

Frequently Asked Questions

1. How can I purchase chestnut seed/seedlings?
 2. Why should I plant pure American chestnuts instead of waiting for the blight-resistant material is available?
 3. I thought the chestnut was extinct, but I saw one the other day. How can that be?
 4. What do I do if I found/think I found an American chestnut?
 5. Can I have some blight-resistant seed? (*I'm a really great grower and I'll treat them real good...I promise!*)
 6. How do I plant chestnuts?
 7. There are worms in my chestnuts! How do I get rid of them?
 8. How was the blight introduced? What causes the blight? Where's it from? How did it get here?
 9. Why should I care about what you guys are doing? The tree has been gone now for over 100 years and we seem to be doing okay without it, right?
 10. Why can't you just take the resistance genes from the Chinese chestnut and put it into the American chestnut through gene splicing/biotechnology/magic elves?
 11. I heard about what they're doing in Europe to save their trees? Why won't that work here?
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1. How can I purchase Chestnut seed/seedlings?

TACF has limited quantities of backcross chestnuts that are expected to be highly-blight resistance and very American in character. These seed are **for initial testing and research** and are not available to the general public. Currently, small amounts of seed are available to TACF members on a seniority basis, i.e. the longer one has been a member the more likely one will be able to purchase seed for a minimal cost.

Seeds are expected to be available for wider distribution in the following 5 to 15 years and only after testing proves the seed to be worthy of outplanting.

Currently, TACF members are able to purchase **PURE, not resistant, and guaranteed to blight** American chestnut seeds and seedlings through our website, http://acf.org/seeds_seedlings.php

2. Why should I plant pure American chestnuts instead of waiting for the blight-resistant material is available?

Long story short: there isn't really be any drawback to planting "pure" American chestnuts now. The only resource you'd be losing in the long-term would be space--but you can either get more space, or cut down those straight Americans once you're ready to plant the blight-resistant stock.

Some wonder whether the blight from the Americans planted could ill-affect the blight-resistant stock. Well, you might have the probability of more cankering, but blight-resistant stock should overcome any cankers. If you're really worried about an increase in inoculum load, you can just cut down the original trees.

Long story long: there are several reasons to plant American chestnuts now:

1. To preserve native germplasm
2. To accustom oneself to the care and maintenance that chestnut trees require. Side effects of planting and growing chestnuts can be several:

- nut crops--yummy!;
- wood for making stuff;
- have a place where people can learn about the tree and, unfortunately, learn about how quickly the fungus can attack and kill a tree with no intervention.

It is that last thing that can often really have an effect on growers. It is amazing - crushing, even - to watch those trees die and to not really have anything to stop it in the long-term.

In preserving native germplasm, we can help to guarantee that the genetic background of what trees are currently living in our forests will be conserved for a couple more generations. Along with that conservation of genetic stock, the trees can also be used for future breeding, either of blight-resistant stock, should there be necessity to do so, or use in order to increase the diversity of for future blight-resistant stock.

Although straight American chestnuts will die eventually because of blight infection, with proper care and maintenance, one can grow large American chestnut trees, on the order of about 5-6" dbh and 30 feet in height. Depending on the location (growing season length, inoculum load, etc.), they might even get bigger! I have visited several orchards throughout the northeast that are growing American chestnuts that have reached the above sizes. Some have more blight than others.

Note, too, that if you plant several, you will receive great crops of American chestnuts that can further preserve the stock, give others an opportunity to plant and grow chestnuts, and potentially provide a food source for wildlife and yourself. Many growers also use the wood for making things--most usually make walking sticks, but some can salvage the wood to complete other small projects.

As for the second consideration I note above, once blight-resistant American chestnuts are available, you will have already tested your property for suitability of chestnuts, and learned how to grow them. Although chestnuts are a hardy tree, there are some lessons that can be learned and practiced with our native stock which is a bit more "expendable" at the moment.

Additionally, I'm sure you are aware of the American chestnut's ability to resprout from rootstock. Because of this trait, one can have what I call a "perpetual orchard." Once a main stem dies, the grower can then start to coddle a new sprout, thereby having a tree in that particular location perpetually. That said, if you need to get rid of the blight-susceptible trees in order to make room for blight-resistant

stock, there are several methods one may employ to reduce or eradicate sprouting (remove the stump, cover up the stump, or herbicide the stump, just to name a few methods). - Sara Fitzsimmons

In the Southern region, planting pure American stock also helps a landowner test for the presence of Phytophthora root rot. I suggest that a prospective landowner plant several small test plots of pure Americans. This helps them to learn how to grow chestnut trees, as well as to find out what parts of their property are best for growing chestnut. - Dr. Paul Sisco

I've long believed that this item--accustoming oneself to the care and maintenance that chestnut trees require--should be a high priority for the long term program. - Marshal Case, President and CEO

3. I thought the chestnut was extinct, but I saw one the other day. How can that be?

This is a common misconception. The American chestnut tree is not extinct or even technically endangered. There are still millions of sprouts throughout its native range, mostly in forest areas.

