

Williamson County Master Gardener Journal

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Dedicated to growing with Williamson County

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PIONEER DAYS AT OLD SETTLERS PARK

Juanita James

Do you remember the good old days? To plow a field you hooked up the plow to oxen or a horse. How about cooking over a campfire all the time, not just on a camping trip? There was no indoor plumbing, thus the invention of the outhouse. This was the way the pioneers lived, and it was all displayed at Pioneer Days at Old Settlers Park in Round Rock.

Master Gardeners spent two days telling children on field trips from Cedar Park, Thrall, Florence and Round Rock about the origin of different vegetables. We also told them about the "Three Sisters Garden" which was an idea of the Native Americans. They planted corn and when it started to grow, they planted pole beans next to the corn. The pole beans would use the corn as a trellis to climb up as well as provide nitrogen for the

corn. They would then plant squash or pumpkin vines which would grow around the bottom of the corn and beans to shade the ground and keep other vegetation from growing. So they called it the "Three Sisters Garden. The corn, beans and squash represent three sisters.. We planted a display of this garden next to the outhouse. We also explained the turning plow, which turned the soil over to help prepare it for planting. The

harrow helped smooth out the soil after it was turned over by the turning plow, and the planter planted the seeds. These three plows were all pulled by oxen or horses.

On Saturday we talked to the general public about all of the above. Some of the adults were amazed that the Native Americans came up with the idea of a "Three Sisters Garden". This is a fun project for Master Gardeners.



The President's Corner

Winola Van Artsdalen



I hope you have had a wonderful month of May! My husband and I are in California visiting our son. I am thoroughly enjoying the beautiful gardens in Berkeley and Oakland. The climate may be too cool for those of us who love the Austin area, but it is heaven for roses! Roses are blooming everywhere! I find particularly intriguing the small yards filled with incredible beauty by their creative owners. Many of their front yards may have only 10 feet between the house and the sidewalk, but they are bursting with color! One of our son's neighbors has such a challenging space, but he lined the front sidewalk with tree roses, surrounded a pond with blooming ground-covers, and put in a lovely waterfall with water flowing around the corner and down the hillside. Beautiful!

I could not resist sending you these pictures taken in the front yard of the elementary school in our son's neighborhood. The children have planted fruit trees such that the front yard of the school has become an orchard. Obviously, the children made their own plant markers!



I look forward to returning home to work with you in preparing for the JMG teachers' class in July and the new MG class in August. If you wish to help, please send a note to Juanita for the JMG training class and to JoAnne for the new MG class. The success of all MG activities depends on the ideas and work from all of you, and I love being your cheerleader! See you soon!

Gardening tips for early summer

Look carefully at your trees and shrubs. Last summer's drought followed by the freeze this winter may have stressed them such that they will need extra care such as deep, slow watering and some gentle organic feeding. Be sure you are watering your grass, shrubs, and trees deeply, so that you develop a deep root system in case we have periods of drought again.

Your best preparation for the heat of summer is mulch, which reduces soil temperatures and helps the plants keep growing. It also cuts down on the required weeding time, which you will greatly appreciate as the temperatures climb. Be sure to mulch your container plants as well as those in the ground.

Keep after those weeds! Digging them is certainly the most earth friendly treatment. If you must resort to herbicides, some weeds such as clover are best treated now while vigorously growing. Treating at optimum time may enable you to use less chemicals for desired result.

This is the season to enjoy bright, blooming annuals. Hopefully, they are already planted and established, ready for the hot summer weather, but you can still plant some such as zinnias and cosmos for summer and fall color. Remember that dead heading plants after bloom will help them keep giving you more blooms. You may want to propagate some of the cuttings to have additional plants ready to plant this fall in your garden or to share with friends. With the rains we have had, it should be a beautiful summer. Enjoy!



Larkspur in Norma Beissner's garden

Lawn Care

Patty Hoenigman

When our house was built in Avery Ranch, the builders gave us a choice of two types of grass....St. Augustine or Bermuda. Maybe they wanted to give us something we'd all have to talk about for the rest of our lives, since these grasses are bound to invade each other. A question arose recently about what to do when Bermuda has taken hold in St. Augustine, so here's my explanation which covers a lot about lawn care too.

