University of Arizona Yavapai County Cooperative Extension

Yavapai Gardens

Master Gardener Newsletter August-September 2018

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Growing Chilies and Peppers

by Nora Graf

Chilies?? Peppers?? What's the difference!? Botanically, not much. For this article chilies and peppers are the same plant. They are sometimes broken down into three categories, bell peppers, sweet peppers and hot peppers. Taxonomically they are in the same family. If you didn't know, tomatoes are close relatives. Peppers are in the Capsicum family and the hot ingredient in them is capsaicin along with a few other chemicals called capsaicinoids. The quantity of these chemicals varies from variety to variety and are also impacted by cultural practices. Water stress can create hotter chilies. Capsaicin binds to pain receptors in the mouth which causes the receptors to relay the heat and pain to the brainstem and thalamus.

Over time, chiles came to mean the peppers that are on the hotter side while bell peppers are the sweeter or non-hot varieties. On the hotness scale, otherwise known as the Scoville heat scale, green bell peppers are 0 while the habanero measures 100,000, although these days 100,000 is fairly mild. Today there are chilies available that measure in the millions of Scoville heat units (SHU).

Chiles in the diet have been dated to at least 7500 BCE and domestication of the plant happened over 6000 years ago in Mexico, Central and South America. Christopher Columbus was one of the first Europeans to encounter them. Once they were introduced to Europe they spread across the world, becoming an important part of many different cultures. The name "pepper" came from the Europeans as they equated them to the black pepper we have in shakers and grinders. This type of pepper is from the tree *Piper nigrum.*

Regardless of what you call them, peppers and chiles are grown the same. Plant them in good soil amended with compost or aged manure. A moderate amount of extra nitrogen and phosphorus fertilizer will help improve the vigor of the plant. They need daytime temperatures between 65 & 85°F and above 55°F nighttime temperatures to set fruit. With even, deep watering and at least 8 hours of sun a day and you should have a bountiful crop. They tend to flower quickly but pinch off those first blooms to help the plant grow larger. I know that's hard but giving the plant a chance to put on more size and leaves will give you a better crop overall. The fruit can be picked anytime. As the fruit develops it will usually change color and become sweeter. As with most vegetables there are a number of stumbling blocks to achieve that good yield.

Flower Drop is when buds, flowers and immature pods drop from the plant. This is usually caused by some type of stress. Lack of pollination is one of the first things to consider when flowers drop. You

can hand-pollinate but planting flowers that are known as bee attractors will help. Zinnias and marigolds are both good summer bloomers. Other stressors are high temperatures, poor watering practices, high humidity, strong winds and nutrient problems. Some varieties may be more tolerant to some of these problems

Sunscald shows up as large tan colored areas that are sunken, soft and wrinkled. The symptoms appear on fruit that is directly exposed to the sun during times of high temperatures. These areas can be openings for fungi and bacteria. The symptoms can sometimes be confused with blossom-end rot. Sunscald can occur anywhere on the fruit while blossom end rot is only found at the blossom-end of the fruit. A good lush plant with lots of leaves will help protect fruit but you can provide LIGHT shade to the fruit if necessary.

Wind injury is a problem we don't think about much but peppers can be damaged by strong winds. Their leaves can become desiccated, wilt and dry up. They can also be physically torn or cracked. The entire plant can be broken at the soil also. If you know a big storm is coming you might want to put up some protection for the peppers.

Salt Injury shows up as leaf necrosis, wilting, defoliation and burned root tips. The salt can be in soil, water, or both. Loss of yields can be significant. In home gardens it is most often caused by poor watering practices. Peppers need deep watering. With shallow watering the moisture gets drawn up and concentrates salts in the root zone. Deep watering moves the salt below the roots.

Small-sized fruit is something that happens in the summer. Fruit doesn't set as well and fruit size will be smaller than normal. This is caused by high temperature and stressful growing conditions.

