



The Virtual Gardener—Watch Out For Imazapyr!

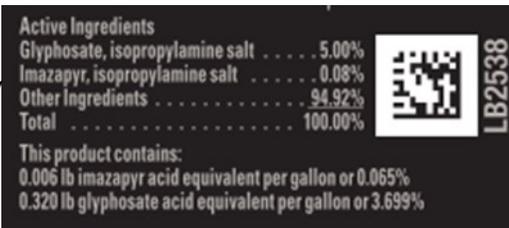
The weedy season is upon us. Besides picking zucchinis and tomatoes, most of us are in the weed eradication business. Some of us scrape, some pull, and many spray. This month I want to discuss an herbicide chemical called imazapyr. This chemical is a very effective non-selective herbicide and a component of many commercially available herbicides. It must be used with extreme caution.

ingested) is quite high at greater than 5,000 mg per kilogram of body weight. This means that a human weighing 130 pounds would have to consume 300,000 mg (2/3 pound) to be at that risk level. Highly unlikely. The chemical also has no known carcinogenic or genetic effects for humans.

Tests also indicate low toxicity to birds, fish, and other mammals. In fact, the Environmental Protection Agency has rated the chemical as safe for use in aquatic environments, including riparian areas and coastal waters.

Imazapyr works to kill plants by interfering with their ability to synthesize certain necessary proteins and is very effective. It is readily absorbed by both leaves and roots and accumulates in the active growing tissues (meristem) of plants where it does its deadly work. As mentioned, it is non-selective and works equally well to control grasses, broadleaf weeds, and even woody plants. And it has a long half-life in the soil (69-125 days), making it perfect for long-term weed control. So what's the problem?

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Be sure to read the list of ingredients on the label of the herbicide before you buy it.

The danger of this chemical is not so much to humans. It can cause eye irritation and skin redness, rashes, and even swelling, but these effects are basically superficial. The LD₅₀ (the amount that is estimated to cause death 50 percent of the time, if the chemical is

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The basic problem is that imazapyr is too effective and too non-discriminating. It doesn't discriminate between good plants and bad plants but kills them all. Of course, other herbicides will also kill your ornamental and food plants but most have limited half lives in the soil so you only have to be careful not to spray them directly on the plants you want to keep. One of the most popular herbicides, glyphosate, is almost instantly neutralized when it hits the soil. It is only effective when sprayed directly on plants. Another popular herbicide, 2-4-D, has a limited lifespan and limited mobility in the soil. Although its effect lingers longer than glyphosate, they are still fairly restricted.

Because of its chemistry, the mobility and persistence of imazapyr in the soil is sensitive to soil pH (acidity). In acid soils, it is relatively quickly adsorbed and its mobility limited. In alkaline soils, such as we have here in Southeastern Arizona, imazapyr is not quickly adsorbed by soil particles, allowing it to move greater distances—both horizontally and vertically. It is this ability to penetrate deep into the soil and make contact with tree roots that makes this chemical a threat to trees. The instructions on the container for one popular herbicide containing imazapyr say never to apply the herbicide to within twice the width of the drip line of a tree you don't want to kill.

As one University of Arizona Horticultural Agent once said about an herbicide containing imazapyr:

“You should not use it within three yards of any plants you don't want to kill—your yard, your neighbor's yard, and his neighbor's yard!”

Research has shown another interesting characteristic of imazapyr. The roots of some legumes that have been exposed to this herbicide—mesquites were specifically mentioned—may exude the chemical. This means that other plants whose roots touch the roots of mesquites that have been exposed to imazapyr may be poisoned.

The moral of this article is that you must always **READ THE LABEL**. If you don't recognize the name of a chemical in the herbicide, look it up on the internet before you buy it. And once you have brought it home, carefully follow the instructions on the label when you apply it.

For additional technical details about imazapyr, check out this [webpage](#).

Until next time, happy surfing!

Gary Gruenhagen, Master Gardener
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Wettie sez...
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Water harvesting
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save water for
plants.

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(520) 458-8278, Ext. 2141

Cochise County Master
Gardener Newsletter Editor
Carolyn Gruenhagen



Monsoon Rains Have Hidden Benefits for Plants

(**Editor's Note:** Adapted from [article](#) of the same title by John Begeman in the September 1998 *Cochise County Master Gardener Newsletter*.)