No Need for Herbicides

St. Augustine will block out Bermuda that has invaded it without needing to apply any herbicides, but it will take some time and diligence to make your lawn as healthy as possible. Start by yanking as much of the Bermuda as you can, so those long shoots don't root again. Bermuda grass is a survivor. It grows from rhizomes, stolons and seeds, so keep at it whenever you see Bermuda show up. The best time to pull out Bermuda, and any other weed, is after a good rain or after watering the area well so the soil is pliable enough to release the roots. It's so supremely satisfying to pull on a weed and have the roots pop out!

Make it your goal is to do everything you can so your St. Augustine grass stays as healthy as possible which will eventually choke out the Bermuda, and many other weeds. This is done by letting the lawn grow a bit taller, providing adequate water, cutting no more than 1/3 of the grass at a time, aerating the lawn annually in the spring or fall, then topdressing with compost, and fertilizing in both the spring and the fall. It helps a lot if your St. Augustine lawn is in the shade, where this plant is happiest and thrives with hardly any water at all. Unfortunately if it's got sun on it, not only will St. Augustine fade, but the Bermuda will flourish since it loves the sun.

It doesn't hurt if your neighbors with Bermuda grass keep their lawns mowed regularly so it doesn't go to seed, though birds will always disperse seeds too. A physical barrier is necessary between lawns of different types so the underground rhizomes are stopped from encroaching.

Aerate in the Spring or Fall

Aerating is good for lawns, especially where your soil is heavy with clay, like west of I-35. It allows air to circulate to the roots and breaks up the thatch. I suggest aerating in the spring, like April or early May, after the grass has come out of dormancy. The night before you aerate, mow your lawn short, (two inches) and water it well. Hire someone to do the aerating for you who knows how to handle the equipment. We used pink flags, the kind used on construction sites, to mark each sprinkler head the night before aerating was done, to make sure we wouldn't be stuck with a gnarly repair job. My husband stood in the dry garage turning on each set of sprinklers in sequence, while I loped through the yard wearing my long raincoat sticking flags in the ground while being sprayed with water at every turn. Next time I'll wear my bikini and really give the neighbors something to talk about!

After the aerating job is done, your yard will look like a pack of gophers had their family reunion at your house. It really makes a mess of little plugs of soil that have been pulled to the surface. Don't panic...that's what it's supposed to look like! Allow the plugs to dry for a few days. Then, when you cut the lawn, they will break apart and the soil will be redistributed. If you try using your mower when the plugs are too wet, you'll get a sticky mess on your mower. Not a pretty picture! Remember to reset your lawnmower to three inches.

Myth about Grass Clippings

Sometimes you'll hear people say that thatch is what's formed from leaving grass trimmings on the lawn. This is incorrect! Those blades of grass left behind when you "recycle" your grass disintegrate very quickly, resupplying the soil with nitrogen and other nutrients. You should never need to pick up your grass clippings, except when there is a heavy drop of leaves.

So What is Thatch, Anyway?

Thatch is a build-up of living and dead stems and roots from grass plants at the ground level. The two things that are the primary contributors to thatch are using fertilizers that are too high in nitrogen (anything above 12) and overwatering. Both cause the grass to grow faster than those bits of stems and roots can decompose.

Why is Thatch Bad?

An excessive layer of thatch starts choking the grass, making it unhealthy. These weakened plants are then more susceptible to disease. Since thatch is where pests and diseases get going, a lawn that hasn't been aerated is like a child going to school where someone has the mumps...little Johnny is bound to get sick!

Topdress, Rake and Water

After your lawn has been aerated, now you want to topdress it by spreading 1/4 inch of compost on your lawn. A 40 pound bag holds 2 cubic feet of compost, which will cover 96 square feet. Figure out how many square feet you need to cover and get a few extra bags since the tendency is to use more than necessary.

