Starting American Chestnuts:

Common Issues Faced by New Growers

Basic Tenants of Planting Chestnuts

America chestnuts need WELL-DRAINED and ACIDIC SOILS. Be sure you have the right site selected. Also, be sure that you have properly followed the recommendations on TACF’s fact sheet, Growing Chestnuts: A Guide to the Basics.

To give proper treatments, the problem must be properly diagnosed. There are a wide range of web resources available, or you could send pictures and/or samples to your TACF Regional Science Coordinator and/or local Cooperative Extension Agent to properly make assessments or diagnose problems.

Site Selection and Planting

Should I plant in the SUN or in the SHADE?

American chestnut grows very slowly in shade and only exhibits its characteristic fast growth in full sun. Chestnut is considered intermediately shade tolerant. This means that the tree will survive in shaded conditions but needs a moderate to high-light environment to thrive. Full sun is required for chestnut flowers to form, so bear this in mind when selecting a site.

Should I DIRECT SEED or plant a SEEDLING?

DIRECT SEEDING allows the nut to germinate and the tree to grow directly into the environment it will inhabit for years to come. This reduces the time it takes for the tree to get established and is the practice used for most TACF orchard plantings.

Planting a nut in a pot allows for starting the SEEDLING a little earlier in the season. Transplanting this seedling does require some special attention (see next topic) and it will take a little while for the root system to get established. However, this is a good option if rodent predation of nuts is a concern.

When should seedlings be PLANTED-OUT?

The proper timing for planting out chestnut seedlings depends on where you are and whether you have a bare-root or potted, leafy seedling. BARE-ROOT SEEDLINGS are grown outdoors in nursery beds and should be reasonably acclimated to outdoor conditions. These seedlings should be planted while they are still dormant and as early in the season as the soil can be worked.
Leaves on SEEDLINGS GROWN INDOORS develop much earlier than they would if they were growing outside and this tender young foliage requires more care. The leaves will be susceptible to frost damage so planting after the frost-free date for your area is necessary. The leaves and young stems also need to acclimate to outdoor conditions - a process called “hardening-off”. Place the potted seedling in a protected, mostly shady place outdoors. You should do this for at least two weeks before planting permanently. Leafy seedlings should not be planted in the heat of summer – if you miss the spring window it may be best to wait until early fall.

Remember to water every week for at least a month after planting a seedling.

**Growing Problems**

*How long should I wait until I give up on a seed that DID NOT SPROUT?*

Chestnuts should germinate within the first 2-4 weeks after planting, but some wait much longer. Soil moisture and temperature, along with planting depth, play the biggest roles in determining when trees finally sprout out of the ground. In most cases, our cut-off for “giving up” on seed is July 15.

Though we typically do not recommend it, you can take initiative to excavate VERY carefully around the area where you planted to see if they have taken root in the ground. As long as the root is going down, and the nuts are still sound, they should come up in a couple of weeks. If the nut is gone, seems moldy or “squishy”, it’s a lost cause.

*Seeds germinated, but then TURNED BLACK AND DIED or are SEVERELY STUNTED*

Chances are you have some type of fungus or small insect that is affecting the leaves and/or stems. If possible, take a sample to your local extension agency to find out exactly what the problem is and to get recommendations for treatment.

If you water often and the seedlings are stunted and gangly, you are probably dealing with DAMPING OFF. Reduce the amount and frequency of watering. Try to water deep occasionally and allow the soil to dry out a bit in-between watering. In rare cases the cause could be CHESTNUT BLIGHT, which is sometimes present inside the seed.

This problem may very well be related to *Phytophthora* if the seeds/seedlings are planted directly in the ground (see section below), or if they are in pots that are touching the ground. If the seedlings are growing in sterile potting media, it is unlikely that you have *Phytophthora*.

**Diseases and Insect Pests**

*Phytophthora Root Rot*

Chestnut trees fall prey to *Phytophthora root rot* (**Prr**), also known as ink disease, primarily in the warmer climates of the Southern US. Asiatic species of chestnut are generally resistant, but pure American chestnut and some lines of TACF’s advanced material are not. TACF recommends testing soils for

1[^1](http://davesgarden.com/guides/freeze-frost-dates/) offers an on-line utility to determine early and late frost dates for your area.
the presence of the causal agent, *Phytophthora cinnamomi*. *Phytophthora* organisms generally thrive in moist soils, so avoid wet and heavy soils, opting for dry, sandy, or gravelly soils.