Blossom-end rot is same as what happens with tomatoes. It shows up as a brown to blackened soft spot at the blossom-end of the fruit. You want to keep your soil evenly moist. Epsom salts will not solve the problem. Improve your watering practices and it seems to go away as summer warms up.

Root-Knot Nematodes are tiny non-segmented worm-like creatures in the soil. You won't see them without a microscope but the damage they do is visible in the roots. The nematodes infect the plant and lay eggs in the root or on the root surface. The eggs may hatch or overwinter in the soil. They form galls or knots on the root system. The knots can be from 1/8 inch to 1 inch in diameter and are very visible on the roots. The damage can prevent the plant from getting water and nutrients. The plant will wilt, become stunted and have yellowish leaves. Once the nematodes are in the soil they are very hard to get rid of. I had them in a couple of my raised beds, probably brought in on contaminated soil in bedding plants I bought. It took several years to get rid of them and I am still very careful about planting in those beds. For control options check out Jeff Scahlau's "Backyard Gardener" article: https://cals.arizona.edu/yavapai/anr/hort/byg/archive/rootknotnematodes2015.html

Insects

There are a number of insects that can be a problem on peppers and there are things that look like problems but aren't. Some you can treat effectively, others you can't. Some of the pests can be controlled by chemical agents. I am not going to list them and it is your responsibility to use the correct product. First identify the pest, then read the labels carefully and choose a product that is designed to treat the pest you have. Apply it according to directions. The label will have a list of pests that the product will treat. If the name of your pest isn't on the label it won't be effective for your problem.

Stinkbug damage will show up as tiny brown specks surrounded by round pale-yellow halos. Stinkbugs overwinter in leaf litter, tree bark and other protected sites. Clean up your garden to reduce the places they can hide. You can prevent this by using row covers early in the season.

Western Flower Thrips are very tiny insects that like hiding out in places where they are hard to see. Thrips can carry some virus diseases. They feed by sucking the contents from epidermal cells. Damage shows up as silvered or bronzed leaves, stunted leaves and terminals, and scarred and deformed flowers and fruit. The bad news is there is just not much you can do about them. Because they hide in the deep crevices in the plants sprays generally don't reach them. Some years are worse than others for thrips.

Leaf Miners tunnel between the upper and lower leaf surfaces causing visible trails in the leaf. It rarely causes enough damage to be concerned about.

Flea Beetles leave characteristic "shot holes" in the leaves. In heavy infestations the leaves can be damaged enough to stop growth and even kill the plant. Use the link below to find a "Backyard Gardener" article that should help you control flea beetles. https://cals.arizona.edu/yavapai/anr/hort/byg/archive/fleabeetles2017.html

Aphids cluster on the bottoms of leaves and new growth. They are sucking insects and feed by piercing the plant tissues and sucking out the sap. There are many different species of aphids. If the infestation isn't too large

you can spray them off with water or use a spray of insecticidal soap.

Diseases
There are a number of diseases that will affect peppers. They are often seen as mottled green and yellow foliage, malformed leaves and fruit. In all cases the plant should be immediately pulled and put in the trash. You do not want to put these plants in compost piles. Curly top virus is the one most commonly seen in Yavapai County.

Heat Scale for some of the more popular varieties
Bell Peppers—0 SHU
New Mexico chiles (green chile types that turn red on ripening.) The dried red chiles are ground for chili powder include the Big Jim, Sandia, New Mexico, NuMex varieties —500-2500 SHU

Pasillas or Chile Negro are used in moles and are thought to be the predecessor of the New Mexico type—1000-1500 SHU
Jalapenos can be green to purple. Used in fresh salsas, pickled, canned and bottled. Chipotle chilies are smoked jalapenos—2500-5000 SHU
Serrano's are dark green and narrow in shape. They can ripen to red, orange or yellow—10,000 to 23,000 SHU

