



## William T. Kemper Center for Home Gardening

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### Selection and Care of Christmas Trees

The Christmas tradition was first documented in 336 AD when an early Roman calendar positioned December 25 as the day of observance. Special foods, decorations of greenery in the home and gift giving were part of that custom. By 1100, Christmas was recognized as the most important holiday in Europe and St. Nicholas symbolized the tradition of gift giving. During the 1500s, a religious movement that led to the Reformation and the birth of Protestantism caused many Christians to consider Christmas a pagan celebration because it included many non-religious customs. In the 1600s, Christmas was outlawed in England and many British colonies in America, though gift giving continued and prevailed.

A European legend tells how in the 1700s, St. Boniface persuaded the Teutons to give up their cruel practice of sacrificing a child before an oak tree during the midwinter festival. Disgusted by this tradition, he suggested cutting down a big fir tree, take it home and celebrate around it with the innocent children. He honored the fir tree because it symbolized immortality; the leaves were always green and the top pointed up to the heavens. During the 1800s, decorating a tree and sending cards became popular. The custom of decorating a Christmas tree spread throughout Germany into the rest of the European community and England. It came to America with the German immigrants and because this custom was favored by British royalty, it became fashionable in the homes of many Americans of English descent.

Today, the tradition of decorating a Christmas tree lives on for about two-thirds of the American population. Half of these people will buy real Christmas trees while the other half will buy artificial trees. This year at least 100 million seedling conifers have been planted as Christmas trees seedlings and about 40 million trees will be cut and sold. Of all the Christmas trees, 90 percent of the trees are planted and raised on farms and ten percent are cut from native stands. In the U.S. alone, over one million acres are devoted to Christmas tree production; more than 12,000 growers supply trees at Christmas time.

#### **Types of Christmas Trees**

While Christmas trees are grown in all 50 states, the Northwest is the highest producing region in the U.S. Southern states now have active Christmas tree farms since hybrid trees were generated that can grow much better in this region than natural selections.

The earliest choice for Christmas trees in the U.S. was the northern white cedar (*Thuja occidentalis*) which is not a true cedar at all. Instead, we commonly call it an arborvitae as it has overlapping scales and not needles. In the late 1800s, balsam fir (*Abies balsamea*) became popular as a Christmas tree. In the 1930s, balsam fir gave way to the Scotch pine (*Pinus strobus*), native to Europe and Asia. Scotch pine remains one of the most popular choices today along with a number of other trees, including spruces and firs.



Christmas tree suppliers use to cut trees from the wild and transport them back to the consumer. Because sources of natural stands have become more remote, the quality of trees declined. Moreover, Eastern forests are prominently spruce and fir which tend to not hold their needles as well as the pines. Early harvesting and long shipping distances therefore resulted in trees which are much drier and have poorer needle retention. This has forced suppliers to consider developing plantations where harvest and tree quality can be controlled. In addition, there has been a shift towards longer-needled, bushier trees that hold their needles for many weeks. Now, pines in general and Scotch pine in particular as well as firs, notably Douglas fir, are the most popular choices.

## Pines

Pines are attractive as Christmas trees because of their long needles that are rarely less than 1.5 inches long and occur in small bundles of 2 to 5 per cluster. They are the fastest growing of all Christmas trees, but were not used extensively in this country until the 1950s. Since that time, the popularity of the pines has steadily increased. The two pines most prominently grown as plantation Christmas trees in Missouri are Scotch pine and Eastern White pine.

### *Scotch Pine*

Native to Europe, Scotch pine (*Pinus sylvestris*) is found over most of the continent and much of northern Asia including forested areas of Germany and Russia. Though it has been a commercially important timber tree in Europe, this has not been so in America. In U.S. forests, Scotch pine can grow to between 60 and 90 feet tall. In Europe and under more favorable growing conditions, trees in excess of 150 feet have been recorded.

Scotch pine can adapt to deep, well drained moist soils as well as dry, sterile sands and thin soils. It may also be found on rocky outcrops to elevations 8,000 feet. The flexibility of this tree to grow under varied conditions makes it particularly attractive and useful as a durable Christmas tree able to withstand the indoor climate for many weeks. There are many varieties that differ in length, color and stiffness of the needles. The stem form is also quite variable and it is common to find a crooked stem even with the best varieties.

Once planted, Scotch will grow rapidly and attain a Christmas-tree size in six to seven years. It will respond well to shearing and retains its needles and color for four to six weeks after harvest. You can identify a

Scotch pine by its needles which are 1.5 to 3.5 inches long. Borne in sheathed clusters with two needles each, the needles often are twisted and the terminal bud is typically orange-red with the small scales turned backward; the tree has an overall dull blue-green color.

