



The Virtual Gardener—Pre-Emergence Herbicides For Effective Weed Control

This year, we in southeastern Arizona, have been blessed with a particularly heavy crop of weeds, probably because of the early start to the summer rains. The weeds seemed to pop up overnight and grow...well, like weeds. As usual, I was caught somewhat by surprise. I treated some of my cactus beds with a pre-emergence (AKA pre-emergent) herbicide and saved myself some pain, but I should have also used it in other areas as well. I also used post-emergence herbicides—glyphosate and 2-4-D—in some areas, but it took days to weeks to see any results and left me with a mess to rake up when the weeds were dead.

Once the weeds have emerged and begun growing, there is really no easy way of dealing with them. They can be pulled, scraped, mowed, or they can be killed with post-emergence herbicides. Pulling and scraping disturbs the ground and promotes the germination of even more seeds. Mowing creates a mess that has to be raked up and leaves ugly stumps of weeds to grow again. And, as mentioned above, poisoning takes a

relatively long time to work and also creates yet another mess to be cleaned up.

For non-organic gardeners, chemical pre-emergence herbicides are the best way to control weeds. As the name “pre-emergence” implies, these chemicals control weeds after they germinate from seeds but before they emerge at the soil surface. These herbicides do this by interfering with the enzyme chemistry that promotes growth, not by preventing the germination of seeds. Since they do not interfere with weeds that have already emerged from the soil, they must be applied before weeds appear at the surface. Timing is important.

Because pre-emergents do not affect plants that are already growing, they are safe to apply around existing plantings, but not in beds you’ve seeded!. In fact one of the biggest uses of pre-emergents is to control crab grass and other weeds in established lawns.

It was previously thought that the pre-emergence chemicals created a “blanket”

(Continued on Page 2)

Inside this issue:

Fall Plant Sales—Tucson	2
October Reminders	2
Cuttings 'N' Clippings	3
This Month in the Garden	3
Ready, Set... Grow!	4
At a Glance Box	5
Fall Grasses	5



COLLEGE OF AGRICULTURE AND LIFE SCIENCES
COOPERATIVE EXTENSION
Cochise County

Cochise County Cooperative Extension

www.ag.arizona.edu/cochise/mg/

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

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

(Continued from page 1)

one or two inches beneath the surface of the soil and that anything that broke through this “blanket” would cause the herbicide to become ineffective. [Research](#) done by the Universities of Georgia and Michigan has shown this to be untrue. The herbicides adsorb (bind) to soil particles and disturbing the soil has little effect on their effectiveness.

Judging by the number of pre-emergence herbicides found on the shelves of local big box stores and other garden supply stores, it would seem that there is not a large variety of these chemicals on the market. However, a quick search online reveals a large number and variety of pre-emergence herbicides are available. A guide for weed control from [Penn State](#) lists over 50 brands of pre-emergence herbicides.

Some of these chemicals are most effective against grasses and others against broad-leafed weeds. Some products are effective against both. The products themselves come in dry granular form that should be tilled in or as solutions dissolved in water applied as a spray. In either case, they must be “activated” by abundant application of water after application. Many products specify up to a half inch of water be applied to the treated area within a few hours of their application. This means they can also be applied before a significant rainfall.

Most pre-emergence herbicides are harmful to aquatic organisms but not to birds. But they should not be swallowed, inhaled, or allowed to contact eyes or skin. **As with all garden chemicals, you must carefully read the label before purchasing and using them**

and take appropriate protective measures for yourself when applying them.

Here in southeastern Arizona we have two weed seasons which pretty much coincide with our annual rainfall patterns. The summer weed season brings a crop of warm-season grasses and broad-leaved plants shortly after the monsoon rains begin to fall in July and reaches a peak in August and September. The winter weed season begins with the winter rains around the end of year and continues through January and into February bringing cool-season grasses and other weeds. To be effective here in Cochise County, pre-emergence herbicides need to be applied twice a year. Mid-June and mid-November would be good choices.

There is good news and bad news for organic gardeners with respect to pre-emergence herbicides. In 1991 Dr. Nick Christians from Iowa State University discovered that corn gluten meal kills many dicot weeds after they germinate but before they emerge. Corn meal gluten was touted as an excellent product for controlling weeds in lawns. That’s the good news.

