Companion Planting

by The Garden Hoe, Lis Friemoth

Fall really feels like it has arrived when the leaves show their glorious late season colors. There are a number of factors that influence what color that glory takes – heredity, air temperatures, water, sunlight and composition of the soil. Even though scientists have studied this subject for years, leaves changing color and falling is still not completely and totally understood. But looking at the impact of some of the known factors will help in timing those fall drives through the countryside to enjoy the visual bounty.

Tree species and heredity play a huge role in what color the leaves will show in the fall. Some trees will only show varying shades of one color palette – whether that is yellow, brown, orange, red, or purple. Then again, other trees show such a diverse range in the color palette that it takes your breath away. All of the other influencing factors, even when in perfect harmony, will not improve the chances of seeing the leaves turn a color different than what nature intended. If it is yellow, orange and brown coloration seen during the fall season – those pigments are actually present throughout the growing season, they are just not visible. Why? The continuous production of chlorophyll masks them with intense green. As fall brings on the reduction and eventual elimination of chlorophyll production, the green is no longer present and the yellow, orange, and brown colors are able to shine through. If the fall colors are red or purple, those develop during the fall season and in direct response to excessive levels of leaf sugars and proteins, as well as bright levels of sunlight. An interesting note: some scientific research is finding that the red and purple pigment production is actually a deciduous tree response and protection mechanism to cold, sunburn, and health stresses caused by diseases and insects.

Air temperatures and sunlight levels throughout the year are important to the overall health and seasonal longevity of trees. Warm evening air and long hours of sun during the growing season will allow the sugars that have accumulated throughout the day to continue to move through the tree system at night. But as fall approaches, these become important factors in the development of leaf color. Cooler evening temperatures and lessening hours of sunlight encourage deciduous trees to begin the process of closing off the veins that carry nutrients to and from the leaves – in anticipation of the actual leaf drop. As this process works, leaf sugars pool and remain within the leaf structure. When the sun hits them during the day those sugars and proteins will work to produce the red and purple pigments. If the temperatures lower (freeze) early in the fall, the process is sped up and the sugars and proteins do not have an opportunity to pool within the leaves before the veins are completely sealed off. The resulting response is typically a fast leaf fall with minimal coloring. If cloudy conditions are present during the fall, the colors will not be as vibrant as the sun does not have an opportunity to encourage the production of pigment. Expect the brightest colors when fall days are dry and sunny and the nights are cool (above freezing) and dry.

Levels of water and differing soils play interesting roles in the leaf coloring process. During the growing season, plenty of rain in early spring, adequate moisture throughout the summer, and a dry fall will encourage the best moisture conditions for leaf coloring. Wet fall weather reduces the potential coloring as rain is generally accompanied by clouds, which reduces the amount of sunlight able to process the leaf sugars into pigments. Soil also directly impacts the coloring of leaves. It is, after all, the main source for most tree needs and sets the stage for good or not so good health conditions. As studies are showing, stressed trees may actually produce the most vibrant fall colors. While this may be good for fall viewing, it is not good for long term care of the trees. Soil conditions appropriate for the needs of each tree – drainage, composition, and pH – will continue to keep the tree healthy and happy for many years of fall viewing. As with many plants, pH levels impact coloration. In fall leaf coloring, lower pH levels encourage brighter reds while higher pH levels will create more of a purplish hue to the leaves.

So – what is expected for color this year? Well, the best colors are expected when spring is moist (yes), moisture is adequate throughout the summer (no), and fall is warm and dry (yes). Two out of three isn't bad. Conditions were right this spring and fall to see some pretty nice colors. But, as it has been so dry for the last few years, do not expect the leaves to remain on and beautifully colored for very long, especially if the temperatures dip and stay down. Get out and enjoy the leaf color while it is here – it is one of the most breathtakingly colorful times of the year for the Midwest.