I see so many yards where several inches of compost are piled up all over the lawn. It looks like a batch of brownies from a Dr. Seuss book with tufts of green grass poking through the fudgy mass. I cringe whenever I see this because it's so bad for the lawn. It's too heavy, blocks the sun from reaching the grass and weakens your lawn. Just a sprinkle is all that's necessary. After spreading the compost, then lightly rake to get the compost to move down between the blades of grass and water it in. When you're done you shouldn't even be able to see the compost on your lawn, but in a few days it will start to green up nicely.

Why Topdress?

Applying compost is very beneficial to your lawn, and doing it right after aeration is the ideal time. It's adding a wide array of trace nutrients that you don't get with the NPK in chemical fertilizers, and compost is full of microorganisms that keep the good guys and the bad guys in check so soil borne diseases don't take hold. It's also helping to break up the heavy clay by adding organic material. By topdressing every year you are gradually changing the tilth (texture) of the soil so water can percolate through it more easily.

Many people ask me which kind of compost I like best. I favor mushroom compost, which I've gotten at Lowe's. It costs about a dollar more per bag than other types, but you're really getting your money's worth out of it because it's teeming with beneficial microbes, plus it's completely broken down into non-recognizable organic material. If you get a bag labeled "compost" that has woody materials in it, that's not suitable for use on your lawn. That's generally what comes in a bag of the cheaper "compost". Those woody parts are just fillers - you want the real deal!

Fertilize the End of May

We are getting to the end of May now which is the best time to apply a fertilizer to get your lawn healthy before our Texas heat sets in. If you've already fertilized, it's not bad, you've just made your grass grow faster, and you've probably had to mow more frequently than if you'd waited a little while.

Use a fertilizer with low phosphorous...that middle number in the NPK...should be zero or no more than 2 because soils in Austin are already very high in phosphorous. Adding more phosphorous is not only unnecessary but excessive phosphorous stops the uptake of other nutrients. A slow-release fertilizer that's about a 12-0-4 would be about right. Stronger fertilizers aren't necessary and promote thatch. They often wash away without your plants realizing full benefit from them.

In addition, too much nitrogen stresses the plant by making it grow too fast, which also makes it necessary to mow your lawn more often. A slow release fertilizer is always the very best choice to have your lawn get the full benefit and save you from problems down the line.

Sharpen Your Lawnmower

One last suggestion is to have your mower blades sharpened in the spring. The ragged edge left from cutting grass with a dull blade is leaving your lawn more susceptible to disease. There are lots of local folks who have a home-based business repairing and sharpening mowers.

In Summary

Every time I hear an Aggie professor at a Master Gardener class explain how to avoid a disease in a plant, it so often goes back to keeping the plant healthy to begin with, and your lawn is no different. By getting into the habit of doing these things for your lawn each year, it will be green and healthy and dense enough to keep even that pesky Bermuda grass at bay.

Field Trips

We will postpone field trips until the fall when the weather will be more conducive for touring gardens. If anyone has any suggestions for a garden, or lecture, that would be of interest to the group please notify me at terobin@suddenlink.net

Thank you,
TERESA ROBINSON
Trip Coordinator

Monthly Meetings

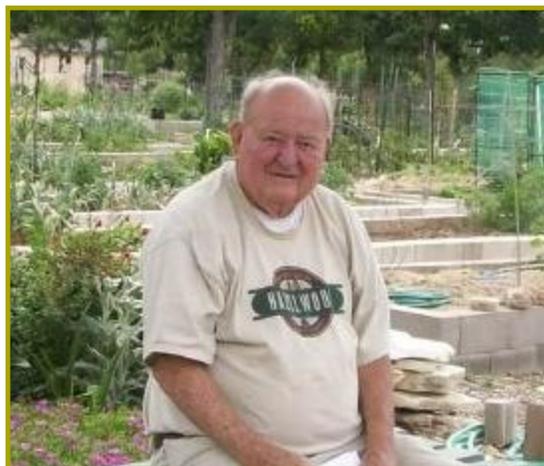
Williamson County Master Gardeners hold monthly meetings at the Williamson County Extension Office, 3151 SE Innerloop Road, Suite A, Georgetown on the second Monday of each month at 6:30pm. Master Gardeners and the public are welcome to attend.