The bad news is [research](#) has shown it requires the application of at least 20 pounds per 1,000 square feet to be effective. Now 1,000 square feet sounds like a big area until you take the square root and discover that a square measuring only a little over 31 feet on a side contains 1,000 square feet. Even that might not be so bad if corn gluten meal weren’t so darn expensive—around \$60 for a 50 pound bag!

If you would like to learn more about the use of pre-emergence herbicides, check out this [fact sheet](#) from the University of Nevada Cooperative Extension

Until next time, happy surfing!

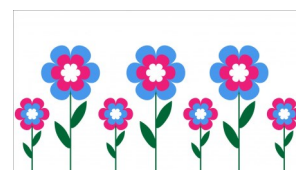
Fall Plant Sales— Tucson

Sept. 29—October 3, Desert Survivors Nursery, 1020 W. Starr Pass Blvd. specializing in native and heritage species—10 percent off.

October 10, Pima County Master Gardener Fall Plant Sale, Pima County Cooperative Extension, 4210 N. Campbell Ave. Nearly 3,000 plants including pollinator species, tropical plumeria, figs, canna lilies, salvia, and a large selection of cacti and succulents will be for sale. Painted gourds, recycled-metal art, used garden tools, and other items will also be offered for sale.

October 17-18, Tohono Chul Park, 7366 N. Paseo del Norte. An abundance of butterfly-attracting milkweed is among the seasonal plants offered.

-Arizona Daily Star



October Reminders

- ◆ Be ready for the first frost
- ◆ Thin seedlings
- ◆ Over seed lawns
- ◆ Plant spring bulbs
- ◆ Divide perennials
- ◆ Don't let weeds go to seed

Cochise County Master
Gardener Newsletter Editor
Carolyn Gruenhagen

Cuttings 'N' Clippings

✿ Cochise County Master Gardener Association will meet on **October 8 from 2:00—4:00 PM** on the UASV campus, room 503. For more information contact Valerie at:

valeriedavidson@email.arizona.edu

✿ The Master Gardeners are at the Sierra Vista Farmers Market on the **first Thursday of each month.**

✿ The next free Water Wise presentation will be *Water Quality & Well Ownership*. We hear a lot about water quantity, but do you know what you're drinking? Come to this excellent presentation to learn about the responsibilities of well ownership. Check the Water Wise 2015 schedule on their web site for time and location at:

waterwise.arizona.edu

For more information contact Valerie at:

valeriedavidson@email.arizona.edu

✿ The Cochise Chapter of the Arizona Native Plant Society holds monthly programs on the third Friday of each month from September through May at 5:00 PM in the Cochise County Community Development Office Conference Room, 4001 Foothills Dr. (corner of Highway 92 and Foothills), Sierra Vista. The Chapter has established a Facebook website at:

<http://www.facebook.com/AZNPSCochise>. Their next meeting will be Friday, **October 16 at 5:00 PM.**

The presentation by Bill Warner will be *Mushrooming Arizona: Edible and Poisonous Mushrooms for Beginners*.



Boletus barrowsi (edible)

This Month In the High Desert Garden— Fall is on the Way

(**Editor's Note:** This article written by Bill Schulze was adapted from a October 2012 article published in the *Sierra Vista Herald*.)

It's October, a time of definite change in the garden. Cool fall weather means that summer annuals and vegetable crops will soon be a thing of the past. Here in the high desert, we might even experience our first frost or freeze this month, although that's more likely to occur in November or December. When chilly weather does come, check out the following link to a University of Arizona publication for information on how to protect tender plants:

Frost Protection, <http://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1002.pdf>.

In the meantime, stop fertilizing and deadheading flowering perennial plants such as roses to allow them to go dormant. Pruning and fertilizing both tend to stimulate new growth and new growth is frost sensitive. Also begin to cut back on watering since cooler weather means less water is needed. This doesn't mean to stop watering; plants always need water, even in dormancy. If we have a dry winter, water trees and shrubs every four to six weeks or so.

Speaking of watering, many people water frequently for short periods of time. I see some lawns being watered every day, and I've heard about watering schedules for big trees and shrubs that are 15-30 minutes three times per week. This is wrong! Except for new transplants and maybe outdoor plants in small containers that are exposed to hot sun, no plant should be watered daily.

