

## WHITE FIR

*Abies concolor* (Gord. & Glend.) Lindl. Ex Hildebr.  
Plant Symbol = ABCO

Contributed by: USDA NRCS Plant Materials Program



©W.L. Wagner  
Smithsonian Institution  
@ USDA NRCS PLANTS

### Uses

**Timber:** It is cut for lumber, boxes and crates, planing mill products, sashes, doors, and general mill work and pulpwood. It is light in weight, easy to work, and relatively free from splitting when nailed; it holds nails only moderately well.

**Ornamental:** White fir makes an excellent Christmas tree for it has a delightful aroma, retains its needles well after cutting, and has strong sturdy branches that hold their shape. It is highly regarded as an ornamental or specimen tree in colder, moister climates.

**Wildlife:** White fir seed is eaten by squirrels and other rodents. Seedlings are often browsed extensively by deer. Porcupines will gnaw the bark, and grouse will feed on the buds and needles. White fir makes good winter roosting trees for grouse.

### Status

Please consult the PLANTS Web site and your State Department of Natural Resources for this plant's current status (e.g. threatened or endangered species, state noxious status, and wetland indicator values).

### Description

*Abies concolor* (Gord. & Glend.) Lindl. ex Hildebr., white fir, is a large forest tree from 60 to 200 feet in height that can live up to 300 years or more. Its leaves or needles are 2 to 3 inches long, silvery-blue to silvery-green, extending at nearly right angles from all sides of the twig or more or less obscurely 2-ranked; flattened, stomatiferous above and below, rounded or acute at the apex. The upright cones are 2 to 5 inches long, oblong, olive-green to purple; bracts shorter than the scales, with short, broad erose shoulders, and spikelike tips. The bark is 4 to 7 inches thick on old trunks, ashy gray and divided by deep irregular furrows in thick, horny flattened ridges; young stems with conspicuous resin blisters.

### Adaptation and Distribution

White fir is found in areas characterized by a moderately humid climate with long winters and moderate to heavy deposits of snow. It is found principally where precipitation exceeds 20 inches; however, best development is in areas where precipitation is 35 to 75 inches annually. Most white fir is found at elevations of 4,000 to 10,000 feet along the western Sierra Nevada. White fir grows on soils from a wide variety of parent materials, including andesite, basalt, granite, pumice, sandstone and shale. Deep and permeable soils are best for growth when supplied with adequate moisture. Soils on which white fir is frequently found include the Aiken, Holland, Hugo, Olympic, Sheet Iron and Sites series. Most soils on which white fir occurs are moderately to strongly acid, friable, granular and clay loam.

White fir is distributed primarily throughout the western United States. For a current distribution map, please consult the Plant Profile page for this species on the PLANTS Website.

## **Establishment**

White fir may be regenerated by natural seeding, direct seeded, or planted. Cones begin to disintegrate and shed seeds in late September or early October, and there is a good seed crop about every 2 to 5 years. The seed germinates in the spring but usually less than 50 percent of the seed germinate. White fir is generally rated as tolerant to very tolerant of shade so that selective (partial) cutting tends to favor this species. Initial growth rate is usually very slow up to about 30 years, then growth accelerates markedly. In planting white fir 2 to 4 year old stock is recommended. In direct seeding 10 to 15 seeds per spot is recommended. To ensure adequate stocking of natural seedings, clear cutting strips 130 to 200 feet wide or patches up to 250 feet across the largest dimension is recommended. At least 10 seed trees per acre should be left if larger areas are clear cut when adequate seedlings are not present.

## **Management**

On better sites fully stocked, unmanaged stands of white fir may yield up to 150,000 board feet per acre at age 100. Thinning white fir stands periodically will salvage trees which would be lost to natural mortality. Pruning is not ordinarily recommended for white fir because of its tendency for epicormic sprouting and unless the tree is being grown for veneer or finish lumber, there is not need for this practice.

Young trees are easily killed by fire and must be protected from this hazard. Young sapling and pole sized trees are subject to sunscald when exposed suddenly, and thinnings should be light because of this. White fir is more prone to windthrow than ponderosa pine because of its more shallow, wide spreading root system, and care should be taken in partial cuttings to leave buffer strips against the wind and to thin conservatively.

White fir Christmas trees require 6 to 9 years to produce a 6 foot tree. They need cultivation or other treatment to prevent excessive competition from grass. Excessive leader growth will need to be controlled by basal pruning, basal scarring or pruning of the terminal shoot. Leader growth should be kept to about 12 inches.

## **Pests and Potential Problems**

Some of the more important enemies of white fir are the spruce budworm, Douglas-fir tussock moth, many different bark beetles, mistletoe and heart rot fungi. Needle rusts may be a serious problem in producing Christmas trees, and white fir is one of the conifers most sensitive to sulphur dioxide.

## **Cultivars, Improved, and Selected Materials (and area of origin)**

White pine seed can be purchased at most commercial seed sources in the west. Seedlings can also be purchased from pine nurseries in the western part of the country.

## **Prepared By & Species Coordinator: USDA NRCS Plant Materials Program**

31Jan2002 JLK; 24may06jsp

For more information about this and other plants, please contact your local NRCS field office or Conservation District, and visit the PLANTS Web site <<http://plants.usda.gov>> or the Plant Materials Program Web site <<http://Plant-Materials.nrcs.usda.gov>>

*The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).*

*To file a complaint of discrimination write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice or TDD). USDA is an equal opportunity provider and employer.*

*Read about [Civil Rights at the Natural Resources Conservation Service](#).*