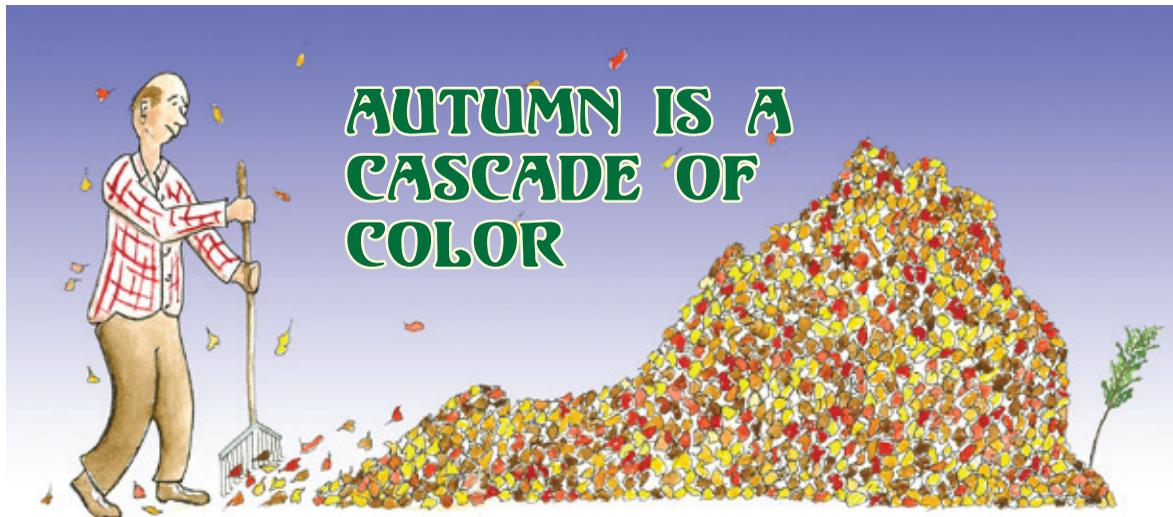




Forest Facts

VIRGINIA IN THE FALL



Virginia is a state you can count on for a colorful autumn display, as the green leaves of summer turn red, orange and yellow before they fall off the trees.

Trees that lose their leaves in

winter are called deciduous, and they are the ones that provide fall color. Trees that keep their leaves are called evergreen.

Leaves change color due to a combination of three factors: the pigments in the leaves, the increasingly longer nights and the weather. Because the weather varies from year to year, no two autumns are alike.

THE ROLE OF PIGMENTS

Pigments are what give plants and animals their color. Three pigments affect leaf color. Chlorophyll gives leaves their green color and is needed for photosynthesis, the process in which plants use sunlight to make sugar for food. Carotenoids produce yellow, orange and brown colors. Anthocyanins produce red, purple and crimson.

Chlorophyll and carotenoids occur in leaf cells throughout the growing season. Because carotenoids are always present in the leaves, the yellow and gold colors stay relatively constant from year to year. Most anthocyanins are produced in the autumn.

As the nights get longer, chlorophyll production slows and eventually stops. Because there is no more chlorophyll, there is no more green to mask the colors of the carotenoids and anthocyanins. So instead of green, we see yellow, orange, red and brown.

Chlorophyll

Carotenoids

Anthocyanins

EFFECTS OF THE CALENDAR AND WEATHER

Day length and weather determine when the color change starts and when the leaves fall off the trees. Longer and cooler nights trigger the processes that lead to fall color. Just how much color we see and how vivid it is varies from year to year. That's because weather conditions – mainly moisture and temperature – also vary. Both a drought and an extended wet spell can affect fall color. The combination of a warm, wet spring, no summer drought and warm, sunny fall days seems to result in the brightest leaf color. Warm, sunny days and cool, crisp nights tend to produce the best reds. In daytime, lots of sugars are produced in the leaf. The cool nights trigger a gradual closing of tiny tubes connecting the leaves with the rest of the tree, which traps the sugars in the leaves. That produces anthocyanin pigments. Once the tubes connecting the leaves with the rest of the tree close completely, the leaf falls from the tree.

WHY THESE CHANGES OCCUR

Unlike a tree's trunk and branches, its leaves are too tender to survive winter's freezing temperatures. The leaves are broad and thin, and the fluid inside the leaves freezes easily. To protect itself, the tree seals off the leaves, which eventually fall.

Evergreens don't shed their leaves or needles because they have both a waxy coating and the plant equivalent of antifreeze in the fluid inside their leaf cells. That enables them to survive most winters.



CAN YOU FIND THESE?

Autumn leaves come in many shapes and colors. Some change color before others. You can see autumn color in parks, in woods, along city streets and in your own backyard. If your job is to rake leaves, make the chore fun by seeing how many different colors and shapes you can find in the pile. See if you can find:



A leaf that looks like a red, orange-red or yellow star (sweetgum)



A leaf that looks purplish red (dogwood)



A leaf that looks like a red, orange or yellow mitten (sassafras)



A leaf that looks like a yellow tulip blossom (tulip poplar)



A big brown leaf (sycamore)



A deep red leaf (northern red oak)

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