



November 2018

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Orange Dog caterpillar displaying
its inverted osmeterium organ.

Photo by Chris Dunaway

Aquatic Milkweed *Asclepias perennis*

Our Below-the-Lake Native Milkweed

Late last February I was in my back yard marveling that my aquatic milkweeds were green and budding when the rest of my garden was twice-frozen toast. An erratic motion caught my eye and I watched as the most ragged, faded, limping monarch butterfly I've ever seen fluttered in, circled and went straight to the aquatic milkweed. In that moment I realized how co-evolved *Asclepias perennis* is to the great monarch migration that so many of us are trying to help preserve.

Migration butterflies mate in Mexico and, as soon as wildflowers are out there, they fly north to Texas and—if weather permits—to the Gulf Coast. The females deposit their eggs on the milkweed they find and then die. Their caterpillar hatchlings are monarch generation one.

These caterpillars eat the milkweed on which they were born, become butterflies, mate and take wing north. They are gone from our area by mid-May. It takes a stair-step second and third generation for the migration to arrive at their Corn Belt summer breeding grounds. Fourth generation butterflies will return to Mexico.

They are born with stronger wings and a suppressed mating instinct. If weather permits—it didn't in 2018—south bound monarchs might show up on the Gulf Coast in October. South-flying butterflies need nectar and roosting places, not milkweed. Those that we see in our area outside of these migrations are most likely not part of the migration. Instead, the year-round availability of host plants in the form of tropical milkweed has led to the formation of resident communities of monarch butterflies that never leave the area.



Monarch butterfly nectaring on an aquatic milkweed flower.



Below Lake Pontchartrain, one and only one native milkweed is perfectly synced to the monarch's early spring arrival: aquatic. When "Bug Lady" Linda Auld asked for a search of the Shirley G. Tucker Herbarium to identify native milkweeds in the historical record below the Lake, only aquatic shows up (see photo of specimen probably taken between 1890 and 1910).

Aquatic milkweed is a small well-behaved plant that does well in rain gardens, partial shade gardens and pots. The soil should be pH neutral to slightly acid and kept moderately rich and moist. It can grow in standing water. I like to tuck threesomes in between taller plants such as basil, pentas and salvias. It grows to a compact 18 inches and has multiple lovely white flower heads. Put in starter plants in fall for good root development or in spring, as early as possible. According to Pelican Greenhouse information, aquatic milkweed is hardy to zero degrees.

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November Vegetable Planting Guide

Crop	Recommended Variety	Planting Depth	Spacing Inches	Days Until Harvest * from transplant date
Beets	Detroit Dark Red, Kestrel, Red Ace F1, Ruby Queen	¼ inch	2-4	55-60
Cabbage	Blue Vantage, Platinum Dynasty, Stonehead, Cheers, Blue Dynasty, Emblem, Rio Verde	⅝ inch	12-15	65-75*
Carrots	Danvers 128, Purple Haze, Thumbelina, Apache, Enterprise, Maverick, Sugar Snax 54	⅝ inch	1-2	70-75
Celery	None Given	⅝ inch	6-8	210
Chinese Cabbage	None Given	¼ inch	12	60-80*
Collards	Champions, Flash, Georgia Southern, Top Bunch, Vates	⅝ inch	6-12	75
Garlic	Creole: Early, Louisiana, White Mexican; Italian: Early Red, Lorz; Large: Elephant (Tahitian)	1 inch	4-6	210
Kale	None Given	½ inch	12-18	50
Kohlrabi	Early Purple Vienna, Early White, Vienna, Winner	⅝ inch	6	55-75
Leeks	Alora	⅝ inch	2-4	135-210
Lettuce	Esmeralda, New Red Fire F1, Nevada, Tall Guzman Elite	⅝ inch	4-12	45-80
Mustard Greens	Florida Broadleaf, Greenwave, Red Giant, Southern Giant Curled, Savannah, Tendergreen	⅝ inch	4-6	35-50
Onions	Red: Red Creole, Southern Belle; White: Candy, Savannah Sweet; Vidalia: Candy Ann, Caramelo, Century, Georgia Boy, Mata Hari	½ inch	4-6	85
Radishes	Cherriette, Champion, White Icicle, April Cross	⅝ inch	1	22-28
Shallots	Matador, Prism	1 inch	4-8	50
Spinach	Bloomsdale Long Standing, Melody, Tyee, Unipak 151	⅝ inch	3-6	35-45
Swiss Chard	None Given	¼ inch	6-8	45-55
Turnips	Alamo, All Top, Purple, Top White Globe, Seven Top, Southern Green, Top Star, Tokyo Cross	⅝ inch	2-6	40-50

To find vegetable gardening tips from the LSU AgCenter click [here](#).