The loud crackle and thunderous boom of lightning is now a familiar sound as our monsoon is in full swing! Every time lightning strikes, nitrogen in the atmosphere is combined with hydrogen or oxygen to form ammonium and nitrate, two forms of nitrogen. The nitrogen then goes into solution in atmospheric moisture and is washed to the ground in rainfall. Plants then absorb nitrogen from the ground and utilize it for growth. Since it is a key constituent in chlorophyll, the green pigment of plants, nitrogen causes a greening of the plant.

Physicists estimate that roughly 250,000 tons of nitrogen are produced by about 1,800 thunderstorms that occur on Earth every day. Our summer thunder storms can release significant amounts of nitrogen for plant growth here in Southeast Arizona. That causes a significant part of the greening of plants we notice after a storm.

John Begeman, former Horticultural Extension Agent for Pima County

“Give weeds an inch and they'll take a yard.”



Cuttings 'N' Clippings

✿ **The August Cochise County Master Gardener Association meeting has been moved to Thursday, August 20 from 2:00—4:00 PM.** They will be joining with the Sierra Vista Area Garden Club at their regular meeting location in the lecture room of the County Constables Building at 4001 Foothills Drive, on the northeast corner of Foothills and Highway 92. Dr. Paula Kahn-Rivadeneira, Assistant Professor & Extension Specialist, Food Safety and Wildlife, Department of Soil, Water, & Environmental Science, University of Arizona, Yuma Agricultural Center will be talking about *Critters in my garden: Food safety risks and humane solutions*. Check the web site for the next scheduled event or contact Valerie at:

valeriedavidson@email.arizona.edu

✿ The Master Gardeners have returned to the **Sierra Vista Farmers Market** on the **first Thursday of each month**.

✿ The next free Water Wise presentation will be **Saturday, August 8 from 9:00—11:30 AM** in the University of Arizona South PMR. Jan Groth, Master Gardener, will speak on *Plant Now: 20 Most Successful Landscape Plants*. Late summer to early fall is the BEST time to plant most landscape plants. But what to plant? Successful landscape plants, along with design, planting, and care will be discussed. Plants will be for sale following the talk. Check the Water Wise 2015 schedule on their web site:

waterwise.arizona.edu

For more information contact Valerie at:

valeriedavidson@email.arizona.edu

This Month In the High Desert Garden— Time Is Running Out . . .

(Editor's Note: This article written by Bill Schulze was adapted from a August 2011 article published in the *Sierra Vista Herald*.)

It's pretty safe to speculate that August will be a whole lot like July here in the high desert. With any luck, our monsoon rains will continue—let's hope they're gentle—and the daytime highs will be in the 80° and 90°F range. As such, continue to plant annual flowers such as zinnias, cosmos, vincas, and marigolds, and at least



some warm season vegetables. It's most likely a bit too late to plant tomato plants, although early varieties such as 'Early Girl', 'Patio', and many cherry types should still yield decently before frost strikes. If you haven't planted your peppers, chiles, winter squash, and melons by now, it'd be best to hold off until next year. Beans, cucumbers, and summer squash remain good choices and there's still plenty of time to grow more zucchini than any one family can possibly eat.

Continue to give supplemental water as the monsoon rains dictate and remember to water slow and deep. A fifteen minute drip

on your tree or shrub three times a week really doesn't do much good. And, with the advent of the rains, weeding becomes important. Use mulches to suppress weeds or pull the weeds by hand while they're still small. Don't give them a chance to go to seed or your weed headaches will just be multiplied in the months and years to come. Remember that if you give a weed an inch, it'll take a yard!

When mowing grass, leave it 3-4 inches long. Cutting it too close to the ground stresses the grass, especially in hot weather. It also results in a poor looking lawn. As an alternative, think about replacing your thirsty grass lawn with a more water-use friendly landscape. It's hard to argue against spending less time mowing, or a lower water bill!

Keep an eye out for insect pests. I like to use insecticidal soap or hand picking (I know, yechhh!) to control insects. I recommend buying insecticidal soap, whether pre-mixed or in concentrate form, from a nursery. Concentrate is much cheaper in the long run. If you do choose to use insecticidal soap concentrate, mix it carefully according to label instructions. There's a fine line between insecticidal soap and herbicidal soap. I nearly killed a couple of my wife's rose bushes years ago when the soap solution I made was not only made from regular dish soap but was a bit too strong. Realize, too, that you must spray the soap solution directly on the insects. Soap solutions work by suffocating insects with a soap film. An insect crawling over a sprayed leaf won't be killed.

