

American Chestnut Cooperators Foundation

2011 Newsletter

Dear Friends and Cooperating Growers:

GROWERS' REPORTS:

So far we have six growers reporting 108 all-American chestnuts growing. Last fall and winter, I planted 282 chestnuts; in spite of very good germination only 173 remain for me to water through the drought. We shall never again plant such a large number in one year. We had a chance to open up three new forest plots, and we went for it. Three or four dozen, on which the autopsy has not yet been done, died from either drought or voles and many more to other above- and below-ground varmints. Altogether, 777 of my chestnuts planted since 1985 survive.

GRAFTING:

Since many states have recently enacted quarantine or other restrictive laws against imports of chestnuts from those states in which gall wasp has been identified, we can no longer send scions to cooperating grafters. You can still continue improving your chestnut groves by collecting scions from the best-looking among your chestnuts with swollen blight cankers and grafting them on the new shoots from chestnuts killed by the blight. This is what we have been doing all along. This spring I made 70 grafts of which 14 are growing. Following heavy losses to ambrosia beetle this spring, altogether 53 of my grafts since 1990 survive.

HOTINE PLOT VIRTUAL TOUR:

We named it for my parents; Hotine is my family name. Located in the National Forest about 300 yards downhill from our back yard, the half-acre was cleared by a Forest Service crew in the winter of 2002-03, after Ed Leonard, USDAFS silviculturist, obtained special permission for the research plot.

Site selection was deliberate: it is east facing (for morning sun exposure), on a cove-slope, two-thirds of the way down the mountain (to avoid frost pockets), where there used to be a field in which tulip poplars grew 100 feet tall in 30 years, promising great growth potential. Gary wanted the soil disturbed as little as

possible, so the stumps were left in place and killed by applying a high nitrogen fertilizer. In the upper half of this clearing, we laid out 10 rows, about eight feet apart because the slope is so steep, perhaps 50 degrees, and drove stakes to mark planting places, from six to 10 per row, the spacing dictated by the stumps. Laying branches across the slope, leveling places for the cages, removing roots and rocks to make the planting holes and making the protection cages completed the heavy work, well before planting time.

We accepted plenty of volunteer help from our children and grandchildren and especially from **Douglas Buege**, who carried most of the wire (enough rolls of 5 x 50-foot weldwire to make 94 cages) down to the site that summer, when he was doing the research for his book about American chestnuts, *If a Tree Falls*. He expressed concern that the steep site could be prone to erosion, but this has not been a problem. The grasses and clover we planted, along with volunteer wildflowers and berries, rapidly covered the bare soil.

At the time when we made the application for a clearing, we proposed planting the next generation of the Miles x Ruth family there. However, that year Gary had discouraging results when rating the cankers among what were then the best representatives in that line. This is one of the big challenges in resistance breeding: from one year to the next, over the winter, blight cankers may completely change their appearance, altering the resistance rating from good to bad or sometimes, vice versa. This is why Gary rates cankers annually and why we cull individuals whose blight resistance does not hold up for at least 10 years. Thus, Gary decided that we should start a new family here, using the mother tree with highest rated blight resistance and longest blight control.

We had observed, among all our chestnuts, this one was the last to go into dormancy, and we considered this extra week or two in growth might bestow an advantage in disease resistance. Thinking along these lines, we decided to use as father tree, the first chestnut to emerge from dormancy, which is a week to 10 days ahead of all the others, and this way, perhaps produce some progeny that combined the first in and last out feature to further extend the growing season. This was my idea, which may yet turn out to be bogus, but since I was doing the pollination in 2003, I decided to try it.

So far, the Hotine plot has been mostly a place for good luck. Starting with ready agreement from the community for the cut and major help from the USDAFS, next

thing we received the grant from the National Wild Turkey Federation which paid for site preparation, protection cages and maintenance for the first three years.

The only bad luck was with the first controlled pollination. If you put up 50 bags, enclosing 150 flowers, return three times to paint pollen on each flower at intervals over a 10-day period, you may harvest a number of chestnuts anywhere between zero and 450. The pollen may be immature or too old, and the flowers generally are not all receptive on the same day. My 2003 pollination was a flop: it produced just seven viable chestnuts. I planted them in the top two rows, along with some volunteer seedlings which I planned to use for grafting stocks.

The following year I planted 35 more of this intercross. In 2005, deciding it was a difficult cross to make and maybe we had enough of these, we began to plant nuts from the same mother tree, using different father trees; next we used different mother trees with the original mother as the father. Finally in 2007, we planted an extra column of open-pollinated chestnuts in the Miles X Ruth line, once again back in favor. This way we may be able to compare their blight resistance to the newer breeding lines on this site.

Now we have 94 seedlings and four grafts growing. The grafts are of parent trees and also, one new first-generation selection. In general, the first two or three seedlings in each row grow very slowly or not at all, while the rest make very good to exceptional growth. The cause was a planting mistake: we planted too close to several 100-foot tall poplars on the south side which shade the nearby seedlings too soon in the day while the poplar root systems keep growing back into the chestnut planting holes. Five of these tiny seedlings finally died. The survivors in the first two rows are four, each at one foot tall; four, at two feet tall, and one at seven feet; however, the last is in an upper row not crowded by the big poplars. Normal chestnuts of the same age growing in the rest of the rows are 12 to 14 feet tall.