Aquatic Milkweed *Asclepias perennis*

Our Below-the-Lake Native Milkweed (Continued)



Seed pods and seed of Aquatic Milkweed.

Photo by: Lilly Anderson-Messec.

The plants easily rebound from repeated caterpillar feedings. In 2018, my plants re-leafed five times after being totally munched down. They do, however, drop their leaves in the winter. This is a desirable self-cleaning strategy that rids it of monarch butterfly disease organisms such as OE. Seed pods are formed from June through November. Unique among milkweeds, aquatic milkweed seeds lack the silky comas attached to the seeds that would catch the breeze and disperse seed. Instead they rely on water movement for seed dispersal.

If you have a greenhouse or indoor lights for propagating, you can head start aquatic plants from seeds. November is a good time to start. For best results, cold moist stratify (CMS) seeds for 30 days. A damp paper towel in a

sealed plastic bag in the fridge is fine. Or put them in a covered container of water, shake once a week to remove growth inhibitors. My CMS seeds germinate at 80% compared to 20-50% without CMS.

ADVICE for greenhouse & indoor light growers:

1. Keep equipment clean and wash your hands!
2. Use distilled water for CMS and a good sterile soilless seed mix for germinating.
3. Sterilize all seeds before planting by shaking them for one minute in a cup or two of distilled water with a tablespoon of hydrogen peroxide. Rinse well and plant 1/8 inch deep. My germination rates jumped when I started doing this. Credit to Jennifer Lamkin of St. Joseph MO for this tip.

Germination runs 13 to 23 days. Keep seeds and seedlings moist. It is impossible to overwater this plant. For stronger plants, snip back to the first set of true leaves once three or four leaf sets have grown. Although I have heard from others that *perennis* is supposed to be “easy to root from cuttings,” I have yet to achieve success with that method. If anyone has figured it out, please call.

Where to get seeds. Last year at this time I was knocking myself out trying to find seeds. Every seed bank was out of stock and stayed out of stock. Searching the web, I found packets of 10 *Asc. Perennis* seeds selling from \$18 to \$65 each. Yikes! Fortunately, Mac Vidrine of Eunice rescued me with seeds he was willing to share. I planted them and this year I was able to harvest the seeds myself. To that extent I currently have extras and am willing to share.

Where to get starter plants. Aquatic milkweeds are usually available at Pelican Greenhouse monthly sales. Local nurseries also regularly sell native milkweed plants. Other local sources include Linda Auld (NOLA Buglady) at Barber Laboratories in Harahan (504) 739-5715 and myself on the West Bank (602) 369-7079.

~Ginna Hoff



Cold moist stratify the seeds in a plastic bags with a moistened paper towel. Refrigerate for 30 days.

Termite Terror & Other Wood Destroyers

Chris, Anna and I attended the County Agent Termite Program held recently in Baton Rouge. The program was organized by Dr. Dennis Ring and featured speakers covering a variety of subjects from Louisiana Department of Agriculture & Forestry presentations on termite contracts and required treatment protocols to termite characteristics and identification. Training also included identification of other wood destroying insect and pathogen damage and the associated perpetrators. Overall, it was a great training and I'd like to share a few tidbits with you.

Worldwide there are about 2800 species of termites belonging to 7 different families – in Louisiana we have 9 species belonging to 2 families. We have 5 species of subterranean termites (Rhinotermitidae) and 4 species of dry wood termites (Kalotermitidae). Termites are eusocial insects with colonies containing workers, soldiers and reproductives.



Photo by: Chris Dunaway

Drywood termites remain hidden within the wood that they are consuming. Often times the only sign of trouble are the fecal pellets that they cast out of the nest. In the photo drywood termites were living in a piece of furniture.

Drywood termites have small colonies (<5,000) and do not rely on external sources of moisture. Instead, they get their water from the wood they eat. The entire colony lives in the wood. You could have a drywood termite colony munching on your house for 30 years and not even notice.

