717-232-1885

Secretary: Bob Summersgill, New Jersey
908-647-5864

Treasurer: Tracey Coulter, Cumberland County
717-486-8935

Board Members

2000 Term

Blair Carbaugh, Montour County, 717-275-7848

Phil Gruska, Chester County,
610-388-1000, Extn: 541

Chandis Klinger, Snyder County, 717-837-0457

2001 Term

William Peifer, Indiana, 219-478-6413

Ann Leffel, York County, 717-927-9557

Tom Pugel, Bucks County, 610-346-6198

Committee Coordinators

History: Bill Lord, Allegheny County,
412-793-0255

PA Farm Show: Dan Heacock, Perry Co.
717-957-2733, WORK: 717-975-8150,
FAX: 717-232-1885

Tree Location and Identification: Blair
Carbaugh, Montour County, 717-275-7848

Grants: Larry Pachtel, Allegheny Co.
412-824-5019

Tree Breeding Program: Bob Leffel, York Co.
717-927-9557, FAX: 717-927-8410

Newsletter Editor: Warren Lauder, Chester Co.
610-388-6944

Newsletter Production: Dave Armstrong, York
Co. 717-632-8669, FAX: 632-0479

Newsletter Printing: News Printing Co.
Barney and Charlotte Barnhart

Chapter Director: Dave Armstrong

Regional Coordinators:

Western - Larry Patchel 412-814-5019

South West - Jack Laws 814-623-2207

South Central - Lee Saufley 717-566-2993

South East - Don Franks 717-560-9632

Pocono - Gene Dougherty 507-467-2303

North West - John Maruhnich 570-378-3565

The Chestnut Tree is published four times a year, March, June, September, and December, by The Pennsylvania Chapter of the American Chestnut Foundation.

The PA bylaws provide for an Executive Board composed of four officers and six board members. The board meets several times a year. The Committee Coordinators and the Region Coordinators participate in meetings. All members are invited and encouraged to attend the board meetings.

TACF was founded in 1983 as a 501(c)(3) non-profit organization. Its sole goal is to restore the American chestnut through co-operative research and a scientific breeding program.

We do not discriminate with regard to race, religion, color, natural origin, gender, age or disability.

The Executive Board Met in Stahlstown, PA on November 12, 1999

Due to circumstances beyond our control, we found ourselves at the last minute with no meeting place. Thanks to Darcey Dangremond of Botanica Farms for providing an emergency meeting place in the apple storage area of their store on very short notice. We worked in the delightful aroma of apples and the delightful taste of hot apple cider using an apple crate as a conference table.



Dr. Paul Sisco who attended as the TACF Representative announced that Duke University may provide a forestry student intern this summer for the PA Chapter. He or she will be tasked to visit and take notes at our orchard sites and set-up an automated data collection system for the breeding orchards. Ann and Bob Leffel will be responsible for providing Paul an outline of the needs to be met by the student.

Reorganization -The board reviewed and approved the reorganization proposal detailed on page 7. Send us your membership ballot on page 7 regarding this reorganization.

Finances - The Board approved the expenditure of \$500 for the purchase of part of a lot of reclaimed chestnut lumber from an old farm building, purchased by Chris Ditlow at \$2.00 per board foot. Chris will store the wood and use it to make items for auction at our chapter meetings. The Chapter has benefitted greatly financially from the sale of Chris's work.

The Financial Report for the year was presented by treasurer, Tracey Coulter. A suggestion was made to further refine income and spending categories for ease of understanding and that income designated for special purposes be accounted for. The Pa Chapter had an income of \$22,217.99 and expenses of \$19,316.08 this year. Our net worth increased by \$2901.91 to a total of \$22,380.93. A budget for the year 2000 was accepted by the board with minor changes.

