

Ginseng

Introduction

Ginseng is a perennial herb that has been used for medicinal purposes in China and other Asian countries for centuries. American ginseng is native to the rich hardwood forests of Canada and the eastern half of the United States, including Kentucky. Wild American ginseng is considered at risk and is, therefore, protected by federal and state law. Because ginseng regulations are subject to change, the State Ginseng Coordinator in the Kentucky Department of Agriculture should be contacted for the latest laws and restrictions.

Marketing

The market for ginseng is well-established; however, the harvest and sale of all ginseng is strictly regulated in Kentucky. Wild ginseng harvested in the state can ONLY be sold through dealers licensed by the Commonwealth of Kentucky. A list of dealers can be obtained from the Kentucky Department of Agriculture (KDA).

Cultivated ginseng (wild-simulated, woods-cultivated, or field-cultivated) may be sold through any market channel; however, the roots must be accompanied by a certificate from the KDA indicating that the roots were cultivated and not harvested from natural sites.

Ginseng for export must be certified by the U.S. Fish and Wildlife Service to be in compliance with the Convention on International Trade in Endangered Species (CITES) treaty. These regulations are in place in order to protect the limited stock of wild ginseng



WOODS-CULTIVATED GINSENG PLANTING (INSET: WILD GINSENG ROOT)

growing in the forests, and to help eliminate the theft problems that can occur with this valuable and very slow growing plant.

Market Outlook

There continues to be a strong market for wild (wild-harvested), wild-simulated, and woods-cultivated ginseng. The strength of the Pacific Rim economy affects ginseng prices since 85 percent of the ginseng harvested in the United States is exported to Hong Kong and will ultimately end up in China. This market represents the largest consumer base and is the driving force in the ginseng market.

Wild roots have a distinctive appearance and are in the greatest demand by Asian markets. The Chinese have an extremely long history of ginseng use in their traditional medicine. In addition, there is a great cultural and mystical connotation to wild ginseng among Chinese consumers.

Prices for wild ginseng sold in open air markets in China can be as high as \$1,500 to \$2,000 per pound.



Field-cultivated ginseng roots have a different appearance from those growing wild in the forest; they are also thought to be less potent and are, therefore, of less value. The market for field-cultivated ginseng is in value-added pharmaceutical products. Most, if not all, of the manufactured ginseng herbal products are made using cultivated ginseng. While there is a steady market for field-cultivated ginseng, profitability of production is marginal at present. Prices for cultivated ginseng have declined during the last decade due to an increase in supply, mainly from Canadian producers, as well as from the production of American ginseng in China itself.

Wild-simulated and woods-cultivated ginseng roots most closely approximate those of wild ginseng. Because of this, they bring a better price than field-cultivated roots, although not as high as wild roots. Good quality roots grown in woodland sites can bring up to 50 percent of the price of wild-harvested roots. Wild-simulated ginseng can be sold into the export market, but roots must be accompanied by the appropriate certification papers.

Production Considerations

Cultivated ginseng plants must be provided with growing conditions similar to those present in wild sites. This includes moist, well-drained soil high in organic matter and 70 percent to 80 percent shade. The best wooded sites are those with long-lived, deep-rooted deciduous trees, such as oak, hickory, beech, and walnut. Wild plants that indicate good ginseng growing conditions include rattlesnake fern, spleenwort, Jack-in-the-pulpit, and wild ginger.

Production methods

WILD ginseng grows naturally without human influence. Kentucky state regulations require that seeds adhering to plants dug during the season must be removed and planted within 50 feet of the collection site. The ripe, bright red berries should be planted $\frac{3}{4}$ to 1 inch deep using only a finger as a tool. Good ginseng stewardship also entails not harvesting all mature plants, but leaving some for the future.

WILD-SIMULATED ginseng is grown in untilled soil in a favorable forest location. Little site preparation is required other than raking away the leaf litter down to the topsoil. Seeds can be pushed into the soil individually or raked into the top one inch of soil. The leaf litter is then raked back over the planting. Once planted, no further labor is required until harvest, at which time plants are hand-dug.

