



High on the Desert

Cochise County Master Gardener

Newsletter

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The University of Arizona and U.S. Department of Agriculture Cooperating

The Virtual Gardener—"Autumn Leaves"

The shortest fall season I remember lasted only four days. I was living near Fairbanks, Alaska at the time, and my wife and I together with some friends went camping over the long Labor Day weekend. When we drove north up the road from Fairbanks on Saturday morning, the trees were leafed out in summer green. When we drove back down the same road on Monday afternoon, the trees were bare. In the space of less than 72 hours, the leaves had turned from green to yellow and red and fallen off the trees. Fall was over.

Our fall season in southeastern Arizona lasts a little longer than 72 hours, but the process is the same. The leaves on the trees turn from green to gold and ultimately fall to the ground. What causes this to happen?

A good place to look on the Web for the latest research news on all kinds of technical and scientific topics is at ScienceDaily

<http://www.sciencedaily.com>

Here's what I found there about fall colors.

Scientists have understood for a long time the chemistry that causes leaves to change their colors to yellow and orange in the fall. The pigments that cause the leaves to appear yellow (xanthophylls) and orange (carotenoids) are present in the leaves all summer long but the green pigments of chlorophyll mask their colors. When the chlorophyll degrades in the cooler, shorter days of fall, the yellow and orange shades become visible.

The red colors are caused by other pigments called anthocyanins which, unlike the yellow and orange pigments, are not present all summer long but are synthesized in the leaves during the fall. That much everyone agrees on. But the mechanism that causes these pigments to be produced is more controversial.

According to the traditional view, they are created from sugars that are trapped in the leaves during the fall. Throughout the warm summer months, the sugars move throughout the plant to provide the energy for growth. When nighttime temperatures drop in the fall, cells in an

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Cochise County Cooperative Extension
www.ag.arizona.edu/cochise/mg/

1140 N. Colombo, Sierra Vista, AZ 85635
(520) 458-8278, Ext. 2141

450 Haskell, Willcox, AZ 85643
(520) 384-3594

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area called the abscission layer at the base of the leaves develop and cut off circulation to the leaves. Sugars still being produced in the leaves at this time accumulate there and chemically change into anthocyanins, giving the leaves their red colors, or so the story goes.

Scientists at the University of Wisconsin-Madison disagree. They postulate that the anthocyanins are really just a form of sunscreen for the plant. According to an article recently published in the journal *Tree Physiology* they believe that the anthocyanins are produced to protect the photosynthetic cells as the chlorophyll begins to break down in the cooler weather, thus prolonging their production of sugars and coloring the leaves.

These explanations are great as far as they go, but other—still



puzzling—questions remain. Why are the colors more spectacular in some years than in others? And why are the fall colors in some areas more brilliant than in other areas?

According to Peter J. Davies, Cornell University professor of plant physiology, there are two major reasons why fall colors are more spectacular in some years than in others. The most brilliant fall colors come when the fall days are bright and warm, the nights are cold but not freezing, and the trees have been under drought stress during the summer. Both the traditionalist “trapped sugar” theorists and the authors of the newer “sunscreen” theory of anthocyanins agree. But what about the second question? Why are some areas especially noted for producing brilliant fall colors?

Two scientists at the University of North Carolina-Charlotte, Emily

Habink and Martha Eppes, suggested the answer in a recent presentation to the Geological Society of America. Their explanation nicely dovetails with the sunscreen theory and provides a clue as to why some areas perennially have more brilliant fall colors than others. The authors of the presentation have observed that nutrient-poor soils—especially soils low in nitrogen—cause trees to produce more anthocyanins and therefore display more brilliant colors. Thus the production of anthocyanins would appear to be a survival mechanism designed to extract the maximum nutrition from poor soils as the temperatures drop and the trees prepare for the cold winter ahead.

Until next time...Happy Surfing!