Subterranean termites have large colonies (60,000 to over 1,000,000), require high moisture, and are foragers who live below ground (subterranean). In Louisiana, there are 4 native species and one imported species – the dreaded Formosan Subterranean Termite. The 4 native species have colony sizes of around 300,000 individuals of which about 1-2% are soldiers, they swarm in the daytime from early spring to late summer (depending on the species) and do not build carton nests between studs and rafters. The imported Formosan subterranean termite has a colony size of over 1,000,000 individuals of which about 10% are aggressive soldiers, they swarm at night in May and June and build large carton nests in void spaces. These are the guys that horror movies are made from. Termite species identification is typically based on soldier morphology – workers from different species all look pretty much the same.

Termites are one of the few animals that can digest cellulose as a major food source because they produce cellulase but also have a mutualistic relationship with gut symbionts who produce large amounts of cellulase. An interesting side note: as termites grow, when they molt, they lose all their gut microflora and have to be reinoculated by their colony mates.

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Termites require wood as a food source for their entire lives but there are other insects that just want

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A Formosan termite King and Queen with workers and Soldiers.

Photo by: Chris Dunaway

Termite Terror and Other Wood Destroyers (Continued)

to use the wood as a nursery for their young. Ambrosia beetle, powderpost beetles, round headed wood borers, old house borers, and flat headed wood borers deposit their eggs into a piece of wood. When they hatch the young larvae feed on the wood until they emerge as mature adults. Carpenter ants and bees do not eat the wood but bore into it to live in or in which to lay their eggs. Many of these pests can usually be identified by the holes they make in the wood. Some can live in the wood for up to 25 years before they mature and emerge. And then there are the fungi that lead to pock rot and brown rot.

All-in-all there are quite a few critters that are looking at your house and wooden structures as a tasty morsel or a comfy maternity ward. But the good news is that there are ways of stopping them. It just takes the correct identification and the correct control procedures. Your county agents are now a little better equipped to be an ally in that battle. ~Dr. Joe Willis



Old house borer larvae feeding inside a piece of wood.



Termites do serve an important purpose. They consume dead plant material and release the stored nutrients back into the soil making them available for other plants to take up and use. Turn over a dead log in the woods and you are likely to find termites munching away. The only problem is that the termites and other wood destroying organisms don't know the difference between a dead log and the 2 x 4 in your home!



CAUTION



MASTER GARDENERS AT WORK

I confess to being a sometimes fickle gardener. If a plant catches my eye, I have to have it. I can't help notice the pink muhly grass around town and the city right

now. *Muhlenbergia capillaris* is the scientific name for pink muhly grass. Fall is a great time to appreciate this ornamental grass and others, as their flower plumes, known as inflorescences, are in their full glory. One of the best and showier grasses, Gulf Muhly grass or pink muhly grass is a native ornamental grass to the gulf coast that shows off with stunning pink/purplish color in the fall and winter.

This grass has a unique texture with spiky, upright leaves that have summer interest. But it's the fall and winter that really create landscape excitement: the grass flowers in billowy masses that resemble pink clouds. As long as there isn't a hard freeze the color will hold all winter. Even after freezing temperatures, the flower heads keep their airy shape.

Grasses lend themselves well in the landscape and look beautiful in mass, in planters or as a specimen planting. They add texture, form and color as well as movement in the wind. In the fall, as the sun

rises, the Gulf Muhly grass can be backlit and glows like a rich, pink cloud or fountain with maximum impact for any garden.



Pink Muhly Grass *Muhlenbergia capillaris*



Lindheimer's Muhly *Muhlenbergia lindheimeri*

At planting, select a landscape site that receives at least six hours of full sun during fall days. Turn over the soil, and work in at least 2 inches of organic matter. Always set the plant a little bit higher than the native grade of the landscape bed for good drainage. Water well at planting to establish plant. Only minimal fertilizer is needed in April and not much watering. No disease or pest problems bother this plant.

Mass plantings of pink muhly grass is stunning but these plants do need their individual space. Each plant can grow up to 4 feet wide, so plant on 3-foot centers. This will achieve that filled-in, mass look. Cut the grass clumps back by 1/3 or 6 inches in late winter before the spring growth starts. Do not cut back any earlier as you will remove the dry inflorescences that

create movement with the wind and habitat for wildlife. Propagate by dividing clumps. Cut clumps with a sharp knife or shovel.