### **White Pine**

The Eastern White pine (*Pinus strobus*) occurs naturally throughout southeastern Canada, the Lake states, New England and the Appalachian mountains southward to Georgia. White pine ranks as one of the principle timber woods in America now exceeded by the southern pines collectively, Douglas fir, oaks and ponderosa pine. It is not noted for its strength as a wood, but is non-resinous, straight-grained, easy to cut and polishes well. It has been planted more widely than any other American tree and will outgrow all other native trees under ideal conditions. Next to the Californian sugarpine, Eastern White pine is the tallest pine in the U.S.

White pine thrives on deep, sandy-loam soils, but will also do well in many other soil types as long as adequate moisture is present. As a Christmas tree, white pine has become quite popular because of its soft needles and overall appearance, mild evergreen smell and fair-to-good needle retention. Although in demand, most suppliers of white pine are local because of its tendency to be brittle and inability to ship well. In Christmas tree plantations, it will grow fast and attain harvestable size in six or seven years. Its natural open form requires that growers shear the trees to produce a more bushy appearance. Its upright habit and balanced crown density make it a good choice as a holiday tree. However, the branches can be very brittle and will not support heavy ornaments.

White pine can be identified by its soft needles, three to five inches long and in clusters of five. A papery sheath surrounds their bases during early spring and summer. The branches are positioned in characteristic whorls. Bark on the trees is smooth and easily damaged so that care must be taken when setting it up as a Christmas tree.

### **Spruces**

The spruces have been popular Christmas trees generally because of their symmetrical shape and very supportive branches. These trees grow relatively slowly compared to the pines, but remain one of the traditional Christmas trees, especially in the northern part of the U.S. and Canada. The only drawback to using spruce is their tendency not to retain needles for long periods. Amongst all Christmas trees selections, spruce will shed its needles first. This, coupled along with the characteristically sharp needles and relatively long growing period required to produce a sizable tree, makes spruce less desirable overall.

Through the 1950s, black spruce was fourth on the list in popularity as a Christmas tree selection with white spruce following close behind. More recently, blue spruce, used commonly as a landscape ornamental, is finding its way into the Christmas tree trade. It is the only commonly cultivated Christmas tree in Missouri among all spruces grown.

### **White Spruce**

The white spruce (*Picea glauca*) is native to North America stretching from Alaska southward to Montana and the Lake states north to New York and the New England states. The development of Christmas tree plantations has extended its range into the lower mid-western states like Missouri and Iowa.

White spruce is best grown in cooler climates or higher altitudes farther south. It does well on average soils with good moisture and is especially suited to rolling hills where air circulation is good.

The tree holds its needles fairly well and when crushed in the fingers, will produce a pungent odor which can be disagreeable to some. With the exception of needle loss, it has all the desirable features of a good Christmas tree. Its branches are slender and its blue foliage is dense and consistent for a long period after harvest. The needles are incurved, short, 0.5 to 1.0 inch in length, four-sided and sharp. Ten to fifteen years are generally required to produce a good Christmas tree which makes it traditionally more expensive to buy. However, growers rarely shear white spruce, thus reducing its maintenance requirement.

### ***Blue Spruce***

Commonly known as Colorado Blue spruce (*Picea pungens*), this tree has begun to be more commonly accepted as a Christmas tree choice, especially when a small tree is desired. It also makes a good living Christmas tree when planted outdoors after the holidays. It is one of the most admired and widely known native North American trees and grows naturally in a small area in the central Rocky Mountains. Although found at elevations of 6,000 to 8,500 feet, trees may extend to elevations over 10,000 feet. Blue spruce is quite adaptable to a variety of soil types and moisture conditions and does well in moderately rich, dry-to-moist gravelly or rocky soils.

Perhaps best known as a landscape ornamental, blue spruce has been the subject of much selection. The development of new hybrids has promoted the Christmas tree industry to consider it as an adaptable, although slow-growing, tree. Blue spruce is considered more desirable as a Christmas tree than red, black and Engelmann spruce because of its ability to retain needles longer. As with other spruces, needle retention is a prime consideration for Christmas trees and some caution should be taken if plans are made to keep the tree up beyond 4 weeks. A featured characteristic of blue spruce is its waxy coated needles which give it a unique blue appearance. This waxy layer can be rubbed off to expose the underlying deep green needles.

### **Firs**

It sometimes is easy to confuse firs and spruces at a distance. However upon close inspection, firs have longer and softer needles which are two-sided and flat rather than four-sided and pointed like those of the spruces. Amongst all the firs used as Christmas trees, Balsam fir and Douglas fir are the most commonly encountered. Both are desirable because of their long needle retention and fragrance. Neither is commonly grown in Missouri as plantation Christmas trees and so are largely imported from other states on the west, east and northern sections of the country.

