American Chestnut Cooperators' Foundation

2009 Newsletter

Send your report via https://accf-online.org/greport.htm or to

Forest Service Road 708, Newport, Virginia 24128

Dear Friends and Cooperating Growers:

This year we take you on a virtual tour of the **Martin American Chestnut Planting** on Salt Pond Mountain, Virginia, at 3,500 feet elevation. **Gary Griffin** and **John Elkins** made the original planting in 1976 on land given to **Virginia Tech** by **Ruth and Miles Horton** for American chestnut research and dedicated to the memory of **Miss Flossie Martin**, a biology teacher who awakened in Miles a lifelong interest in science.

Gary and John laid out the planting holes with 10 foot spacing: 13 rows of nine and one row of six. They planted one-year- old all-American first-generation intercross seedlings, representing four of the parent trees which at that time had passed blight resistance tests: Floyd, Gault, MacDaniels and Weekley. Among these intercrosses they also planted, for reference purposes, open-pollinated chestnuts of two kinds: Wisconsin seedlings from outside the range of the blight fungus and Pease 16 seedlings from West Virginia. They planted at least one of each open-pollinated variety per row.

The planting site slopes steeply toward the southwest with woods on the other three sides. The clearing was made by the previous owners to grow feed corn. After the limestone-based soil had been played out, it became a hay field. This plot was planted before Gary had made his extensive forest ecology studies, so we did not realize that we were creating a worst-case scenario site: not the preferred north to eastern exposure, but open to severe winter stress and late freezes in spring, the wrong soil type, not acid and not well-drained in spite of the slope, and the upper layer of soil was seriously depleted, leaving available fertility well below the surface.

It was a struggle to get them established. At first, we used compost and newspaper mulch to improve the soil, and for many springs and summers we carried water to

each seedling. For years they grew very poorly, at less than half the normal rate, until the taproots finally reached deep below the surface soil and into more fertile ground. Then they took off. In 1988, with 78 of the original 117 surviving, Gary and John inoculated all chestnuts over 1.5 inches in diameter at breast height (DBH) with a killing strain of the blight fungus to test for blight resistance. The Wisconsin trees died within a month or two; the Pease did a little better. Gary and John observed canker growth over a two-year period, and judged three of the intercrosses to have resistance equal to or better than the parent trees.

John Elkins made some second-generation intercrosses and planted 12 of the seedlings to fill spaces in the rows in 1993. Over the last eight years, we have filled most of the other spaces by direct-seeding chestnuts. In 2000 and 2004, we planted controlled, first-generation intercrosses representing three more parent trees. In 2005 through 2008 we planted open- pollinated chestnuts from a plot which contains only blight resistant chestnuts and represents five original sources of blight resistance. These nuts are the same as those we have been sending to growers in recent years; most of them may be second- or third-generation natural intercrosses.

Walking through the Martin American Chestnut Planting today, you see seven chestnuts over 30 feet tall, with the tallest at about 44 feet, six chestnuts over 20 feet tall, and another six over 10 feet tall; these are original survivors, 1993 seedlings, several of my grafts which date from 1995, and a few are seedlings from nuts where the planting spot was much improved on the second try. Thirty-four more chestnuts, ranging between 9 feet and 6 inches tall, are mostly from direct-seeded nuts; one is a new graft this year. You will also see many more chestnuts, between 10 and two inches in diameter have been cut at the base and are making stump sprouts; these are for future grafting opportunities. Every chestnut smaller than 30 feet tall is enclosed in a wire cage, because the trees are a target for deer rubs which easily strip the smooth bark, and of course, deer eat unprotected sprouts.

You probably would expect to find American chestnuts that are 25 to 30 years old to be much taller than 44 feet, and you would be correct. Leaving aside their slow start, the relatively small stature of the older chestnut stems in this planting is mostly due to cutting; many are second or third shoots to emerge when the previous trunk was cut at the base because it was seriously disfigured or had the top killed by blight.