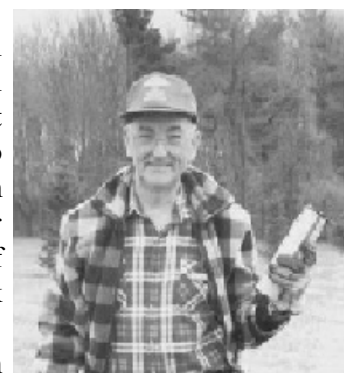
Spring Planting - Bob Leffel reported on the harvest of hand pollinated nuts and the tentative plans for spring orchards. Ann Leffel presented a report on harvest of American chestnuts. Suggestions for planting sites were entertained.

Chapter Meetings - The next Chapter meeting will be at PSU - Mont Alto on April 8, 2000. Tracey Coulter offered participation of forestry students in the way of forestry practice demonstrations.

Regional development in other states - The Board agreed to include Maryland and Delaware in our activities and to include their members on our newsletter mailing list, as passive measures of support for the development of their own chapters in the future.

President's Message - Al Eelman

Many thanks to all the people who made our fall meeting such a resounding success. Special thanks go to Dave Armstrong and Larry Patchel, but the utmost gratitude goes to Bob Summersgill who came back from Egypt to set up our meeting. That in itself shows great dedication, but when you consider that he was also running a fever and had a case of pneumonia his determination becomes awesome. Thank you Bob.



We are covering in this issue a reorganization of the board of directors. We believe that this will help move our growing chapter forward in the most efficient manner. We realize that we haven't been able to get input from everyone on these changes. I would like, therefore, to invite anyone who has suggestions, questions, or criticisms to contact me personally and I will bring those considerations before the board.

The Grower's Corner

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

Progeny Testing in American Orchards

by Dave Armstrong

American chestnut progeny testing is the evaluation of the characteristics of a tree's offspring to determine if they should remain in our breeding program.

Over the last few years, we have placed 34 American orchards across Pennsylvania to be used to supply American germplasm in our future breeding program. The planted nuts were open pollinated American seed. The maternal parent had predominantly American characteristics but the progeny may be different due to the open pollination process.

In the PA Chapter we have developed a worksheet to evaluate American characteristics of a tree. There is a total of 16 characteristics including four microscopic traits on the worksheet. These traits were developed from the publications and training of **Dr. Fred Hebard, Dr Doris Goldman, Dr. Sandra Anagnostakis** and **Dr. Arthur H. Graves**. The objective is to categorize the chestnut tree into the following classes:

Class A. Classic American. All evaluated areas are within the scope of American characteristics and the best candidates for the breeding program.

Class B. Several characteristics are not typical American but are minor and is acceptable for the breeding program if a class A is not available.

Class C. Not acceptable for the program due to too many deviations from American characteristics.

Class D. Not an American species or American hybrid.

An American planting is normally done in blocks of 10 or 20. When we test a block we randomly pick two trees per block. The trees should have completed two growing seasons so the characteristics are adequately developed. It is important that we view several leaves, twigs, and branches to compensate for the usual variation in one tree.

This year, when I did a progeny test of my American orchard, I found the following:

Block 1 - Stahlstown - StWe Class A Mostly American with some European

Block 2 - Fairhope - FhSo Class C European/American hybrid

Block 3 - Quakake - Q1Sc Class A Classic American, Excellent timber type

Block 4 - Reels Corner - R6So Class A Classic American

Block 5 - Brogueville - BrYo Class A Classic American

Block 6 - Mt Gretna - MgLe Class A&B Possibly mixed seed

Block 7 - Joliette - JoSc Class C European/American hybrid

Block 8 - Delano - L38s Class B American with some European

I recommend we progeny test each of our American orchards after their second growth year to assure quality in our backcross breeding program.

Expressions of Appreciation ☺

We have so many, many volunteer workers and contributors across the country, it is difficult to name them all. Thanks for all your support. Here are some of our supporters:

☺ **Russ Larson**, retired Dean of Agriculture, Provost of University, and Professor Emeritus, donated \$500 toward the chestnut project being handled by Dr. Larry Kuhns, Horticulture, Department, PSU.

