FACT SHEET

Growing Chestnuts

THE American Chestnut FOUNDATION

A Quick Guide to Starting Chestnut Seeds and Seedlings

Before you plant: Starting Chestnuts from Seed

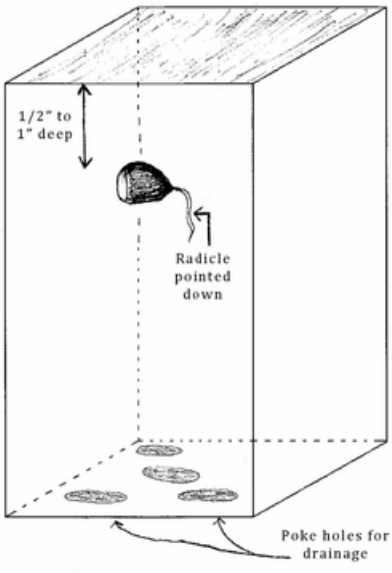
Storing Chestnut Seeds

Chestnut seeds need a period of cold stratification (34-40°F is optimal) that lasts 60-90 days in order to efficiently germinate. Beyond this time, they should be kept cold until you are ready to plant. The vegetable crisper drawer in your refrigerator is usually a good option for providing the right conditions; however, watch out for storing chestnut seeds with certain fresh fruit – the ethylene produced by the fruit can cause the chestnuts to ripen too quickly.

The radicle, or young root, has emerged from the pointed end of this chestnut. Chestnuts typically sprout after 60-90 days of stratification

Chestnuts also need to be kept damp. This can be accomplished by storing seeds in a number of different pre-moistened media. Peat is the standard, however sphagnum moss, coarse perlite, or coarse vermiculite are all good alternatives. No matter the media you choose, it should be at a moisture content where no water drips out when you squeeze it in your hand. The radicle (young root) will likely emerge during cold storage. Once this happens, avoid moving or disturbing the nuts since the radicle is fragile.

Starting Chestnuts in Pots



Start your seeds in a deep pot designed for growing trees, or a re-used milk or juice container.

You may want to sow your chestnuts in pots instead of direct-sowing into the ground. A number of different containers can work well for growing chestnuts. Tall (at least 12” deep) narrow pots are ideal (to allow room for the taproot). An inexpensive option is to re-use a two-quart milk or juice carton with holes punched in the bottom for drainage. Fill with a soilless potting mix. A variety of commercial mixes may be used, but choosing a well-aerated mix is important.

Chestnuts should be planted around ½- 1” deep (a general horticultural rule for planting is to plant your hole two times as deep as the seed is wide), and be careful with the delicate radicle. Remember that the radicle is the root and should be planted down or sideways. If the radicle has not yet emerged, the same rule applies to the pointed end of the nut. Chestnuts should generally be watered the same way as any tree or woody plant; allow the potting mix to dry out a little between watering. If kept too wet the nut may not germinate or the seedling may die.

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Planting Chestnuts Outside

What Makes a Good Planting Location?

Well drained soil is very important. Dry, sandy, gravelly, or loamy soils are good. Avoid clay soils or those that retain water. A generous amount of top soil will result in better growth; however, chestnuts can generally tolerate relatively poor sites. Avoid planting over ledges or in compacted soils – the root system needs room to grow. The pH of the soil should be slightly acidic, between 4.5-6.5. You can find the pH of your soil by submitting a sample to a soil testing lab, available through most land grant universities. Soil test results from a lab will include soil pH, as well as an analysis of other important nutrients and fertilization recommendations. Chestnut is intermediately shade tolerant. For fast growth and flower production, trees need full sun. They will tolerate shade, but will grow slowly in low light environments and will not flower or reproduce.

SOIL TEST RESULTS

Avail. Phosphate	(ppm P)	1.1
Potash	(ppm K)	78
Magnesium	(ppm Mg)	41
pH		5.2
Calcium	(ppm Ca)	405

Soil test results from a soil testing lab will include soil pH, as well as analysis of other important nutrients. Soil tests are highly recommended.

Direct Sowing Chestnuts Outside

Chestnuts may be direct-sown outside with good success. The same general planting rules for container planting apply to direct-sowing: plant chestnuts no more than ½ -1" deep, be careful to not break the radicle, and plant the seed so the radicle or pointed end are facing down or sideways. Chestnuts are a tasty food source for wildlife and it is important to protect the nut from predation, especially before they sprout. A tree shelter, cage, or other protective device is a good idea. Tree shelters are also beneficial for transplanted seedlings (see Wildlife Protection, below).

Direct-sown chestnuts are usually planted in the spring, but may be planted in the fall if good wildlife protection is in place. For spring planting, wait until the soil can be worked and the major risk of a hard frost has passed. Many growers plant chestnuts into a mixture of soilless potting mix (similar to recommendations for sowing in pots) and a small amount of native forest soils. The soilless potting mix provides a weed-free germinating environment for direct-sowing and helps regulate moisture for transplanted seedlings. Adding a handful or two of forest soil, collected from under a pine or oak tree, may also be beneficial. Forest soils often contain beneficial mycorrhizae that can help make the chestnut's root system more efficient. (Mycorrhizae are fungi that are typically found in forest soils but may be deficient in field soils.)