Bill Schulze, Master Gardener

Ready, Set . . . Grow!

“Fungus Amongus!” If you haven’t seen any yet, it will not be long. It has been a blessing to receive so much consistent rain lately. Some areas (*e.g.*, Sierra Vista) are, of course, seeing it more than others, which is the usual nature in our desert climate. But the conditions are perfect for fungus to multiply and spread. All sorts of fungus can run rampant during this time: powdery mildew, anthracnose, root rots, sooty mold, rust, and verticillium wilt just to name a few. I don’t mean to sound like a “downer,” but it’s true.

I was recently reminded by a visiting friend and plant pathologist that, “Of all the diseases you will get called on to identify it is almost always 90% of the time, fungus.” Pathogenic “fun-guys” (see what I did there), spread by spores, which can be thought of as seeds of the fungi. However, as we know, these spores cannot be seen by the naked eye, so you may have fungus but just don’t know it. When the conditions are right, these spores germinate and form mycelia with specialized structures used to penetrate plant tissue and live from its resources and nutrients. It is only when these mycelium are so vast that the fungi becomes visible to the naked eye for us to see the symptoms left by our “not-so-courteous” guests. Symptoms we frequently get asked about like galls, cankers, leaf spots and curls, blight, and root rots can be caused by both fungus and bacteria. However, when the symptom is mold, smut, sooty mold, or powdery mildew it can only be a pathogenic fungus.

Why are they so hard to get control of once they are “partying” all over your squash and roses?

These fungi don’t necessarily need a partner to reproduce. They have the capability of reproducing sexually and asexually. Plus, once spores are produced, wind, rain, irrigation water, tools, animals, and insects can disperse them over great distances and quickly. This is why it is a great battle to get them under control and why it is advised that preventative measures be used from the get-go. Once the disease is present it is usually too late to spray anything that will control it.

So, what are ways we can prevent these pathogenic fungi?

There are organic and synthetic fungicides available on the market, and if you are organic, be sure to check the Organic Materials Review Institute (OMRI) site for any listings first. Here is their website: www.omri.org/omri-lists.

I must say one thing about spraying fungicides here...**DO NOT spray the same fungicide over and over again!** I really hope to get this point driven home. Because of the quick life cycle of these fungi, they become resistant to a chemical, which is also why it must be applied correctly, according to the label, and with complete plant coverage (also, read the precautions for protecting you).

It is best to have a diverse program with different preventative controls being applied over the length of the season. (Side note: This is what is done in commercial orchards and row crops.)

Here is a list of some natural fungicides and control mixtures to get you started:

- Sodium bicarbonate (yep, baking soda)—Mix two teaspoons

baking soda with two teaspoons horticultural oil with one gallon water—may add about a teaspoon of a surfactant (such as dish soap) to help it stick.

- Copper compounds (a.k.a. Bordeaux mixture)

- Copper soap fungicides
- Neem oil
- Potassium bicarbonate
- Sulfur dust
- Lime sulfur (calcium polysulfide) Only use during dormancy.

Caution: it’s caustic—*Sunset Western Garden Book*, 2001

Notice throughout this article I referred to only pathogenic fungi. As many of you know, there are more beneficial “fun-guys” that live synergistically with plants and actually help them grow, but more about that another time.

Happy gardening, friends!

Joshua Sherman, M.S.

Commercial Horticulture Area Agent

Note: Mention of commercial products or trade names is made with the understanding that no endorsement is implied and no discrimination is intended by UA Cooperative Extension.



August Reminders

- ◆ Keep pulling the weeds
- ◆ Prolong annuals by dead-heading spent flowers
- ◆ Plan your spring wildflower garden
- ◆ Watch for nutrient deficiencies, sunburn, salt burn, over-watering, & insects
- ◆ Fertilize

At a Glance Box

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

Plant: Apache plant, *Guardiola platyphylla*

Description: Large shrub. Deciduous.

Blooms: White flowers, mid-spring

Use: Excellent Xeriscape plant

Culture: Not picky. Hands-off!

Learn more: Cochise County Herbarium, www.cochisecountyherbarium.org

For an in-depth article, see below.