Continued at the end of the next article

Termites in Trees and Gardens

Every year, right around Mother's Day, the termite blizzard arrives. Lights look like they are surrounded by a cloud of snow. What you are seeing is thousands of flying Formosan subterranean termite Kings and Queens out looking for a new place to begin a colony. We have native subterranean and drywood species of termites also, but the large swarms in the spring are always Formosans. For information on identifying termites that you've found, check out the termite page on the AgCenter's website [here](#).

Formosans are invasive and were brought here via returning supply ships after WWII. They will eat your house which is a reality many of us are familiar with. Termites damage more than just homes. They will also nest in trees, including all species and sizes. We've even seen them eating the woody inside of a broccoli plant. They eat away at the tree until it can no longer support itself, causing the tree to shed limbs or fall over. Trees that are infested near a home or other wooden structure can also serve as a bridge into that new habitat, leading to unwanted guests. [Checking trees for termites](#) should be a regular part of your landscaping routine. If you are paying attention to your flowers and lawns already, why not add trees into your care routine? Early detection of infestations is worth the effort and can save you a lot of expense and trouble down the road.



Formosan termite alates flying around stadium lights.
Photo By: Scott Threlkeld @ NOLA.com

Formosan termites enter trees via the soil through the roots or through the trunk at the transition zone between bark and root at the base of the tree. They will also build mud tubes on the outside of the tree in the spring. Keep an eye out for tubes which look like mud trails up the bark and can extend high up the into the tree. Termites also tend to make "castles" at the ends of broken branches or within limb scars.

Look for something that looks like mud packed in. During swarming season, the Kings and Queens will use these openings to fly out of the colony. In the spring, you may find hundreds of termites hiding behind the artificial wall they constructed. Also be sure to dig lightly around the base of the tree between the root flares with a trowel or other implement. This is likely one of the first places that you may discover a Formosan termite infestation. You are also more likely to find active termites at these locations in the months following the swarm, especially the cold winter.

If you find termites, it's time to make a few phone calls. Find a professional arborist or pest control operator to treat the trees that have termites. Although most chemical options are available to homeowners, some specialized equipment may be needed to treat the trees properly. You should also inspect structures nearby for infestations at this time. Termites from the same colony in the tree can be causing other trouble nearby.

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Formosan termites will build shelter tubes on the exterior of trees.
Photo by: Chris Dunaway



Formosan termites will build swarm castles at limb scars.
Photo by: Chris Dunaway

Termites in Trees and Gardens

(Continued)



Formosan termites consume trees from the inside out constructing large nests as they go.
Photo by: Chris Dunaway

Research has shown that treatments with termiticide products containing fipronil are very effective at eliminating termite infestations in trees and preventing new infestations. All treatments should include the application of the termiticide solution to the soil around the base of the tree. Use a rod to inject the solution into the soil or carefully break up the soil around the base and pour the solution over the area as a drench. Make sure that the area between the root flares is thoroughly treated. Also lightly spray the solution onto shelter tubes and other termite breakouts on the trunk. See the product label for application volumes. This will usually be enough to prevent future infestation and to remedy lightly infested trees in which the termites have not built large internal nests. To treat large nests, drill several holes through the trunk of the tree into the cavity. Inject the fipronil solution into the cavity. For better penetration, the termiticide may be mixed with soap and injected into the tree as a foam. The foam can move up the interior of the tree taking the active ingredient throughout the termite nest.

This method that was developed by Dr. Gregg Henderson and Chris Dunaway of LSU in cooperation with Jim Ballard from FMC Corporation. Traditional liquid treatments injected into the tree will flow down due to gravity using the path of least resistance and will not provide as thorough distribution of product.

Fruit and nut trees present an interesting challenge because there aren't any termiticides labeled for the treatment of fruit and nut trees. Generally, these pesticides are not registered for use on food crops. Baits are likely your best option, placing them in proximity to the tree where termites can find them, pick them up, and carry them back into the colony, leading to a slow demise. Baits can be cost-prohibitive in large orchard operations, but home fruit and nut tree treatment can be worth the expense. If they do get into your food crop trees, contact an arborist or a pest control company.

Recently, the GNO Gardening team attended Termite School at the LSU AgCenter Lois Caffey Termite Training Center to learn more about how to assist homeowners with termite issues. It seems that gardens, in particular, can present termites with an ideal chance to infest your home or structure and should be designed and constructed to minimize this possibility. While a bed of shrubs and flowers along the home foundation looks nice, this can seriously compromise your home, opening it up to infestation.