WOODS-CULTIVATED ginseng is produced in tilled beds under the natural shade of hardwood trees. Site preparation includes clearing away rocks, understory growth, and undesirable trees. Well-rotted organic matter may be added to the beds. Seeds are either broadcast or planted in rows. Maintenance can include hand weeding, the continued removal of competing understory plants, thinning seedlings, and pesticide applications.

FIELD-CULTIVATED ginseng is grown in well-tilled raised beds in an open area. Leaves, rotted sawdust, or woodland soil may be added to the beds. Artificial shade is provided by wooden lath houses or black polypropylene shade cloth. Seeds are planted in furrows and mulch is added immediately after seeding. Maintenance consists of weeding, adding more mulch, fertilizing, and applying pesticides.

Seeds and transplants

Starting plants from seed is the cheapest and most common way to establish the planting initially. Plantings can also be started by purchasing one-year-old roots. While this method is more expensive than starting from seeds, the plants will produce seed one year earlier.

Seed harvest normally starts by the third or fourth year. Producers will need to decide whether to harvest seed to sell for additional income or to remove flower buds to allow larger root development.

Pest management

Some insect pests to anticipate are jumping plant lice, tree crickets, and aphids. Alternaria blight

and *Phytophthora* root and crown rot are the main disease concerns. Fungicides are routinely applied to ginseng cultivated under artificial shade. Deer and wild turkeys can be problems in some locations. Rodents, such as field mice, can do a great deal of damage, especially in wooded sites. Weed control, generally by hand, will be necessary in some plantings. Despite these potential problems, human theft remains the major concern of ginseng growers.

Harvest and storage

The harvest season for wild ginseng in Kentucky begins August 15 and ends December 1; wild ginseng may only be dug during this period. Sales to dealers occur between September 1 and March 30. These dates could change in any given year, so it is advisable to check with the KDA for verification.

Wild ginseng diggers are required to sign a "Ginseng Purchase Record" at the time they sell their roots to a state-licensed dealer. Diggers must also be able to provide information regarding the date and location of harvest. Permits are required for digging wild ginseng in national forests; ginseng harvest is not allowed on other federally owned or state-owned lands. Digging on private property does not require a permit; however, permission must be obtained from the landowner. Wild roots are hand dug and must be at least 5 years old before they can be harvested; roots for export must be at least 10 years old.

Harvest times for roots that have been cultivated will vary depending on the production method. Roots cultivated under artificial shade can be harvested after four to five years. Ginseng roots in woodland sites may require six or more seasons of growth. Harvesting from raised beds can be done by hand, with a potato fork or with a mechanical digger. Wild-simulated root is usually dug with a modified hoe or trowel.

Once harvested, roots are washed and then dried slowly, either in the open or in drying rooms with forced hot air. Roots can be stored in a dry,

rodent-proof area until sold. Cultivated roots can be expected to yield at least 1,500 to 2,000 pounds dry weight per acre with 100 to 250 dry roots to a pound. Wild-simulated roots may yield closer to 100 to 600 pounds per acre and contain 200 to 350 dry roots per pound.

Labor requirements

Labor requirements for ginseng production vary considerably depending on the intensity of cultivation and the production year. Intensively produced woods-cultivated ginseng in Kentucky may require as much as 3,000 hours per acre for land preparation and planting, an average of 600 hours maintenance per acre during production years, and 3,500 hours per acre for harvest and drying operations. On the other hand, the same size woods planting cultivated less intensively can require 3,600 hours total, over a period of six to eight years. An acre of wild-simulated ginseng can require 1,500 hours total, over 6 to 12 years.

Economic Considerations

Commercial ginseng production can be quite profitable; however, it requires an enormous commitment of time and money. Generalized budgets are difficult to establish due to variations in production methods. The lowest investment and production costs can be expected for wild-simulated ginseng, while the greatest expenses are required for intensively cultivated field-cultivated ginseng under artificial shade.