A wire cage can provide good protection from wildlife. The cage shown here was constructed out of welded wire garden fencing, zip ties and a hardwood stake.

Chestnuts can be planted at a variety of spacings, depending on the goal of the planting, but no matter the spacing, remember - trees need room to grow! Fertilizers are not necessary but can be beneficial to chestnuts. Follow the recommendations on your soil test report, or an acid-loving fertilizer high in nitrogen is generally beneficial (read labels carefully and follow directions closely!). Make sure to water chestnuts regularly for the first year. Once well-established, there isn't much need to water unless there is a severe drought.

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Hardening Off Seedlings

Leafed-out seedlings, especially those started indoors in containers, need to acclimate to the outdoor environment to prevent leaf scorch and dieback. This is called “hardening-off” and will help make transplanting more successful. Ease new seedlings into full exposure to sun and wind by placing them on a covered porch, under a shade tree, or in a protected area outside. Remove any remnant nut shell from the base of the seedling to avoid attracting wildlife. Leafed-out seedlings will need to acclimate for a week or two, but bare-root seedlings do not, as they usually have no leaves at the time of planting.

Planting Seedlings Outside

Plant after the ground has thawed, and, for leafed-out seedlings, after risk of frost. Dig a small hole the same depth as the pot or root system, and about twice as wide. If your seedling is coming out of a container, gently remove it from the pot and work the root ball with your hands to break it up, being careful to avoid damaging the roots. Do this next to the hole to create a pile of potting soil that can be mixed with the native soil when you refill the hole. Hold the seedling in the hole so that the root collar (area where the root and stem join) is level with the ground surface. Fill the hole half-way with soilless planting mix, pack well around the roots, then fill the rest of the way and pack down again. Use your foot to tamp the soil down firmly around the seedling. As with seeds (see Direct-Sowing Chestnuts Outside, above), adding forest soil may be beneficial to young trees. An acid-loving fertilizer may be added to the hole, or a top dressing of compost may be used for fertilization.

After Planting: Protecting Your Seedlings

Wildlife Protection

Chestnut nuts, shoots, and roots can all be attractive food sources for wildlife species, and tree protection is very important. As mentioned above, directed seeded nuts are the most vulnerable and need to be protected from predation. Tree shelters, cylinders made of hardware cloth, and wire cages can be options. Most rodents, turkeys, deer, voles, and even bears may eat chestnut seeds or seedlings, and the height (or depth) of the shelter should correspond with the wildlife threats that are present. It is best to pick the shortest shelter appropriate for the site/predation, and sink it 2-4” to provide a barrier to tunneling rodents. Tall shelters over 2 feet are not generally recommended, as the trees are protected from the wind and do not develop the structural wood needed to support themselves when the shelters are removed, and the branching pattern can become abnormal. Tall shelters may also result in kinks or abnormal growth in the trunks of growing trees if not removed at the proper time. A combination of a shorter shelter for rodent protection and a wire cage to keep larger animals away may also be used.

This 18” vented plastic shelter is sunk 2-4” into the soil to protect the base of the seedling.

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Vegetation Control

One of the top killers of chestnut seedlings is weeds! Remove competing vegetation from the planting area so that planted chestnuts have full access to available resources. A vegetation-free space about 3 feet in diameter is good for young trees. Regular weeding can be a good option, but may not be practical or effective depending on the site and number of trees planted. Landscape fabric, competition mats, or mulch work well for additional protection, though these types of weed barriers may harbor voles, which can be a risk. Herbicides can be used but should only be attempted by someone with experience using chemicals. ALWAYS follow the directions on the label!

Landscape fabric, or other weed barriers, can be a great way to keep competition from vegetation at bay in your chestnut planting

Insect Pests

Spongy moth caterpillars can damage your chestnuts. Natural and chemical controls are options for this pest.

There are many insect pests that can be problematic for chestnut, such as Japanese beetles, aphids, cicadas, chestnut weevils, chestnut gall wasp, and spongy moth caterpillars, to name a few. Be sure to reach out to your local extension agent for any pest questions - your local land-grant university may have a plant disease and insect identification/diagnostics lab that can identify pests and recommend control and prevention methods. Commercial insecticides may be used, but as is the case with herbicides, they should only be used by someone with experience applying chemicals, and always follow the directions on the label. Some chemical-free methods of insect removal and control include simply spraying the pests off with a hose, knocking insects off into a bucket of soapy water, or attracting or introducing beneficial insects that feed on the pest you are trying to control.

For More Information

Ask lots of questions and keep track of how you care for your trees. Chestnuts are not always an easy species to grow, but armed with education and a support network, you should be on the path to becoming a successful grower. One of the best ways to identify and understand the pathogens, pests, and other problems that may arise in your area is to talk to your local extension agent.

Also, don't hesitate to contact us! TACF's regional science coordinators and farm staff have lots of experience growing, observing, and troubleshooting chestnut plantings. For more information, check out our fact sheet library, which includes more details on many of the aspects of growing and caring for chestnut trees: www.tacf.org/tacf-fact-sheets/