Chiltepins are the wild ancestors of today's chiles and still grow in the wild in parts of Arizona. They are small, round, red and spicy—70,000+ SHU
Habanero are the hottest variety in most stores—200,000 to 300,000 SHU
Scotch Bonnet is popular in Caribbean islands, Guyana, Panama and parts of Africa. It comes by its name because it resembles a tam o'shanter hat. There is a Scotch Bonnet that is also completely sweet—150,000 to 300,000 SHU

There is a race to produce the hottest chiles, but seriously folks, these could really hurt you. While sources say you would be incapacitated before eating enough to kill you, you could experience fainting, vomiting or as one source described the sensation "like chainsaws ripping through their insides." There are stories of people with damage to the esophagus but they may just be stories.
Ghost Pepper or Bhut Jolokia has many names depending on the region where it is grown and its heat level can vary depending on growing conditions —1,000,000+ SHU
Trinidad Moruga Scorpion apparently has a fruit-like flavor where the heat builds and builds— 2,000,000+
The latest and hottest entry as of this writing is **Pepper X** —3.18 million SHU (unconfirmed)

Looking to Escape?

The summer heat can get to everyone, including old-timers (meaning the length of time you have lived here vs. how old you are), who have survived summers here for years. You just reach a point where you have to go somewhere cooler. While it would be nice to jet off to Canada or Iceland, for many of us that is unlikely, so we need to look closer to home. In Arizona we look for places like Show Low, Flagstaff and the White Mountains. Flagstaff is the choice of many, if the line of traffic on I-17 is any indication. If you live in the Verde Valley I-17 can be a disaster on weekends. I don't know how it works if you are coming up from Prescott. Whether weekday or weekend, Flagstaff is lovely place for a summertime trip. There is one destination I have in mind that is an oasis for gardeners. At 7150 feet elevation this cool day trip is on a short and interesting drive. Three miles of dirt road but accessible to all vehicles, from downtown, to the Arboretum at Flagstaff. You can wander on your own or attend one of their special events or activities. Many of the plants they grow can also be grown in Yavapai County, especially at higher elevations. Arboretums and botanical gardens are great places to see what a mature plant will look like and get ideas for your own garden.

For those of you who are wondering, the definition of arboretum (as compared to botanical garden) is all about the trees. The Latin word means "a place grown with trees". Arbor means "tree", etum is a suffix used to form the names of gardens and woods.

Events
Thru Oct 31, 11am & 1pm Garden Tours
Thru Sept 30 Butterfly House
Thru Sept daily Botanical Blacksmiths & Friends
Aug 18-19 Mushroom Foray & Tasting
Sept. 9 Wine in the Woods
Sept. 30 Festival of Science Open House
Oct 28 Pumpkin Walk & Fall Fest
Nov 30 Festival of Trees
Groups tours available by appointment

http://www.thearb.org
Closed Tuesdays
9am to 4pm thru Sept 30
Admission is charged, including for your dog if you bring one; Fridays are half-price. (No dogs at special events; please check the website or call for more information)
928-774-1442
4001 S. Woody Mountain Rd.

Monsoon Madness 2008: Origins of a Yavapai County Master Gardener Tradition

How many of us hauling plants out of the Mackin building's basement at 6 a.m. this past July reflected on the origin of the event? Probably not many, especially when we had Cathy Michener urging us to "get the houseplants next."

In 2008 we were slated to host the Arizona Highlands Gardening Conference. Started several years earlier, the Conference was a popular meeting for Master Gardeners (and the public) from throughout the area. The conference moved from county to county each year. It was Yavapai's turn to host, but while sponsors for the event were searched for, few could be found. The October conference was fast approaching. It was May and we were broke. What to do?

Sherry Morton floated the idea of having a plant sale to raise money. The idea swiftly caught on. It was decided to have the sale as quickly as possible. Cynthia Cartier (future MGA president) rallied the volunteers; Bev Bostrom and Richard Wise became the first Chair/Co-Chair of MM. P.J. Ames, Mary Barnes, Kay Gaffney, Sherry Howard, Judy Mannen, Cathy Michener, Missy Sandeen, Bev Turnbull, Tom Watkins also put up their hands to volunteer and committees were promptly formed.

