

# Conifer Quarterly

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Those of us who are tempted to mope during the dark days of winter might take a lesson from this cheery fellow!

*Pinus contorta* 'Chief Joseph' was photographed by Gary Shuldt, who was selected as the winner of our photo contest.

Turn to the center of this issue to see more gold conifers in full color.

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*Cover photo: This Thuja occidentalis 'Columbia' growing in Bill Barger's garden in Wadsworth, Ohio, was a gift from Pete Girard. It was only 16 inches (40 cm) tall eight years ago.*

# Gold Conifers Light Up the Garden

Adapted from an article by Clark D. West

*Editor's note:* This text is taken from the article "Yellow Conifers" that appeared in the *American Conifer Society Bulletin*, Vol. 12, No. 3 (Summer 1995). However, the accompanying photos on pages 14-22 were submitted by Conifer Society members for this issue.

One of the clues that you are viewing the yard or garden of a dwarf conifer collector is to see yellow. The conifer enthusiast's yard often has little grass and at least one big, bold yellow conifer.

There is no argument that yellow plants call attention to themselves and their surroundings. This author considers them attractive, though others disagree, saying the color reminds them of a sickly plant.

In varieties that are yellow while healthy, what causes the golden color?

## Why are they yellow?

The green color of most plants is caused by the presence of chlorophyll, produced in structures in the cells known as chloroplasts. Chlorophyll is responsible for converting water and carbon dioxide into "food" for the plant, in the presence of sunlight.

Yellow or yellow-variegated plants have a relative lack of chloroplasts, and some may grow at a rate only one quarter that of their green counterparts. Some appear to be solid yellow and, considering how important chlorophyll is in the production of starches for the plant's energy needs, one wonders how they grow at all. Is there a yellow form of chlorophyll, less efficient perhaps than the green, or is there actually some chlorophyll present, allowing just

enough starch production for the plant to grow slowly? In the complete absence of chlorophyll, would the foliage be white?

It is well known that many yellow forms can produce abundant chlorophyll when taken out of the sun. Many turn

*Yellow or yellow-variegated plants have a relative lack of chloroplasts*

green in the shade, and being in a shady location for a few years can result in a considerable growth spurt, according to Tom Dilatush. Yellow forms that turn green in the shade are sensitive to bright light, which inhibits their production of chlorophyll. He has noted that yellow forms may grow the slowest when planted on a reflective surface such as stone mulch. The growth that they manage on a non-reflective surface depends on chlorophyll produced on the underside, or shady side, of the leaves, and when this shade no longer exists due to a reflective surface, their growth is even slower. It follows that in some of these plants, chlorophyll in shaded foliage or on its north side is its only growth engine. Examples of plants that are light



Bill Barger

Reader  
Recommendations

*Picea pungens* 'Spring Ghost'

Below: *Pinus densiflora*  
'Oculus-draconis'



Fletcher Spillman

sensitive in this way are solid yellow *Thuja* (arborvitae), *Chamaecyparis* (falsecypress) and *Tsuga* (hemlock). However, not all yellow conifers behave this way.

The yellow color in some conifers has a different basis and is more like that

*If the outer cells of a shoot apex are yellow, the leaf will have a yellow margin*

in variegated herbaceous plants. In these plants, the pattern of variegation depends on the arrangement of cells that can or cannot make chlorophyll in the shoot apex – the growing tip of a shoot. If the outer cells of a shoot apex are yellow, the leaf will have a yellow margin, as in some *Hosta*. This arrangement of cells is known as a **periclinal chimera** (*periclinal* means surrounding, and *chimera* means tissue containing cells with two or more genotypes, or genetic compositions). In contrast to these chimeras that produce a marginal leaf pattern, there can be segmental variega-

tion, as in the needles of *Pinus densiflora* ‘Oculus-draconis’. (*Editor’s note: see photos of this cultivar on page 15 and page C1 of the color section.*) This is the result of each of the several layers of a shoot apex having both yellow and normal cells. This is called a **sectoral chimera** and it produces a patterned variegation.

The seemingly random variegation found in some *Chamaecyparis* and *Juniperus horizontalis* ‘Variegata,’ is the result of a condition known as “ever sporting.” In the growing shoot, the cells are unstable with respect to chlorophyll production, and on parts of the leaf, seemingly at random, non-chlorophyll producing cells proliferate more rapidly and overgrow the green. In contrast to light-sensitive *Thuja*, *Chamaecyparis* and *Tsuga* described earlier, the yellow color produced by a chimera or “ever sporting” variety is present regardless of sun exposure. Thus, in shade the variegation persists but the plant may not be as brilliantly colored and may grow more slowly.

If you like conifers with yellow foliage, there are many to choose from.

## Reader Recommendations



Bill Barger

*Pinus parviflora* ‘Ogon-janome’

*Gingko biloba* ‘Variegata’



Bill Barger

They can be eye-catching without being brassy, and because they often grow more slowly than their green counterparts, they tend to stay put and not crowd the garden. Most conifer species have variants which are yellow at least part of the year. Their beauty and popularity becomes obvious to anyone leafing through the book *Conifers: The Illustrated Encyclopedia* by van Gelderen and van Hoey Smith.