☺ **Wild Turkey Federation (WTF)** donated \$4000 to PA-TACF for planting supplies for spring of 2000. A large check will be presented at the PA-WTF spring banquet with a presentation by PA-TACF. Thanks to **Brad Roads** of the local WTF.

☺ **Timothy McKechnie** is a graduate student at University of Massachusetts working in molecular biology. He is the volunteer, at Meadowview this summer, responsible for collecting the pollen used by the PA hybridizers this summer. Thanks Timothy.

☺ Our silent auction at the November Chapter Meeting added to the coffers once again. So, once again thanks to **Chris Ditlow**, woodworker, who continues to delight with his imaginative ways of using chestnut wood.

☺ Thanks also to **George Dickum** who contributed bags of nuts from his commercial orchard to the silent auction.

☺ Three cheers for **Darcey Dangremond**, Botanica Farm Store in Stahlstown for providing PA-TACF a free meeting place for their board meeting on Friday, November 12 on very short notice. Our member host, **Bob Summersgill** was ill with pneumonia and was unable to host us as planned. Doctor's orders!! Being a real trooper, he did host the tour of his unusual American chestnut stand on his farm the next day.

☺ **Carl Mayfield** and **John Hoffman** of Virginia who were as usual generous in donations and planting supplies this year.

☺ Thanks to **Larry Patchel**, West Region Coordinator for his hard work and coordination in hosting the fall meeting at Powdermill Nature Reserve.

Donate to the Restoration of the American Chestnut by Purchasing and Planting Nuts

Due to the demand, we will release a limited supply of nuts for distribution on a first-come, first-serve basis. These nuts are open pollinated Americans and are **susceptible to the blight**.

The following donations to the chapter will go toward the chestnut backcross breeding program:

5 Nuts - \$30 10 Nuts - \$50 15 Nuts - \$70

Make your check payable to PA-TACF and mail to:

PA -TACF, 800 East King Street, York, PA 17403

We will confirm your order by post card and plan to mail the nuts in March 2000 with planting instructions.



Member Location by County

Membership has reached an all time high of **725** due to member referrals and some excellent newspaper and magazine coverage. Many new members have joined us from the north western part of PA providing more potential for chestnut planting, pollinating and harvesting in that area. Included in the 725 members are 30 who reside outside Pa in NJ, DE, IN, MD, VA, TX and Mexico.

The Pennsylvania Chestnut Tree Blight Commission, 1911 - 1913. A Synopsis

by Dr. Bill Lord, Chapter Historian

Note: Dr. Lord's paper on the Commission was reduced to fit into this newsletter. The full paper of 8 pages is available upon request from the York office.(717 852-0035)

In 1904 Dr. Herman H. Merkel of the Bronx Zoological Park, N.Y., reported a lethal disease in the park's American chestnut trees and reported it to Professor W. A. Murrill of the Bronx Botanical Gardens. Murrill isolated and described the disease causing organism as a new species of fungus which he named *Diaporthe parasitica*. (Today it is labeled *Cryphonectria parasitica*) The disease spread rapidly within the immediate region of its discovery, over Long Island, up the Hudson River Valley and into Rhode Island, Connecticut, and New Jersey. Infections believed to be caused by the blight were noted in Connecticut in 1905. Dr. Murrill, and Dr. George P. Clinton of the Connecticut Agriculture Experiment Station were witness to the rapid spread. Clinton believed the pestilence was temporary and would self correct. Murrill concluded that no workable plan was available to control or limit the spread.