Meet Your Master Gardener

Bob Hazelwood

Sandra Rosen

If you have met and worked with Bob Hazelwood in some Master Gardener activities, you probably think of him as a very nice, ordinary sort of guy. Well, you are only half right – he is very nice, but certainly far from ordinary. He is actually Dr. Hazelwood with a Ph.D. in physiology from UC at Berkeley. He has done extensive teaching and research in the field of diabetes, both in the U.S. and abroad. In fact, two of the major diabetes researchers in the U.S. now are his former students. He has authored and co-authored books, actually textbooks, and numerous articles. He has done significant studies and research in the field of diabetes. He is not ordinary!



For 24 years, in addition to teaching at the University of Houston's Biology department, Bob was a visiting professor at the medical school in Chiang Mai, Thailand. Also, he just happened to be in a Beijing hotel on Tiananmen Square in China when the student rebellion took place in 1989. Although his hotel room faced the square where all the action was taking place, you know by now that he didn't just watch from his room. The students Bob talked to were exhausted but wanted only freedom and democracy for their country. They also wanted to stop the graft. This is only one of the interesting stories from his travels.

Bob grew up in Oakland, California, in an urban area, but his mother was always interested in nature. Though they didn't grow vegetables, they did have fruit trees and berries. Bob, the youngest of three brothers, was the chief "weeder", and from this and from his mom he learned to appreciate nature as an art form.

After service in the Navy, he and Barbara, his wife, lived on a large corner lot, with room for growing vegetables which they did. Also right across the street was another large lot, owned by the J.B. Hunt Company. This was one of their tomato fields. Bob noticed that the plants were always full of tomatoes, but nobody really "tended" to them very much, and they didn't grow very tall – maybe 2 ½ feet. Observing carefully, Bob realized that only when the plants were first planted did they water and fertilize them. After that, the growers just left them alone, and the plants were very productive. That's how Bob grows his tomatoes today – watering only at first and fertilizing at the beginning planting and then at the first fruit. To do otherwise causes the plants to put their energy in growth, not fruit. (The Hunt/Hazelwood Tomato Method)

Bob and Barbara lived in Houston for 40 years where he taught and did research at the University of Houston's Biology department. During this time as he traveled and taught abroad, he always visited gardens, noticing the agricultural practices of the different countries. He came back with many "fruitful" ideas, along with an appreciation of other attitudes and cultures, gardens and growing methods. In one country, the orchids in each hotel room were changed daily. While in another, it was interesting and uplifting to note the pleasure that the people took in their small gardens and small spaces.

When Bob and Barbara moved to Sun City, he asked the CA manager about a community garden and was told that maybe they could put a spigot somewhere in the area that is now the tennis courts. Although that didn't work out, at that time the deer weren't a problem, so a backyard garden worked pretty well. Now Bob enjoys the Sun City Community Gardens, and he also lectures at the Senior University on health related issues.

If you were to "Google" Robert L. Hazelwood, you'd find numerous pages (9+) of articles and abstracts written by or co-authored by Bob. Ordinary – No! Really, really nice – Yes!

Community Garden

Norma Beissner

Norma Beissner and other Williamson County Master Gardeners were available to assist in a community garden project at High Point Fellowship Church in Cedar Park. The garden participants were excited and grateful to have the experience and knowledge that our Master Gardeners contributed that day. Joan Adams shared her knowledge of the square foot gardening technique, while Mary helped give tips about herbs in the garden. John Womack and Sandra Rosen gave instructions on plant spacing and seed depth. Many of the children planted flowers in garden gloves to hang on our fence along with brightly colored paper butterflies to decorate our garden wall.



These sixteen garden plots and three compost bins were built last year. This year eager new garden participants planted their spaces. The group added three more compost bins along with clearing additional space for future beds. A seed potato bed was planted with hopes of a good harvest to donate to the local Hill Country Ministry's food pantry. Weeding and a little paint on the neighboring fence gave the space a positive reception from everyone.

Imagine Texas without Oak Trees

Patty Hoenigman

May 7th found over 30 people gathered at the AgriLIFE Extension Office for a day-long discussion of Oak Wilt disease. It was like a Master Gardener class but with a twist; half the attendees were professional arborists who were as intent on learning about this dread disease as we were. We were all ears as Dr. David Appel, from Texas A & M and Jim Houser, of the Texas Forest Service, shared their vast knowledge.

