Virginia Cooperative Extension

PUBLICATION 420-080

Introduction to Growing Christmas Trees in Virginia

James E. Johnson, Extension Forester, Virginia Tech
John L. Torbert, Forestry Research Associate, Virginia Tech

Each year many landowners in Virginia consider Christmas tree farming as an alternative enterprise for their unused open land. The number of growers in the Commonwealth is increasing steadily, and currently Virginia ranks eighth in the nation in Christmas tree production, with about 1.8 million trees harvested in 1990.

There is not a lot of detailed information available about the Christmas tree industry in Virginia. Most estimates say that about 1,400 growers contribute gross sales of $20 to $30 million per year. Most of these growers are part-time, and many are so new to the industry that they have not yet sold any trees. The average farm in Virginia is about 15 acres in size, with farms larger than 30 acres uncommon. (See Figure 1.)

This publication provides a broad overview of Christmas tree production in Virginia. Potential growers should certainly seek more detailed information from county foresters and Extension agents, as proper planning can be the key to a successful plantation.

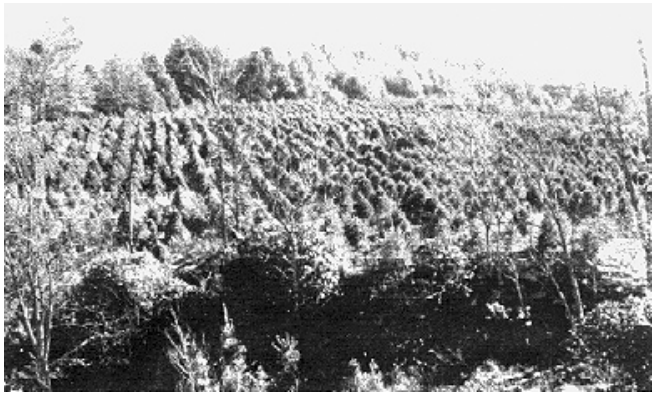

Figure 1. The average Christmas tree farm in Virginia is 15 acres in size.

Advantages of Growing Christmas Trees

Most agricultural and horticultural crops require larger investments and more intensive management than timber production.

Christmas tree production is a compromise between short-term, intensively managed crops and long-term timber production. As such, it shares many of the advantages associated with each type of production:

1. Christmas tree rotations are much shorter than timber rotations. It takes six to 12 years to grow a marketable Christmas tree. Timber production requires 20 to 30 years (or more, depending upon site and tree species). Besides providing income sooner, Christmas trees do not tie up land and capital resources as long.

2. Christmas trees can be grown economically on small acreages. Timber production and many agricultural crops require large acreages for economical management. Although there are marketing disadvantages associated with very small plantations, Christmas trees can be and are sometimes grown on farms of 1 acre or less.

3. Christmas trees require less ground cover disturbance than that needed with many agricultural crops. Ground vegetation is controlled, not removed, and little bare ground is exposed. This vegetation helps prevent the erosion that commonly occurs with agricultural crops. Cover disturbance can be greater than with timber production and properly grazed pastureland, however.

www.ext.vt.edu

Produced by Communications and Marketing, College of Agriculture and Life Sciences, Virginia Polytechnic Institute and State University, 2009

VirginiaTech 1872 Invent the Future

VIRGINIA STATE UNIVERSITY

4. The economic returns of growing Christmas trees are favorable, as discussed later. Per-acre returns are far greater than timber returns and are greater than the returns from many agricultural and horticultural crops.

5. Capital investment for machinery can be low for Christmas tree production. On small acreages, all work can be performed with hand-operated machines and tools. Reduced machinery requirements allow production on many sites too rough or steep for other crops.

6. Christmas trees can be produced on land only marginally productive for agriculture. They can be grown on sites too steep or rocky for other crops, and many species will grow on soils too infertile for good crop or pasture production. While site requirements for Christmas trees are less than for other crops, there are biological and logistical constraints that limit production on extreme sites.