The blight was evident in Pennsylvania by 1907. Mr. I. C. Williams of the State Forestry Department became active

and dedicated in the effort to control of the disease as of 1908. Influential land owners in the Philadelphia area called upon the State for help when their efforts to combat the disease failed. In April, 1911 the legislature authorized an expenditure of \$275,000 to combat the disease. Governor John K. Tener appointed the Pennsylvania Chestnut Tree Bight Commission, June, 1911, "...for the purpose of thoroughly investigating the chestnut blight, to devise and apply ways and means through which it might, if possible, be stamped out."

Starting with a field force of 30 men, the Commission began its field investigations in August, 1911, employing the cut and removal method described in Farmer's Bulletin 467. "...this consists in first determining to exact range of the disease, especially the advance points of the infection. The diseased trees of these spot infections are destroyed as soon as possible after being located. Ultimately, it is planned to establish a zone free from the disease which will be constantly patrolled for new infections. The portion of the State west of this zone will be thoroughly scouted over at least once each year and new spot infections eradicated as soon as found. East of the immune zone no immediate attempt will be made to eradicate the disease, partly because most of the energy will be required to fight the

Continued on page 5

disease in the immune zone and westward, and also because of the poor market for chestnut products, especially cord wood, of which a large amount will be produced. It is planned, however, to place competent men in the region of general infection for the purpose of encouraging timber owners to cut their diseased trees before they deteriorate, and to assist them in finding a market for this material."

The February conference began and ended with an optimistic address by Governor Tener, but it was apparent that the Pennsylvania initiative was not assured of any support, other than moral, from the participating States. The representatives hoped for the best but didn't expect it.

The conference did augment the available knowledge about the blight fungus. It was identified by Professor W. G. Farlow [not present] of Harvard University, as a member of the genus *Endothia*, *Endothia parasitica*. Farlow acknowledged that fungus diseases with such severity and rapid spread as the chestnut blight are typically caused by a foreign species. However, he erroneously reported that this same species occurred in Europe, and did not cause the same disease in the European chestnut.

Of special interest to TACF members is a reference during the convention to Professor Arthur H. Graves, then of Yale University. Prior to attending the convention he had the adventurous mission of scouting throughout Connecticut on a motor cycle for evidence of blight. As we of the present day know, some of the stock used in our breeding program originated from Graves' research.

Hindsight shows the Commission had no chance of success in obtaining their objectives. This was clearly put forth at the convention by Dr. Murrill.

On the afternoon of the last day of the conference he rose to reply to an explanation by Professor Collins of the work described in Farmer's Bulletin 467.

"Mr. Chairman: I wish to speak just for a moment in reply to the preceding paper, and I wish to speak very briefly and plainly, as to why the chestnut canker cannot be controlled by the cutting-out method proposed:

1. It is impossible to locate all advance infections, these not being apparent even under close inspections.
2. It is practically impossible to cut and burn all infected trees after their discovery.
3. Even if these trees are cut, it is impossible to discover and eradicate the numerous infections originating from millions of spores produced on these trees and distributed by birds, insects, squirrels, wind and rain.
4. Even if it were possible to cut and burn all affected trees, for

ten and twenty years afterwards numbers of sprouts would grow up from the roots of these trees and continue to die from the disease and to spread the infection.

5. Supposing that it might be possible to eradicate all advance infections, what method is proposed that is at all feasible for combating the disease in its main line of advance? All of the foresters connected with the United States Government and the entire Army of the United States would be utterly powerless to oppose its progress.

6. Although the chestnut canker has been known and experimented with since 1905, there is not a single instance where an individual tree or a grove of trees affected by the disease has been saved. If it is impossible to combat the canker under the most favorable circumstances, how would it be possible to succeed with an extensive forest? The published account [Farmer's Bulletin 647] of the examination of the chestnut canker in the vicinity of Washington, D. C., upon which experiment the requests for state appropriations are said to be funded, cannot be relied upon. The trees most conspicuously affected there have been cut and burned, so that the presence of the disease is not readily apparent, but with each season additional trees will be affected and the attempt to stay the disease will be abandoned, especially when the main line of advance, which is now in northern Maryland, reaches the Potomac."