Gary A. Gruenhagen, Master Gardener
virtualgardener@cox.net

High on the Desert

High Desert Gardening & Landscaping Conference Scholarship Application

The Cochise County Master Gardeners Association (CCMGA) is awarding up to three full scholarships to the 2008 High Desert Gardening & Landscaping Conference to be held at the Windemere Hotel & Conference Center, Sierra Vista, AZ, February 15 & 16, 2008. Applicants are invited to submit an essay on one of the following topics:

- Gardening for food production
- Landscaping with native plants
- Environmental stewardship

Essays must meet the following criteria:

1. 750 to 1,000 words in length.
2. Double spaced and typed on plain bond paper — a computer disk or CD included.
3. Represent original scholarship and be suitable for publication. All references and authorities cited must be properly attributed.
4. Entries must be accompanied by an official cover sheet available from the Cooperative Extension Office at the University of Arizona South campus or from the web site: www.ag.arizona.edu/cochise/mg
5. Entries must be received at the Cooperative Extension Office, 1140 N. Colombo, Sierra Vista, AZ 85635 not later than close of business on January 18, 2008.

Entries will be judged by the Cochise County Horticultural Extension Agent and a committee of Master Gardeners appointed by the President of CCMGA. The awardees will be notified not later than January 25, 2008 and their names published in the February 2008 Master Gardener Newsletter.

Some More Food For Thought

You know one of the beautiful things about being alive is that you never stop learning. I recently started reading a book by Barbara Kingsolver, a Tucson native, called *Animal, Vegetable, Miracle*. In this book, Barbara's family decides they will eat only locally grown foods and foods that are in season. There are a number of things in this book I have enjoyed; one is the insight into the food industry and two the way the family has responded to the change. It has really opened my eyes.

I feel that I can label myself an environmentalist, but it is interesting that I never stop learning about more that I can do—little things that add up to big change. Here in Sierra Vista and the surrounding areas we are fortunate to have great farmers. They grow seasonal crops without chemicals and have animals without hormones. This book sheds new light on how many hands actually touch our food, the chemicals, packaging, and fuels it takes to bring it to our grocery store. Even to grow our food the amount of gasoline and diesel fuel used to till, plant, cultivate, spray, harvest, and bring it to the processing plant is absolutely incredible. The damage they do to the land and animals in the process is crazy, too.

So, in the last week I have bought more produce, goat milk and meat at my local farmers markets. Sierra Vista's market runs each Thursday from Noon to 4:00 p.m. at the corner of



Wilcox and Carmichael throughout November to April. I have been canning tomatoes, peaches, apple sauce and making my own yogurt. Last night I bought a book on-line on how to make my own cheese. Okay, some people would view us as freaks. I am cool with that, but just think of the fuel and recycling I will save by making the food in my home and using the Mason jars I have had for many years. No more yogurt containers either!

Yes, life is good and as long as I am breathing in and out, I will keep learning what it is that I can do to help this big blue and green ball we call earth clean.

Until next time, keep using your own bags at the store—remember, plastic is evil!

Lori Kovash, Master Gardener

Robert E. Call

Robert E. Call
Extension Agent, Horticulture

Carolyn Gruenhagen
Editor

Cuttings 'N' Clippings

* The next CCMGA meeting is 5:00 p.m. Thursday, December 6, 2007 in Room 502 at UAS. Kim McReynolds, Area Agent, Range Management, the University of Arizona Cooperative Extension, Willcox Office, will present a program on the grasses of Cochise County. You are invited to bring grass samples for her to identify—include the stem, leaf, and seed head.

* There are no more Water Wise Workshops scheduled for 2007. Watch for them to begin in January. You can check their web site at www.ag.arizona.edu/cochise/waterwise or call (520) 458-8278, Ext. 2141.

* Due to popular demand, the Sierra Vista Farmers' Market continues Thursdays through April. It is held from Noon—4:00 p.m. on the NW corner of Wilcox and Carmichael. For more information e-mail vallimac@cox.net or call 266-1976.