7. Many growers begin production for reasons other than economic returns. A Christmas tree plantation offers the opportunity to get fresh air and exercise while being productive. It is also often used to teach good work habits to children.

Christmas Trees as an Investment

The decision as to whether or not to grow Christmas trees can be partially decided by economic considerations. Much time and some money must be invested in order to produce a crop of trees, and it is good to have some upfront idea as to what these time and money requirements are.

Experienced growers estimate that once the trees are above 3 feet tall, each acre requires about 40 man-hours per year of care. Furthermore, many cultural treatments must be done at certain times of the year. Shearing is often confined to a five-week period during early summer; mowing is required as needed throughout the growing season. Frequently, growers will plant too many trees and find they must hire outside help in order to keep up with all the cultural practices that need to be done in later years.

There are many costs of producing Christmas trees that must be borne during the early years of the plantation. It is not until some trees are large enough for harvest and sale that a positive cash flow begins to develop. Production costs can include the following:

- equipment (mowers, sprayers, shearing equipment, etc.)
- labor (planting, pest control, shearing, harvesting, etc.)
- seedlings
- chemicals (herbicides, insecticides, fertilizers, etc.)
- miscellaneous items (signs, flagging, road maintenance, gates, etc.)

For all of these items, cost estimates can range form $3,000 to $12,000 per acre. Total costs will often depend upon the size of the operation. For example, a small grower with less than 10 acres may invest only in a small riding tractor or walk-behind, self-propelled mower; a backpack sprayer, and shearing equipment.

Larger growers will need to rely on tractor-mounted equipment and may easily invest $10,000 or more in equipment.

A 1989 study by the Virginia Department of Forestry evaluated costs and expected returns based upon data provided by 15 experienced white pine growers in the state. They calculated that the internal rate of return from producing white pine Christmas trees on average sites is 21 percent. However, there are many risks to growing trees, and these are not usually evaluated in economic terms. Valuable trees can succumb to drought, wildfire, insects, diseases, and mice damage. Marketing can be tricky, and there are no guarantees of high prices at the end of the rotation.

Christmas Tree Production

Site Selection The first consideration in establishing a Christmas tree farm is site selection. On land already owned, the most suitable planting areas, appropriate tree species, and logistical constraints should be determined. Christmas trees should not be planted on poorly drained soils. It is strongly recommended that growers contact their local Virginia Department of Forestry (DOF) or Soil Conservation Service (SCS) office for free advice on site considerations. Site characteristics or location may limit marketing options even if the site is suitable for production.

Species Selection

There are many species of Christmas trees that can be grown in Virginia. These include white pine, Scotch pine, Virginia pine, Norway spruce, blue spruce, Fraser fir, balsam fir, and Douglas fir. (See Figure 2.)