This article is by no means an exhaustive compilation of yellow conifers, but rather, will provide a brief overview of some noteworthy yellow conifers from a few major plant families.

**Chamaecyparis (falsecypress)**

One of the most noteworthy species with yellow variants is *Chamaecyparis lawsoniana*. One has only to travel to England to be impressed with these cultivars. Many climates in the United States, including mine, are unfriendly toward this species, so I will only say that I have grown *C. lawsoniana* ‘Golden Showers’ (Lawson falsecypress) successfully. It has yellow variegated foliage and relatively compact growth, and it remains yellow well into the winter (as compared to *Thuja occidentalis* and *T. orientalis* that become a dull copper bronze).

Another species, *Chamaecyparis obtusa* (Hinoki falsecypress), offers some attractive cultivars. One of the most attractive of all yellow conifers is *C. o.* ‘Nana Aurea,’ which is said to be

Top: *Pinus contorta* ‘Taylor’s Sunburst’

*Chamaecyparis pisifera* ‘Golden Mop’ used in a formal garden setting.



Charlene Harris



Charlene Harris

Reader recommendations



Bill Barger

Left and below: *Pinus densiflora* ‘Golden Ghost’



Bill Barger

more compact than *C. obtusa* 'Nana Lutea' and is beautiful for both its color and its texture. In full sun, it will display more yellow color but it may burn in the winter. Another cultivar, *C. o.* 'Crippsii,' becomes almost tree-like, but in the right spot it is a dream tree for the lover of yellow conifers. It may require mild trimming to make it more dense, and it looks most healthy in a location that receives no more than a half day of sun.

*Chamaecyparis pisifera* (Sawara falsecypress) also offers a number of yellow members, most notably 'Filifera Aurea' and the dwarf 'Golden Mop.' 'Filifera Aurea' stands out because its foliage is threadlike and thick, eventually producing a dense yellow plant 12 to 15 feet tall. If you want to distinguish

your house from others on the street, plant one of these in your front yard and wait ten years. Another available cultivar is *C. pisifera* 'Plumosa Rogersii.' It has some green coloration and, probably for that reason, remains healthy in full sun. It is compact and grows slowly to about three feet.

### Abies (fir)

Though rarely seen, there are a number of yellow or golden firs. There is at least one yellow form of *A. koreana* (Korean fir), one of *A. pinsapo* (Spanish fir), and two of *A. concolor* (white or silver fir). One that is becoming popular is *A. nordmanniana* 'Golden Spreader' (Nordmann fir) which is often planted in rock gardens. Specimens in England have

eventually become quite large even though some books say it does not exceed two feet in any dimension. It can develop a vertical leader, which should be cut out unless you want a large tree. Its yellow color is brightest in winter; in full summer sun the leaves are a less attractive, light golden yellow. Plant in a location away from midday sun to prevent burning.

### Pinus (pine)

There are many pines that have yellow foliage all or part of the year. Well known is the dragon's eye pine, *Pinus densiflora* 'Oculus-draconis.' (Editor's note: See photos on pages 15 and C1.) It does not appear to be adversely affected by full sun. A pine similar in appearance is *P.*

*wallichiana* 'Zebrina' (Himalayan pine).

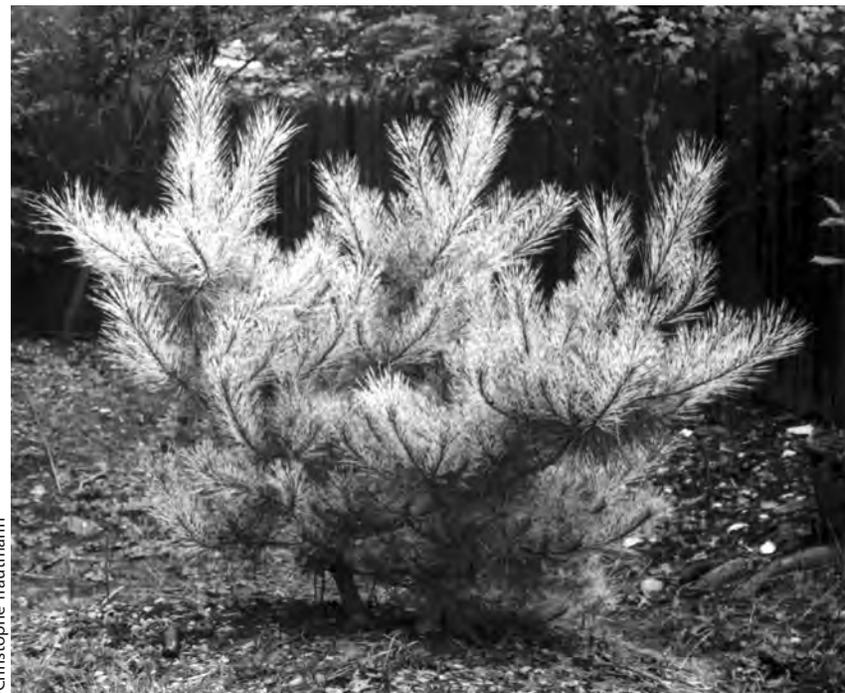
The needles of several pines develop a yellow cast in the winter, giving the impression of ill health to those not "in the know." Warm weather replenishes the chloroplasts and the plant looks healthy again. There are also, however, cultivars whose yellow winter coloration is striking and worth noting.