Article by Karen LeMay, Guest Author

Founder of Pollinator Corridors Southwest

Apache plant *Guardiola platyphylla*

I first discovered Apache plant (*Guardiola platyphylla*) during a naturalist's walk led by Vincent Pinto in the Coronado National Memorial. It wasn't the numerous tiny white flowers that caught my attention—it was the interesting leaf shape and plant's form. Since then, I've learned how valuable it is for native pollinators.



Apache plant is native to northern Mexico in Sonora and Chihuahua, and Cochise, Santa Cruz, Pima, and Gila Counties in Arizona (USDA Plant Database <http://plants.usda.gov/>). The other thirteen *Guardiolas* are Mexican. Apache plant's natural habitat is upland areas, growing on rocky slopes in oak-juniper canyons. It can reach one meter in height. I haven't seen any that large in the wild, but there's one at Tohono Chul Botanical Gardens in Tucson that's even taller.

I learned that Apache plant was named after a Spanish botanist, and that *Guardiola* is a common family name in Spain, but no more about its namesake. I have never learned why it's called Apache plant. If any of you have further information concerning its common name, please share it with me. I did read that in Mexico, a tea made from the leafy stems is used to treat cattle with skin infections.

Given its honeysuckle-like appearance, I was surprised to learn that Apache plant is an aster. Its curious flowers don't exhibit the *Asteraceae*'s typical sunflower-like shape. Instead, the irregularly-shaped ½ inch white flowers, with one to five rays ("petals"), and only a few disk flowers are clustered at the tips of the stems. Attracting numerous pollinators, it appears that they provide a lot of nectar.

Our home adjoins the Coronado National Memorial area, and I have made many trips along the road to Montezuma Pass, observing the flowering plants that thrive there. This has helped me select plants for our habitat garden, as my mission has been to use as many local natives as possible. When I discovered that Desert Survivors in Tucson

(<http://www.desertsurvivors.org/plant-lists.html>) propagates and sells Apache plant, I purchased three. I planted them in full sun and partial shade and after several years in the ground, all are thriving. During one especially mild winter they were evergreen, and were the earliest plants to flower in our yard, offering nectar to a variety of spring pollinators. During more typical winters, the plants are deciduous, but quickly leaf out from the base and flower by mid-spring.

In our yard, we have observed a number of bees nectaring on

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The Cochise County Master Gardeners are now on Facebook!

Like us at www.Facebook.com/CochiseCountyMasterGardeners

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Apache plant, including the sweat bees, *Augochlorella* and *Halictus*, the tiny carpenter bee, *Ceratina*,

Carpenter bee, *Ceratina*



and honey bees. Butterflies on its flowers have included Grey Hair-streak, Marine Blue, and the locally uncommon Eastern Tailed-Blue.

Apache plant makes an attractive specimen plant in a formal setting and, as noted above, it's

an excellent choice for a wildlife/pollinator habitat garden. Either way, it has many benefits. A local native, it is adapted to our nutrient-poor soil, extremes in temperature, dry windy weather, and rainfall that is absent for months or comes in downpours. It doesn't require soil amendments, pesticides, or pruning, and makes little demand on our scarce water resources. In the wild or the garden, it is a nicely shaped

Eastern Tailed-Blue



plant that blooms several times a year, each blooming period providing nectar for a different set of native pollinators.

It seems like once you're introduced to a plant, you begin to see it everywhere. This spring I noticed many volunteers of Apache plant along the five mile Coronado Memorial Drive (off of Hwy 92 in Hereford) that leads into the National Memorial and visitor's center. Maybe they were there before I discovered them, but now I'm well aware of them and will look for new pollinators at their flowers.

Karen LeMay, Guest Author, Founder of Pollinator Corridors Southwest (a new nonprofit supporting native plant habitats and their pollinators). For info see:

www.PoCoSouthwest.org

Photos and technical advice from Robert A. Behrstock

August 29, 2015

10:00 — 2:00 PM

Water Wise/Master Gardener

18th Annual

Xeriscape Tour!



Photos and video by Carolyn Gruenhagen

Don't miss this exciting tour!

For a short video tour of an amazing 5 acre cactus/succulent/rock sculpture garden on the tour, [Click here.](#)

Contact the University of Arizona Cooperative Extension for information and maps.

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