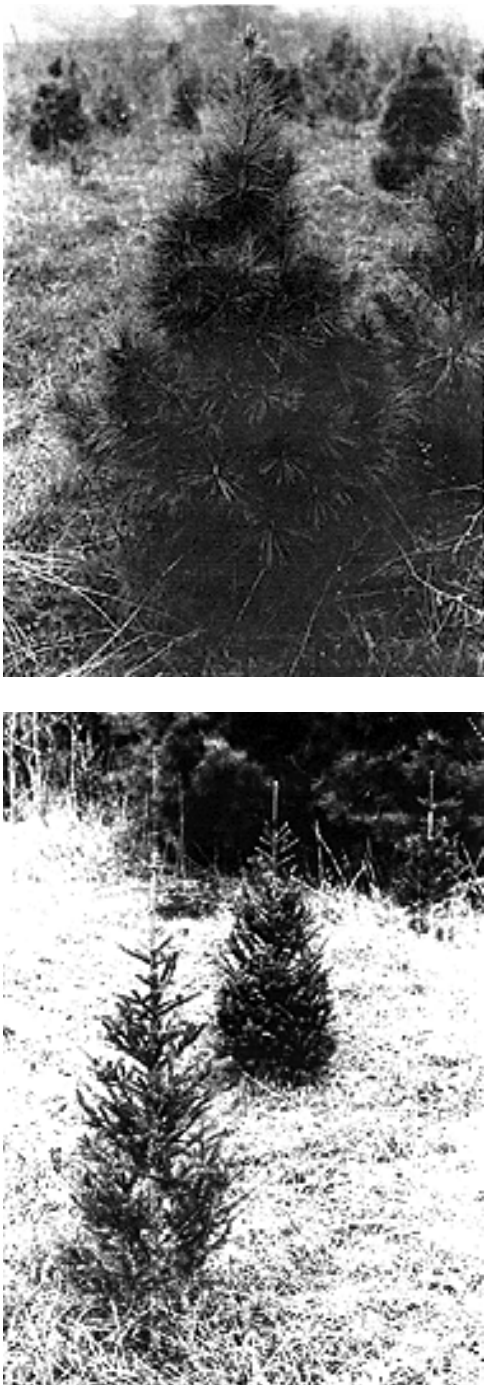

Figure 2. Species such as white pine (top) and Fraser fir (right) grow well in some parts of Virginia.

Not all species, however, will grow in all parts of the state. Each species has certain site requirements, and growers should check with their DOF forester to be certain that their site can grow the species of interest.

Species also differ with respect to their marketability, establishment costs, and management requirements. White pine may be the easiest and least expensive Christmas tree to produce, whereas Fraser fir requires the most expense. On the other hand, there is generally a greater demand for Fraser fir and its harvest values are much higher than those of white pine. Before deciding which species to plant, a grower should consider marketing strategy and site availability to determine which species would be appropriate.

Plantation Planting

Proper planning before planting ensures the efficiency of subsequent operations. (See Figure 3.) Planning includes determining the numbers of trees to plant and designing the plantation layout. The most serious mistake is excessive planting without consideration of subsequent labor requirements and marketing. It is recommended that growers plant only a portion of their land at one time, instead of all at once. For instance, if it takes eight years to grow trees, 1/8 of the total planned area should be planted each year. Often, new growers plant all of their land in one or two years. As each new phase of learning is reached, they must learn and carry out practices on large acreages. When mistakes are made during the learning process, they usually are large mistakes.

Figure 3. Proper treee spacing is an important consideration in plantation planning.

Planting trees on a rotation basis also distributes the workload over the years and enhances marketing. When planting in rotation, markets can be built up gradually. If many trees are planted at one time, large markets must be found quickly, then marketing efforts abruptly stop while a new crop is grown. Most new growers should plant only small acreages (1/2 to 1 acre) each year until a full rotation is completed. With this scheme, the grower learns the techniques and can better decide whether or not to invest more heavily in larger plantings. Far too many realize that Christmas tree production isn't for them only after they've planted many acres.

Landowners must determine total acreage (or total number of trees), tree spacing to determine number of trees per acre, and must design annual planting blocks that will allow efficient operations. Often, complete fields are planted without thought of access. In this event, whole rows of trees must be removed to provide access, or excess labor must be used to resolve the problem. Another common mistake is planting rows too close together, which restricts the use of machinery.

Site preparation

Once site selection and species selection have been made, and plans for the location and number of trees are laid out, the site can be prepared for planting. Inadequate site preparation creates future problems, which often require extensive hand labor to correct, or even cause plantation failure. Depending on site conditions, site preparation may consist of any or all of these operations: eradication of existing trees and shrubs, removing physical obstacles (stumps, logs, etc.) to permit cultural operations, and controlling grasses and other herbaceous vegetation. Recently cutover timberland requires the most extensive site preparation efforts. It may often be more economical to pay more for cleared land than to try growing trees on cutover lands because of reduced site preparation efforts and subsequent maintenance efforts.

Site preparation should be completed the fall before planting; herbicide treatments should be done by late summer to early fall.

If shrubs or trees exist on the area, site preparation may need to be initiated several years before.