Its research scientists, namely Frederick D. Heald and Paul J Anderson wrote excellent studies with detailed drawings on *Endothia parasitica*. These works described the complicated life history, step by step. Unless I missed it, however, I did not find any reference to sexual reproduction. Current literature states that a first series of generations are by means of asexual spores, the conidia, followed in the more mature parasite by the sexual production of the ascospores.

In 1913, the Commission noted the discovery of *Endothia parasitica* in China by Frank N. Meyer. This strengthened the view of Metcalf and Collins, among others that *Endothia parasitica* was of foreign origin and probably entered this country on diseased nursery stock. It was also noted that the Japanese chestnut was strongly resistant to the blight whereas the European and American chestnut were not. I found no reference to the resistance of the Chinese chestnut.

The Commission published the proceedings of the February, 1912 convention and copies were sent to every person who registered at the convention. A volume consisting of the convention proceedings and of the scientific and historical reports has been published by the University of Cornell Forestry Department, 1992, copy in possession of TACF.

The Chapter Calendar.. 2000

Jan 8 - 13 PA Farm Show
 Feb 29 Chapter Newsletter Mailed
 Mar 18 Planters Meeting -
 Leffel Farm
 Mar 15 - Apr 30 Planting Time

Apr 7 Region and County
 Coordinator Meeting
 Apr 8 PA Chapter Meeting
 Mont Alto, Chambersburg, PA
 May 31 Chapter Newsletter Mailed
 Jun 15 - Jul 10 Pollination Time

Aug 31 Chapter Newsletter Mailed
 Sept 15 - 30 Harvest Time
 Oct 13 - 15 TACF Annual Meeting
 Abingdon, VA
 Nov 30 Chapter Newsletter Mailed

American Seed Harvest

by: Ann Leffel

Each harvest season is unique. This year the factors affecting seed set and harvest time were the drought and Hurricane Floyd. The seeds ripened early this year, but not before 'Floyd' came along. Pollinating bags were stripped from the trees, only the paper clips or wire ties left to identify where controlled pollination had been located. Nuts were lost, but the harvest was surprisingly good. A total of 3272 open pollinated seeds from American trees, hopefully pollinated by other American trees, were collected.

To assure that the pollinator was American, the trees resulting from planted open pollinated seed are again verified at the end of the first or second growing season. Only PA-American chestnut trees are used in the breeding program. Seed from at least 15 new trees are included in the seed collection this year.

The Chapter establishes new American orchards each spring for a number of reasons:

1. To maintain the gene pool of American chestnut.
2. To provide convenient mother trees for future breeding.
3. To test the mother tree. Is she a good nut producer?
4. To test the planting site.
5. To learn how to grow chestnut trees.
6. To provide American seed for research purposes.
7. To provide seed for seed kits and seedling sales.

Members wishing to become a part of the chapter breeding program are welcome to participate.

Your site should be on open well-drained loamy soil for best results. Chestnuts don't like clay soils and wet feet. The trees produce flowers only with adequate sunlight. Seedling trees do not compete with grass, so weed control is important. Fertilization helps to bring trees into bloom at an early age. On March 18th, the growers and prospective growers will meet to share experiences, and to receive seed and instructions for planting. If you are interested in becoming a grower, contact Ann and Bob Leffel, Ph: 717-927-9557; e-mail: <baleffel@blazenet.net>.



In 1999, the drought reduced our harvest then Hurricane Floyd beat and ripped the pollination bags.

