

American Chestnut Cooperator's Foundation

2005 Newsletter

The 2005 Seedling Cost is \$40 per 50 or fewer year-old, bare-root American chestnut seedlings mailed to growers east of the Mississippi. For western growers, the cost is \$50 per 50 seedlings, to cover the additional mailing cost. Seedling orders need to be submitted on a Cooperating Grower Agreement form (inside leaf), unless we already have one here on file for you. Make the check out to ACCF, and please remember to include your annual donation if you have not already sent it in. Early ordering is strongly advised; we ran out of seedlings in the beginning of November in 2004.

Everyone who has a Grower Agreement on file with us and has sent in a donation this year may request up to **15 American chestnut seeds**. But you will need to get your request in early, also: all chestnut seeds which have not been requested by October 15, will be shipped to the nursery to make next year's seedlings. We have discontinued the practice of sending out larger seed lots to individuals or groups. The work of processing, extracting them from their burs and then the hot water treatment, 120 F for 20 minutes, is very time-consuming, and we do not have the capacity to store large numbers of chestnut seed.

From the 2004 Virginia harvest we sent 4,716 nuts to cooperating growers and the nursery in West Virginia, and the nursery distributed **5544 American chestnut seedlings** to our cooperating growers.

The only way to get more than 15 American chestnuts is to help out at harvest and take up to 100 nuts home with you, in their burs, and process them yourself. **We need volunteer help at chestnut harvest**, usually beginning in the third week of September, to cut out the burs on the trees ready to be harvested and put burs into dog food bags marked by mother tree. The seed orchards are in Blacksburg and Giles County. I usually leave home around 9 and work till noon or until the work for that day is done. Some days there may be only one tree to harvest, other days, many. The burs are cut with an extension pole pruner usually 12 feet long; you hold it overhead, stretching to reach the burs and bracing against the rope pull that works the blade. It is hard work, for strong, younger persons. To pitch in at harvest, e-mail Lucille at accf@direcway.com for a date and directions.

We store the burs in the basement about a week, until many are cracking open, then extract nuts from the burs, wearing heavy leather gloves, working outside on a picnic table, usually afternoons, beginning in the end of September. This is a repetitive job that wears out your hands and grip. We would be grateful for help with this, also.

Voles are determined miners of American chestnuts, eating the nuts before they sprout and eating the roots when they grow below the protection of the tree shelter. Direct-seeding chestnuts is wasted effort in the face of large vole populations and nursery plantings may be possible only with special precautions. The bed should be prepared by digging a trench one foot deep and lining the bottom and sides with quarter-inch grid hardware cloth before replacing the soil and planting. The hardware cloth should extend several inches above ground where it is joined by a chicken-wire fence. Poison baits to be placed in PVC pipes or tire halves can be obtained at feed stores, but they require daily monitoring to remove the dead voles.

The **Asian ambrosia beetle** is a tiny pest which has been found throughout the southeast, from Texas to coastal Maryland. To reproduce, the female bores pinholes into the sapwood of young, thin-barked hardwoods. The beetle damage is most serious when it begins in early March and April, and it continues at lower levels until fall. While many other tree species may survive, an attack by ambrosia beetles can be a death sentence for American chestnut because the blight fungus may enter through the many tiny holes.

Defend against this pest by examining the lower trunk and branches of chestnuts smaller than 3 inches in diameter at breast height: look for the telltale pinholes; sometimes a tiny column of sawdust is protruding from the hole. Check once a week at least, beginning in March and throughout the season. If any pinholes are found, treat the entire bark surface weekly with a spray containing permethrin. Prune out heavily infested stems and burn them. Stems with strong root systems can sprout back if you cut the stem near ground level and cover the wound with soil.

Here in the Virginia mountains, this is the first year we have found ambrosia beetle damage. Because so much is at stake in the four research plots involved, we have been spraying all the chestnut stems 3 inches in diameter and smaller in these plots. The beetles had been at work for two months before we discovered them,

so we may lose at least six large grafts. We hope, through vigilance and prompt treatment, that you may be able to avoid similar losses.

