Martin-Gatton College of Agriculture, Food and Environment
University of Kentucky

Center for Crop Diversification Crop Profile
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Christmas Trees

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Introduction

Christmas trees can be grown on relatively small parcels of land. This enterprise can fit in well with an existing farm or nursery operation. While Christmas tree production does have good profitability potential, it is also a long-term, risky investment requiring regular periods of intensive labor.

Marketing

Christmas trees can be marketed in a choose-and-cut operation, where the consumer selects their tree of choice on-farm and then assumes the cost of harvest and transportation. This type of operation is most successful when it is accessible to consumers and located near a populated area. Farms offering other Pick Your Own crops and agritourism activities often find that Christmas trees can add another customer visit to the farm during the winter season. Growers can also sell trees in a retail market, which means transporting the trees to a retail space and providing labor for tending the lot.

Selling trees wholesale generally involves contracting with a buyer for a specific type and number of trees. Direct wholesaling to local grocery stores, department stores and organizations is another possibility. Wholesale producers should promote their product by stressing the benefits of purchasing quality, locally grown, fresh trees over "imported" trees, as well as promoting their trees as more sustainable and environmentally friendly than artificial trees. Wholesale Christmas tree markets are well established, and smaller growers may have difficulty competing on price with large-scale wholesale producers.

Christmas trees can be produced on a wide variety of soils.

Market Outlook

According to the National Christmas Tree Association (NCTA), real Christmas trees represented a $2.56 billion market in 2018, up from $1.32 billion in 2015. NCTA's annual survey of 2,000 consumers in 2021 projected that 20.98 million real Christmas trees were sold in 2021, at a median price of $69.50. Growers should keep in mind that selling directly to consumers can result in higher prices, which can often offset the cost of direct marketing. Customers most frequently purchase real Christmas trees at chain stores, like Walmart and Home Depot, followed closely by on-the-farm purchases. Christmas tree retail lots, nursery garden centers, and non-profit organization fundraisers are other frequent points of purchase. According to the Real Christmas Tree Board, 71 percent of growers surveyed planned to increase

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prices 5 to 15 percent in 2022 compared to 2021. All growers surveyed reported increases in input costs of at least 10 percent over 2021.

Kentucky growers may have a competitive edge since locally grown trees are often fresher than trees from out-of-state sources. In addition, local producers do not have the transportation costs associated with imported trees. Recent increases in transportation costs can create additional advantages for local production. Still, local producers should carefully consider their marketing plan before planting Christmas trees for commercial production because markets remain competitive. In Kentucky, there is currently room for additional growers, particularly younger growers as many producers are past middle age. The greatest barrier for Christmas tree marketing is the increasing popularity of artificial Christmas trees among consumers. For tips for answering questions from customers, growers can visit https://www.realchristmastreeboard.org/resources/media-interview-guides-faqs/. The market outlook for Pick Your Own (U-Cut) growers varies with proximity to population centers. Growers utilizing and establishing a local following on social media benefit from sharing photos of families searching for and cutting their Christmas trees.

Production Considerations

Species selection

A number of different species of evergreen trees (conifers) can be grown as Christmas trees in Kentucky. The most popular and salable species are white pine (*Pinus strobus*), Virginia pine (*Pinus virginiana*), Scotch (Scots) pine (*Pinus sylvestris*), and Canaan fir (*Abies balsamea* var. *phanerolepis*). Needle cast problems have made Scotch pine a less desirable choice from a production standpoint, especially in areas where serious outbreaks occur. Other species include Colorado blue spruce (*Picea pungens*), fraser fir (*Abies fraseri*), and white fir (*Abies concolor*), although the latter two species are difficult to grow in Kentucky. More than one species should be planted to reduce the potential for losses from diseases and insects. Select the species/cultivars adapted to your climatic conditions and elevation. It is also important to match the tree species with the existing soil conditions.

White pine

Scots pine

Canaan Fir

Colorado Blue Spruce

Site selection and planting

Christmas trees can be produced on a wide variety of soils. While good agricultural land is ideal, some species can even be grown on marginal soils, such as reclaimed mine land. A moist but well-drained site that is level or slightly rolling is best. Planting trees on steep slopes may prevent trunks from growing straight, making it more difficult for Christmas tree buyers to have a straight tree in their stand. Additionally, one of the most important aspects in the establishment, growth, and profitability of Christmas tree production is maintaining a proper soil pH, as soil pH can greatly impact the ability of plants to absorb nutrients that are present in the soil. Soils suitable for Christmas tree production reside in the 5.0-7.0 pH range.