It was decided to focus on perennials, natives and houseplants. How much could be done in just two months? Plenty. Propagation by dividing was the name of the game. Many enthusiastic volunteers worked Intake, Pricing and worked the day of the sale.

The Extension Meeting Room floor was covered with tarps and all sale plants were staged there. The bouquet of the greenery was staggering. It was amazing how many plants the Master Gardeners were able to get together in such a short time. Nurseries donated "slightly used" plants; most plants came from MG gardens.

The "sales area" in 2008 was pure "garage sale format" with most everything out on the hot pavement just outside the office. There were no canopies; no control fencing, and the cashiers held forth at a couple of tables. It was a hot day, with no rain and little shelter; volunteers were sweating. But the public came, and bought most everything in sight. The sale was a financial success ($2,800 gross), as was the conference.

Over the years, Monsoon Madness became a community tradition that continues today with eager purchasers lining up well before the opening at 7:30 a.m. It has also spawned many remembrances: Lesley Alward showing up on sale day with four broken fingers, Cathy Michener sleeping in the parking lot over night (it rained) guarding Monsoon merchandise. There are many more and more to come in the future.

Steve McIntyre

Photos from 2018 Monsoon Madness

Plant storage waiting for removal to sales yard

Plant intake, unloading plants

Plant intake, sorting and cleaning

Sale day; Early morning set up

Sale day; Crowd buys everything in sight.

Monsoon Madness 2018

Number of plants: 2585

Number of volunteers: 84 over 5 days

Number of customers: 815 not counting MGs

Net profit (after expenses) $8160 (provisional)

Sale day; Cashiers Nancy Christie, Lisa Gerber

Sale day; Garden Information Richard Wise

Sale day; Perennials,Sue Poling

Sale day; Refreshments

Us vs. Them

by Nora Graf

August, September—two words that can strike fear into an Arizona gardeners life. What happens in August and September: heat, more heat, humidity and once in a great while rain, and then more heat and more humidity. The heat can make you envious of those that live in cooler climates. I thought I'd compare what gardeners are doing elsewhere vs. what we are doing.

Other Places
Arizona Gardeners

Order spring bulbs
Spring, what's that?

Check mulch, add more if necessary, add compost
Shovel something!? You've got to be kidding, the only thing I'm shoveling is ice into a gin and tonic.

Take pictures of your garden at peak
Stay inside with the air conditioning on, peak was 2 months ago.

Remove diseased foliage
Sit in front of the air conditioner.

Divide Perennials including bearded iris
Set clock to 4am to divide, stop by 5am, the rest of day sit in front of the air conditioner.

Mow wildflower meadows
Make a note on calendar to mow meadow in October—maybe late October.

Seed peas, spinach and keep harvesting
Set the alarm for 4am the night before. Turn over and shut the alarm off and go back to sleep that morning.

Harvest fruit trees
No need, already done, can just sit in front of the air conditioner.

Water if soil is dry
Isn't that pretty much every day? Just asking.

Weed
Getting up at 4am to weed, finish by 5am, the rest of day sit in front of the air conditioner.

Harvest vegetables
I'm letting the javelina in to eat the zucchini.

Landscape Fabric

Not the cure-all we are looking for.

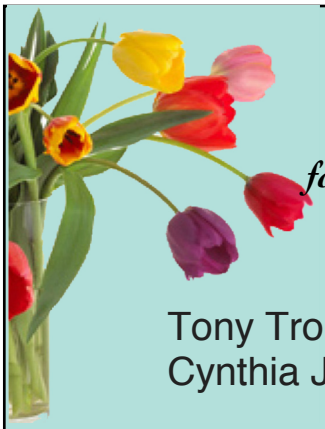
by Nora Graf

Almost no one likes to weed. Weeding is a never-ending process that never seems satisfying because the day after you do it you see all the weeds you missed and all the weeds that sprouted overnight. With our monsoon rains summers can be a horrifying, hot, torturous weeding experience. We all want a way to stop weeding. Well, I have bad news, there isn't a miracle cure. There have been attempts to find a solution. One used in many yards in Arizona is landscape fabric which is covered with massive quantities of heat holding stones. Piles and piles of stones were dumped in yards. These days those stones are being hauled away and the landscape cloth is being removed. A time-consuming and expensive project. Turns out that landscape cloth wasn't the miracle we wanted.