What one can term the chestnut is that they are "effectively extinct". The American chestnut tree is threatened with extinction from blight because very few trees are producing nuts. Very few of the small sprouts will live long enough to flower, and when trees do flower, they tend to die fairly quickly. It is unclear how long it will take for most of the small sprouts to die out. In 1978 measurements, larger ones ranged in age up to 39 years old. Many probably are correspondingly older today. Our best guess is that it will take several hundred to a thousand years for American chestnut to become extinct.

There are very few tree-sized chestnuts. Most sprouts are less than eight inches dbh (diameter at breast height). Because of this, you sometimes will see statements such as, "American chestnut is extinct as a large forest tree." That statement is restricted to large forest trees, and even that is not strictly correct.

Further information can be found in the article, "Locating Flowering Trees," in Volume 6, Number 2 of *The Journal of The American Chestnut Foundation*. You can find this article at, http://acf.org/pdfs/resources/journal/journ_vol6-2.pdf.

The entire set of back issues of the Journal is available at <http://acf.org/journal.php>.

4. What do I do if I found/think I found an American chestnut?

The best thing is to contact your local state chapter to determine what their procedure for American chestnut tree location is. Most state chapters have tree locator programs that allow them to track found trees across their state.

Please see this website: http://acf.org/find_a_tree.php for more information on how to send in a leaf sample for proper identification.

Typically, one should collect a leaf and twig sample from the tree they found and send it in with pertinent information about the tree. Many states have tree locator forms that they use to outline that type of information. By sending in the completed locator form, along with the leaf and twig sample, you allow the current members of tree locator committees to properly analyze the leaf and twig sample for American characteristics and to properly catalogue your finding.

The contact will respond to you with their analysis. If the tree is an American chestnut and is accessible for controlled pollination, the chapter will likely look forward to using the tree in its breeding program--and would welcome your help in doing so!

5. **Can I have some blight-resistant seed? (*I'm a really great grower and I'll treat them real good...I promise!*)**

Well, the thing about that is that we have not completed our work in breeding a completely resistant American chestnut-type tree.

TACF's breeding program is based on a minimum of six generations, the fifth of which we first planted in 2002. The selections from the sixth generation will hopefully be used to begin **reforestation**, although we first need to test the stock to be certain we've done all of our work properly. For more general information on our breeding program, please visit www.acf.org.

So, we don't have blight-resistant progeny for the public to plant. We offer members pure American chestnuts to plant. While these will eventually die from the blight, they will also sprout back. They may even produce many nuts before they die back.

If you find that you really like planting chestnuts, we also have various generations of breeding stock, mostly moderately-resistant stock, that need to be created, grown, tested, and selected by **volunteers such as you**. If you or your group is interested in participating in our breeding program, growing out progeny from one of our early generations contact your local state chapter.

Also, please see the answer to our first question.

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6. **How do I plant chestnuts?**

That's a tough one, because there are many things that you'll need to consider. We can cover the basics here, and then suggest some great websites that can give you a lot of information about the various steps and things you'll need to think about when planting.

To start, you'll need a well-drained, somewhat acidic site. You can have a soil test done with your local university, extension agent, or environmental laboratory. Since blueberries and azaleas grow well in similar same soil conditions, ask for recommendations based on growing those more familiar plants.

TACF recommends direct seeding in the spring, as soon as you can work the soil. Don't plant the seed deeper than about one inch in the ground, and protect it from critters.

That's the easy part. You will certainly run into many other questions and problems. I recommend reading the information on this site: <http://chestnut.cas.psu.edu/Procedures/growing/planting.htm>

It is also recommended that you join the TACF Growers listserv by going here: <http://chestnut.cas.psu.edu/maillinglist.htm>

7. There are worms in my chestnuts! How do I get rid of them?

The worms in chestnuts are larvae of the chestnut weevil. There are two species--the 'lesser' and the 'greater.' Very few pesticides are labeled for treatment of chestnut weevil, so the best way to control their proliferation is through good sanitary practices. Every fall, be certain to collect all burs, nuts, and leaf matter from under chestnut trees and burn them. Try to collect nuts within one or two days of falling from the bur (if not before).

As soon as possible after harvest, treat nuts by putting them in 120°F water for 20 minutes. This process kills the egg/small larvae but does not affect the germinability of the seed. If the temperature is too low (less than 117°F), the weevil will not be killed. Too hot, and you kill the embryo and, thus, the seed.