This **Grower's Report** covers twelve separate American chestnut research plots: eleven are in three Virginia counties and one is in West Virginia. Half are in yard or orchard settings and half are in the forest. I have been planting American chestnuts since 1985. This year I counted 331 survivors, of which 131 are F2 seedlings (second generation all-Americans). My tallest is Pacman, at about 35 feet, and three of my seedlings are bearing nuts. Seedling losses this year I attribute, in order of importance, to poor germination, hungry voles, blight, *Phytophthora*, and other unidentified varmints.

As of MAY 8, we have received 141 reports from growers, for a total of **6639 ACCF chestnuts reported**.

This **Grafter's Report** covers eight grafting plots in Virginia, all of which contain seedling plantings, also. Four plots are in the National Forest. For 2005, I have only 15 new grafts surviving. From all the years since 1990, I have 111 surviving grafts of which 26 are bearing nuts. Thirty-eight are F2 grafts, and three of these are bearing. As always, graft failure is the biggest problem, followed by premature blight infection, undermining of the root systems by a root rot or voles, and now also, the ambrosia beetle.

We look forward to reading your grafting reports, and as they are received, they will be posted in the on-line newsletter here:

Carl Mayfield reports **41** surviving ACCF grafts. **Harold Pierce** beginning this year grafting into chinquapin has **4** grafts.

Nathan Pease is the occasional subject of inquiry. Ed Greenwell named his Pease seedling, Nathan when it showed precocious blight resistance. You may remember that we began the blight-resistance trial on a Nathan nutgraft in May 2004, by inoculating the lowest branch in two places with a killing strain of the blight fungus. This May the results were disappointing: the level of blight resistance recorded in the one-year test is very low and would be insufficient for inclusion in our breeding program. However, there is the second, long-term test: this spring we inoculated a blight canker on Nathan's trunk with hypovirulent strains of the blight fungus. A few of our American chestnuts, which did not test well at first, have since shown impressive long-term resistance (10 years +).

Breeding: We have just over a hundred control bags up in six different mother trees. All of this year's intercrosses are first generation all-Americans, to increase the numbers that may be available for future testing in several new lines which we started in previous years. Although the mother trees have demonstrated very impressive long-term blight resistance, we have learned from past resistance trials that blight resistance of the parent trees does not regularly combine. Equal or better blight resistance may be expected to show up in about 10% of the progeny. This is one reason why breeding for blight resistance takes so much time.

Another reason is premature infection with the blight fungus. The one-year resistance test requires trunks blight free and at least 1.5 inches in diameter at breast height. Before they reach this size, many American chestnuts have blight on the main stem. This is the case with our large, bearing F2 grafts. We inoculated their cankers with hypovirulence and will have to watch them over 10 years, instead of being able to make selections for the next generation following a one-year test. Thus, we did not put bags on the F2 flowers.

We thank the National Wild Turkey Federation for continuing support of our cooperative research with the **Virginia Department of Forestry, USDA-Forest Service** and **Virginia Tech**, establishing and maintaining forest plots of ACCF all-American chestnuts.

The **Pandapas** plot has 96 prepared planting holes, with staked 5-foot weldwire cages and tree mats for weed control. From the 2003 planting, 7 (Th x J) and 7 volunteers (for grafting) have survived. Last winter, we direct-seeded nuts to fill all the empty spaces for a total of 96 and planted four to six daffodils around each cage in an attempt to create an area unappetizing to voles. We also made a small nursery planting with 30 extra from this seed lot in a cold frame in our yard, for a backup system, in case of poor germination or theft. Only 31 of the direct-seeded chestnuts germinated and all 30 in the backup nursery were stolen by voles. The tallest new seedling is 21 inches. We are contemplating strategies for planting the 51 empty spaces this winter.

