

Chinese Chestnuts

Introduction

American chestnuts, once prominent in the eastern US landscape, all but disappeared in the mid 1900's as a result of chestnut blight. Blight resistant varieties of Chinese chestnuts are a viable alternative for commercial chestnut production.

Chestnuts are low in fat compared with other nuts and are receiving attention from the health food industry. These nuts are eaten roasted, boiled, sautéed and a few varieties, like Qing, can be consumed fresh. Chestnuts can be used as an ingredient in various recipes, such as stuffing, vegetable dishes, casseroles and desserts. Dried chestnuts can be ground into flour as a substitute for wheat flour.

Marketing

The most promising outlets for chestnuts include the domestic fresh (roasting) markets and chestnut flour, as well as the ethnic and health food markets. Fresh chestnuts can be sold at roadside stands, farmers' markets, retail groceries and specialty food retailers. Chestnuts should be marketed in refrigerated cases to prevent the nuts from drying out. There is some potential for marketing into the fine dining sector.

Chestnuts are often considered a holiday food item, so growers could take advantage of this potential market by timing sales accordingly. A ready-to-use product will also have more appeal to consumers.



Market Outlook

Chestnuts have potential as a cash crop that is well suited for production on marginal land in Kentucky. Most chestnuts currently sold in the US are imported, expensive and of poor quality. Local growers who can consistently supply high quality, good tasting, weevil-free chestnuts should have a marketing edge. Chestnut growers in southeast Iowa report a high demand and growing market.

Production Considerations

Site selection and planting

Chestnuts can be grown on land that is considered unsuitable for other crops, such as sandy or gravelly soils. They prefer sites that are somewhat acidic and will not tolerate limestone soils.

Planting grafted trees is preferred due to the consistent size and quality of the nuts produced. Mature chestnuts require a final 40 feet by 40 feet spacing, however, it can take 20 or more years before trees actually fill this space. Some growers interplant chestnut seedlings at a closer spacing among grafted



chestnuts. As the permanent grafted trees mature and come into full production, these filler trees are removed. Chinese chestnuts are self-sterile so two or more varieties are required for good pollination.

Trees are trained to a modified central leader shape, with only limited pruning needed on bearing trees. Young trees require protection against sunscald. Supplemental watering helps promote tree growth and to reduce stress, especially in the first year. Irrigation will help bearing trees to produce larger nuts and improve nut fill.

Pest management

Eliminating undesirable vegetation prior to planting is essential for tree establishment. Weeds should be controlled within 3 feet of young trees. Weed control strategies include the use of herbicides and mowing between tree rows. Chestnut blight is still present in the US, but it may be reduced by using blight-resistant varieties. Potential insect problems include aphids, Japanese beetles and chestnut weevil. Insecticide applications will be required annually for weevil control and as-needed to control Japanese beetles.

Young trees are very prone to damage by animal pests, such as rabbits, mice, squirrels and deer. These pests will need to be controlled to reduce nut losses. Deer repellants and tree shelters should be used until trees are large.

Harvest and storage

The first harvest for seedling chestnuts can be expected in 5 to 6 years, while grafted trees will bear within 3 years. Chestnuts are hand-picked off the ground once they have fallen from the tree. Daily harvesting is necessary to prevent the fallen nuts from drying out and to ensure that wildlife does not steal or damage the crop. Alternatively, where deer or squirrel losses are severe, nuts in burs may be shaken from the tree and gathered close to harvest.

Once nuts are separated from any debris gathered at harvest they are cleaned and stored in air tight

containers. Chestnuts are perishable and should be refrigerated or frozen until sold. If nuts are fresh and then frozen, they must remain frozen. If thawed and left at room temperature they will turn black. Nuts can also be boiled, shelled and then frozen.

Labor requirements

Based on 1,000 to 2,000 pounds produced per acre, labor needs are approximately 80 hours for establishment (first 2 years) and 25 hours for production. Hand harvest can take 70 hours per ton, with 16 hours for packaging/grading per ton.

Economic Considerations

Chestnuts require a 4 to 6 year establishment period before any nuts may be harvested. This delay without any cash income presents a significant financial and production risk.

The initial investment will include land preparation, the purchase of trees and possibly the installation of an irrigation system. Other costs will include a good sprayer, a nutshaker, cleaning equipment, a grader and a cold storage unit. Significant costs may be incurred protecting seedlings from animal pests. In some cases substantial losses due to graft incompatibility can occur.

Chestnuts require approximately \$3,000 to \$4,000 per acre in establishment costs. The first crop should be harvested in year 5 of production, at which time harvest costs will become a significant portion of production costs. Based on a \$2.00 price per pound, annual returns to labor, land and management of \$1,200 to \$2,400 per acre of chestnuts can be realized after year 7.

Financial returns may increase as trees mature and produce substantially greater yields of nuts per acre. Higher prices will also generate greater profitability from chestnuts. Growers in Southeast Iowa reported prices between \$2.00 and \$4.00 per pound in 2001. Product quality and market development will be crucial for chestnut profitability.

More information

- Nut Tree Growing in Kentucky, ID-77 (University of Kentucky, 2007)
<http://www.ca.uky.edu/agc/pubs/id/id77/id77.pdf>
- Chestnuts (Agricultural Marketing Resource Center)
<http://www.agmrc.org/agmrc/commodity/nuts/chestnuts/>

- The Chestnut Grower's Primer (Southeast Iowa Nut Growers, 2002)
http://www.pfi.iastate.edu/OFR/Chestnut_Primer.htm
- Nuts with Commercial Potential for America's Heartland (Purdue University, 1994)
<http://newcrop.hort.purdue.edu/newcrop/NewCropsNews/94-4-1/nuts.html>