

American Chestnut Cooperators' Foundation

2008 Newsletter

Send your report via our [Online Report Form](#) or to

Forest Service Road 708, Newport, Virginia 24128

Dear Friends and Cooperating Growers:

In special thanks to the many volunteers who have helped us reclaim the **Lesesne research plot**, we feature a virtual tour.

The Lesesne is surrounded by state forest lands of the same name which were donated by the DuPont family to the **Virginia Dept of Forestry (VDF)** for American chestnut research. **Al Dietz**, cooperating with the VDF, planted here in 1969, on a gentle south-facing slope at the foot of the Blue Ridge in deep fertile loam soils. His original planting was about 10 acres, divided into three squares with 40 rows and columns in each square and the chestnuts planted on 10-foot centers. These chestnuts had been exposed to ionizing radiation in an experiment aiming to induce mutations favorable to blight resistance.

Over the years, nearly all of Al's chestnuts have died from blight, and then from deer browsing the new shoots and from intense competition of other trees when state funds for maintenance were cut. With the exception of the roadways leading up to and between the squares and the western edge of the middle square the planting disappeared in a tangle of vines and other trees.

The western edge was saved because there in 1980, **Bruce Given** and **John Elkins** of our informal American chestnut research group had worked with **Tom Dierauf** (VDF) to graft large survivors into the stocks of the blight-killed chestnuts. In 1982 and '83, the first blight cankers on the grafts were inoculated with a mixture of hypovirulent (weak) strains of the blight fungus obtained from **Jack Elliston** in Connecticut. Research conducted by **Virginia Tech** graduate students, supported by the ACCF has shown some of these hypovirulent strains have spread, over the past 26 years, throughout the grafted trees. These grafts inspired me to add to the collection.

My scope was quite limited until **John Buschmann** approached the VDF to enlarge our edge by clearing an acre, or the first 24 columns on the west side. Then, in 2002, a **National Wild Turkey Federation** grant made it possible for us to clear and plant 5 rows of second-generation all-Americans (Ruth x Miles) along the downhill, southeast side. The following winter, once again the VDF pitched in to clear the rest of the square, making planting room in which we have established several additional breeding lines by direct-seeding nuts beginning in 2003; they are first- and second-generation intercrosses among six different parent trees.

In each case, before clearing, we flagged all the chestnut stems to be saved for resistance testing; most failed the tests. On the western side we left many failed chestnuts to witness the continuous cycles of death by blight followed by regeneration via root sprouts; we use the others for grafting stock.

Mainly I graft the parent trees whose progeny we have been planting here, but also, some related chestnuts, such as "Ed", with its first blight canker swollen, a very strong-growing volunteer from a Virginia Tech breeding orchard, and "Joyce" an advanced intercross (Parent x F1) made by John Elkins in 1993, which has thrived with blight infection in a severe environment.

Because foresters don't like to cut down beautiful trees, in addition to all the chestnuts, ranging in age from one to 49 years old, there are four large tulip poplars and one oak among the upper eastern rows and in the space between the upper and lower rows. Probably around 20 years old and up to 60 feet tall, they illustrate the site's growth potential.

We have kept to the approximate 10 foot spacing between chestnuts, but more than doubled the space between rows at VDF request for vehicle travel. In the center of the square, the VDF bulldozed the cleared trash trees to fill a big dip; a similar dump is at the beginning of the first row at the bottom of this dip. These places have become havens for birds, blackberries, and snakes. In rows two through 5, many chestnuts planted in the dip died of apparent root rot, and we have left most of these spaces planted in grass. We also left a broad space between the upper and lower rows and a lesser one between the western side and the eastern rows. These are buffer zones against the spread of root disease.

In spite of watering, many of the seedlings planted in 2002 struggled for several years, with **yellowish-green leaves and little or no growth increments**, and many

of them died in their first two years, before we discovered that ***Phytophthora*** was a problem here. We can guess how this soil-born disease may have been introduced because **it is endemic in Piedmont soils**, and the Lesesne is near the edge of the Piedmont: it was probably transported here on the tires of vehicles that had driven in infected fields or roadways.