Growers who plan to convert forested land should clear the land and establish a beneficial cover crop one or more years before planting. If pastureland is used, it may need heavily mowed, plowed, or herbicide-treated strips for planting seedlings. Herbicide-treated strips, or some other means of controlling weeds adjacent to the trees, will be needed no matter how the land was used in the past. Because Christmas trees are a long-term crop, growers might want to interplant them with a compatible annual cash crop so that the land gives a return on the investment while the trees are growing. Options include corn, soybeans, wheat, potatoes, peas, beans, or forage crops. Growers should note that interplanting requires a significant level of management. See the University of Kentucky publication Alley Cropping (FOR-111) for details at http://www2.ca.uky.edu/agcomm/pubs/for/for111/for111.pdf.

In-row spacing should be a minimum of 5 feet depending on the species and the maximum size/age of mature trees. The distance between rows depends on mowing equipment. To plant 1,000 trees per acre, spacing would be about 6 x 7.25 feet or 5.5 x 8 feet.

It can take five to seven years for a tree to reach the optimum market size of 5½ to 7 feet tall.

Planting material may be container-grown seedlings or bareroot seedlings grown in a nursery bed. Stock should be planted in March or April in the Commonwealth. Planting can be accomplished with a planting bar (dibble), a spade, or by machine. The trees need adequate water for at least two years after establishment. When rainfall is insufficient, trees can be watered with a water wagon, tank or truck, or by drip irrigation. Applying woody mulch at the time of planting conserves moisture and reduces weed competition. Always ensure that your woody mulch has been properly aged due to nitrogen sequestration from the soil if applied while mulch is still freshly chipped.

Maintenance

Christmas trees require regular maintenance from the year of planting until harvest. Monitoring the farm for pest or cultural problems on a weekly, bi-weekly, or monthly basis, depending on the season, is recommended. Corrective pruning should be done the first year after establishment until harvest. Beginning in the third year and continuing every year until sold, pine trees must be sheared to the Christmas tree's classical conical shape. Shearing of pines is usually done in late May to June after the new growth spurt is complete. The specific date varies with weather. Some true firs require less shearing, although all species require annual shearing to maintain their shape. True firs, such as Canaan firs and Concolor firs, should be sheared from late summer through the winter and offer the advantage of having their shearing spread over a much longer period.

Equipment for shearing includes rotary pruners, which can save significant labor costs for an investment of less than $1,000, though many Kentucky Christmas tree growers choose to hand shear their trees for more customization that fits each tree's shape and needs.

Pest management

Farms should be monitored for pests and diseases beginning in March and continuing through October. Potentially destructive insects include sawfly, aphids, bagworms, pine-tip moth, white pine weevil, and pales weevil. Diseases, such as needlecasts, needle blights, and root rots may decrease the value of the trees or kill them outright. Deer, voles, and rabbits can also cause feeding or rubbing damage. Livestock should not be allowed to roam in unprotected plantings due to the resulting mechanical injury and soil compaction. Weed control is achieved by mowing, applying herbicides, mulching, or a combination of these methods.

Harvest

Due to variations in growth rate, not all trees of the same age will be harvestable the same year. A single year's planting could be harvested over a period of three years. It can take five to seven years for a tree to reach the optimum market size of 5½ to 7 feet tall. Tree species that turn yellowish in late fall may be sprayed with a commercial coloring dye in late September or early October for increased marketability that season. Small chain saws or bow saws are commonly used to cut Christmas trees. U-Cut operations use hand saws only.

Labor requirements

Christmas tree production has periods of intensive labor, requiring time to monitor and manage plantings. Presuming 1,000 trees are planted in a solid 1-acre block (with some space left for access routes) and harvested over three years, per acre labor needs are approximately five hours for site preparation, 40 to 48 hours for planting, 24 to 48 hours during establishment years, and 55 to 70 hours for harvest years. As trees grow larger, it may take up to 20 hours or more per acre just for shearing. The total labor commitment may total 125 to 175 hours per acre over the seven-year Christmas tree cycle. Growers should avoid planting all trees in a single year. Instead, a seven- or eight-year rotation should be used. Growers should divide the total area to be planted by seven or eight and plant 1/7 or 1/8 of the area each year, so that trees are ready to harvest each year. U-cut growers might want to start with a smaller area and build to the 1/8 rotation while they develop a customer base. Otherwise, they can end up with large, unharvested trees that take up space which could have been used to plant trees for future harvest.