You may remember our discovery last year at the Airport plot where two chestnuts had no **gall wasp** damage, while all the others had a major infestation. Those two possibly gall wasp resistant chestnuts were parents of the 42 nuts we planted in 2003 and 2004. Several of them are over 20 feet tall and many more are over ten feet, so we anticipated an early nut crop this summer. As it turns out, we might get a few, but not enough to share: only one chestnut made any flowers so I tied bunches of catkins on the tips of branches to entice bees to pollinate these flowers.

GALL WASPS:

We suffered a major gall wasp infestation in our yard chestnuts this May, dealt with by cutting out two grafts and 10 seedlings, all well over ten feet tall, thus it was the only way to get rid of the problem. We also cut the top and many upper branches out of the Pie chestnut in front of our dining room window, so it is not as beautiful as it used to be. The grafts are finished, but the seedlings can start again clean, and some of them have new sprouts already six feet tall. We found and destroyed a small number of galls at the Airport plot, not nearly as many as last year. A sprout from one Miles and one Ruth (cut down last year at the Airport) are growing tall, and three of the others we have grafted with newer selections. We also found a discouraging number of galls in the Martin American Chestnut Planting, picked them out by hand, stuffed into plastic bags to the dump. I read in the Nutshell (NNGA 101st annual report) that the natural predators of gall wasp develop along with them inside the galls, but choose not to take the chance that these predators may have reached our area.

AMBROSIA BEETLE:

This pest caused extensive damage and some big losses. Arthur Frisbee, from North Carolina warned years ago that this beetle, said to attack only injured trees, thinks grafts are injured trees. In a forest plot out in Giles County, we had six grafts killed by ambrosia beetle. When you cut a graft at the base, you are usually cutting into the stock, but there is a small chance that a piece of the graft, covered with soil, may send up a new sprout; this does not usually happen.

In addition, we had infestations on ten healthy seedlings at Mountain Lake and in the Hotine plot as well as a few grafts at the Airport and Mountain Lake. We cut all seedlings and heavily infested grafts in one-foot segments, to be able to examine them for the telltale pinholes, and put all infested wood in triple plastic bags, to the dump. Again, we chose the strongest new shoots and cut out the others. Some of these new shoots are also six feet tall.

On two very large grafts, we found only a few pinholes near the base and tried to save them with applications of permethrin, once a week or after each rain. We saved one.

In every plot where this pest made an appearance this year, we shall have to spray all grafts and small seedlings from the base to five feet up, beginning in April 2012 to prevent further losses of grafts and time.

HYPOVIRULENCE

Over the years, we have received many requests to share the hypovirulent strains of the blight fungus with which we inoculate the first cankers on chestnuts in our breeding program that demonstrate blight resistance. We are not permitted to share them because they are under a special USDA license for use in research under Gary's direct supervision.

OUTSTANDING COOPERATORS:

Thanks again to **John Buschmann** for supporting ACCF research and plot maintenance in the Lesesne.

Thanks to **Matthew, Hannah, Grace & Luke Griffin** for folding, applying stamps & labels, stuffing & sealing envelopes to get out last summer's newsletter.

Many thanks for harvest help from **Lise & Harry Cooper, Carol Croy, Rick Gendreau,** and **Vicky & Eli Lewis**. If you wish to volunteer for the 2011 harvest, please e-mail me at allaccf@gmail.com and suggest a week day after September 15, when you may be able to help.

More thanks to **Lise & Harry Cooper**, for helping with replanting at Turkey Run. Special thanks to **Karl Cooper** for cutting many trees at Turkey Run to put more sun on a few small seedlings and make room for 12 more planting places.

In future newsletters, the research plots on our virtual tour will be quite different: the rest are not laid out on a grid, like an orchard enclosed within the forest, but are planted or grafted at random in groves as the forest grows. We now have many more chestnut research plots than there are days in the week. So we must limit ourselves to maintenance, improvement, and perhaps, expansion in a few plots.

But that was not our dream. We have imagined all-American chestnuts growing in each new forest opening on ideal sites in the whole eastern forest formerly occupied by American chestnut. We will need lots of help to accomplish this, and

we believe seasoned chestnut growers will be most able to create successful forest projects.

Some of you are raising a few or several yard chestnuts, some are making large orchards and others are making forest groves. If you are in the first category above and have run out of yard space, we urge you to consider branching out and putting your experience growing chestnuts to use in a forest setting on public lands. A few of our cooperators are already doing this; we need many more to join them. State and Federal foresters make very good cooperators; they welcome volunteer forest improvement projects and help with site selection.

When you work near a forest service road, the same pickups, motor cycles and SUVs, carry woodcutters, hikers, campers or hunters past you. One will stop to ask what you are planting. American chestnuts you say, and often you have a new friend. After a few years on the job, most of the passersby, as well as nearby cabin dwellers wave and many express thanks for your work. It is the best job in the world.

We look forward to reading your reports and thank you for your work.

Respectfully submitted,

Lucille Griffin, Executive Director

Other ACCF Directors

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

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Dedicated to the restoration of American chestnuts