Ginseng values depend on production method, root appearance, and quality. Prices growers receive for ginseng roots (particularly wild-harvested) can vary tremendously from season to season. Wild ginseng is considered the most valuable, selling normally in the range of \$300 to \$350 per pound of dry weight to ginseng dealers in Kentucky. In 2006, ginseng in Kentucky was in short supply and prices rose above \$500 per pound in some cases. Next in value is wild-simulated, followed by woods-cultivated ginseng. These latter two production methods produce roots that most closely resemble wild roots and therefore sell in the range of \$100 or more per pound.

Field-cultivated ginseng roots, which do not closely resemble wild ginseng, are far less valuable per pound. Field-cultivated ginseng values have declined in recent years, with per pound prices going as low as \$8 to \$10 in the 1990s. In 2006 cultivated ginseng sold in the \$18 to \$35 range, with most sales around \$25 per pound, depending on quality. Wisconsin ginseng producers believe it costs approximately \$20 to \$22 per pound to grow four-year-old roots to harvest.

The following figures (2007) were adapted for Kentucky from information presented at the 1998 Specialty Forest Products/Forest Farming Conference and are based on ½ acre.

Method	Years to harvest	Total costs	Net profit
FIELD-CULTIVATED	3 to 4	\$33,500	\$(20,000)*
WOODS-CULTIVATED	6 to 8	\$24,135	\$5,865
WILD-SIMULATED	6 to 12	\$9,690	\$14,310

* Note: Parentheses indicate a negative number, i.e. a net loss

Selected Resources

Kentucky

- American Ginseng Program (Kentucky Department of Agriculture)
<http://www.kyagr.com/marketing/plantmktg/Ginseng.htm>
- Cultivating Ginseng in Kentucky, ID-60 (University of Kentucky, 1996) - Available at County Extension offices
- Medicinal Herb Seed and Root Sources for Planting in Kentucky, H0-73 (University of Kentucky, 2001)
<http://www.ca.uky.edu/agc/pubs/ho/ho73/ho73.htm>
- Selected Internet Resources for Herb Marketing (University of Kentucky, 2005)
<http://www.uky.edu/Ag/NewCrops/herbmarketing.pdf>

- Natural Resources: Ginseng (Daniel Boone National Forest, 2007)
<http://www.fs.fed.us/r8/boone/resources/plants/ginseng.shtml>
- Woods Production of Ginseng and Goldenseal (Robinson Station, University of Kentucky, 2003)
<http://ces.ca.uky.edu/robinsonstation/Horticulture/Medicinal%20Plants.pdf>

Other

- Alternate Field Crops Manual: Ginseng (University of Wisconsin and University of Minnesota, 2000)
<http://www.hort.purdue.edu/newcrop/afcm/ginseng.html>
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
<http://www.cites.org>
- Ginseng: A Production Guide for North Carolina (North Carolina State University, 1997)
<http://www.ces.ncsu.edu/depts/hort/hil/pdf/ag-323.pdf>
- Ginseng, Goldenseal, and Other Native Roots (ATTRA, 2004)
<http://attra.ncat.org/attra-pub/ginsgold.html>
- Ginseng Production Guide for Commercial Growers (British Columbia Ministry of Agriculture and Lands, 2003)
http://www.agf.gov.bc.ca/speccrop/ginseng/ginseng_production_guide.htm
- Good Stewardship Harvesting of Wild American Ginseng – Kentucky (U.S. Fish and Wildlife Service, American Herbal Products Association, and United Plant Savers, 2006)
<http://www.ahpa.org/portals/0/pdfs/Kentucky.pdf>
- Growing American Ginseng in Ohio: Selecting a Site (Ohio State University)
<http://ohioline.osu.edu/for-fact/pdf/0058.pdf>
- Growing American Ginseng in its Native Woodland Habitat in Proceedings from the 1998 Specialty Forest Products/Forest Farming Conference - *Table of contents & ordering info*
http://www.cinram.umn.edu/publications/proceedings_from_the_1998_specia.htm

- Producing and Marketing Wild Simulated Ginseng in Forest and Agroforestry Systems (Virginia Tech, 2000)
<http://www.ext.vt.edu/pubs/forestry/354-312/354-312.html>
- U.S. Fish and Wildlife Service International Affairs – Ginseng
http://www.fws.gov/international/DMA_DSA/CITES/plants/ginseng.html

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