Economic Considerations

Returns from Christmas tree production may appear high; however, a grower must make substantial investments for both labor and capital for five to seven years before realizing any positive net returns. Initial investments include land preparation, purchase of plants, plant establishment, mowing equipment, and possibly the installation of an irrigation system. Growers have used walk behind mowers, but garden tractors or zero-turn mowers are becoming more common.

The following economic data is based on 1 acre of manually planted Christmas trees (1,000 trees), 75 percent of which will be harvested in equal amounts during years five, six, and seven on the farm. Total production costs for establishing and growing these trees over a seven-year period will generally range between $6,000 and $7,200. Because labor costs account for nearly one-third of this total cost, the availability of family labor versus hired labor will greatly affect total cash outlay. Other variables impacting total costs include operation size, types of trees grown, cultural practices, and accounting for tree loss. Greens obtained from pruning the bases of trees, or from poor quality trees or culls can be sold for wreaths, garlands, and other Christmas decorations, thus providing some income in the early production years and supplemental income during harvest years.

Christmas trees are usually harvested starting five to seven years after planting. Assuming 10 to 35 percent of the total 660-tree population (which accounts for tree mortality from the 1,000 originally planted) is sold annually at an average price of $60 per tree, an acre of Christmas trees can generate between $3,960 and $13,869 in annual gross revenues. The cost of establishing the Christmas tree stand is typically not recovered until the sixth or seventh year of production, so producers should be comfortable with investing in the establishment and production costs of Christmas trees until later returns are realized. If trees are sold at wholesale prices, returns above all costs for the 10-year period are estimated at about half of returns from retail sales. Ideally, growers should use a budget worksheet (examples are listed below in Selected Resources) and plug in numbers for their specific farm and planting.

Selected Resources

- Christmas Trees 101 Webinar recording (Kentucky Horticulture Council, 2022) https://www.youtube.com/watch?v=lbYrP2Hk0EI
- Forest Farming: Christmas Trees, FOR-116 (University of Kentucky, 2009) http://forestry.ca.uky.edu/sites/forestry.ca.uky.edu/files/for116.pdf
- Caring for Christmas Trees, FOR-105 (University of Kentucky, 2007) http://forestry.ca.uky.edu/sites/forestry.ca.uky.edu/files/for105.pdf
- University of Kentucky Christmas tree publications http://forestry.ca.uky.edu/ntfp-pubs
- Kentucky Christmas Tree Association (KCTA, 2009) https://kychristmastreefarms.com/

- Common Diseases of Spruce in Kentucky (University of Kentucky, 2016) http://plantpathology.ca.uky.edu/files/ppfs-or-w-24.pdf
- Christmas Tree Farm Budget Worksheet (University of Maryland Extension, 2021) https://extension.umd.edu/resource/rural-enterprise-series-christmas-tree-farm-budget-worksheet
- Christmas Tree Production (Penn State Extension, 2013, includes sample budget worksheets) https://extension.psu.edu/christmas-tree-production
- Christmas Tree Production Budgets (The Ohio State University, 2000) https://farmoffice.osu.edu/farm-management/enterprise-budgets#Christmas
- Christmas Tree Enterprise (Western Maryland Research and Education Center, 2003) https://extension.umd.edu/sites/extension.umd.edu/files/2021-03/RES_08Christmastree.pdf
- Christmas Tree Production in North Carolina website (North Carolina State University https://christmastrees.ces.ncsu.edu/christmas-tree-production/
- An Introduction to Growing Christmas Trees in Virginia (Virginia Cooperative Extension, 2015) https://pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/420/420-080/420-080_pdf.pdf
- Tree Crops for Marginal Farmland: Christmas Trees, PB-1463 (University of Tennessee, 2002) https://extension.tennessee.edu/publications/Documents/PB1463.pdf (32 pp)

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Photos courtesy of Pexels.com (pgs. 1,3); Steven Katovich, Bugwood.org (white pine, Scots pine, and Colorado blue spruce, pg. 2); and T. Davis Sydnor, The Ohio State University, Bugwood.org (Canaan fir, pg 2). **June 2023**