

# ask

## the landscape professional

Linda K. Lillie of Sprigs & Twigs



### **Welcome to my weekly series!**

Feel free to send me questions you'd like to have me answer and I will do my best to address the ones of most general interest.

**Email or mail your questions to: [info@sprigsandtwigs.net](mailto:info@sprigsandtwigs.net) or**

**Linda Lillie, Sprigs & Twigs Inc, PO Box 245, Gales Ferry, CT 06335**

### **Question of the Week:** *Why do leaves turn colors in the fall?*

Shorter days play the major role in the changing leaf colors of autumn as well as cooler temperatures and the pH of the soil.

Believe it or not, leaves are always shades of yellow; you just can't see the colors during the summer! Trees are amazing living things. They take water from the ground, carbon dioxide from the air and sunlight to produce oxygen and food (sugars). The process of converting sunlight into energy that the tree can use is called Photosynthesis. A critical part of the Photosynthesis process is the absorption of sunlight through the leaves which regulates the production of the green pigment called Chlorophyll. In the summer, leaves appear green because green is the dominant pigment, obscuring other pigments in the leaves. As the days get shorter in the fall, less Chlorophyll is produced due to the reduction of light, and the trees begin to go dormant. As Photosynthesis comes to an end, the green Chlorophyll fades from the leaves unmasking the shades of yellow pigments that were present all along. The yellow pigments are called Carotenoids.



Another process that happens at the same time is a corklike layer at the base of each leaf forms causing the leaf to detach from the tree. But before the leaves fall off, the tree "senescences" or transfers its (sugar) energy out of the leaves into the roots. This higher sugar concentration creates the production of red pigments called Anthocyanins. The red color of the Anthocyanins actually protects the leaf cells from sunlight damage while they are senescing. The leaves of some trees, like birches, will turn yellow (because of the high quantity of Carotenoids within its leaves), but not red because birches are much more tolerant of sunlight and don't need the protection offered by the Anthocyanins. A Sugar Maple appears orange because of the combination of Anthocyanins and Carotenoids within its leaves. A Blueberry shrub with its bright red leaves has Anthocyanins as its dominant pigment.

One of the best things about autumn is that each year is different because the pigments that are visible are affected by the weather. Bright, sunny and cool autumn days produce the most colorful foliage displays of oranges and reds. If the weather is overall dry and overcast more yellows and browns will dominate the color palette.

Enjoy the fall colors!

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Linda K. Lillie is the President of Sprigs & Twigs, Inc, the premier landscape tree care & lawn care company in SE Connecticut for the last 19 years. She is a graduate of Connecticut College in Botany, a Connecticut Master Gardener and a national award winning landscape designer for her design and installation work.

860-235-0752