Even a lawn in the middle of summer needs watering only once or twice a week. Frequent, shallow watering leads to shallow roots and excessively moist soil that is more conducive to diseases and pests. The proper technique is to water slowly and deeply. Water should penetrate about twelve inches deep for a grass lawn or a bed of annual flowers, two feet for shrubs, and two and half to three feet for trees. Pick up a soil probe for just \$5 from the good folks at Water Wise to help determine how deeply you've watered. Explore the Water Wise website at: <http://waterwise.arizona.edu/> for great information on how to use our scarce water wisely. Water Wise also sponsors regular talks on water related topics in both Bisbee and Sierra Vista.



October is a good time to install cold hardy trees, shrubs, and other perennials because cooler weather significantly reduces transplanting stresses. If it's annual flowers that you are interested in, consider pansies, petunias, bachelor buttons, snap dragons, and English daisies. Some herbs such as thyme, rosemary, and sage are winter hardy and can be planted now. If you've got tomatoes or peppers still growing, continue to harvest them right up until frost strikes. Remove any new flowers that appear since there isn't likely to be enough time for them to yield fruit. Removing them will help the plant "concentrate" on growing and ripening existing fruits. If you are going to plant a winter vegetable garden, it's time to get

(Continued on page 6)

Ready, Set... Grow!

Fall is one of my most favorite seasons. I get a new feeling of excitement and motivation; there's new energy in the air. The lower daytime high and nighttime low temperatures allow for opening the windows, letting a fall breeze flow through the home, planning and planting a fall garden, and of course, observing the color changes in the leaves on trees. The natural fall color show can be so magnificent!



This color show is also an interesting and complex process happening physiologically. Factors that drive this color changing transition are the advanced age and stress of the leaves, the shorter day length, cooler night temperatures and an increase of the presence of a plant hormone known as abscisic acid or ABA. As the duration of environmental changes (*i.e.*, lower night temperatures) become longer and longer, the ABA becomes higher in concentration and begins to form a corky layer of cells at the natural abscission point (where the leaf falls off), between the leaf petiole

and the stem, which eventually causes separation. However, until this concentration of ABA becomes enough to do this, the concentration of three pigments within the leaf begin to alter, causing this glorious display of colors. These three pigments are:

- Chlorophyll – (responsible for the green color we see)
- Carotenoids – (the yellow and orange hues)
- Anthocyanins – (the red we see).

In most plant species, chlorophyll is the dominant leaf pigment, which gives healthy leaves their green appearance during the spring and summer. But as the abscission layer is developing, water and nutrient movement into the leaf is slower, therefore reducing the amount of chlorophyll in the leaf. Since there are lower amounts of the green pigment, the carotenoids get to show through (which, have been there all season as well).

The carotenoids include the xanthophylls, which produce the yellow color, and the carotenes, which absorb more of the orange color. The red anthocyanins are more difficult to come across without a little travel outside the area and this is because only about ten percent of the deciduous hardwood trees in North America contain this pigment. As phosphate and other minerals decline in these leaves, the anthocyanins become concentrated in sugar-rich plant cell sap and this

results in the bright reds and purples.

Weather patterns and the growing conditions of the trees have a significant impact on how long we will see these colors and the pigment being expressed. Physical factors like rain, wind, or anything that physically removes the leaves, of course will shorten the period of visible fall color. However, good soil moisture will reduce tree stress and slow the influence of ABA, therefore giving us a longer fall transition and longer time to enjoy the show. This is because the longer transition allows for the carotenoid group of pigments a longer opportunity to be seen before frost. Also, cold temperatures with high sunlight tend to intensify the red anthocyanin production in the plants that produce them.

To conclude, I have a small task for you...as you are safely driving or walking around this fall and noticing the fall color, maybe stop and take a mental note. What was the beautiful color that caught your eye and what is the species of the tree? Can you think of the names of the ten percent of trees in North America that produce the red pigment?



Happy fall gardening friends!

*Joshua Sherman, M.S.
Commercial Horticulture Area Agent*

"Friends are flowers in the garden of life"

- anonymous

At a Glance Box

It's a Bloomin' Cochise County Native Plant of the Month

Plant: Fall grasses - Blue and sideoats gramas, cottontop, tanglehead

Description: Pretty seedheads

Water Need: No supplemental

Use: Excellent RainScape (landscapes supported by rainwater alone) plants

Culture: Native soils

Learn more: Cochise County Herbarium, www.cochisecountyherbarium.org
For an in-depth article, see below.

