MISSOURI’S AUTUMN COLORS

The spectacular parade of colors associated with the "Indian Summer" days of autumn is created by a complicated series of interactions involving pigments, sunlight, moisture, chemicals, hormones, temperature, length of daylight, growing location and genetic traits. A precise clockwork within the leaf cells sets the forests of Missouri ablaze when early fall days are bright and cool, and nights are chilly but not freezing.

The leaves of the growing season are green because of the formation of chlorophyll, a pigment found in minute leaf structures called plastids. Chlorophyll is the change agent for food making in green plants. These green pigments use energy from sunlight, carbon dioxide from air, and water from the tree itself to produce simple sugars that feed the tree in a delicate process known as photosynthesis.

Yellow and orange pigments called "carotenoids" are also present in the leaves during the warm weather of the growing season, but are "masked" by the greater amounts of the green pigments. Autumn’s dropping temperatures and decreasing day length stop the production of new green pigments and cause existing chlorophyll to degrade at an accelerated rate. The yellow pigments are then "unmasked" as the green pigments disappear, accounting for the brilliant coloration of Missouri hardwood species such as hickories, birches, cottonwood, sassafras, poplars and hackberry.

These autumn environmental stimuli also cause the leaves to form a hormone called "abscisic acid." The abscisic acid induces the plant to form weak layers of new cells at the base of the leaf stem. These "abscission zones" eventually break apart from wind or other physical disturbances, often causing the leaf to fall before the yellow and red pigments have deteriorated.

The pigments responsible for the vivid red and purple autumn colors of persimmons, dogwoods, maples, sumacs, sweetgums and ashes come from another group of cell pigments called "anthocyanins." Anthocyanins develop in the sap of leaf cells in late summer and are stimulated by lowering temperatures and high light levels. If the tree's sap is acidic, the leaves become red; alkaline sap causes purple coloration. Anthocyanin formation in the leaf depends on a simultaneous increase of sugars in the presence of bright light and a decreasing level of phosphate caused by the chemical moving out of the leaf into the stem. Mild drought conditions also stimulate production of the red pigments. Carotenoids and anthocyanins often combine in leaves to give the deep oranges, fiery reds, and bronzes typical of many hardwood spe-
cies. Brown autumn leaf color of oaks and beech is due to the presence of the brownish tannin compounds in combination with the carotenoids.

Several environmental factors can diminish the fall foliage colors. Very warm weather conditions encourage late season chlorophyll production and vegetative growth, which discourages initiation of autumn colors. An early frost before abscission kills the leaf before the pigments reach their maximum development, causing it to simply shrivel and fall to the ground. Long periods of wet, cloudy weather in fall produce a drab coloration because of low light intensity.

To summarize, cool but not freezing temperatures, mild late-season drought and sunny days are necessary ingredients for creating the brightest fall colors for Missouri woodlands.

Source: http://extension.missouri.edu/p/G5010

(Continued from page 1)

COMPOST CONTAMINATED WITH HERBICIDE IS SHOWING UP IN MISSOURI

In recent years, we have been seeing increasing damage to crops from herbicide-contaminated soil which was brought into a crop-growing area, or even compost, which contained enough herbicide to cause significant damage to crops. “The culprit can be one of any three herbicides which have been approved for use on pastures and forage crops,” said David Trinklein, University of Missouri Extension horticulture specialist. Newer versions of herbicides with active ingredients such as clopyralid, picloram and aminopyralid can pass through the digestive systems of foraging animals and arrive, unchanged, in the manure. If that manure is composted, gardeners could unwittingly introduce these plant-killing compounds into their soil.

“My first encounter with this was with a gentleman in northwestern Missouri who was using buffalo manure for composting,” Trinklein said. “We were able to demonstrate, on tomato, that there was something in the compost.” So why not just test compost before selling it? Commercial testing for these chemicals is costly. The test is between $300 and $400 per chemical. Say you test for picloram and it’s not found in the sample. You’ll have to spend another $400 to test for another chemical. You would have to keep testing until you find the culprit. Meanwhile, you’ve spent $400 a test.

