Chestnuts have been enjoyed for centuries. Asian chestnuts (*Castanea crenata* or *C. mollissima*) are mentioned in poetry as far back as 5,000 years ago and early Europeans arriving in the New World found forests of American chestnuts (*Castanea* sp.) blanketed the East Coast from Georgia to Maine and as far west as the Mississippi River. But while the Asian cultivars are still going strong, the American chestnut was all but wiped out in the early 1900s in one of the West’s worst botanical disasters. An attempt to import Chinese chestnut trees brought in chestnut blight (*Cryphonectria parasitica*), to which Asian chestnut trees were mostly immune but American trees were not.

Fifty years and up to 5 billion dead trees later, the American chestnut began a slow process of recovery that continues to this day. Producing less than 1 percent of the world’s chestnut supply, most chestnuts consumed in the United States come from Italy. New varieties, developed at the end of the twentieth century, include a wheat gene resistant to chestnut blight that produces a tree almost identical to the wild American chestnut.

With seeds that look similar to buckeyes, chestnuts belong to the Fagaceae or Beech family. Often roasted, the seed shell must be pierced to prevent it from exploding due to the high moisture content. Chestnuts can also be eaten raw or even ground into flour for baking. Larger nuts are considered preferable for fresh market sale. Depending on cultivar, chestnuts range from the sweetest American varieties to some less sweet European and Chinese nuts. The skin around the seed kernel is bitter and needs to be removed for eating. American and Chinese chestnuts are generally the smoothest and easiest to peel, making them popular for commercial marketing.

References: Agricultural Marketing Resource Center, UC Davis Fruit/Nut Research & Information Center, University of Florida/IFAS Extension, University of Illinois Extension, USDA, Western Growers Association.

### Seasonal Availability

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References: Agricultural Marketing Resource Center, Food and Agriculture Organization of the United Nations, Michigan Department of Agriculture & Rural Development, Oregon State University, University of California Davis, University of Florida, USDA.
Italian Chestnuts
Peeled and ready to eat

Star Quality. Star Power.
Consumers love the exceptional quality and great taste of our premium ready to eat chestnuts. Available this fall in our new vibrant and consumer friendly packaging, there’s no doubt they will continue to reach for the star... TruStar.
3.5 ounce pouch package. Floor display available.
TYPES, VARIETIES & CUTS

There are four major species of chestnut tree. The American chestnut (*Castanea dentate*) has an upright tree form and produces smaller, sweeter nuts. The European chestnut (*C. sativa*) is native to Western Asia, Europe, and North America. European trees also have an upright form, but tend to produce bitter or bland nuts that are larger though harder to peel. Both American and European trees are susceptible to blight.

Chinese chestnuts (*C. mollissima*) are native to Northern and Western China and tend to have a low, spreading form with many branches at ground level though some Chinese cultivars have an upright form. These very blight-resistant trees yield medium-sized, sweeter, easy to peel nuts. Japanese chestnuts (*C. crenata*) are native to Japan and China, are also blight-resistant, and tend to be smaller with a spreading form. Nuts from Japanese trees are large but have an undesirable taste so the trees are used primarily for hybridization. Trees in the Castanea family are very similar and hybridize easily, often making species difficult to distinguish.

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Chestnuts are primarily sold fresh in the shell and the USDA classifies them by size as Large, Giant, Jumbo, or Mammoth.

References: Chestnut Growers of America, UC Davis Fruit/Nut Research & Information Center, University of Florida/IFAS Extension, University of Missouri.

PESTS & DISEASE

Chestnut trees are susceptible to a few pests such as the chestnut weevil, oriental chestnut gall wasp, spider mites, shot hole borers, filbert worms, and even deer and squirrels.

Chestnut trees are also susceptible to certain diseases. *Cryphonectria parasitica* or chestnut blight is the most notable for the damage done to American chestnut trees. Other diseases include *Alternaria* spp, *Aspergillus niger*, *Botrytis cinerea*, *Fusarium* spp, *Penicillium* spp, *Phomopsis castanea*, *Phytophthora* root rot (also known as ink disease), leaf spot, powdery mildew, and *Armillaria mellea* (also known as oak root fungus). Asian chestnuts are particularly susceptible to twig canker.

