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Women in Agriculture
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Winter Squash

A New (Old) Source of Local Food

Group seeks to restore the American chestnut to its former glory

by Rick Enser

I hear the dull thump of heavy stones against the trees from far through the rustling wood, where boys are ranging for nuts.

—Henry David Thoreau

In this journal entry from October 24, 1857, Thoreau was referring to boys who were “chestnutting”—rattling the trunks of American chestnut trees to loosen the green, spiny husks that held sweet, glossy-brown nuts. These nuts—what many people called manna from heaven—might have been taken home to be used in a variety of recipes for gravy, pudding, or stuffing. Or the boys might have taken them to market, where a bushel could garner 20 cents at the beginning of the harvest. At the peak of the season in October and November, a great abundance of chestnuts would have littered the forest floor, readily available to anyone who just wanted to walk into the woods and pick them up.

This is something we can't do today. In 1904, an accidentally imported fungus known as *Cryphonectria parasitica*, or chestnut blight, was discovered in New York City, where it began infecting and killing American chestnuts. In less than half a century, all mature trees had died, and large portions of the landscape were transformed into what were known as skeleton forests, where tall, dead chestnut spires were the prevalent feature.

Thoreau devoted more space in his journals to the chestnut than any other subject, but he never could have imagined the catastrophe that would befall one of his favorite trees. Nor could he have imagined the herculean efforts being made today by some in the Northeast—Vermont included—to bring the chestnut back as a reliable source of local food.

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Throughout the eastern deciduous forest, from Maine to Georgia and west to the Ohio River Valley, the American chestnut once reigned as a predominant tree. Within this range a quarter of all hardwood trees were chestnuts—an estimated 4 billion trees—serving as a keystone species because of its importance to the survival of many forest inhabitants. Wild turkeys, along with a variety of

other birds and mammals, depended on the nuts for food, and an entire community of invertebrates, lichens, and other life forms inhabited the ecosystem of chestnut trunks and crowns.

European settlers were astounded by the number of trees and the quantity of nuts produced here (up to 6,000 nuts from a single mature tree). The nuts were so abundant that attics and other storage places could be quickly filled to satisfy human consumption, which meant that most of the harvest could be used to feed livestock. Pigs were often simply released into the woods during the fall to consume the fallen chestnuts.

In the native chestnut (*Castanea dentata*), Europeans found a familiar food. Before the introduction of corn to Europe in the 1600s, chestnut meal was the principle ingredient of polenta, and in parts of the Mediterranean region, where cereal grasses do not grow well, chestnut had been a staple food for thousands of years. There are four important nut-bearing species of chestnut (genus *Castanea*) in the world, including Chinese, Japanese, and European, and for centuries the chestnut has been a traditional part of the diet of many cultures.

There is general consensus among connoisseurs that the American chestnut, although smaller in comparison to other varieties, is the sweetest and best tasting of all the world's chestnuts. This quality assured that the American chestnut would be adopted into the traditional European cooking that eventually became colonial cooking, and that it would be incorporated into new dishes learned from Native Americans. Victorian cookbooks speak of the chestnut's use as a thickening agent for stews, a substitute for flour in breads, cakes,

and pancakes, stuffing for vegetables and game birds, and a variety of desserts. A dessert that may have had its origins in the Vermont area consisted of a puree of boiled chestnuts, vanilla, and maple syrup.

By the mid-1800s chestnuts were commercially available in cities, where they were roasted and sold by street vendors. During his stay in New York in 1856, Thoreau recounted seeing “more chestnuts in the streets than anywhere else... large and plump



Illustration by Elizabeth Eldredge

ones...roasting and popping on the steps of banks and exchanges."

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Fortunately, after the 1904 blight, the American chestnut did not become extinct, and today, chestnut saplings are able to sprout from the rootstocks of their brethren, growing 20 to 30 feet with 6-inch diameter trunks. In the mid-1980s, the U.S. Forest Service estimated there were 260 million chestnut seedlings and saplings in New England, but only a fraction of these were 5 inches or more in diameter. The problem occurs when saplings approach nut-bearing age; cracks begin to form in the bark and serve as entry points for the deadly fungus. Most infected trees die, but in rare cases an individual will survive to produce a generation or two of progeny before they succumb.



Pollinating a native chestnut in Colchester with blight-resistant pollen from the Meadowview Research Farm in Meadowview, VA

The fact that these trees are still found today, isolated throughout the countryside, is the basis of a plan to restore the chestnut to its former status in the eastern forest. The survival of these few individuals indicates that a certain amount of resistance to the blight exists in some trees, and that this characteristic might be strengthened through a specialized breeding program.

Such a program is run by The American Chestnut Foundation (TACF), a North Carolina-based nonprofit that was formed in 1983 and has a branch office in Bennington. The organization maintains a research farm in southwest Virginia, where tradi-

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tional breeding techniques are employed to develop a blight-resistant American chestnut. Initially, pure American trees are crossed with the Chinese chestnut, a species that is resistant to the blight. The resulting progeny are then backcrossed through a minimum of six additional generations to develop a tree that has the classic appearance and characteristics of an American chestnut, but that also retains the blight resistance of the original Chinese parent. Some of the resulting blight-resistant chestnuts have been planted in high-profile areas, such as the White House and Mount Vernon, but the primary goal of TACF is to "return this majestic tree to its rightful place in our landscapes." The group recently announced that the first trial restorations using saplings grown from completely blight-resistant nuts will begin at the end of 2009 in three national forests in the southern United States.