At **Turkey Run** 15 grafts survive. Two each were killed this past spring by blight and ambrosia beetle. The few new grafts made failed, so we concentrated efforts to cut back the competing tree species and bring more sunlight on the grafts and other chestnuts which may be grafted in a year or two, when they are growing more vigorously. We direct-seeded seven (Ruth x Miles) to fill the empty places in the

small planting area where three chestnuts from previous plantings survive. Here we had excellent germination, but one by one, at six to eight inches tall, the five planted in the bottom row died, their roots trimmed off by voles.

In the **Lesesne State Forest**, Nelson County, we planted in holes where nuts or seedlings had previously failed 59 open-pollinated nuts and 12 volunteer seedlings. None of the nuts germinated in the two sections in which we have a *Phytophthora* problem, while seven of the small volunteer seedlings survive there, but with insignificant incremental growth. We continue to treat with SubdueMax fungicide drench, spring and fall, most of the lower half of this 3.5 acre plot and also tried a chicken manure treatment in the spring.

In the 2003 planting section, most of the open pollinated nuts germinated and 9 have survived. Nearly all of the controlled pollinated nuts germinated, also: we have 27 (NCC x J), 26 (VT2 x G4) and 12 Pacman. Total survivors in this planting, including 6 F1 back-crosses to the Floyd parent, are 80. Many of the new seedlings were at or over 20 inches tall when checked on August 9, and the tallest 2-year-old is 4.5 feet.

In the 2002 planting, 88 of the original F2 seedlings survive, along with 5 F2 grafts and 5 volunteers for future grafting. The tallest seedling is 12 feet. Most of the losses in this planting have been to *Phytophthora*.

The western third of the Lesesne plot contains the big 1980 grafts and many root systems from the original Dietz planting in 1969, some of which may receive grafts in the future. We have nine new grafts in this area, along with 12 others made since 2000. Three of the older grafts and one from this spring have died apparently from root rot, along with two small seedlings. Ten seedlings survive, although the tallest has yellowing leaves which might be an early sign of stress from root rot. In addition to the fungicide drench, we spray yellowing leaves with magnesium sulfate and amend the soil inside the cage with compost, in case the problem may be nutritional.

We have gone into detail, to give the newcomers among an idea of some growing problems in forest settings, as well as any planting place without very good drainage.

Outstanding Cooperators:

John B. Bushmann, Ken James, Karl Mayfield, and Violet Pesinkowski are long-term, outstanding supporters of and contributors to American chestnut research.

Charlie Elgin and another gentleman, whose name I have misplaced, helped with the 2004 chestnut harvest. We hope to recognize the unidentified gentleman here next year.

Jenny & Lizzy Cooper cut trees in the Turkey Run plot and grafted, spending their spring vacation helping the American chestnut cause.

INTERNET RESOURCES: Ed's Web page showing Nathan's progress
<https://www.accf-online.org/nathanblight.htm>

The Tennessee ACCF site, also by Ed:
<https://www.geocities.com/RainForest/Canopy/1436/>

ACCF Links page, by Ed, featuring a March 2003, photo of **Jenny Cooper grafting in Craigs Creek research plot**:

<https://www.accf-online.org/links.html>

We are working for American chestnut restoration with the hope of making a small contribution which might be multiplied many times throughout the natural range and through the generations to improve our forests. This is often hard work and also demands a stubborn, long-term commitment, keen observation skills and a thoughtful, rapid response in problem-solving. It teaches the habit of keeping notes and is a great introduction to scientific study. With our work product constantly exposed to the forces of nature, we learn to develop patience in adversity and humility in success. Our spirits are uplifted by each small advance, and we give thanks. These are the values which made our country great. You cannot go wrong by involving the whole family, children and grandchildren in American chestnut restoration.

Respectfully submitted,

Lucille Griffin, Executive Director

Other ACCF Directors

Gary Griffin, President, Professor of Forest Pathology, Virginia Tech

Dave McCurdy, Vice-president, Superintendent, Clements State Tree Nursery, WV

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, Cookeville, TN

Dedicated to the restoration of American chestnuts