If you're going to eat the chestnuts, store them fresh in a grocery bag in the refrigerator for up to two months. Sweeten fresh chestnuts by leaving them at room temperature for two days (starches will convert to sugar). For longer storage, put them in the freezer and use immediately after thawing (or else they will become mushy).

For other storage options, please consult this website: <http://chestnut.cas.psu.edu/Procedures/pollination/pollinating.htm#harvesting>

8. How was the blight introduced? What causes the blight? Where's it from? How did it get here?

The chestnut blight fungus, *Cryphonectria parasitica*, is an ascomycete. Imported on plant material in the late 19th century, and first discovered in 1904 in New York City, the blight--an Asiatic fungus to which our native chestnuts had very little resistance--spread quickly.

In its wake it left only dead and dying stems. By 1950, except for the shrubby root sprouts the species continually produces (and which also quickly become infected), the keystone species on some nine million acres of eastern forests had disappeared.

9. Why should I care about what you guys are doing? The tree has been gone now for over 100 years and we seem to be doing okay without it, right?

Some reasons to consider:

Carbon Sequestration: American chestnut was among the fastest growing hardwoods of the eastern USA. Fast-growing species like American chestnut will be of great use to help mitigate accelerated

global warming through the uptake and storage of carbon.

Wildlife Food Source: Native wildlife from birds to bears, squirrels to deer, depended on the tree's abundant crops of nutritious nuts.

Organic Food Source for People: As winter came on, attics were often stacked to the rafters with flour bags full of the glossy, dark brown nuts. Springhouses and smokehouses were hung with hams and other products from livestock that had fattened on the harvest gleanings. And what wasn't consumed was sold.

Timber Products: The tree was one of the best for timber. It grew straight and often branch-free for 50 feet. Loggers tell of loading entire railroad cars with boards cut from just one tree. Straight-grained, lighter in weight than oak and more easily worked, chestnut was as rot resistant as redwood. It was used for virtually everything - telegraph poles, railroad ties, shingles, paneling, fine furniture, musical instruments, even pulp and plywood.

10. Why can't you just take the resistance genes from the Chinese chestnut and put it into the American chestnut through gene splicing/biotechnology/magic elves?

One of the main problems is that we have not isolated the genes for blight resistance from Chinese chestnut yet. However, our progenies are being used in a large NSF project. More information on that project may be found here: <http://www.fagaceae.org/>. Until the gene for blight-resistance from Chinese chestnuts can be found, other genes will need to be used.

In conjunction with [SUNY-ESF](#) our New York Chapters has been working for almost 20 years to try and insert a gene that would confer resistance into chestnut. Currently, In 2006, TACFNY and associated scientists outplanted their first candidate plants and have planted several more since.

One of the goals of that project is to identify at least one candidate blight resistance gene. The candidate genes will then have to be inserted into American chestnut to confirm that they confer blight resistance. Once this is accomplished, we will be able to transfer them into enough American chestnut trees to develop a viable population. We do not anticipate accomplishing this for at least 5 years, and it may take quite a bit longer.

For more information on TACF's biotechnological efforts, please see a two-part series of articles by Dr. Paul Sisco, available in these issues of the TACF Journal:

Part I. Spring 2006 (XX, 1) Page 30: <http://acf.org/pdfs/resources/journal/JrnlSpring2006.pdf>

Part II. Fall 2006 (XX, 2) Page 35: <http://acf.org/pdfs/resources/journal/JrnlFall2006.pdf>

11. I heard about what they're doing in Europe to save their trees? Why won't that work here?

There are a series of viruses that attack the blight fungus in Europe, rendering it incapable of causing

severe cankers on European chestnut. This seems to indicate that these hypoviruses have made blight a relatively minor disease on European chestnut. In the United States, despite extensive efforts over the past 30 years, the same viruses have not resulted in a significant decrease in blight severity on American chestnut, especially in forested settings. However, pure stands of American chestnut located in orchard settings have been protected from blight to the extent that they continue to live and produce nuts. Unfortunately, those trees are too disfigured by blight cankers to produce sound timber. Additionally, the disfiguring cankers quite likely would make those American chestnuts incapable of competing with other tree species in forest settings.

The reasons are not entirely clear why hypoviruses give good control of blight in Europe but not the United States. It is known that there are many fewer strains of the blight fungus in Europe than in the United States and that hypoviruses spread much more easily within strains than between strains. Thus, cankers on European chestnut initiated by virulent strains of the blight fungus are much more likely to become infected with hypoviruses. Additionally, European chestnut is slightly less susceptible to blight than American chestnut, which would make cankers persist longer on European chestnut, increasing chances for hypoviruses to invade them. Finally, European chestnut trees tend to grow in fairly pure stands, without competition from other tree species. Competition may weaken American chestnut trees, increasing blight severity to the point where trees die before hypoviruses can act.

Updated 8-31-2009