After one of the big inspirational chestnut grafts died from root rot, Gary cordoned off the area around the two nearby grafts whose root systems were in contact with the dead tree to ward off foot travelers and inhibit deer. Inside the cages where small seedlings had died, apparently from root rot, we removed them, treated the soil with SubdueMax fungicide drench and planted grass. We also spread grass clippings around the outside of cages and sprinkled gypsum inside the cages of nearby seedlings to help control the spread of this disease.

These measures cannot save the big chestnuts with extensive, deep root systems, so Gary has been treating them with a combination of fungicides, painted on the lower bark (where ***Phytophthora*** can cause collar rot) or injected into the stem from whence it works down to the roots. These treatments are experimental, but they have been used with success in avocado orchards. He also covered the soil at the base of the trunks with limestone gravel, to prevent splashing of soil onto the bark during heavy rains. Other measures to contain the spread of ***Phytophthora***: vehicle traffic is minimized and restricted to the roadways; we treat shoes, tools, gloves used in the infected area with 20% Clorox solution for two minutes; the contract mower power-washes his equipment, does not mow within 24 hours of a rainfall, and begins at the top of the plot, working downhill and avoiding the cordoned-off area.

Before we discovered the *Phytophthora* problem, weeds appeared to be the most trouble. This is to be expected in any fertile site in full sun. Where the soil is deepest and in the dip, which holds moisture longest, by August the weeds are over my head. I tried tree mats to control weeds inside the cages; the tree mats encouraged voles. We use Roundup between and outside the cages, and I hand-weed inside the cages, once in winter and twice in the growing season. Weeding one row can take an hour.

Probing for **vole** tunnels with a stick, at first I seeded the tunnels with **Prozap** or another more expensive poison. I found so many tunnels, I think chestnut roots must be the voles favorite food. They may graze on feeder roots of seedlings for

many years, **severely stunting the growth (also causing yellowish-green leaves)**, or in a drought they may be capable of consuming the whole taproot, leaving a once three-foot tall chestnut seedling rootless and leaning against its cage. In this way, I lost about a dozen seedlings here last August. This year I tried **Molemax** sprinkled inside the cages, in March and June, with extra doses whenever new holes appeared or where my probe turned up new tunnels. This has been more effective than poison (unless the poison had already knocked off most of the vole population), and this summer most of the formerly stunted chestnuts are thriving and many have doubled their size. I will apply Molemax again in September. On the chance that nutrition delivered via the leaves may assist recovery of the chestnuts with vole-damaged root systems, I **spray the seedlings having poor leaf color with iron chelate and magnesium sulfate**, on alternating weeks.

NOTE: It is inadvisable to plant chestnuts in or near former apple orchards because **voles are famous apple orchard pests**.

We plant empty spaces where chestnuts have died from blight or voles by direct-seeding with members of the same family which were open-pollinated on a precocious F2 graft or on one of the parent trees. There are about 30 places to be re-seeded this winter. In drought, watering the one- and two-year old chestnuts can take two hours.

There is so much work to be done in this plot, we work here most Tuesdays. On workdays **November through January**, we prepare planting holes, direct-seed the nuts from the previous fall, erect protection cages and transplant volunteers (planted by squirrels, often inside the cages). In **February**, I am collecting scions and preparing the stems to be grafted beginning mid-March through April. **In late spring and summer**, I try to cruise the whole plot, checking and tying up the new grafts, straightening out any cages which the deer have crashed into and looking for other problems, with a roll of flagging and a **Sevin** sprayer handy. Besides defoliation, insects can wound the tiny stems of new seedlings, providing an entry for blight before the seedlings are big enough to express resistance; they can take out the leader of big seedlings. So I spray the newly planted chestnuts and those leaders still within reach on the bigger chestnuts.

