

IS WEATHER THE REASON LEAVES CHANGE?

Sometimes the red fall colors seem brighter and more spectacular than in other years. The temperature and cloud cover can make a big difference in a tree's red colors from year to year.

When a number of warm, sunny autumn days and cool but not freezing night come one after the other, it's going to be a good year for reds! In the daytime, the leaves can produce lots of sugar, but the cool night temperatures prevent the sugar sap from flowing through the leaf veins and down into the branches and trunk. The extra sugar sap and sunlight increase the production of the anthocyanin pigments in the leaves. When the chlorophyll is finally gone, these leaves will turn bright, brilliant shades of red, purple and crimson.

The yellow, gold and orange colors created by carotenoid remain fairly constant from year to year. That is because carotenoid are always present in leaves, and the amount does not change in response to weather.

The amount of rain in a year also affects autumn leaf color. A severe drought can delay the arrival of fall colors by a few weeks. A warm, wet period during fall will lower the intensity, or brightness, of autumn colors. A severe frost will kill the leaves, turning them brown and causing them to drop early. The best autumn colors come when there's been:

- A warm, wet spring

- A summer that is not too hot or dry

- A fall with plenty of warm sunny days and cool nights.

DO YOU KNOW A MAPLE TREE BY THE COLOR OF LEAVES?

A sugar maple has orange – red leaves in the fall.

Black maple has the glowing yellow leaves in the fall.

Red maple are the bright scarlet leaves in the fall.

DO YOU KNOW WHY LEAVES FALL FROM THE TREE?

A tree's roots, branches and twigs can take the freezing temperatures, but most leaves are not so tough. On a broadleaf tree, such as a maple, the tender thin leaves, made up of cells filled with water sap, will freeze in the winter. Any plant tissue unable to live through the winter must be sealed off and shed to ensure the tree's survival.

As sunlight decreased in autumn, the veins that carry sap into and out of a leaf gradually close. A layer of cells, called the separation layer, forms at the base of the leaf stem. When this layer is complete, the leaf is separated from the tissue that connected it to the branch, and it then falls off.

THE COLOR OF MAPLE LEAVES WHAT DOES THIS MEAN?

Do you know where leaf colors come from?

Leaf color comes from **pigments**. Pigments are natural substances produced by leaf cells. There are three (3) pigments that color a leaf.

- Chlorophyll (green)
- Carotenoid (yellow, orange, and brown)
- Anthocyanins (red)

Chlorophyll is the most important of the three. Without the chlorophyll in leaves, trees wouldn't be able to use sunlight to produce food.

Carotenoid create bright yellows and oranges in familiar fruits and vegetables. Corn, carrots, and bananas are just a few of the many plants colored by carotenoid.

Anthocyanins add the color red to plants, including cranberries, red apples, cherries, strawberries and others.

Chlorophyll and carotenoid are in leaf cells all the time during the growing season. But, the chlorophyll covers the carotenoid – which is why summer leaves are green, not yellow or orange. Most anthocyanins are produced only in autumn, and only under certain conditions. Not all trees can make anthocyanins.

HOW AND WHY LEAVES CHANGE COLOR

As the earth makes its 365-day journey around the sun, some parts of the planet will get fewer hours of sunlight at certain times of the year. In those regions, the days become shorter and the nights grow longer. The temperature slowly drops. Autumn comes and then winter.

Trees respond to the decreasing amount of sunlight by producing less and less chlorophyll. Eventually, a tree stops producing chlorophyll. When that happens, the carotenoid already in the leaves and the anthocyanins created that autumn, can finally show their colors. With the green mask of chlorophyll gone, the leaves become a bright rainbow of glowing yellows, deep reds, sparkling oranges and warm browns.