The message is urgent. Oak trees of many varieties, especially live oaks and those in the red oak family are dying from exposure to the oak wilt fungus. The best hope we have, if we want these grand oaks to survive, is to educate the public.

This disease is already in Williamson County, and it's coming to your neighborhood soon if it isn't already there. One way it's spread is by nitidulid beetles that feed on fungal mats under the bark of infected red oak trees. Spores of the fungus are carried by these beetles from one oak tree to another. These tiny beetles are only 1/8 inch long and might be dismissed as a gnat they are so hard to see. They are attracted to freshly cut wood, zeroing in on the smell of the sap. They land on the wound to feed, introducing the spores of



Master Gardeners and professional arborists gathered in a Georgetown neighborhood to watch the macro-infusion of a live oak tree.

the oak wilt fungus to the tree. That's all it takes for your tree to be contaminated. The spores multiply in the xylem, which serves as part of the tree's vascular system, clogging the "arteries". Live oaks can die within 6 months, and red oaks can be dead in only 4 weeks!

Oak wilt fungus, *ceratocystis fagacearum*, is a vascular disease, unlike other tree diseases. The most noticeable symptom is leaves that begin browning out when it's not the season for them to be turning brown. Leaves on live oaks look diseased along the veins, while leaves on trees in the red oak family appear to be half brown, half green, until they turn completely brown.

The other way that oak wilt fungus spreads is by underground roots that



Root flares were exposed the day before by blowing out the soil using specialized equipment.



Dr. Appel drilled into the root flares while T-connectors were inserted immediately afterwards. Fluid circulates through the tubing back and forth between the pressurized containers until it has all been absorbed.

where a tree that was in imminent danger had been identified. The home owner sure must have been surprised when two Aggie professors and Bob Whitney showed up at their door offering to treat their tree! They likely didn't even realize it was in jeopardy, but across the street one tree was dying, and half way down the block another was already dead.

It was fascinating watching the macro-infusion treatment of this live oak with Alamo. An arborist had come out the day before and blown out the soil about a foot down to expose the root flares, so the tree was all ready for Dr. Appel to drill holes and insert the plastic T-connectors and tubing. We gathered around watching several gallons of the blue liquid absorb into the roots within about an hour. With any luck, that tree will survive, though there is still much to be learned about the effective treatment of trees. This isn't a 100% cure, and there are no guarantees.



It took about an hour for this tree to absorb all the fungicide, but it can take much longer. Someone needs to be present during the entire infusion process in case a leak occurs that needs to be fixed immediately.

Photos by Grace Bryce

What's the message you should tell your friends about Oak Wilt Disease?

1. Don't even think about trimming an oak tree of any variety between February and June as these are the cooler, moist months when the nitidulid beetle is most active. Live oaks and red oaks are most susceptible, but other varieties have been known to die of Oak Wilt disease.
2. Before pruning your tree, sterilize your saw or clippers with spray-on Lysol. Sterilize tools between pruning trees. Avoid using bleach since it corrodes metal tools.
3. Paint the wound or pruning cut immediately! Don't wait! Any kind of paint will work. The smell of the paint disguises the smell of the sap so nitidulid beetles won't be drawn to your tree. After 2-3 days, it is too late to paint. By this time the tree could already be infected or it will no longer smell to attract beetles. So paint immediately as you cut!
4. Keep your trees healthy by watering them weekly at the dripline and fertilizing them spring and fall. Though this is not known to be the ultimate protection from Oak Wilt Disease, it may help.
5. Follow proper pruning procedures:
<http://aggie-horticulture.tamu.edu/extension/pruning/PRUNING.html>
6. Look over your trees regularly, top to bottom. You're looking for splits in the bark where there might be a fungal mat, though these never appear on live oaks, just red oaks. When you knock on the bark over a fungal mat it will sound hollow. Also look way up in the canopy for browning leaves. If you suspect Oak Wilt Disease, have an Oak Wilt Specialist come take a look and advise you about what to do, or call the Extension Office at 512-943-3300. Notice what's going on with your neighbor's trees too. If their trees get oak wilt, your trees could be saved by treating them in time. Only oak trees get oak wilt disease. See also: www.texasoakwilt.org and <http://grovesite.com/MG/WCMG/OakWilt> for more information.
7. Talk to your neighbors about oak wilt disease, telling them not to prune from February through June. Remind them that painting the wound immediately is the best protection.