*P. sylvestris* 'Aurea' (Scots pine) has bright foliage in the winter but reverts to the green of an ordinary *P. sylvestris* in the summer. *P. strobus* 'Winter Gold' (Eastern white pine) has the same characteristic. A plant that is becoming more popular is *P. virginiana* 'Wate's Golden' (Virginia pine) whose glowing winter color more than makes up for the pedestrian appearance of the species. Be sure



Christophe Trautmann

*Pinus parviflora* 'Fukai'



Christophe Trautmann

*Pinus densiflora* 'Burke's Variegated'

that it gets full sun all summer or it will not perform in the winter.

Two *P. mugo* (Mugo pines) that brighten up in the winter are 'Ophir' and 'Winter Gold.' The latter differs in that it is yellow in all seasons but becomes more golden in the winter.

### Thuja (arborvitae)

Yellow arborvitae cultivars from the species *T. orientalis* (Oriental arborvitae) and *T. occidentalis* (American arborvitae) are relatively easy to grow, but they do not seem to be as popular among conifer collectors as other yellow conifers. *T. occidentalis* 'Sunkist' and 'Pumila Sudworth' are the standby yellows that were developed in the 1960s. An older but inferior cultivar in terms of its color is *T. occidentalis* 'Lutea.' Both 'Sunkist' and 'Pumila Sudworth' develop an orange yellow color in early winter and later turn bronze.

The cultivars *T. occidentalis* 'Wareana Lutescens' and 'Watnong Gold' display yellow winter color without the orange overtones.

In exposed locations during cold winters, some foliage of *T. orientalis* 'Aurea Nana' will die out, leaving an ugly scar. However, in locations where this is not a problem, the cultivar can grow into perfect, greenish-yellow columns and can be propagated rather easily from seed.

This variegated shoot on an Eastern white pine (*Pinus strobus*) may represent the birth of a new golden cultivar.

A number of dwarf yellow forms of *T. plicata* should be considered as well. 'Stoneham Gold' is upright with deep yellow new shoots that stand out against the older green foliage. 'Cuprea' is a low, spreading shrub that is more of a golden bronze, and 'Rogersii' is similar but with more congested foliage and a tendency to produce upright shoots that should be pruned out.

### Taxus (yew)

Yellow forms of *Taxus* are rarely seen in the United States but are common in England. *T. baccata* 'Standishii' (English yew) is probably the best known and certainly the most yellow. It is very slow growing. A variegated version of the old Irish Yew, *T. baccata* 'Fastigiata Aureomarginata' displays yellow mar-



Christophe Trautmann

gins on leaves less than one year old.

Several spreading forms of *T. baccata* have yellow foliage. 'Adpressa Aurea' has yellow young shoots that later turn green. For year-round gold color, plant 'Semperaurea,' whose needles are reported to retain their gold color for two years.

Of the yellow Japanese yews, *T. cuspidata* 'Aurescens' is the most common, though it is less striking than *T. baccata* 'Semperaurea.' For reasons that are not yet clear, there are no yellow forms of *Taxus x media*.

### Tsuga (hemlock)

The most common, overall yellow hemlock is *T. canadensis* 'Everitt Golden' (Eastern or Canadian hemlock). Grown in the shade, it is a stiff, coarse-textured, green dwarf hemlock, but grown in the sun it becomes yellow in the spring and develops greenish overtones in the summer. Two other cultivars that thrive in the sun are *T. c.* 'Golden Splendor,' which has light lime green growth in the spring and later turns fully yellow, and 'New Gold,' which pushes yellow in the spring but later turns dark green. Both are large trees but grow more slowly than the species.

A number of hemlocks display white growing tips that give the plants an overall whitish color. Young plants of the well-known *T. c.* 'Gentsch White' are usually sheared to increase the number of white growing tips, but left to its own it will form a perfect dwarf replica of a species hemlock, except with white tips.

In summary, yellow conifers add beauty and interest to a plant collection, but consider following a few rules of thumb. Don't include too many yellow plants, because they look better against a green background than a yellow background. Also, work to find the right amount of shade for those plants that require it for best yellow coloration; with the right amount of light, they will not look washed out (from too much shade) but will be moderately vigorous (with enough shade to produce some green foliage for adequate photosynthesis). Of course, this admonition to avoid excess sun does not apply to those plants that require sun to be yellow. These include *Pinus densiflora* 'Oculus-draconis' and the pines that are yellow only in the winter, such as *P. sylvestris* 'Aurea' and *P. virginiana* 'Wate's Golden.'

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