Among my Lesesne grafts, 7 are bearing nuts and 4 others have made their first male flowers. **Among the seedlings planted in 2002**, 38 have outgrown the 5-foot tall cages and are enclosed in heavy-gauge, 4-foot cages with a bigger grid for easier

weeding inside cages. Eight of these are bearing nuts and an equivalent number made first male flowers. **Among the seedlings grown from chestnuts direct-seeded in 2003**, 17 have outgrown the 5-foot cages, one made early flowers, and the tallest, at 18 feet, nearly equals the size of the champion among the seedlings in the lower rows which had a two-year head start! The glorious chestnut grafts of 1980 are showing no signs of decline and producing big chestnut crops. For the time being, the infection in their roots is under control.

The Lesesne is the largest of many research plots where American chestnuts in our breeding program are under study, producing information as well as chestnuts. Future newsletters will visit the other plots.

Those of you who can travel and are unwilling to wait a year, may see one or more of the other research plots by **volunteering to help at harvest, weekdays September 22 through October 10**. To volunteer, suggest a date when you may be able to help, by e-mail to accf@hughes.net

My 2008 Report shows a total of 469 chestnuts surviving, mostly from direct-seeded nuts; 71 are new this year. I have 99 grafts, only 18 of which are new, and 2 of these I shall have to destroy since they have been ID'd as American x Japanese hybrids. **We shall no longer solicit scions or identify leaves for others**, because of the time involved. To make the most of many possible intercrosses among the 12 parent trees already identified by our tests as blight resistant, we must concentrate on them.

We received Reports from 209 growers in 2007, reporting on **5,175 ACCF chestnut survivors**. Where are the rest of the reports? Since 1985 we have sent out about 160,000 American chestnuts. Where have all these chestnuts gone? **So far in 2008** we have received **141 reports**, of **4,286 survivors**.

At the 100th anniversary of the founding of the **American Phytopathological Society**, **Gary's invited talk**, reviewing and evaluating recent progress in the many branches of American chestnut research, was very well received. Among the best pictures shown were the two biggest Lesesne grafts and John's "Joyce " chestnut. This is the objective opinion of an interested observer.

Several years ago, **Douglas J. Buege** spent a week, working with us in many of our chestnut plots, as part of his preparation to write about the organizations working for American chestnut recovery. His book has a few small errors and a final chapter

with which we do not agree, but otherwise we recommend **If a Tree Falls** for evenhanded reporting written in engaging style. Available from Xlibris Corp. at 1-888-795-4274 or Orders@Xlibris.com

Thanks to Outstanding Cooperators who helped with the 2007 harvest: **Philip Latasa, Tim Logan, Vincent Roberts, E. C. Horman, Harold & Rich Pierce, Albert Ward, Molly & Shawn Hash.** who assisted in spring 2008 grafting: **Eli Lewis and Elizabeth Cooper,** who probed for voles and made the March Molemax application in the Lesesne: **Victoria & Eli Lewis,** who gave substantial funds that support student technicians to keep chestnut research going in the laboratory at Virginia Tech and pay the contractors for maintenance and improvements in the largest research plots: **The National Wild Turkey Federation, John B. Buschmann, Carl Mayfield, and Violet Pesinkowski.**

Our directors believe in the all-American chestnut breeding program. This is the reason for the ACCF. We are working to restore 100% American chestnuts in our forests. However, some of our growers have been hedging their bets and also planting hybrid chestnuts developed elsewhere. The nuts from their plantings will not be all-American; in this way the ACCF contribution to American chestnut restoration could be diminished or erased.

To insure that American chestnut groves, established with our help, accurately reflect our breeding program, we have changed the Grower Agreement form. To order or request ACCF seedlings, chestnuts or scions, please fill out and return the new form (link on front page). If you have already reported via our Web site, please indicate this on the Report form. The \$20 donation to ACCF research is unaffected by inflation, but please note that the nursery cost of seedlings is valid only for the 2008 supply.

When we establish a chestnut planting, we try to plant on sites which are ideal for growing American chestnuts, but a trouble-free chestnut site has not yet been found. So if you want a successful chestnut planting, you must commit to defend your work, in spite of all losses. You may e-mail me for advice in dealing with trouble as it arises (accf@hughes.net), or write in the space at the bottom of the Report Form. Your reports are most welcome; we look forward to them.

Respectfully submitted,

Lucille

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, WV

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

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Dedicated to the restoration of American chestnuts