By taking all the necessary precautions whenever you cut your oaks, we can all do our part to save our trees. Can you imagine Texas without its oak trees?

KNOW YOUR HILL COUNTRY OAKS

Red Oak group *



Blackjack Oak
Quercus marilandica



**Texas Oak/
Spanish Oak**
Quercus buckleyi



Shumard Oak
Quercus shumardii
(East Texas native)

(* Red oaks infected with oak wilt can form fungal mats.)



Escarpment Live Oak
Quercus fusiformis

(Live oaks are susceptible to oak wilt but do not form fungal mats.)

White Oak group (none resistant to oak wilt)



**White Shin Oak /
Bigelow Oak**
Quercus brevitoba v. sinuata



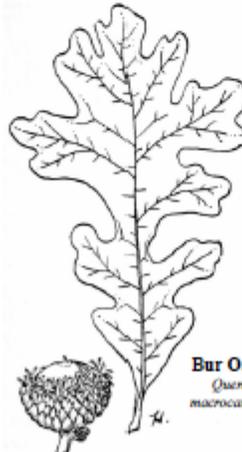
**Lacey Oak/
Blue Oak**
Quercus laceyi



Chinkapin Oak
Quercus muhlenbergii



Post Oak
Quercus stellata



Bur Oak
Quercus macrocarpa



Vasey Oak
Quercus vaseyana
(western Edwards Plateau)



Mexican White Oak
Quercus polymorpha
(West Texas)

TEXAS FOREST SERVICE
<http://tx.forestservice.tamu.edu>
www.texasoakwilt.org

Illustrations taken from:
Forest Trees of Texas, TFS Bulletin 20
Trees of Central Texas, Robert A. Vinton

Use this chart to identify your oak trees to see if they are susceptible to oak wilt disease. Red oaks and live oaks are most likely to get oak wilt disease. Trees in the white oak family far less likely to become contaminated.

A Master Gardener's Experience

The Difference Proper Watering Makes for the Home Garden

Mary Hargita

A few years ago my husband built five raised beds for me to grow our vegetables in. I took great care to fill them with a wonderful soil mixture, (lots of compost), selected the healthiest plants and the best seeds to grow. I hand-watered them...and the veggies grew, but not quite as well as I thought they should.

I always heard that drip irrigation is the best, so I begged my hubby to install one into my five beds. Seasons came and seasons went, but it was not getting done because we both thought that it was a very difficult and costly thing to do.

I looked at all the accessories for irrigation at Lowe's, and I got dizzy. The salesman did not help much either by asking me questions like: "Do you want pressure regulating emitters or regular ones?" I spent time studying websites on the internet,, and I got more and more confused.

Then one day I volunteered to help out at the Master Gardeners vegetable gardens behind the AgriLIFE Extension office, and I saw some homemade watering systems up close. Our County Agent, Bob Whitney, showed us the drip tape and told us how cheap it is and how easy it can be to install it in raised beds. Well, it still did not seem that easy, but I bought a few hundred yards of drip tape and decided to try to do it by myself at home.



I purchased some ¼” tubing, some ½” tubing, a backflow preventer, pressure regulator, timer and some fasteners that will hold the tape in place. I was getting excited just by finally knowing exactly what I needed and could hardly wait to start work on it at home.

First I buried a water hose from the faucet to the first bed, than I installed the 1/2 “pipes all around the 5 beds. Next I attached the ¼” pipes from the larger ones to the tape in each bed. When all this was done, anxiously I turned the water on—and it was going everywhere!!!