Seedling Acquisition

Seedlings should be ordered several months before they are to be planted (orders placed after January 1 often cannot be filled). Late winter through early spring (mid-April) is usually the recommended time for planting. Proper storage, handling, and planting of seedlings are fairly easy to carry out if guidelines are followed. Allowing seedlings to dry, freeze, or overheat is a common cause of seedling mortality the first year. Local DOF foresters can provide seedlings at a modest cost and demonstrate proper handling and planting procedures. The DOF also lends hand-planting tools and rents machine-planting equipment to growers. (See Figure 4.)

Figure 4. Tree planting is commonly done either by machine, shown here, or by hand.

Weed Control

Weed control is especially important during the first few years following planting. (See Figure 5.) Competition from grasses and other vegetation can kill trees or limit their growth by blocking sunlight and competing for soil moisture. Tree quality can be reduced by vegetation that restricts lower branch growth. Weed control requires spraying herbicides in early fall and/or early spring in spots around each tree or in bands along the planting row. In conjunction, the area between the tree rows are usually mowed about three times each year.

Figure 5. Weed control is especially important during the early years when the plantation is becoming established.

Growers should use caution and follow label instructions when using herbicides. Determining proper herbicides, spray volumes, and timing for controlling specific weeds can be complicated, but VCE has extensive information, including a Christmas Tree Pest Management Guide, to assist in determining proper herbicide application. Growers can contact their local Extension office for more information.

Shearing

Beginning about the third year after planting, trees must be sheared each year. Shearing consists of cutting branches to give the tree a desirable "upside-down cone" shape. Improper shearing is the primary cause of non-merchantable trees and abandoned plantations. Even with inadequate vegetation control, trees will often survive and be marginally marketable; but, improper shearing usually eliminates marketability or requires extensive corrective pruning. Consequently, it is critical to learn proper shearing techniques. (See Figure 6: Shearing hand tools.)

Figure 6. Shearing hand tools.

Once the trees are 3 feet tall, proper shearing requires considerable manpower. Although small trees are sheared quickly, it can take 10 to 30 hours or more to shear 1,000 larger trees. With pine, shearing must be done during a short time period in early summer. When shearing starts, landowners often wish they had planted fewer trees. Assuming 1,200 trees per acre, and 1/8 of the plantation is in each age class from one to eight years old, an average person can shear a total of about 3 acres with a knife during three 8-hour-day weekends. Very often, new growers annually plant this acreage or more and must hire outside help (if it's available) to shear.

Fertilization

Generally, pines (the most commonly planted Christmas trees in Virginia) do not require high levels of nutrients; and on most sites, tree response to fertilizer does not justify the expense. Firs and spruces, however, are more nutrient-demanding and are fertilized annually in the winter or early spring. Nitrogen is commonly the primary nutrient applied, but often complete fertilizers, containing nitrogen, phosphorus, and potassium, are used. Growers should contact their local Extension office for instructions and cost associated with soil sampling and fertilizer recommendations.

Pest Control

Insect and disease pests can be major problems in some plantations. When present, they must be controlled quickly to prevent damage that often may be substantial. Insecticides and fungicides for pest control are not usually sprayed regularly; instead, problems are allowed to develop until they are large enough to justify the expense of spraying. Exceptions to this include those areas of the state where Procerum root disease is common. In those areas, insecticide is normally sprayed to control pales weevil, a vector in spreading the disease.

It is crucial that pesticides be applied at proper doses and times, as stated on the product label. One week too late or too early could not waste pesticide and labor, but the ensuing damage caused by ineffective control can result in heavy tree damage. As with herbicides, the VCE Pest Management Guide provides up-to-date information on specific pesticides, and local VCE agents can provide additional requirements.

Wildlife pests cause problems in some plantations by feeding on new growth or, in the case of deer, rubbing their antlers on trees. In areas with large deer populations, they may feed on certain tree species, and successful control techniques are limited. Voles cause damage in plantations by girdling the bases of trees. Control techniques, including poison-baiting and proper vegetation control, can significantly reduce their damage.

Coloring

In recent years, many growers have begun to spray their mature trees with a colorant in the fall prior to harvest. This practice imparts a deep, rich green color to the trees and masks the natural fading or yellowing common with Virginia pine, white pine, and some varieties of Scotch pine.

