Chestnut Production

Castanea spp.

Characteristics and Adaptability

The American chestnut (C. *denata*) was a once a widely distributed forest tree of Eastern North America. It was noted for its large size, timber quality, and edible nut. The introduction of chestnut blight in the early 1900’s had a devastating effect on the native American chestnut population and very few wild trees remain. The Chinese chestnut (C. *mollissima*) has been introduced as a blight-resistant substitute for American chestnuts in edible nut production. Winter hardiness of Chinese chestnuts has been compared as slightly greater than peaches; they are the most tender tree nut species discussed in this series of fact sheets. Hybrids of American x Chinese chestnuts have been bred with variable disease resistance and nut quality. These hybrids can be grown in hardiness zones 5+, while Chinese chestnuts are more tender and are better suited to zone 6. Chestnuts must be planted on well drained, acidic, coarse-textured sandy soils, with a pH of 5-6.

Propagation, Cultivars and Pollination, and Tree Spacing

Chestnut seedlings will produce trees with variable cropping habits, nut quality, and disease resistance. However, chestnut seedlings are considered to be satisfactory for orchard establishment. Grafted trees of improved cultivars are available to increase tree uniformity and may be worth the extra cost if a specific market has been identified. Examples of improved cultivars suitable for planting in Atlantic Canada are 150Y and 142Q. Grafted trees are more tender than seedlings and are appropriate for only the most protected sites.

Chestnut trees rarely self-pollinate and single isolated trees produce very few nuts. At least two different seedlings or improved cultivars will be required for nut production. When establishing an orchard with grafted trees, distribute cultivars evenly in the planting pattern to ensure cross pollination. Seedling orchards will have adequate pollination due to natural variability.

Suggested tree spacing is on 12 m (40 feet) x 12 m squares with a semi-permanent tree planted in the center of the square 8.5 m from each corner. The semi-permanent trees can be removed if the trees begin to crowd after 15 to 20 years. This system can also allow for selection of superior trees in seedling orchards.

Orchard Management, Pests and Diseases

Chestnuts can be trained to a central-leader system. Permanent branches below 2.5 m are not desirable for orchard management and harvesting. Keep lower limbs pruned short until branches are established above 2.5 m. Once the tree begins to establish a canopy above 2.5 m, the lower branches

“The Chinese chestnut is a blight resistant substitute for American chestnut. Chestnut blight is the most important disease of chestnut.”
can be completely removed. Pruning cuts should be made when the tree is dormant in late winter or early spring. Wide branching angles (> 45°) are preferred due to their improved strength.

Chestnut blight, caused by the fungal organism *Cryphonectria parasitica* is the most important disease of chestnut. This disease severely affects American chestnut by infecting the vascular system and girdling the trunk. Cankers form which eventually kill the tops of trees. Despite the isolation of susceptible chestnut trees in Nova Scotia, chestnut blight has been confirmed through petri dish culture and DNA analysis. Wrapping moist soil around blight cankers has been suggested as way of killing cankers, however, it is not practical on a large scale.

Blossom end rot is a fungal infection which develops initially at the tip of nut and progresses throughout the nut rendering it unmarketable. It is most often identified after harvest. Chestnut weevils are the main insect pests of chestnuts and control may be warranted if insect pressure builds. Leafhoppers are sometimes a major pest of young chestnut plantings.

### Harvesting

Chestnuts begin bearing quickly after planting and may crop in the second year. It is recommended that the trees be decropped for the first two years to encourage tree establishment. The earliest chestnuts will begin to ripen and drop in mid-September. To maintain the best nut quality, nuts need to be collected as soon as possible after dropping. Chestnuts should then be cured for a few days at 10 to 15°C and high humidity to enhance flavour and quality.

### Additional Information

**Perennia Fact Sheets**

- Tree Nut Production Opportunities in Atlantic Canada
- Persian Walnut Production
- Hazelnut Production
- Heartnut Production
  
  [http://www.perennia.ca/production_other.php](http://www.perennia.ca/production_other.php)

**Publications**

- *A Guide to Tree Nut Culture in North America, Vol. 1*
  Fulbright, D.
  Northern Nut Growers Association (NNGA)

- *Hazelnuts in Ontario*
  Biology and Potential Varieties (Fact sheet 12-007)
  Growing, Harvesting, and Food Safety (Fact sheet 12-011)
  Pests (Fact sheet 12-009)
  Ontario Ministry of Agriculture, Food and Rural Affairs

- *Nut Tree Ontario*
  Grimo, E.
  Society of Ontario Nut Growers (SONG)

- *Nut Culture in Ontario*
  Ontario Ministry of Agriculture, Food and Rural Affairs
  Publication 494

- *Nut Tree Nurseries*
  Grimo Nut Nursery – Niagara-on-the-Lake, Ontario

  Charlie The Tree Guy – Truro, Nova Scotia
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