I could not figure out what I did wrong! So out of sheer desperation, I called Bob for help. As busy as he is, he was ready to help me. Soon he discovered that my using an Exacto knife to punch holes into the large pipes and into the tape for attaching the little pipes was not a good idea. The holes were way too big to work properly. I needed a special tool, a hole-puncher for that. Once I purchased one, I redid it all, just like Bob instructed me, and like magic, it worked! No gushing water, squirts, no puddles just gentle, slow dripping action, just the way plants like it.

The result can be seen in the picture of my happy vegetable beds. I could not imagine better production. In the bed to the right I have white potatoes, two rows of bush green beans, pole beans, corn and a zucchini, and I already harvested the radishes. The bed is almost like a Square Foot Garden, but it is not. The second bed on the photo has Nasturtium flowers, spaghetti squash, red potatoes, wax beans and cucumber. In the other 3 beds I grow cabbages, tomatoes, tomatillo, sweet onions, carrots, kohlrabies, dill, parsley, sorrel and Swiss chard. This year I planted watermelons and cantaloupes in two whiskey barrels placed on the lawn to let them run freely away from my veggies.

In My Garden

Norma Beissner

My front garden is still producing a beautiful show of white larkspur. The difficult challenge with annuals is deciding when to remove seed pods even though the plant is still giving you great flowers. I decided to remove this first rush of seed pods which will prolong the flowering. I have lots of seeds collected from last year's flowers. This stand of white larkspur is from seeds that were dropped last year. When I first saw how many were coming up this spring, I knew I would need to thin. Well - we all know how those good intentions are when it comes to the garden. I did not get around to that chore and to my surprise had much better luck with keeping them upright. They showed no signs of needing anything from me. The rains came at just the right time this spring, and I only had to water once.

My grandmother would tell us to go find the white bunnies in her garden! After no luck finding those bunnies, she would bring us a larkspur flower to show us the pair of bunny ears and faces looking back at us. This is a memory I now share with my grandchildren.



Larkspur in the garden of Norma Beissner, Leander, Texas

The Bee Crisis Continues

Christine Powell

As we all know, honeybees are in trouble. Populations had been declining without much notice for decades, then in 2006 a new threat appeared. Colony Collapse Disorder caused bees to abandon their hives and die. According to a recent Associated Press article by Garance Burke and Seth Borenstein, the hard, cold winter in much of North America and Europe has made the situation that much worse. The weather piled onto other stressors to cause mass casualties. There may have been three times as many abandoned hives this spring as in 2009. Some of the larger beekeepers have suffered million-dollar losses. Business failures could make commercial hives even scarcer. As many as a third of California's almond growers, who provide most of the world supply, had trouble finding enough hives this year, and growers for other bee-pollinated crops are having similar difficulties. At this rate, prices for apples, zucchinis, and a multitude of products in between will be rising sharply, when they are available at all.

Although the bee decline remains largely a mystery, it appears that there is no single villain in this, but rather a combination of parasites, bacteria, viruses, malnutrition, insecticides, and pollution. The EPA and environmental defense groups have been engaging in vigorous litigation with pesticide manufacturers to establish the safety of new products. Scientists have found pesticide residues from at least 121 different chemicals in the majority of recent pollen and wax samples. Chemicals are just one aspect of the problem; the levels of individual pesticides are probably not high enough to be threatening. The combination of factors is what scientists find so troubling, particularly when even less is known about the impact of insect pathogens. The current state of knowledge about the multiple causes of the bee decline has certainly not led to a solution. "It's just gotten so much worse in the past four years," says Jeff Pettis, research leader of the Department of Agriculture's Bee Research Laboratory in Beltsville, Md. "We're just not keeping bees alive that long." NPSOT members should stay informed, but given that bee pollination is critical for almost a third of the world's food supply, this has drastic implications for everyone, not just those particularly interested in the natural world. At this point we should be nurturing our native bee populations. Go to <http://www.bee watchers.com/> and <http://nature.berkeley.edu/urbanbeegardens/> for more information and Keep Planting Native!