A new shoot on an established root system has a greatly improved chance to reach a larger size before its first blight attack. Therefore, because of the severity of conditions on this site, we have given many of the original chestnuts two or three chances to make a better blight resistance test score. However, the first selections are still the best, so this summer we hired a tree service to cut at ground level 52 trees that did not pass inspection. This leaves the orchard with only blight-resistant chestnuts able to produce pollen and nuts. It also greatly increased the sunlight available to stimulate more rapid growth on the smaller chestnuts and for next year's grafts.

This year's Martin American open-pollinated nuts will represent various combinations among six original parents (Floyd, Gault, MacDaniels, Thompson, Nathan Pease, and Ragged Mt.) in first-, second- or third-generation natural intercrosses. Six additional original sources of blight resistance are represented in the seedlings and grafts which will flower here in the near future.

In addition to the harsh environment and continuous blight infections, this site has weathered two serious insect problems. The ambrosia beetle attacked in 2006 and again in 2008, both times killing or setting back by a few years each, from two to four of our grafts. So we must keep a close lookout each March for the telltale pinholes on the lower half of stems smaller than 3 inches DBH and be prepared to spray all trunks of that size with Permethrin. A much bigger threat by gypsy moth was stopped this May by a large countywide spraying effort followed by almost two months of above-normal rains which appear to have interrupted reproduction of the pest.

The stress factors on this site are not completely unrelieved: because of the poor upper soil, weeds do not seriously compete with the young seedlings, and because the soil is very compact, voles have not created the general nuisance we battle in the richer and well-drained forest sites. About five years ago, the **Mary Moody Northern Foundation** purchased a large block of mountain land which includes the Martin American Chestnut Planting and three smaller related chestnut plots. This foundation is deeply concerned in environmental projects that engage the local public, in other words, exactly our kind of folks; they make our work easier by keeping the plots mown.

MOST FREQUENT PROBLEMS

Poor germination is most often a result of improper storage and can be avoided by planting chestnut seed when it arrives. In the north, however, where heavy snow covers the ground for a month or so, the chestnuts may be better off stored as follows: put the seednuts in a mixture of 50/50 sand and peat moss, very slightly damp, inside a plastic peanut butter jar, in which several small holes have been drilled for air exchange; then bury the jar under about 4 inches of soil inside your first planting hole, well-marked with flagging. Plant the seed by February.

Poor transplant success is common for American chestnuts because the long taproot is easily injured; avoid this problem by direct-seeding the nuts in their chosen site as described in the handout which accompanies the seed.

Yellow or yellow-green foliage that is smaller than normal indicates poor seedling health. In or near the Piedmont and elsewhere in the South where the soil is not well drained, a root rot may be the problem. Watering does not improve the appearance of root rot victims. The seedling dies all at once. For complete information, look up Phytophthora in past newsletters, archived in descending order, below.

Yellowish, unhealthy foliage may also indicate that voles are attacking the root system; this is common in rich, well-drained woodland soils, new clearcuts and old orchards. Probe inside cages with a stick. Wherever it sinks suddenly apply a vole poison in the tunnel. Last year's trial of Molemax and other smelly deterrents failed; poison is necessary for vole control. Voles kill chestnuts is surely as a root rot.

Tree shelters of all descriptions, vented or not, are unsuitable for protecting American chestnut seedlings. The only exception to this rule is the 8-inch tall, short shelter which we sink 3 inches into the soil in the middle of each wire cage for first-season protection of direct-seeded chestnuts. The taller shelters are too small in diameter to accommodate healthy chestnut leaf and stem growth; they are also very efficient blight incubators, and, just like a dense weed growth inside protection cages, they hide the first signs of blight, which often occur at the base and rapidly kill seedlings smaller than an inch in diameter.

Basal cankers, if detected early, may be controlled by making a mud pack to cover the canker with moist soil. This can give the seedling another chance to reach 1.5 inches in diameter, the minimum size for blight resistance expression to be useful.

2009 CHESTNUT DISTRIBUTION

Our directors have discussed the many pros and cons of seedling distribution, and have decided to discontinue it. Henceforth we shall distribute only seednuts. This should decrease my data entry duties by half, leaving more time to spend in the research plots.