It’s not just compost. These herbicides can show up in mulch too. Let’s say a farmer put up hay but it got wet. Normally that would be great for mulch. But if that hay had been treated with picloram, avoid using it since there is the potential for the herbicide to leach into the soil and harm plants. Once these herbicides have been added to the soil, through compost or mulch, there aren’t many options for correcting the problem. You can remove and replace the soil, but that is expensive, labor-intensive and time-consuming. You also have the option to wait until soil microbes break down the herbicides naturally, but these new-generation herbicides have lengthy half–lives of months to years. These herbicides ultimately will break down, but it might take a couple of years, depending on the concentration. We hope in most cases we could plant the following year, but one may want to avoid herbicide-sensitive plants, such as tomato.

The good news is there’s a simple and inexpensive way to test for these compounds. Take green bean seeds and plant them into the compost. Green beans are very sensitive to herbicide. If the seedlings come up twisted and damaged, allow the compost to age until the herbicide is broken down. It is important not to panic. We don’t want to dissuade people from using compost and organic matter. They’re the gardener’s best friend when it comes to building healthy soil. Gardeners should find out whether the compost supplier has used animal manure, and if so, make sure the animals have not been fed forages sprayed with these herbicides. In this situation, being informed and proactive is your best defense. Homeowners and green-industry professionals should use the green bean test before they work compost into the soil. Also, talk with your garden supplier. Make sure they’re aware of the problem and discuss the steps they are taking to avoid it.

Story source: Dr. David Trinklein, University of Missouri

TREES DON’T LIVE FOREVER

We all want our yard trees to last forever. Many times during the year I receive calls from concerned homeowners that say “I don’t want to lose my tree.” Yard trees don’t live forever. Drought, insects, diseases, harsh winters and various other factors take their toll on trees. The past two years have been stressful on trees, killing some and sending others into decline. Keep your trees watered during times of drought to reduce stress. If your tree is dying or dead, all you can do is remove it and plant a new one. Fertilizer and fungicides are not going to bring it back to life.
FALL FRUITS

I want to thank those of you that have given me some fruits this fall to use in programs and for home use. Thanks to Teri for the delicious pears, Mark for the plums, Vanessa for the peaches and apples and Jeanie for apples. I have canned, froze and dehydrated plums, made pear butter and dehydrated pears, made fried apples, and still plan to make apple preserves.

Those of you that have been receiving this newsletter a while, know that I love to visit my parents farm in the Ozarks in the fall. The Ozark hills are so pretty this time of the year with their brilliant array of colors and cattle grazing in pastures. I like to pick persimmons when I am there. Persimmons are usually ready to pick by late October. They must have received a hard frost before picking. Unripe persimmons contain tannin, which causes puckering and distaste. Ripe persimmons are very sweet. The pulp can contain as much as 34 percent fruit sugar. The ripe fruit, almost rotten looking, is soft and it seems to melt in your hand when you pick it up. Persimmons are high in pectin so they can be used in puddings without adding thickeners and sweeteners.

A persimmon fruit has seeds inside. Folklore tells us that upon cracking them open, you will find any one of the three pieces of "silverware" shapes. A knife means we'll have a cold icy winter (where wind will slice through you like a knife), a spoon means you'll need to shovel out of snow, and a fork means you'll have mild winter. So...whichever you find the most shape of in the seeds, is the winter prediction.

I like to make persimmon cookies in the fall. My kids love to eat them soon after the come out of the oven. Here is the recipe that I use.

**Persimmon Cookies**

1 cup persimmon (I like a little more than that)  
1 cup raisins  
1 cup nuts (optional)  
1 cup sugar  
2 cups flour  
cloves

1 egg  
½ cup butter  
1 tsp. soda  
½ tsp. cinnamon  
½ tsp. nutmeg, ½ tsp.

Cream sugar and butter. Add nuts and raisins. Beat eggs, add persimmon and soda, then mix with sugar mixture. Add dry ingredients and mix well. Drop by spoonfuls on greased cookie sheet. Bake approximately 10 minutes at 350 degrees.