*This bee, *Osmia ribifloris* (on a barberry flower), is an effective pollinator of commercial blueberries and is one of several relatives of the blue orchard bee, *Osmia lignaria*. Similar in appearance, the blue orchard bee is also a successful commercial pollinator that is now being evaluated for use in a wider range of crops.*

Photo by Jack Dykinga, USDA

Monarchs Also At Risk

Christine Powell

The total worldwide population of Monarch butterflies may have declined by as much as 60% in the last year, according to Craig Wilson, senior research associate in the Center for Mathematics and Science Education at Texas A&M University. The drought last summer put stress on the population as it migrated south to the wintering areas in Mexico. Once they arrived, they were confronted by torrential rainfalls affecting the ten roosting areas covering only about twelve acres in Michoacan. Illegal logging operations in the area led to mudslides that harmed the roosts, and the wet butterflies were particularly subject to hypothermia from the cold conditions that got even that far south. The late spring also affected the Monarchs, which need temperatures of at least 70° F. to travel. At the point in March when there had been seventy Texas sightings of Monarchs in 2009, there had been only twelve in 2010. As a further threat, the late spring means that the supply of milkweed in Texas (which provides up to 70% of the food energy for the migration to Canada) is also markedly below the average for this time of year. Monarchs lay eggs only on this plant, which provides the larval food supply for the butterflies that will continue the trip, which will only be completed in the third or fourth generation. Because the migration has been delayed, it may not be too late for Texans to help by planting butterfly gardens of milkweed for larval food and nectar plants for the adults. “It really is a case of, if you build it they will come,” Wilson said. For more information go to <http://www.monarchwatch.org/>.



Antelope Hornes (*Asclepias asperula*) can make a beautiful and unique bedding plant.

Newsletter Submissions

Thank you to those Master Gardeners who submitted articles, pictures, and ideas for this newsletter issue. If you would like to contribute to the *Williamson County Master Gardener Journal*, please send your submissions to Jane Williamson at jawilliamson516@yahoo.com by the 25th of the month. As you garden, volunteer and learn, take a moment to share with other gardeners.

What's Eating My Pepper Plants?

Patty Hoenigman

Janet White and I were working over at the Children's Garden at St. Richard's Church when we noticed that the pepper plants were almost completely defoliated. Upon closer inspection, we found 4 well-disguised caterpillars chomping their way through the plants. Since the leaves were almost gone, they were starting on the peppers...Savages!

A little investigating in *The Texas Bug Book*, by Howard Garrett and C. Malcolm Beck, told me these were hornworm caterpillars, which are almost identical to Tomato Hornworms. They evolve into large dark gray moths with 6 orange spots on each side of their abdomen. The caterpillar is a lovely spring green with tiny symmetrical circles, white lines and black spots. It also has a pronounced red horn on the rear end! (...we were thinking it was on the head...too many visions of unicorns dancing through our heads!)

These voracious eaters enjoy dining on your tomatoes, potatoes, eggplant, green peppers, tobacco and other plants in the nightshade family, plus various weeds. I wish they would have sampled the nutgrass first! They mostly eat foliage and can completely defoliate a plant overnight. We gave them a proper burial, though if we'd tossed them out on the ground, the birds might have enjoyed eating them. They sure were doing a job on those pepper plants! These caterpillars are eaten by wasps, birds, skunks and lizards.

Controlling these critters is easy enough. When you're out in your garden, take a look to see if leaves from various plants have disappeared. It can be quite tricky to find the hornworm caterpillars because their coloration blends in so perfectly with the leaves of the host plants; so look very closely. When you find one, it's easy enough to knock it off the plant and put it on your birdfeeder, or add it to your compost pile. Chemical sprays are not recommended. The other choice is to move them all to one sacrificial plant so that they can evolve into moths. These moths are important for the pollination of deep-throated flowers and night bloomers.



A Hornworm Caterpillar is right in the center of this picture, well disguised on a pepper plant.

Photo by Janet White

St. Richard's Children's Garden

A giant artichoke plant gets a dose of water from Patty Hoenigman at the Children's Garden, a Master Gardener project at St. Richard's Church in Round Rock. The fence around it was just finished by Jane Williamson's husband.



Photos by
Janet White

Janet White contributed a large metal butterfly for a touch of whimsy. The garden is finally looking good!



Tomatoes ripening on the vine in the pizza garden.



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