If you have already signed a copy of the enclosed agreement and your information is unchanged, please write, "NO CHANGE" boldly across that side, and fill in your nut request. If you have already reported, please write "REPORTED ONLINE" boldly on the reverse side, and fill in your member number from the envelope label. This will save more office time, thanks very much. **Everyone with a Grower Agreement and current Report on file may order 10 chestnut seeds**.

Most of the 2009 chestnuts we will be sending to growers in late October will come from the two plots which contain only blight-resistant chestnuts, and the chestnuts collected in other plots will come from blight-resistant mother trees, the ones which are nearest to the best pollen sources. Nevertheless, blight resistance may not be regularly inherited among the progeny. We still rely on annual reports from you to learn how many and what percentage of these nuts express blight resistance.

HARVEST

This year we guess the harvest may begin around September 16 on the early trees; therefore, help will probably be needed most the week of September 21, and possibly also the first half of the following week. To help out, please e-mail Lucille at **allaccf@gmail.com** (my new address), mention the date when you plan to come, and I will get back to you. We harvest in the morning, usually beginning at nine. Harvest helpers may request additional chestnuts if they bring their own collection bag and are prepared to take chestnuts in the burs to store and process at home.

ACCF REPORTS

The total American chestnut seedlings and nuts from the 2008 harvest which were planted by our associates and cooperating growers this past winter and spring was 2,846.

The total American chestnuts surviving in Virginia research plots, not including the chestnuts cut back at ground level for grafting stock, is 483 grown from seedlings and seednuts, of which 66 are new this year, and 80 grafts. **As of September 8**, we have received reports from **83 growers** of **1,976 chestnuts** surviving in their ACCF plots.

OUTSTANDING COOPERATORS

Many thanks to UNC freshmen, **Elizabeth Cooper** and **Caroline Robinson**, who volunteered two days of their fall break to make a new chestnut research plot. They constructed 40 wire cages, drove stakes and broke new, difficult ground to dig 40 18-inch holes; the second day, they worked in a driving rain to complete the job. We planted there by direct-seeding 36 chestnuts representing the next step up in our blight-resistance breeding program. Twenty-nine of these seedlings are growing well.

Thanks again, to **Carol Croy**, **Virginia Shepherd** and **George Richardson** who helped us to harvest the chestnuts we sent to growers in 2008.

More thanks to the **National Wild Turkey Federation** which has continued generous support of our work.

Whenever we plant a nut or make a graft, we are committed to defending that chestnut like a mother hen, her chicks. Until it is big enough to express blight resistance (1.5 inches DBH), we give every benefit of protection and assistance, sometimes including second and third chances to demonstrate a better reaction to blight infection. But science must trump sentiment or there could be no progress in blight-resistance breeding.

In your own American chestnut project, you may elect to follow the same plan of continuous improvement for blight resistance, and you will have at least 20 years, perhaps 30 years, head start, as compared to where we began in the 1970's. Or you may have a different goal, such as adding American chestnuts for their mast crop, to support more game on your lands. In this case, you still must defend the young chestnuts till they develop robust root systems, so that stems killed by blight can be rapidly replaced by new stems and the nut crop may be dependable, even though nut-bearing individuals within the planting may vary from year to year. Such a goal does not require cutting out any of your chestnuts, so it may be achieved within 10 to 12 years if the site is rich and the chestnuts are kept in full sun.

The nut-crop plan is flawed only if you have extensive managed woodlands and hope that nuts from your original stand may seed future clearings as more space becomes available. In this case, your seednuts would be inferior to those produced in a chestnut planting that has been managed like a research plot, for continuous improvement of blight resistance.

Of course, the choice is yours. We thank you again for your donations, and look forward to your annual reports.

Respectfully submitted,

Lucille Griffin, Executive Director

Other ACCF Directors

Gary Griffin, President, Professor Emeritus of Plant Pathology, Virginia Tech

Dave McCurdy, Vice-president, retired Superintendent, Clements State Tree Nursery, Raleigh, NC

John Rush Elkins, Secretary, Research Chemist, Professor Emeritus of Chemistry, Concord College, WV

William Pilkington, Treasurer, Financial Advisor, Ghent, WV

Ed Greenwell, Director of Tennessee chestnut projects, Electrical Engineer, McEwen, TN

Dedicated to the restoration of American chestnuts

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