

Fall Tree Color May be Muted This Year

AGRI-VIEWS

by Chuck Otte, Geary County Extension Agent

While I have to admit that fall leaf color in our area isn't typically all that great, it's really looking like this year will be even less spectacular than normal. Ultimately, it all comes down to three basic factors: leaf pigments that are present or absent, length of night and the weather conditions before and during the time that chlorophyll starts leaving the leaves. Length of night (hours of darkness), doesn't change from year to year. It's the big factors that starts the chlorophyll decline. But the other two really have a majority of the impact on what colors we see as the chlorophyll disappears. While we may all like the extended warm spell we are having right now, that is not what we needed to produce optimum color of fall foliage.

First of all, trees need to have a good growing season. Basically any weather that doesn't cause excessive stress to the tree will be needed. Extreme drought or heat stress will cause trees to lose leaves early. Some of the fall colors that we all hope for are in the leaf all year long. Other colors develop when we have the right conditions in the fall. The challenge though is that we also have chlorophyll in leaves and that's what makes leaves green. Chlorophyll is a principle part of photosynthesis which is the process that makes the food that keeps plants alive. There is so much chlorophyll in most leaves that it masks or overpowers any other color compounds in the leaves.

The orange and yellow hues are created by carotenoids - the same basic compounds that make carrots orange! These compounds were in the leaf all through the growing season. But it isn't until the tree starts to shut off the flow of nutrients to and from the leaf, which causes the chlorophyll to break down, that we start to see the yellows or oranges appear. In some cases, removing leaves from a tree in the late summer will hasten the process of letting the yellow hues appear.

Carotenoids are also present in the browns that we see in many leaves. Some trees, like our native bur and chinkapin oaks go from green to brown with no spectacular colors. So even though we may not have good conditions, we'll usually at least see some yellow hues, and of course the ultimate end game, the dead brown leaves! The carotenoid compounds are in the chloroplasts of the cells, right there with chlorophyll.

Reds and purples are a different story however. These are anthocyanin based compounds and are produced in the autumn in response to bright light and excess plant sugars within leaf cells. Anthocyanins are water soluble and are not in the chloroplasts but in the watery liquid of leaf cells. Warm weather (not hot, temperatures in the 60s is adequate) sunny days and crisp, not freezing, nights brings about the best color displays. These conditions produce a lot of sugars in the leaves which can produce a lot of anthocyanin. Good soil moisture conditions also help keep the trees from stressing and aids in the process. A hard freeze too early in the autumn will just stop everything and knock the leaves off the trees before color change can occur.

While we are seeing some color this year, and recent rains have helped, I'm just not overly optimistic that we'll have bright fall colors. I'm seeing occasional bright splotches of color but in between I'm seeing a lot of brownish green leaves just falling off the trees. There's a lot we can't control and this is one of them. So enjoy any little bit of color you find and maybe next year will be better!