An important part of the restoration plan is ensuring conservation of the entire American chestnut gene pool, which can vary considerably throughout its extensive range, based on local environments. Vermont chestnuts are critical to this effort because here they are found at the northern periphery of the tree's natural range, and therefore exhibit a higher degree of cold tolerance. Volunteers with the Vermont/New Hampshire chapter of TACF are working to ensure the "capture" of this portion of the chestnut's genetic diversity by locating surviving nut-bearing trees in the state. The natural distribution of chestnut in Vermont was primarily the lower Connecticut River Valley and lower Champlain Valley, although some especially cold-tolerant trees did grow at more interior locations that were somewhat isolated from the main population being ravaged by the blight.

Today, these Vermont survivors serve as "mother trees" to be hand-pollinated by TACF volunteers with pollen from the chestnuts being bred at the organization's Virginia farm. The nuts produced by the mother trees are collected and planted in several private orchards, where the young trees can be nurtured until they reach maturity and become part of the next breeding generation.

Kendra Gurney, the TACF New England regional science coordinator, explains that the development of a blight-resistant American chestnut is a long, tedious process, but one that is having some success. The Vermont/New Hampshire chapter has been conducting five to six pollinations per year, at a rate of 30 to 50 flower clusters pollinated on each tree. This work has resulted in several hundred viable nuts planted each year in orchards, with an impressive 80 percent germination rate. But there is much more work to be accomplished before American chestnuts regain their place in Vermont forests.

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DRAFT HORSES *Continued from page 7*

Then I stood behind a horse. Not just any horse, either. This was Lincoln, a Belgian more than 18 hands tall, with hooves twice the width of my hand and a temperament that seemed to promise trouble. As his giant hindquarters danced to and fro in front of me, I stood paralyzed with the lines in my hands, remembering the warnings I had received from my riding teachers in the past to never, ever stand behind a horse. I clearly saw, in my mind's eye, his powerful hoof making contact with my forehead. I shed a few tears of terror.

But I overcame this initial shock. While driving our team, Lincoln and Rex, around the Common some time later, I suddenly felt a connection between the horses and me. Their ears perked up, their step became more confident, and my hands on the lines sensed that we had begun to forge an understanding. All three of us relaxed. Since that day, I have become attached to them. Now, as the "Clerk of the Works" for the draft horse program, I make the chore schedule and research project ideas, but most important, I have time to spend with the horses every day. Sometimes I work, going into the woods to haul logs to our sawmill or to plow a potato patch with my teacher. Other times I simply stay around the horses, watch them eat, groom them, muck out the stalls. I am very lucky to have such a job.

This past winter, I began interviewing local Craftsbury women for a project on female farmers. Most of these women were over 70, and all had grown up on horse-powered farms. While it was their generation that started to bring tractors onto these tiny hill farms, all the women felt that this automation of agriculture progressively brought on many of the challenges we face today. It was refreshing to hear their perspective, although it was sometimes a disillusioned one; they were honest and spoke from true experience. These women had gained enormous wisdom by watching a farming commu-

nity change. They grew up in a time when work was still regulated by the hours that nature kept; light meant sunshine and a rainy day meant a day spent by someone's fire with busy hands, exchanging news. Most people were farmers, and most boys in the local high school strove to keep farming once they had graduated. Roads that now have one big farm on them had 15 little ones just a few decades ago. The women told me about long hours and hard work, prices falling and rising, hard, dark winters, wet summers, and runaway horses; but none neglected to mention the sense of fun and the importance of celebration that had pervaded even the hardest times.

Working with draft horses has given me a new understanding of labor. While these horses are so much bigger and stronger than humans, their sensitivity, as well as their frailty, enable us to deeply connect to the delicate and strenuous nature of our own work in the fields. My work with the horses serves both as a muse to my vision of homestead agriculture and a reminder that this kind of farming is not just a process of grueling labor, but a fruitful harnessing of the creative spirit that all creatures possess. I do not know when I will have my own piece of land, how I will get it, or where it will be, nor do I know when I will have a team of horses. I do know that the horse, real or metaphoric, plays a key role in my ideal vision of agriculture, and will help me lead a life that feels more purposeful.

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"There are many ways people can help this effort," Gurney points out. "One is by finding new mother trees." There are believed to be many other mature, nut-bearing chestnuts scattered throughout the Vermont countryside that could be candidates for cross-breeding. The TACF website provides a locator form for reporting these trees, and information on submitting leaf specimens to confirm the identification of the candidate. (Chinese chestnuts, which have been widely planted in parks and neighborhoods, are often mistaken for the American chestnut. And the horse-chestnut (*Aesculus*), an ornamental shade tree distinguished by wide, palmate leaves, has similar-appearing burred nuts that are extremely bitter and reported to be poisonous!) Additional volunteer opportunities with TACF in Vermont include planting and maintaining the chestnut orchards, and/or donating the use of land (1.5-acre minimum) for an orchard site.

Despite the early successes of the breeding program, and the prognosis that soon there may be an ample supply of chestnuts for restoration projects, the goal of returning the American chestnut to its former status is daunting. TACF volunteers acknowledge they are not on a 20-year plan, but a 1000-year plan. Grace Knight, president of the Vermont/New Hampshire chapter, speaks for most TACF members: "This is something we do for our children and grandchildren. It would be my dream that my grandchildren would be able to gather chestnuts from the woods," and in doing so rediscover a tasty and nutritious local food.

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