

This Free E-Book is brought to you by Natural-Aging.com.

**[100% Effective Natural Hormone Treatment](#)
Menopause, Andropause And Other Hormone Imbalances
Impair Healthy Healing In People Over The Age Of 30!**

Historical Mechanisms Promoting Chestnut Survival Through Hybridization

By Pat Malcolm

Historically, chestnuts have throughout the ages provided food and wood products in both

European and Oriental cultures. Chestnuts have saved some civilizations from vanishing during famines, wars, and natural disasters. Native American chestnuts offered many promises and comforts to the early colonists, but during a blight that was introduced by importing nursery stock from Asia, the chestnut trees of American were almost eliminated. Certain chestnut tree colonies survived in isolated locations and because of plant breeding advances, chestnut trees are being reestablished throughout the nation. The original stands of American chestnuts were far superior to all other types in the world in respect to the sweet taste and vast quantities of lumber that was produced. Foreign types of chestnuts such as Chinese, Japanese, and European have been used to implant immunity qualities back into the historical genetic code contained within the tasty kernel of the American chestnut.

An early reference to American chestnuts, 'Castanea dentata,' was given in John and William Bartram's seed and tree nursery catalog, America's first nursery catalog that was published in Philadelphia, PA in 1783. The Bartram family, famous American explorers and botanists, were close friends of Benjamin Franklin and U.S. Presidents George Washington and Thomas Jefferson. The Bartrams supplied American chestnut trees to gardens at Independence Hall at Philadelphia and the personal gardens of George Washington at Mount Vernon and to Thomas Jefferson at Monticello, Va. President Jefferson was an avid plant collector and spent endless hours searching for profitable horticultural crops that were commercially suitable for American farmers. President Jefferson attempted and succeeded in intercrossing and hybridizing the various collections of Spanish or European species of chestnuts, 'Castanea sativa.' He also performed crosses on chestnuts forming hybrid crosses of the European chestnut, 'Castanea sativa' and the American chestnut, 'Castanea dentata.'

Thomas Jefferson is documented to have personally grafted European chestnuts onto American rootstock, however, it is unclear why he did this, since the American chestnuts were more desirable and tasted better than the European chestnuts.

In his book, Travels, William Bartram never mentions any encounter or observation of the American chestnut 'Castanea dentata,' despite his extensive exploration of the Southeastern U.S., where the

Historical Mechanisms Promoting Chestnut Survival Through Hybridization

trees were growing in substantially large numbers in their native habitat. The mystery created by Bartram omitting references to this very significant inhabitant of American forests is a conundrum that may never be answered. Maps locating Bartram's famous Philadelphia, Pa. arboretum and garden still actively used today as a tourist attraction documented the presence of chestnut goliaths in the garden border.

The legendary nuts harvested from the American chestnut had a superior taste and production capability over the European chestnut. These nuts were gathered and stored in the shade and coolness of fall, so that the starchy kernel could develop its spicy sweetness. The nuts could be shelled and eaten fresh, or they could be roasted over hot coals to improve the flavor. A common sight on the streets of New York City or Philadelphia was peddlers with mobile stoves roasting the fresh chestnuts in cast iron pans to offer for sale to pedestrians. The heavy crops of nuts in the native forests offered enough food for not only human populations, but also for animals such as bears, deer, squirrels, turkeys, and the now extinct passenger pigeons.

Chestnuts, because of their 42% starch content, can be ground into a powdered flour without deterioration for extended periods and baked into sweet, nutritious cakes. In Korea chestnuts are used in the diet much like potatoes are used in Western nations.

American chestnut trees were among the largest trees found in the Eastern U.S., sometimes measuring 17 feet in diameter, large enough to drive a carriage or automobile through. These nut trees were found growing from Maine to Florida and from the Eastern seaboard to middle America. Some scattered groves of chestnut trees could be found in Western States. The grandness and gracefulness of this amazingly beautiful tree was highly desirable in estate landscapes. The long white catkin flowers of the chestnut developed into a valuable food crop for the U.S. The tall, straight trunk of the tree was ideal for many uses, because it was easily split along the grain for timber and split-rail fences. The dense wood was strong and extremely resistant to rotting, thus making it perfect for telephone poles, fence posts, and other building materials.

The great gift to the New World of the American chestnut that provided food, shelter, shade, and wood resources, had all but vanished when the trees fell victim to a fungus infection, '*Cryphonectria parasitica*,' in the year 1904. Many years earlier, a USDA plant explorer, Frank Meyer, noticed a fungal disease, later identified as chestnut blight, had entered U.S. ports in 1876 from China and Japan on nursery stock imported from those countries. Luther Burbank, perhaps the world's greatest plant hybridizer, reported that he imported a number of chestnuts from China and Japan in 1884. The USDA official went before Congress in 1912 after the blight decimated American chestnut trees growing at the Bronx Zoo, and was personally given credit for his efforts to stop further debilitating diseases and plagues imported into the U.S. by enacting the Plant Quarantine Act of Congress.

Following the example of President Thomas Jefferson in crossing various species of chestnuts to obtain hybrids with vigor and offspring that might have, within the genetic material of the tree, a built-in resistance to disease, the USDA began hybridizing American chestnuts, '*Castanea dentata*,' the Chinese chestnut, '*Castanea mollissima*,' and Japanese chestnuts, '*Castanea crenata*.' Thousands of chestnut hybrids were obtained, however, the American and Chinese offspring were the most promising, whereas, the Japanese chestnuts were excluded. The European genetic types of chestnut

Historical Mechanisms Promoting Chestnut Survival Through Hybridization

trees were also omitted, because they were also struck down to some degree by the chestnut blight.