1999 Hybridizations - An Unprecedented Success! — and Requires Unprecedented Planning!

By: Dr. Bob Leffel

PA-TACF members and associates achieved the greatest success to date in hybridizing chestnuts in 1999:

<u>Generation</u>	<u>Source of Resistance</u>	<u>Number of Seeds</u>	<u>Number of New Lines</u>
BC3	'Clapper'	2559	11 + 7 partial
	'Graves'	487	2 + 5 partial
BC2	'Douglas'	145	1 + 1 partial
BC1	'Meiling'	43	3 partial
	GM 65-11	62	2 partial
F-1	Various	<u>111</u>	
	Total	3407	

We define a line as 100 or more seeds per maternal PA-American chestnut tree or several trees at the same locale. Our initial goal was to obtain 20 lines, utilizing the Clapper source of resistance. We've now obtained 22 Clapper BC3 lines, 1995 through 1999. Ideally, the 2559 Clapper BC3 seeds above should be planted in year 2000 as orchards of 1818, 509, and 232 BC3s. The largest orchard would contain all lines obtained in 1999 and approximates the concept of establishing all lines of a source of resistance the same year. This is something no one has been able to do to date. PA-TACF has now developed a nucleus of dedicated hybridizers capable of producing as many as 20 lines per source of resistance in a single year!

In addition to year 2000 plantings, we must prepare for year 2000 inoculations of trees seeded in 1996. This involves inoculating each of the BC3 and check trees (Chinese, American, and F-1 hybrid) with each of two strains of the chestnut blight fungus in June, and evaluating the reaction of each tree by fall, to determine the most resistant of the BC3s which should be intermediate in resistance (similar to the resistance of F-1 hybrids). TACF Meadowview Research Farms 1999 Report includes the frequency of selection for blight resistance in BC2 populations, 1994 through 1998. In the Clapper BC2, 71 trees were selected vs. 488 not selected; in the Graves BC2, 63 trees were selected vs. 453 not selected. This is a good fit to a 1 : 7 ratio, suggesting 3 genes for resistance rather than 2 genes. Dr. Hebard prepared us for this possibility by requesting 100 seeds per BC3 line. Assuming the 99% level of probability and 3 genes for resistance, we need 73 BC3 trees per line for at least 4 trees with the three genes in the heterozygous condition. Likewise, we need 640 BC3F2 trees per line for at least 4 trees with the three genes in the homozygous condition.

Also, we must plan for a very large BC3F2 orchard, 8000 trees or more, in which eleven singlecrosses utilizing all selected trees from the 22 Clapper BC3 lines will be consolidated at one location. This will provide for open-pollination to occur among the screened blight-resistant BC3F2 trees, producing seed for our first blight-resistant American chestnuts.

Reorganization of the PA Chapter Executive Board and Chapter By-law Changes

WE NEED EACH PA CHAPTER MEMBER TO VOTE FOR OR AGAINST THESE CHANGES ON THE BALLOT BELOW!!

The submission of your vote will save the chapter money if we do not have to mail you a separate ballot. Thanks for your help.

The Executive Board met on November 12, 1999 and reviewed proposed changes to the organization and by-laws.

Background. Currently, the Executive Committee is composed of 10 members. The President, Vice President, Secretary and Treasurer who are elected for a two year term with a two year consecutive term limit. There are six board members in the Executive Board who are elected for two years; three in odd years and three in even years. They have no term limits.

There are committees and individuals who are appointed to perform specific actions for the chapter. They are: region/county coordinators, the executive director, breeding program coordinator, chapter scientist, tree locator and identification coordinator, newsletter committee, PA farm show coordinator, grants coordinator, and the historian. These individuals and committees function autonomously and perform an excellent service for the chapter.

Growing Pains. We are rapidly expanding in membership, over 60% increase over the last year. Due to the increase in administration, and chapter operations, we opened an office and established an executive director in York, PA. We are presently increasing our region and county coordinator teams to assist at the local level in Pennsylvania.

Since our priority has been on membership and the breeding program, we are limited in our ability to pursue some other important tasks such as orchard automation, grant writing, coordinator recruiting, and chestnut education.