Landscape fabrics are otherwise known as geo-textiles or filter fabrics. They were designed to use on soil to filter, protect or drain. The idea was the fabric would allow the movement of water, allow the exchange of gases while preventing light from getting through and it does those things. The problem with them is they do break down. They are designed to be in an area where the fabric can be replaced over time. Covering it with tons of rocks makes that difficult. As the fabric breaks down, weeds will find their way to the surface of your yard. The second problem is that nature isn't static. Over time and sometimes surprisingly fast, material begins to accumulate on top of the fabric. Once this detritus gets thick enough weed seeds sprout, the roots grow through the fabric and damage it, hurrying the process of breaking down the fabric creating a bigger space for weed invasion. The fabric can make it more difficult to remove weeds. I've had Bermuda grass grow through the cloth and literally destroy the cloth creating a huge mess to clean up.

Use the weed cloth for annual plants, vegetables or in places that are easy to monitor the integrity of the cloth and easy to replace when needed. I've used it very successfully in my vegetable plantings where I lay out the cloth, cut holes to plant through and then cover with a mulch. It works well but rarely lasts more than two seasons before it has to be replaced. You can use it around smaller perennials where it can be replaced every few years but for larger shrubs that are harder to get under it won't be very useful.

So, while landscape fabric has its uses it is no miracle cure. Unfortunately, it's back to weeding.



Congratulations

for completing your first 50 hours

Tony Troianello—mentor Dick Sitts
Cynthia Jones— mentor Faun Vogel

2018 Newsletter Deadline Schedule

The newsletter comes out every two months. Please note the deadlines.

Publish Date	Deadline
Feb-Mar	Feb 1 — Articles Jan 5, announcements Jan 25
April-May	April 1 — Articles March 5, announcements Mar 25
June-July	June 1 — Articles May 5, announcements May 25
Aug-Sept	Aug 1 — Articles July 5, announcements July 25
Oct-Nov	Oct 1 — Articles Sept 5, announcements Sept 25
Dec-Jan	Dec 1 — Articles Nov 5, announcements Nov 25

From the Editor: Send or email articles to the address below. Email is preferred. Please see schedule for deadlines.

Nora Graf
mesquite2@hotmail.com
PO Box 3652
Camp Verde, AZ 86322
928-567-6703

Jeff Schalau
County Director, Yavapai County
Extension Agent, Agriculture & Natural Resources
email: jschalau@cals.arizona.edu

Prescott Office
840 Rodeo Dr. Building C
Prescott, AZ 86305
928-445-6590
MG Help Desk 928-45-6590 ext 222

Camp Verde Office
2830 Commonwealth Dr #103.
Camp Verde, AZ 86322
928-554-8999
MG Help Desk 928-554-8992

Arizona Cooperative Extension
Yavapai County
840 Rodeo Dr. Building C
Prescott, AZ 86305

MG NEWSLETTER

Next Meetings

August 15: Camp Verde, Joanne Oellers, Yavapai College botanist will speak on “Landscaping and Wildlife Habitats.”

September 19 Prescott, Patricia Gulley, Batty About Bats HCNH Volunteer

October 13 Recognition Picnic, Red Rock State Park, Sedona

October 20 “Fall into Gardening”, MG Continuing Education day, Flagstaff

November 14 Prescott, Sue Smith “Native Plants of Bear's Ears National Monument, Utah” (Election of Officers)