PUMPKINS – NOT JUST FOR HALLOWEEN

Pumpkins are a timeless symbol of autumn. They serve as centerpieces, front porch decorations and most frequently as Halloween jack-o’-lanterns. But it’s a mistake to relegate this nutritious vegetable to festive décor. If your idea of cooking with pumpkin is opening a can with a picture of a pumpkin on the label, you’re cheating your taste buds. A two- to six-pound pumpkin is ideal for cooking. Choose a pumpkin that’s a good, solid orange color with a skin that’s not easily scratched. Now, how do you cook this large orange thing sitting on the kitchen table? It’s fairly easy. Start by cutting around the stem with a sharp knife. Then cut the pumpkin in two. At that point you can scrape the seeds out. Don’t throw away the seeds, because they can be roasted. With the pumpkin cut in half, it can be baked, microwaved or boiled. For baking, place the cut side down on a cookie sheet and bake it at 350 degrees until it’s fork tender. That’s about an hour. For microwaving, you do the same thing. Put it cut side down on a microwave-safe dish and cook on high for about 15 minutes or until fork tender. To boil the pumpkin, cut it into chunks and rinse with cold water. Then boil it for about 20 to 30 minutes or until fork tender. Roberts says in all three cases you remove the peel after the pumpkin is cooked. “Once it’s cooked the peel will come off easily. After it’s cooked and peeled, you can puree it a blender or food processor. Roberts says the puree can be frozen and stored for up to one year. This versatile vegetable is low in calories and provides potassium, vitamin C and vitamin A. The puree is great for soups, pies, breads and even pancakes. Diced pumpkin is a great addition to savory dishes like chili and risotto.

**Story source:** Tammy Roberts, Nutrition Specialist, University of Missouri Extension
ORNAMENTALS
- Plant spring bulb flowers.
- Continue watering, especially evergreens if soils are dry.
- Container grown and balled & burlapped trees and shrubs can be planted. Loosen the soil in an area 5 times the diameter of the root ball before planting. Mulch well after watering.
- For best bloom this winter, Christmas Cactus, potted azaleas, and kalanchoe may be left outdoors until night temperatures drop to about 40 degrees.
- Cannas and dahlias can be dug when frost nips their foliage. Allow plants to dry in an airy, frost-free place before storage.
- Spring bulbs for forcing can be potted up now and stored in a cool, frost-free place until it is time to bring indoors, usually for 12-15 weeks.
- Transplant deciduous trees after they have dropped their leaves.

FRUIT
- Persimmons start to ripen, especially after frost.
- Monitor fruit plantings for mouse activity and take steps for their own control if present.
- Place wire guards around trunks of young fruit trees for protection against mice and rabbits.

VEGETABLES
- Continue harvesting tender crops before frost.
- Harvest winter squash and pumpkins before frost.
- Dig sweet potatoes before a hard freeze.
- Gourds should be harvested.
- Sow cover crops such as winter rye after crops are harvested.

TURFGRASS
- Seeding should be finished by October 15.
- Broadleaf herbicides can be applied now to control cool season weeds such as chickweed and dandelion.
- Continue mowing lawns until growth stops.
- Keep leaves raked off grass to prevent smothering grass.
- Now is a good time to apply lime if soil tests indicate the need.
- Winterize lawn mowers before storage.

MISCELLANEOUS
- Week 1-Fall color begins
- Week 3-Begin peak fall color in maples, hickories, and oaks.
- Week 4-End of peak fall color.

GARDEN TIPS FOR OCTOBER

UPCOMING EVENTS
October 3: Putnam/Schuyler Lady Landowner Workshop, Livonia Community Center, 5:30-9:30. Dinner provided. Call the Schuyler County Extension office at 660-457-3469 for more information and to pre-register.

October 5: Field day at Russ Heindselman’s near LaGrange. There will be tours and sessions on bluebirds, fish, pecans, gardening, growing berries and much more. Bring lawn chairs. No cost. This is not an event extension is coordinating. Russ is coordinating this himself. I have been there before, and his place is a very interesting place to visit. You will learn a lot. Call me or email me for directions.

December 6 & 7: Missouri Livestock Symposium, Kirksville.

January 9-11: Great Plains Vegetable Growers Conference; contact me for more information or go to http://www.greatplainsgrowers.org.

January 28: Beekeeping Workshop, Chillicothe. No other information at this time.

April: Spring Forward Workshop, Moberly.

Garden Talk!

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