Proposal. The Executive Committee approved a reorganization subject to membership approval as follows:

In order to place the proper emphasis on functional areas of the chapter, the board members and officers will be given specific

functional responsibilities to coordinate and supervise. They have the authority to appoint committees and action persons as needed to perform their functions.

A short job description for the elected board members is listed below:

Board President - Active supervision of the board and assigning tasks to board Directors as dictated by the mission of the Chapter.

Vice President and President Elect - Elected to be the next president. Acts in the absence of the president. Has overall coordination of the operations of the chapter. Appoints and supervises the Executive Director, the region and county coordinators. Plans and supervises special chapter activities and events. Is responsible for insuring chapter legal requirements are fulfilled.

Past President - Retained on the board as an advisor and voting member for one term of two years.

Tree Breeding Program Director - Responsible for planning and coordination of the breeding program to include science functions, tree identification, orchard management, pollenation, planting and harvesting and documentation.

Membership Director - Plans and coordinates the communication, recruiting and retention of chapter members.

Data Management Director - Plans and coordinates the procurement, development and implementation of data systems and hardware to support the chapter operations.

Education Director - Plans and coordinates the speakers program, public education programs, public relations and historical collection.

Communications Director - Plans and coordinates the chapter newsletter, as well as postal, telephone, and electronic mail communications.

Finance Director - Plans and coordinates the treasury operations, grants program, annual audit, taxes and non-profit status.

The term for all board members will be two years. The President, Vice President, and Past president will have a term limit of two years due to the progression of positions - from Vice President to President to Past President. The board members have no term limits. Half of the board will be elected each year by the members.



PA MEMBER BALLOT (Please leave the address label attached to the other side. Make any address changes necessary)

I approve the proposed reorganization changes to the Pennsylvania Chapter of The American Chestnut Foundation as reported in the *Chestnut Tree* Newsletter of December 1999.

I disapprove the proposed reorganization changes to the Pennsylvania Chapter of The American Chestnut Foundation as reported in the *Chestnut Tree* Newsletter of December 1999.

COMMENTS:

Signature(s):

TACF Scientific Review Team Results

by: Dr Bob Leffel

A review team with expertise in tree breeding and/or genetics (Drs. Buijtenen, Mehlenbacker, and Phillips — Texas A&M University, Oregon State University, and University of Minnesota, respectively) audited the TACF breeding program, including PA-TACF's contributions, August 12-15, 1999. The reviewers endorsed backcross breeding as appropriate for combining blight resistance with American chestnut timber-type growth habit and were impressed by the progress made to date. "The scientists are focused on the goals as set forth originally by Dr. Charles R. Burnham and advanced through the many efforts of The American Chestnut Foundation. These efforts represent an exceptional example of how volunteers with a highly focused mission can accomplish a goal of broad interest to the American people, but one for which federal and state funds are extremely limited."

Recommendations by the review team include:

1. Using additional sources of resistance and advancing them to the BC3F2 generation — possibly a higher priority than advancing 'Clapper, 'Graves, and 'Nanking' sources to the BC6;
2. Using clonal propagation as a routine procedure in the breeding program, such as in BC3F2 seed orchards to increase seed yields;
3. Additional research on methods to determine levels of blight resistance, as among seedlings, to provide more rapid elimination of undesirable plants;
4. Improved cultural and plot techniques for efficiency and to enhance the physical appearance of orchards;
5. The use of DNA markers, primarily through grants or contracts with outside agencies, for detecting pollen contaminants, mapping resistance loci, recovery of the recurrent parent genome, and possible patent protection of advanced selections; and
6. Replacing the current TACF Germplasm Agreement with two separate types of agreements:
 - (1.) A memorandum of understanding or material transfer agreement allowing cooperators to use TACF selections in breeding and for evaluation purposes; and
 - (2.) An agreement to cover the propagation and marketing of new cultivars developed by TACF.

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

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The Chestnut Tree Newsletter

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The strength of the Pennsylvania Chapter
comes from our dedicated volunteer members