

The Secret of Fall Colors

Few sights satisfy the soul like the brilliant colors splashed across our nation's hardwood forests each fall. Refusing to slip quietly into winter, nature marches out with great fanfare, trumpeting the bright oranges and yellows of sugar maples across New England, blaring the gold of aspens across the Rockies, and blowing sultry notes across the South in the deep scarlet of red oaks and deep purple of black gums.

But what determines which color tone is assigned to a particular tree? And how is the color change triggered? Actually, the secret is in the sap. The chemical composition of each tree's sap provides "instructions" on what fall color its leaves should turn.

The amount of iron, magnesium, phosphorus or sodium in the tree, and the acidity of the chemicals in the leaves, determines whether the tree turns amber, gold, red, orange, purple, or just fades from green to brown. For example, scarlet oaks, red maples, and sumacs have a slightly acidic sap which causes their leaves to turn bright red. On the other hand, the leaves of some varieties of ash, growing in areas where limestone (alkaline) is present, will turn a regal purplish-blue.

What triggers the change? Popular myth credits Jack Frost with orchestrating the color transformation, but in reality, the thermometer has little to do with it. The answer lies in the shifting rhythm of day and night. As the days grow shorter and the nights longer, a chemical clock inside the trees starts up, releasing a hormone which restricts the flow of sap to each leaf. As autumn progresses, the sap flow slows and chlorophyll, the chemical that gives leaves their green color in the spring and summer, disappears. The residual sap becomes more concentrated as it dries, creating the colors of fall.

Autumn leaves are not merely pretty. As leaves die and fall to earth, minerals that were taken up into the tree return back to the soil. Mammals, insects, fungi, and bacteria on the forest floor help decompose the leaves, releasing their nutrients to growing plants and trees, and adding organic material to the soil. And

even as this year's leaves fall, next spring's leaves are tightly wrapped in buds. When they unfurl, they will replenish the air as they absorb carbon dioxide and "exhale" oxygen.

Far less dramatic than hardwoods, most conifers also lose their three-year-old "leaves," or needles, in the fall. And every spring, tender green shoots grow at the end of pine limbs in a cycle of renewal.

The renewal of fall's color mirrors the renewal of our forests. Just as trees prepare themselves for spring by putting forth buds, people prepare for future generations by planting forests. In 1992, 178 million tree seedlings were planted in Alabama. This amounts to 45 trees for each and every Alabamian. As long as this concern for our state's forests flourishes, Alabamians will have ample forestland for their recreation and timber needs, and plenty of opportunities to enjoy the glorious colors of autumn.

The Alabama Forestry Commission offers these suggestions for trees which can give your yard more fall color:

YELLOW

Beech
Birch
Elm
Ginkgo
Hackberry
Hickory
Locust
Pecan
Persimmon
Swamp White Oak
Sycamore
Willow

ORANGE

Northern Red Oak
Sassafras
Southern Red Oak

GOLD

Ash
Buckeye
Willow Oak
Yellow Poplar

RED

Black Cherry
Dogwood
Red Maple
Scarlet Oak
Sour-wood
White Oak