*Phytophthora* root rot symptoms on American chestnut seedlings often include chlorosis (yellowing) and wilting of foliage. Additional signs that you have *Phytophthora* include dead and decayed roots and a necrotic lesion advancing up from the root crown area on the lower stem. Note that unlike blight-induced mortality, if a seedling dies from *Phytophthora*, it will NOT resprout; it is completely dead.

**Small Brownish Spots on Leaves**

There are a variety of causes of leaf spots and discolorations. They can be caused by insect damage, bacterial infection, fungal infection, water stress or even nutritional problems. If the spots seem to be causing a serious problem, you could take a photo of the damage and share it with your local extension agent or breeding program coordinator. There are also plant diagnostic labs associated with most land grant universities, where samples can be sent for analysis, as well as a variety of do-it-yourself plant diagnostic websites available. Once the cause is known, proper treatment can be determined.

**Japanese beetles**

Japanese beetle damage is fairly common on chestnut and also very characteristic and easy to identify. Their feeding produces a skeletonized, lacy-looking leaf and often the insects themselves can be spotted on the foliage. Pesticides can be used for control, but should always be applied according to label directions. Do not use Japanese beetle traps unless you can empty them very regularly. If the traps are full of Japanese beetles, they will continue to attract beetles. Since they can not fit in your trap, they will surely go for your chestnut trees.

**Caterpillars and Worms**

Defoliating “worms” are usually beetle or caterpillar larvae, feeding on leaves and causing a lacy pattern of damage. Bagworms, orange-striped oak worms and gypsy moths are just a few of the defoliating insects that commonly attack chestnut trees.

Be vigilant in keeping an eye out for insect invaders. Consult with your extension agent or TACF breeding program coordinator to properly identify the pest and the proper control methods. **TAKE PICTURES AND COLLECT INSECT SAMPLES** whenever possible to obtain proper identification, diagnosis, and prescription.
**Wrinkled and Yellowed Leaves**
Severely wrinkled leaves are most commonly caused by the actions of sucking insects, usually aphids and leaf hoppers. Leaf wrinkling most often occurs in mid- to late summer. Typically, wrinkling due to aphids and leaf hoppers occurs along the latitudinal plane and is usually accompanied by chlorosis (yellowing of the leaves).

Another leaf-sucking insect is the psyllid. A relative of aphids, this pest can often do more damage than leaf hoppers or aphids. Typically, it is not necessary to treat for leaf hoppers or aphids, but psyllid attack may require treatment. Proper identification of the pest is necessary to give proper treatment recommendations.

Leaf wrinkling may also be caused by the effects of herbicide application and/or drift.

**Protection from Wildlife**

**Small Mammals**
There are many small animals that can cause damage to chestnut trees. To protect your trees a short shelter is recommended. Shelters can be purchased from a nursery supplier or you can make them using aluminum flashing or hardware cloth. Shelters should be buried approximately 2-3” into the soil around the base of the seedling. You may also remove the remnant nut shell from the base of the seedling.

Good vegetation control can help reduce the damage by small rodents, especially voles, by reducing habitat. TACF recommends frequent mowing and keeping a three-foot diameter zone around the trees weed-free.

**Deer Protection**

1) **Caging.** For small numbers of trees, simple wire cages work well. They provide protection from deer browse, and if used with a short shelter, will also provide protection from most other critters.

2) **Fencing.** This is often the best method of deer protection, especially for large numbers of trees. The most effective is an 8’ woven wire, galvanized steel fence. Plastic mesh or multi-strand electric fencing are also options. Several growers have erected their own fencing, often proving more cost effective than professional installation.

3) **Tree Shelters.** We do not recommend using tall tree shelters for deer protection, as the seedlings come out weak and spindly.

4) **Deer repellent.** This can be used in conjunction with some type of deer cage or separately. Repellents can be effective, especially if deer browse is moderate, and conscientious application throughout the year may deter deer at high population levels. Repellents must be applied on a regular basis and according to label instructions.