References: Cornell University, UC Davis Fruit/Nut Research & Information Center, UC Davis Postharvest Technology website, University of Florida/IFAS Extension.

CULTIVATION, STORAGE & PACKAGING

Preharvest:

Chestnut trees thrive in warm, temperate regions of the Northern Hemisphere. Although they can tolerate a variety of environments and climates, a long, warm growing season and mild winters are ideal. Deep, well-drained soil with a 5 to 6.5 pH level is best.

Depending on the species and cultivar, these deciduous trees can grow as tall as 100 feet with sharp, serrated leaves approximately 6 inches long. Flowers grow near the base of new shoot growth; most trees are propagated via grafting and budding. Spacing within an orchard depends on the size of the cultivar, but about 108 trees per acre spaced at 20x20 feet is typical. Other common spacings are 25x25 for about 70 trees per acre or 11x22 hedgerows for about 180 trees per acre. While spacing between rows is often sodded, young orchards can be interspersed with row crops like peanuts, clover, hay, or small fruit trees for the first five years or so.

Drip irrigation is recommended both to establish an orchard, provide an easy means of fertilization, and prevent weeds and unwanted growth between rows. Thorough irrigation is particularly important in the last few weeks of nut development.

Pollination is via wind with some assistance from insects. Cross-pollination is necessary as chestnut trees are self-sterile. Pollinators should be planted in a ratio of 1 pollinizer to every 8 cultivars. Some orchards position a pollinizer row at every fifth row in the orchard. Depending on the cultivar, flower to harvest time is about 110 to 150 days.

New growth appears on branch tips where sunlight hits the tree, so pruning should be designed to maximize branches exposed to sunlight. Open-center trees let sunlight into the middle, top, and sides of the tree branches.

Trees grown from seedlings begin to bear large nuts encased in prickly burrs after 3 to 5 years. Grafted trees bear after 2 to 4 years. Burrs should be removed during the initial 3 years to allow trees to grow and mature. Fully mature trees can produce between 1,000 and 1,500 pounds per acre each year.
CULTIVATION, STORAGE & PACKAGING—CONTINUED

Chestnuts are encased in a sea urchin-like, spiny burr that contains the large hard nuts. Nuts develop and fill out in the last 2 or 3 weeks before ripening. Burrs either split open to release nuts as they ripen or fall to the ground with nuts still enclosed.

Hand- or mechanical harvesting can be used for upright-form trees; spreading trees must be hand-harvested as shaking does not adequately knock nuts from drooping branches. Fallen nuts decay quickly and may dry out or become sunburned, so nuts must be gathered from the ground every 1 to 3 days. Some growers install catch frames or mesh nets to prevent nuts from falling onto the ground. Any remaining burrs should be removed from trees after harvest is complete.

**Postharvest:**

Once collected, nuts are removed from burrs and immediately cooled, washed, sorted by size, and stored at 30 to 32°F in breathable mesh bags to prevent decay.

For burrs that have not yet opened, either a few days of ripening time or exposure to ethylene or ethephon speeds splitting with no effect on nuts. Washing with disinfected water followed by a hot water dip of about 125°F then forced-air cooling will remove surface moisture to avoid deterioration. Alternatively, exposure to CO₂ for 5 to 7 days followed by cold storage helps to prevent mold, sprouting, and other deterioration. Exposure to low O₂ is not recommended as it promotes off-flavors.

Quality indicators are size; uniform shell color and gloss; plump kernels; bruise, crack, sprout, and decay-free nuts; peelability; sweetness; and lack of off-flavors.

Chestnuts can last up to several months when stored, but will dry out even at high humidity levels, so protective packaging is needed. Chestnuts are high in starch and low in fat, more like potatoes or apples than other tree nuts. Relative humidity of 85 to 95% in a microporous plastic film is recommended to prevent moisture loss.

References: Cornell University, Purdue University, UC Davis Fruit/Nut Research & Information Center, UC Davis Postharvest Technology website, University of California Agricultural & Natural Resources, University of Florida/IFAS Extension.