Since the hybrid seed of outcrossed chestnut trees were so widely variable and with such unpredictable germination results were unavailable, the seed of a hybrid selected tree did not demonstrate much promising consequence towards establishing profitable commercial chestnut orchards. The chestnut, outstanding hybrid selections, were grafted with extreme difficulty, thus the USDA was unfortunately forced to abandon its efforts on chestnuts in 1960.

It should be mentioned that the chestnut blight does not affect the roots of the trees and consequently shoots arise from the stumps that eventually produce a few scattered nuts that can be used to further the research in obtaining immunity in a hybrid offspring of the American chestnut '*Castanea dentata*.' The chestnut blight only affects the Chinese chestnut trees, '*Castanea sativa*,' in a minor superficial way. It became important to recognize that this immune quality could be transmitted into an American chestnut hybrid even when the presence of the Chinese chestnut immunity factor was only one–sixteenth of the final genetic composition of the hybrids that could be obtained from the cross of *C. dentata* and *C. mollissima*.

Luther Burbank reported intercrossing chestnuts from a resulting gene pool that involved crossing Chinese, Japanese, European (Italian), and American chestnuts to include also chinquapin trees. Out

of this genetic blend, he managed to develop a dwarf chestnut 1 ½ ft tall that produced nuts from the seed after 6 months from being planted. He also managed to produce a crop of chestnuts from everbearing trees that involved chestnuts and flowers being produced month after month continuously. The nuts were a mammoth size of two inches in diameter, each weighing an ounce or more in clusters of 6 to 9 nuts per burr. In the natural state, the spiny burrs act as armor that protects the nuts from squirrels and birds.

More recent observations of the Italian pathologist Antonio Biraghi have shown that certain survivors of the European chestnuts, *C. sativa*, are believed to contain a form of chestnut blight that has been genetically weakened in virulence by an internal virus to the extent that the effect, called '*hypovirulence*,' appears to demonstrate that the virus affected chestnut trees have acquired a measure of immunity to the deadly chestnut fungal blight. These clones are believed by many plant scientists to be capable of imparting a new immunity into the new *C. dentata* hybrid crosses with *C. sativa* and backcrossing onto parental genetic types and are being evaluated.

Many chestnut trees are offered by mail–order and internet companies today, offering an optimistic and productive future for commercial chestnut tree orchards. Some of these offerings are available through the valuable insight and efforts of the U.S. Department of Agriculture and its research facilities.

Patrick A. Malcolm, owner of TyTy Nursery, has an M.S. degree in Botany and has cultivated chestnut trees for over three decades.

<http://www.tytyga.com>

Chinquapin History

By Pat Malcolm

There are two types of chinquapin trees, also called 'chikapin trees,' that are available commercially in the United States, the Allegheny chinquapin and the Georgiana chinquapin. The Allegheny chinquapin, '*Castanea pumila*,' is considered a shrub by some; however, some researchers claim that its dwarf size does not justify its reclassification. Many old-timers remember sweet memories from their youth when baskets were filled with the spicy, sweet, nutty flavored chinquapins. These nuts were eaten fresh, roasted or baked into snack confections for any occasion. The nuts from chinquapin trees grow with only one nut to a burr, whereas chestnuts, a close botanical relative, produce two or more nuts per burr. The Allegheny chinquapin, '*Castanea pumila*,' is widely distributed throughout the Southeastern U.S. and is cold hardy up to Zone 6 and all the way down to Zone 9. The Allegheny chinquapin prefers to grow on a neutral, uphill soil, especially at higher elevations. These nuts are often gathered by local inhabitants and are available at many locations at nearby markets and roadside stands.

The Georgiana chinquapin, '*Castanea alnifolia*,' is best described as the creeping chinquapin and it readily spreads in shady thickets by means of giant underground stems that produce many shallow roots. These plants are found in huge colonies throughout South Georgia and produce numerous nuts in late summer and early fall with a distinct sweetness and characteristic spicy flavor that remains indelibly bonded within the memory. The plant is easily grown and transplanted, but is more vigorous in a shady location. The burr is about one inch in diameter, producing a brown waxy nut in the center. The Georgian chinquapin '*Castanea alnifolia*' is cold hardy in zones 8–10, growing about 4 feet in height, slow growing but excelling in poor sandy soils that are well drained.

Luther Burbank reported in his book *Trees*, Volume 8, that chinquapin trees appeared to be almost immune to the chestnut tree blight of the American chestnut trees that, within a 50 year period of history—beginning in 1912, practically had eliminated the American native chestnut tree. Burbank hybridized thousands of chestnut trees in an effort to renew the American chestnut forests to their former splendor. He noted that any hybrid that had successfully survived the chestnut tree blight to become a viable commercial orchard selection would undoubtedly contain the immune qualities within the chinquapin that had been implanted into the American chinquapin tree genetic makeup.

Patrick A. Malcolm, owner of TyTy Nursery, has an M.S. degree in Botany and has cultivated chinquapin trees for over three decades.

<http://www.tytyga.com>



This Free E-Book has been brought to you by Natural-Aging.com.

[100% Effective Natural Hormone Treatment](#)
Menopause, Andropause And Other Hormone Imbalances
Impair Healthy Healing In People Over The Age Of 30!