### ***Balsam Fir***

A favored tree for Christmas in central and eastern areas of the U.S. is the Balsam fir (*Abies balsamea*). It occurs naturally in Canada through Ontario and the Maritime Provinces. One of ten native American firs, it is found in northern Minnesota, Michigan, New York and New England on low, swampy land. It is also known in lower states down through Virginia at higher elevations in the Appalachian Mountains.

Because of its pleasing evergreen smell, it is a very popular Christmas tree and commonly imported to the Midwest. Needle and color retention is excellent even in dry rooms over and beyond the holiday period. Above all, balsam fir is perhaps the most symmetrical tree amongst the evergreens making it particularly good as a Christmas tree selection.

Balsam fir can be identified by its short needles measuring 0.5 to 1.25 inches long. They are flat, dark green and usually rounded at the tips. The needles are attached on opposite sides and curve upward to cover the main stem. The needle undersides will take on a waxy appearance caused by lines on stomates. This will be distinctive since the needles curve prominently upward. The buds are roundish and coated with waxy

pitch. If cones are present, they are erect, pointed upward and two to three inches long, purple and often resinous.

### ***Douglas Fir***

Douglas fir (*Pseudotsuga menziesii*) has become the most popular Christmas tree in the western states where it is widespread from the Rocky Mountains to the Pacific Ocean, southward to Mexico and northward to British Columbia. This tree remains a botanical puzzle taking on characteristics of spruces, firs and hemlocks. It was discovered in the 1700s and then rediscovered by David Douglas who then introduced it to the British Isles in the 1800s. Today, it is one of the most common timber trees in the west. The wood is light, strong and easy to work with. It remains one of the easiest trees to transplant from nurseries to the forest and will grow anywhere from elevations of 100 to 11,000 feet. However, it is not well adapted to the Midwest unless the air circulation is good and it is protected from late spring frosts.

Every year, more production acres are being devoted to Douglas fir as its popularity as a Christmas tree spreads across all areas of the U.S. It has many good characteristics when used as a Christmas tree. The needles are soft and retained for weeks even in warm rooms. It also has a superior symmetrical form and responds well to shearing in order to create a more compact and bushy appearance. Douglas fir is a moderately fast grower taking from six to eight years to develop into a sizable tree.

Generally imported from the coastal areas of the U.S., Douglas fir can be identified by its pointed buds and soft gently rounded needles which are attached all the way around the stem and lighter green color than most all other Christmas trees on the market.

### **Selecting and Caring for the Tree**

The most important characteristics for choosing a Christmas tree are shape, color, branch distribution and needle retention. The first three are easily evaluated at the lot and are simply a matter of choice. Needle retention, however, is not as easily determined. How long the needles will hold on indoors is a function of when the tree was cut and the conditions of storage or transport before arriving at the lot. This information may be or may not be available by the lot manager. In general, you can assume that pines hold their needles longest, next the firs and last the spruces.

No matter which type of Christmas tree is chosen, the best advice is to pick one which has recently been cut. A popular trend today is to go to a cut-tree farm, select and cut your own. This is one way to make sure that the tree is fresh; these trees can be expected to last several weeks longer than trees purchased off of lots. On the other hand, lot trees may present a wider selection than you might have at a local tree farm.

Most Christmas trees available after Thanksgiving have been cut within the week of their arrival to the lot. However, this varies with the distance they are being shipped and the tendency for needle loss. Most growers will cut pines first and spruces last because they know that pine needles are retained longest and spruce needles the shortest. In any case, call ahead to check when the next shipment is coming in or when the last truckload arrived. If the weather is going to be warmer than 70 degrees for a daytime high, you will want to purchase trees as soon as they arrive.

To check for freshness, look for a firm tree and bounce the trunk on the ground. If only a few needles drop, then you can assume that it is relatively fresh. This test is critical if your selection is a spruce whose ability to retain needles is considerably less than firs and pines. Another test for freshness is to bend the needles. If you can bend it without snapping it in half and the needles cannot be easily pulled from their stem, then the tree is in good shape. Also look for resin at the base of the stump. A fresh, sticky flow will indicate that the tree has recently been cut.



If you are not planning to use your newly purchased tree immediately, store it in a cool spot away from air registers, heating appliances and fireplaces; preferably in an unheated garage out of sunlight. If you are storing it for longer than one day, cut off an inch or so of the base to expose fresh absorbent wood, peel back some of the bark above this cut and set the cut stump into some water in a bucket or in the tree stand so that uptake of water is immediate. Plain water in the tree stand is all that is needed to keep the tree fresh for the longest period. Additions of bleach, sugars and other preservatives do little to prolong the drying process.