The wood mulch is too close to the house and it covers the foundation inhibiting inspection.

Termite treatments typically involve the application of a termiticide in a thin band around the foundation of a structure or by baiting. Working in the garden can disturb the barrier by digging in the treatment zone or pulling out plants with roots that extend into the area. When preparing a new landscape bed, don't dig or disturb the soil for up to a foot out from the base of the structure. Do not add untreated soil over the

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Termites in Trees and Gardens

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top of the treatment zone. Shrubs should be kept away from the structure, three feet is a good rule of thumb. Always keep shrubs and vines trimmed off the structure. Termites and other pests may use them as a bridge into your home. This also allows the inspection to take place unhindered by these obstacles.

Mulch can attract termites not only because it can be a food source, but also because mulch keeps the soil moist and cool. Keep it at least eight inches away from the foundation. This eliminates the possibility that it can become a bridge. Never place garden soil or mulch above the level of the foundation. Keep wooden raised bed supports away from the home. Railroad ties and even treated wood can act as a super highway into the structure since treatments do not reach the inner core of the wood. They will hollow it right out! Metal edging,



Subterranean termite build shelter tubes over the foundation to reach the tasty wood inside a structure.

cinder block, or bricks are a better choice. Keep scrap wood and wood debris out of garden beds and locate woodpiles away from any structures like homes, fences, and sheds. Keep irrigation from splashing your home and potentially acting as a source of water for termite colonies.

Keep a look out for mud tubes while you garden and make an effort to check your trees once in a while. Catching an infestation early can mean the difference between a small issue and a much larger in-



Wooden garden boards can be a superhighway for termite infestations.

Photo by: Chris Dunaway



Termites find even creosote treated railroad ties yummy on the inside.

Photo by: Chris Dunaway

~Anna Timmerman

MASTER GARDENERS AT WORK (Continued)

There are several varieties available at local nurseries that may fit your needs so read the labels carefully. Gulf muhly grass, known botanically as *Muhlenbergia capillaris*, has the pink flower heads. Purple muhly or *Muhlenbergia filipes* grows 4 to 6 feet, and has notable late fall color with purple panicles. It is salt tolerant and does well in open coastal woodlands on salt dunes. Propagation is by division and seed. Lindheimer's muhly or *Muhlenbergia Lindheimeri* grows 3 to 4 feet, available as container grown, fine textured, bluish-gray color grass with purplish flower heads and attractive all year. It is most showy in fall and does well in mass plantings, is drought tolerant and also tolerant of a variety of conditions. Propagate by division in spring or by seed. Seep Muhly or *Muhlenbergia reverchoni*, grows 2 feet and is compact with twisted leaves and purplish seed heads. It adapts to dry areas, will grow in poor gravelly soil and is sometimes used in containers.

~Karen Blackburn, Louisiana Master Gardener

This article originally appeared on the Master Gardeners of Greater New Orleans website at www.MGGNO.org.

Glyphosate – Let's roundup the data!

Whether you have ever used glyphosate or never heard of glyphosate before, everyone has now heard of the “cancer causing chemical that led to a \$289 million verdict” for a man suffering from non-Hodgkin's lymphoma in California. Glyphosate is the active ingredient in the non-selective systemic herbicide brand Roundup as well as many other brands from other companies – Hi-Yield KillZall, Ranger Pro Herbicide, Eraser Max Herbicide, Aqua Star Aquatic Herbicide, etc. If you check the internet, there is a lot of conflicting information being bandied about regarding Roundup, so what should we as consumers know about glyphosate use and its hazards and where does the LSU AgCenter stand?

The following **is not** an impassioned plea for you to **use** glyphosate! The following **is not** an impassioned plea for you to **not use** glyphosate! The following **is** an impassioned plea for you to gather and examine the data and make an informed decision based on experimental research data. So what is some of that data?

In 1964, glyphosate was patented by the Stauffer Chemical Company as a chelating agent for removing mineral deposits (Ca, Mg, Mn, Cu, Zn) from pipes and the like. In 1970, it was independently synthesized by chemist John Franz at Monsanto and found to have herbicidal activity. Monsanto did research on the compound and it was brought to market in 1974 as Roundup. Monsanto retained exclusive rights to glyphosate until all patents expired in 2000. At that point, other manufacturers were free to use glypho-

sate in their product lines.