* A newsletter reader writes that the Tucson recycling center is located behind the Boone-Fickett School at East Calle Arturo Street which is a right turn (East) off Kolb, about .3 miles before Broadway. Kenyon Street is right before Calle Arturo.



Rare Plants of Cochise County

Tom Deecken, retired Wildlife Biologist, US Forest Service (USFS), Coronado National Forest (CNF) made a presentation to the Cochise County Master Gardeners on November 1, 2007. Tom's program covered identification and distribution of some of the rare plants of the CNF and surrounding area. Tom worked twenty-seven years with the three southern districts of the US Forest Service and this allowed him to bring a unique perspective with regards to his personal observations and the historical records on file for these plants.

The CNF has 12 units; within these units, 91 plant species are designated as rare/sensitive, plus 4 more are federally listed. The USFS sensitive plant list follows The Nature Conservancy (TNC) rankings and recommendations of the Rare Plant Committee for Arizona.

A plant could be determined rare if it meets one of the following criteria: 1) widespread geographically and locally rare; 2) restricted ranges but locally abundant; 3) both geographically restricted and locally sparse; and 4) limited distribution in Arizona. In addition, genetic questions may lead to a rare listing.

The focus of Tom's presentation was on 21 rare/sensitive plants (three of which are federally listed) located on and around ranges south of Interstate 10. Ranges included within the CNF were: Chiricahua, Canelo Hills, Dragoon, Huachuca, Patagonia, Santa Rita, and Whetstone. Other areas included: Pajarita Wilderness; Buenos Aires National Wildlife Refuge; Astascosa, Tumacacori, and

Mule Mountains; San Rafael and Altar Valleys; the San Pedro, upper Santa Cruz, upper Yaqui Rivers; and numerous other areas.

With each picture, Tom described unique features of the plant's habitat, flower color, time of blooming, mountain range location, and historical records if available. The program started with a discussion of the Pima pineapple cactus. A brief article about this cactus is in the April 2007 Arizona Native Plant Society's (ANPS) *The Plant Press*. The article can be downloaded at www.aznps.org. Email Sarah at asmcran@cox.net if you want of list of the plants discussed at this presentation.

Some of the plants discussed can be found on excursions around Carr and Miller Canyons:

- ◆ Carr Canyon: along the Carr Canyon Road look for Thurber's hoary pea, Lemmon milkweed, and Huachuca Mountain lupine; an interesting grass, *Tripsacum*, grows in the lower canyon; Tepic flame flower is found on the rocky outcroppings in the Reef area.
- ◆ Miller Canyon: Thurber's hoary pea occurs along the lower portion of the Miller Canyon Trail near the junction with Clark Springs Trail. Lemon lily can be found in some years at the Tombstone water intake about 0.3 of a mile above Beatty's B&B – better numbers are found further up the canyon after the trail crosses the creek. Look for Lemmon's milkweed on the north side of the trail above Tombstone's intake as well.

If you see a rare plant, please report the find to the land management agency (USFS, BLM, TNC, etc.).



Lessingia lemmontii
Lemmon's milkweed

For more detailed information on these plants check out the USDA web site <http://plants.usda.gov/> or rare plant information can be found on the Arizona Game and Fish Department website http://www.azgfd.gov/w_c/edits/hd_ms_abstrats.shtml. A good reference book is *Arizona Rare Plant Field Guide* (2001). This publication was available from the (ANPS) but may now be out of print. A reference copy is kept at the Forest Service Office at 5990 S. Highway 92 in Hereford. Contact Glenn Frederick, District Wildlife Biologist, at 378-0311 prior to visiting the office.

*Sarah Turan, Master Gardener
Tom Deecken, Contributing Author
Glen Frederick, Contributing Author*

The Agent's Observations

Q

I was mowing our lawn and there were little yellow-greenish colored insects, with black spots, flying up from under the grass. What were they and are they harming our lawn?