Keep plenty of water in the stand at all times. During the first week, the tree may take up a gallon of water or more. Replenish this every evening as part of a ritual before going to bed. If the tree happens to run out of water even once, re-cut the base and start all over. To further guard against moisture loss, keep the tree away from air supplies and windows with full sun exposures to reduce the drying effects. Antitranspirants sprayed on the foliage may work to reduce the loss of moisture and should be applied just prior to bringing the tree inside.

### **Once Christmas is Past...**

After Christmas, the question always arises as to how to dispose of the tree. In the past, many spent holiday trees ended up on the curb to be picked up by the sanitation department or contracted hauler for the municipality. Thousands of trees are ultimately deposited in the landfill, but depending upon the state laws, this may no longer be lawful. You may consider other alternatives, including reusing the tree or recycling it back into the landscape.

A tree laid in a protected area can become a haven for feeding birds during the winter. Simply stand it up and hang suet, bird seed balls, popcorn strings, stale bread or dried fruit in a bag. Cones rolled in peanut butter and sprinkled with seed is also a special treat. If you lay it down, the birds and rabbits will appreciate the protection offered by the tree.

If you have perennial beds, cut the branches from the tree and layer over perennial plants. This is considered a type of mulch treatment that will ensure some protection against the effects of cold temperatures and ice. The mulch also provides a small refuge for wildlife including ground-feeding birds. Cut the left over stump up into small logs to dry and eventually be used in the fireplace. In the spring, remove the branches and cut them up into smaller pieces for processing in the compost pile.

A number of items can be made from the trunk if you are a woodworker including candlesticks, stick animals and birdhouses. Also, the fragrant needles of balsam fir will make a good potpourris or closet air freshener if stored in a paper bag.

As a last suggestion, check with the local parks department or State Department of Conservation to see if a Christmas tree chipping program exists. You may need to haul the tree to a chipping site, but you can often get back the processed chips to use as mulch to protect plants and improve soils. Simply layer these out over the beds and by spring as you work the beds, incorporate the materials into the soil. If you are spreading a layer of 2 inches or more, you may need to up the fertilizer rate by one half in order to offset the nitrogen that will be consumed during their decomposition. This added amount will ensure that the landscape plantings do not become nitrogen deficient.

### **Living Trees**

Living Christmas trees are used indoors for decoration and then planted outdoors in the landscape. It is now popular to consider buying a living tree to be used for Christmas instead of a cut tree, so that the money spent will be an investment in the landscape. If you are buying a living tree for ecological reasons,

remember that 90 percent of the cut trees are now grown in plantations for the purpose of producing Christmas trees. Also, cut trees are typically produced on lands not suited for other uses and provide a interim period of wildlife cover and erosion control.

The real key to successfully maintaining a living tree and enabling its survival outside once the holiday passes is proper care. If you plan to keep a tree up for several weeks, do not consider a living tree. The biggest problem with living trees is the foliage drying out. To be kept in prime condition, a living tree should be in the house no more than 3 to 5 days and positioned away from heat sources and drafts like with cut trees.

Living trees are commonly purchased as “balled and burlapped”, meaning that the root system is in a ball and it has been covered with a burlap materials to keep it together. When brought home, make sure that the soil ball is kept moist. Place the soil ball in a shallow pan and place a small amount of water in it. Avoid handling the ball when it is wet because it is likely to break apart. If the ball is frozen when taken home, let it warm up gradually in a cool room, like an unheated garage, before bringing it into the house. A drastic change of conditions will cause more problems than slower changes in temperature and water supply. With the pan underneath the root ball, cover the top with a sheet of plastic to retard rapid drying. A skirt can be used to hide the plastic.

No longer than after 5 days of indoor enjoyment, the decorations should be removed and the tree placed into a cool area for about one week prior to transplanting outdoors. Transplanting should be done when the weather is mild and not excessively cold or windy. Consider digging the transplanting hole before the ground freezes, to avoid an unpleasant job. Also recognize that the backfill soil should remain unfrozen so that there is something to work with when you are ready to plant. Preparing a backfill from a bagged soil mix is not advised. Better long-term survival results from using the native soil in which the tree will have to grow in. Soil mixes are also typically much lighter and may not support the weight of ice, snow or the forces of wind during the winter period without staking.

Lastly, be prepared for the worst. It is not easy for trees that have warmed up to room temperature to endure the elements outdoors. Expect some branch or tip dieback to appear the next growing season. If done properly, however, the tree will recover.