Glyphosate is an aminophosphonic analogue of the natural amino acid glycine. The name is taken as a contraction of the compounds used in its synthesis - viz. glycine and a phosphonate. Glyphosate disrupts the shikimic acid pathway by inhibiting an enzyme - EPSPS (enolpyruvyl shikimate-3-phosphate synthase).

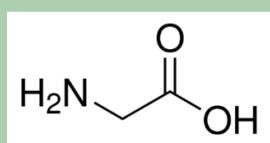


Glyphosate is a substrate analogue that irreversibly binds to the enzyme thus inactivating it. As the pathway shuts down, the plant uses up its supply of phenyl-alanine, tyrosine and tryptophan in protein synthesis and eventually starves to

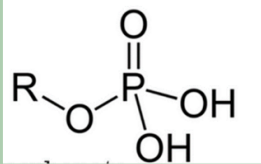
death. It takes from 4-20 days for an actively growing plant to die. This particular enzyme is only found in plants and some micro-organisms.

Some other important facts about glyphosate:

- ♦ Glyphosate binds very tightly to most soils and sediments in the environment – it's a dirt lover.
- ♦ Glyphosate is generally not available for uptake by roots of nearby plants – some research has shown an uptake in spinach and radish.



Glycine



Phosphonate



Glyphosate

- ♦ Glyphosate residues are not likely to leach into groundwater and only lim-

ited amounts of glyphosate are found in surface water as a result of runoff.

- ♦ Glyphosate that reaches surface water is rapidly adsorbed to sediment.
- ♦ Bound glyphosate is degraded to aminomethylphosphonic acid (AMPA) by microorganisms.

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Glyphosate – Let's roundup the data!

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- ♦ AMPA is further degraded to naturally-occurring substances such as carbon dioxide and phosphate by microorganisms.
- ♦ Glyphosate does not become vaporous – once applied it does not volatilize and get carried off-target by air currents.

Based on published research data:

- ♦ In all the organisms tested, including earthworms, birds, mammals and arthropods, glyphosate exhibited only low toxicity at typical application rates.
- ♦ Honeybees were not affected by a glyphosate based-formulation even when they were fed high concentrations or exposed in semi-field studies when vegetation adjacent to beehives was over-sprayed.
- ♦ These results are also supported by a recently completed bee brood study conducted to meet current EU testing requirements for the ongoing glyphosate renewal process.
- ♦ Potential risks for most aquatic organisms are mild or negligible if glyphosate is used according to label instructions. Fish, frogs, and aquatic invertebrates are not affected by typical glyphosate usage.
- ♦ Glyphosate does not bioaccumulate in fish or other animals (doesn't accumulate over time).
- ♦ Because of this relatively favorable safety profile, glyphosate products have even been used in protected habitats such as the Galapagos Islands and the Florida Everglades to protect the native flora from invasive weed species.
- ♦ Based on laboratory and field research, the exposure risk from **glyphosate and the primary soil metabolite, aminomethylphosphonic acid (AMPA) on representative species of earthworms, springtails, and predatory soil mites and the effects on nitrogen-transformation processes by soil microorganisms with worst-case soil concentrations expected for glyphosate and AMPA for annual applications at the highest annual rate of** indicates very low likelihood of adverse effects on soil biota.

“All this is well and good,” you say, “but what about CANCER?!” Okay, let's look at some of the data from that point of view.

First, how does glyphosate enter the body? Since it does not volatilize, entry through airway passages is minimal and not considered to be a major point of entry by the EPA. Entry through skin absorption is also minimal; only 2% of skin exposure is absorbed. The primary route of entry is through consumption – 1/3 of internalized glyphosate is absorbed into the body. So under normal application procedures, the risk of glyphosate getting into the body is low. Even though the risk is low, it is not zero, so what about cancer resulting from this minimal exposure?

In March of 2015, the International Agency for Research on Cancer (IARC) listed glyphosate as “probably carcinogenic to humans”. What did IARC base this classification on? They looked at the existing published studies on non-Hodgkin's lymphoma in relation to glyphosate exposure. Using statistical analysis with odds ratios and a 95% confidence index they examined each published study and found that some indicated an effect due to glyphosate exposure and some indicated no effect. They also looked at the published research of animal studies. Some of these studies showed that given sufficiently high doses of almost pure glyphosate, lab animals do develop cancer.