A

These insects are cucumber beetles and their larvae are called corn rootworms. There are several species. Two common species are the: spotted cucumber beetle



(adult) or southern corn root worm (larvae) (*Diabrotica undecimpunctata howardi*) and the western spotted cucumber beetle (*Diabrotica undecimpunctata undecimpunctata*). Other species are striped like the western corn root worm (*Diabrotica virgifera virgifera*). The adults you see are preparing to overwinter in the lawn. They may also hunker-down under other plant matter. They will become active again in the spring and lay their eggs in the soil next to host plants. Some species lay eggs in the fall.

Eggs hatch and the tiny white larvae burrow in the roots, crowns, and stems and may feed externally on the roots. With high populations plant damage may be severe. Adults feed on above ground plant parts. Adults are vectors (spreaders) of several viruses and bacteria diseases. These include maize chronic mottle virus and/or maize dwarf mosaic virus that effect corn and other grasses. Bacterial wilt of cucumbers and cucumber mosaic virus affect cucumbers and related species. They are also vectored by cucumber beetle adults. Other species of *Diabrotica* are general plant feeders.

Control: Natural control of rootworm larvae is provided by ground and rove beetle predators, nematodes and some fly species. Also, some protozoan diseases help control populations. Tillage and crop rotation are good measures to decrease populations. When 10% of the roots of a corn crop are eaten then a pesticide treatment may be necessary.

Source: Ralph H. Davidson & William F. Lyon. 1987. *Insect Pests of Farm, Garden, and Orchard*, 8th Edition. John Wiley & Sons. pp 179-182, 300.

Q

There are angled holes about the diameter of a quarter and from one to three inches deep in

our lawn. These holes are randomly spread around the yard. Each morning for the past week more seem to appear. Our Bermuda grass lawn was overseeded with annual ryegrass. We have a fenced yard with wrought iron gates. What is causing this damage and what can we do to stop the damage?

A

These holes are most likely caused by a skunk looking for insects to eat. These include cucumber beetle (see above) and other grubs that are in the lawn. Skunks can squeeze through normal wrought iron gates.

Control: Sprinkle some talcum powder on the sidewalk or on a piece of cardboard behind your gates. This will record the foot prints to help identify the invader. A live trap baited with apple and/or peanut butter can be used. If a skunk is trapped disposal becomes a problem. Call the local animal control office for help disposing of the skunk. If someone is sprayed by the skunk the Extension office has a recipe for a mixture that is effective for odor removal.

Robert E. Call
Extension Agent,
Horticulture



The University of Arizona
Cooperative Extension
Cochise County
450 S. Haskell Avenue
Willcox, AZ 85643-2790

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The 15th annual High Desert Gardening & Landscaping Conference sponsored by Cochise County Master Gardeners Association in conjunction with the University of Arizona will be held Friday and Saturday, February 15 & 16, 2008 at the Windemere Hotel & Conference Center in Sierra Vista. Registration forms will be available on the web site and Cooperative Extension office after January 1. There is a fee for this conference. Scholarships are available—see Page 2 of this newsletter for details.

Good Habits Save Water!

- ◆ Don't run the faucet until the water gets hot. Heat water on the stove or in the microwave.
- ◆ Wash fruits and vegetables in a container of water and then use it to water plants.
- ◆ When you rinse out the coffee pot, use the water in your compost bin or on your garden.
- ◆ Keep a pitcher of water in the refrigerator instead of running the water until it is cool.
- ◆ A garbage disposal is an inefficient way to get rid of kitchen scraps. How about making a compost. Save egg shells, used coffee grounds (and the unbleached paper filter), tea bags and trimmings from fruits and vegetables for your compost bin. Do not compost meat and dairy products, including fats.
- ◆ Always fix drippy faucets and leaking pipes.

Give some weeds an inch, and they'll take a yard!

- Farmers' Almanac, Vol. 191