Christmas Tree Marketing

Christmas trees are sold by three methods: wholesale, choose-and- cut, and retail lots. Growers who sell their trees wholesale require fewer resources to market their trees, have fewer risks, but generally earn less money. Services provided by producers range from simply marking harvestable trees to cutting, baling, loading, and delivering to the retail lot. Although wholesale trees are shipped great distances, large quantities are needed to justify long hauls. Most trees grown in Virginia are shipped less than 1-1/2 hours from the plantation. Combined loads from several plantations may be shipped farther; some wholesale brokers buy small quantities of trees and combine them to resell large loads to retail lots.

Choose-and-cut farms, where consumers select and cut their trees in the plantation, are popular for marketing trees. Choose-and- cut prices are generally greater than wholesale prices, so revenues are higher. Production and marketing costs are greater too, however. On average, 1/3 to 1/2 man-hour of marketing labor is needed per tree sold. Plantations must be "spruced-up" for marketing, and access to and within the plantation is a must. The size of potential marketing areas is small (25-50 miles), and local competition varies from none to heavy.

Retail lots can provide the highest revenues, but costs and risks are high. Tree and lot operation costs are high, and the risk of having unsold trees left over is high. With choose-and-cut and wholesale marketing, trees are usually not cut until sold. On retail lots, trees must be cut before being sold; cut trees that are unsold by Christmas time have a negative value since the retailer must haul them away. Most Virginia growers do not sell their trees on retail lots.

As non-growers enter the industry, competition is becoming keener and keener. Already the large number of trees for sale in some areas has depressed prices in recent years. Consumers expect top-quality trees, so trees of poorer quality may be non- marketable in many areas. New growers are cautioned to pay close attention to marketing one to several years before the trees reach a harvestable size.

Additional Help

Growing Christmas trees requires learning many skills, and there are many opportunities for learning. Virginia Cooperative Extension (VCE) provides educational programs and materials. A series of Extension bulletins teaches the principles and techniques for growing and marketing Christmas trees. The VCE produced and also distributes the videotape, Shearing Christmas Trees.

VCE also coordinates education programs with other agencies and organizations. Annual management workshops are held across the state each June to demonstrate proper shearing and other cultural practices. For questions regarding educational programs or materials, contact your local Extension office or:

Christmas Trees
Department of Forestry
Virginia Tech
Blacksburg, VA 24061-0324

The Virginia Department of Forestry (DOF) provides valuable help to growers. Besides participating in educational programs, their foresters assist landowners one-on-one in the field with the selection of species and sites, site preparation, planting, and more. They also provide quality seedlings of many Christmas tree species as low cost. Contact your local DOF office or write:

Virginia Department of Forestry
PO Box 3758
Charlottesville, VA 22903-0758

Several trade associations provide help to growers. The Virginia Christmas Tree Growers Association (VCTGA) conducts and supports educational programs, promotes the industry in Virginia, and provides help with marketing. Members receive the association newsletter four times each year, plus the trade magazines, Christmas Trees and Limbs-n-Needles. The National Christmas Tree Association, affiliated with the VCTGA, conducts similar programs at the national level and provides the trade magazine, American Christmas Tree Journal, to its members.

The Mount Rogers Christmas Tree Growers Association consists primarily of producers in far Southwest Virginia and northwestern North Carolina. This group promotes growth of the industry in that area and has a contract that allows members to collect Fraser fir seeds for their growers. For more information on trade organizations, contact your local Extension office or DOF office, or write to the Virginia Tech address listed above.

Because of unknown markets and resource requirements for growing Christmas trees, landowners may decide that production of other crops is more appropriate for their property. VCE offers educational pro-

grams and materials on many crops, such as berries, mushrooms, and timber. Contact your local Extension office for more information. Landowners should also recognize that their local Virginia Department of Forestry office can provide many services for producing timber on private woodlands.

Reviewed by Kyle Peer, superintendent, Reynolds Homestead Forest Resources Research Center