Cado Daily

Water Resources Coordinator, Water Wise Program

University of Arizona Cochise County Cooperative Extension

Fall Grasses

Although warm-season grasses flowered in early August, we now have the results of all that wind-borne sneezy pollen; the grasses have seeds. As grass plants get buffeted by wind, the seedheads dance around. It is a splendid sight—especially when backlit by a rising or setting sun.

Native grasses that are particularly pretty in the fall are Tanglehead, *Heteropogon contortus*; Sideoats grama, *Bouteloua curtipendula*; Arizona cottontop, *Digitaria californica*; and Blue grama, *Bouteloua gracilis*. All of these grasses are perennial, providing enjoyment year after year.

Tanglehead is probably the most conspicuous of the grasses listed



Tanglehead
Photo: Max Licher SEINnet

above. It is appropriately named because the seeds have very long – 6 to 10 cm, rust-colored awns that twist or contort (as in *contortus!*), while attached to the grass plant. It is a big tangled mess. The awn is a thin extension of the seed and does a very neat thing. Take a close look at the base of the awn. It is twisted like a corkscrew. When the awn gets wet, it straightens out, and when dry, twists. This corkscrew action causes the seed to drill into the ground. Is that cool or what!? Not only is Tanglehead dramatic to look at with its dark awns, but the robust stems and leaf blades are straw-colored with hints of crimson heralding in the fall season very appropriately!

Grama grasses are a large group of nutritious grasses for wildlife and cattle, as well as attractive landscape plants. Shopping in the nursery at ACE Hardware, I saw a one-gallon Blue grama grass grown by Monrovia Nursery called 'Blond Ambition.' It's great that nurseries are growing native plants. True confession: I have never bought a native grass as a land-

scape addition, but in solidarity, I bought the 'Blond Ambition' and it looks fabulous in my yard. Now I want another.

Blue grama grass makes me smile. When the 2.5-4 cm long



Blue Grama
Photo: Max Licher SEINnet

seedheads dry and drop seeds, they curl and look like smiles or bushy eyebrows; both images are a bit comical for a grass plant so I chuckle. Because the Blue grama grass is a softer grass, it is a good choice for a natural lawn and can be mixed with the shorter Buffalo grass for a lovely RainScape grassy area. Both grasses are sold commercially as seed and as plants.

(Continued on page 6)

(Fall Grasses continued from page 5)

Sideoats grama looks exactly as named. The seeds hang down along the culm (stalk) like oats. Sideoats grass is very common and very



fSideoats grama
Photo: Patrick Alexander SEINnet

easy to identify. Another similar-looking grass is the shorter, less common Sprucetop grama plant. Like the Sideoats, the Sprucetop's seeds hang down along the stalk, but the Sideoat grama seeds are more slender than Sprucetop's which have a spruce tree-type shape (I need those mental associations to help me identify plants!).

If I were a hummingbird, I would line my nest with the seeds of **Arizona cottontop**, *Digitaria californica*. The large seeds are sur-



Arizona cottontop
Photo: Max Licher SEINnet

rounded by soft, white downy fluff (no awns) that make the seedheads look like they are covered in cotton. Don't mistake this grass for the Cane beardgrass (also called Cane bluestem) which has a bushy white seedhead with awns on a taller, stouter culm (if you crush the Cane beardgrass seeds they smell like a blueberry pop tart, another good identifier). According to the website SEINet (a great reference), Arizona cottontop has the species name *Californica*, because the first species was collected in Baja California, Mexico. That tells you a little bit about the toughness of this grass, so give it a try in your yard!

Cado Daily, M.A.
Water Resources Coordinator

(Fall is on the Way continued from page 3)

beets, chard, kale, lettuce, garlic, spinach, and carrots into the ground. If you are starting your crops from seed, do keep the soil moist (not soaked!) until the seeds have sprouted and put out a decent root system.

Early October is also a good time to put tulip, daffodil, and ranuncula bulbs into the ground. These bulbs will grow and flower next spring. If you have bearded irises, this is the time to divide them. Here's a short article from Iowa State University that gives some detail on how to divide irises: Dividing Irises, <http://www.ipm.iastate.edu/ipm/hortnews/1993/6-30-1993/iris.html>.

It's pretty easy and you get irises for free—such a deal!

Happy gardening!

Bill Schulze, Master Gardener