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Glyphosate – Let's roundup the data!

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IARC took these pieces of data:

THERE IS SUFFICIENT EVIDENCE IN EXPERIMENTAL ANIMALS FOR THE CARCINOGENICITY OF GLYPHOSATE.

THERE IS LIMITED EVIDENCE IN HUMANS FOR THE CARCINOGENICITY OF GLYPHOSATE.

A POSITIVE ASSOCIATION HAS BEEN OBSERVED FOR NON-HODGKIN LYMPHOMA.

and concluded, “Glyphosate is probably carcinogenic to humans (group 2A). “

The IARC groups substances researched and classify into five groups:

Group 1 – Causes cancer

Group 2A – Probably causes cancer

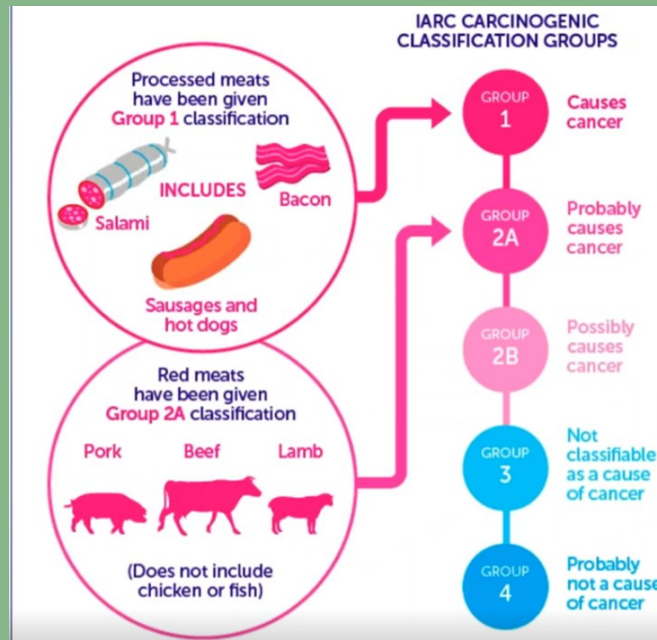
Group 2B – Possibly causes cancer

Group 3 – Not classifiable as a cause of cancer

Group 4 – Probably not a cause of cancer

This graphic shows where glyphosate falls on the

IARC chart and some other things that are in the same category, notably pork, beef and lamb. It also shows some familiar things that are in the higher Group 1 (causes cancer), notably, processed meats like sausage, hot dogs, bacon and salami. Go to your grocery store and see if you can find a “Warning: Causes Cancer” label on any of these products. You won’t. The IARC only looks at one thing – can a substance cause cancer? In the IARC response



to criticisms of the Monographs and the glyphosate

evaluation - prepared by the IARC Director, January 2018 , it is stated that, “IARC defers risk assessment and risk management to national and international bodies, restricting itself to provision of hazard identification as a scientific foundation to those subsequent steps.” The IARC themselves say they only identify a hazard and that subsequent risk assessment is the purview of other national and interna-

tional bodies.

Subsequent to the IARC classification, the United States Environmental Protection Agency (EPA) and its European counterpart, the European Food Safety Authority (EFSA) concluded “the strongest support is for not likely to be carcinogenic to humans at doses relevant to human health risk assessment” and “unlikely to cause cancer in humans” respectively. The pertinent message is that the IARC identifies a hazard and the EPA assesses the risk of the identified hazard. So, if some risk (though minute) exists, then we should do a risk-benefit analysis to determine if the risk is justified.

What are the benefits for farmers of glyphosate herbicide use?

- ♦ Glyphosate herbicides provide simple, flexible and cost-effective weed control.
- ♦ Glyphosate helps to remove perennial weeds for several years.
- ♦ Glyphosate is effective on all weeds, providing broad spectrum control.

Glyphosate – Let's roundup the data!

(Continued)

- ◆ Pre-plant application of glyphosate has the potential to increase yields 30%-60% for many major crops.
- ◆ Glyphosate reduces disease and insect incidence by removing weeds that might otherwise act as an intermediate host for parasites and disease vectors.
- ◆ Its effectiveness as a broad-spectrum herbicide has reduced the use of plowing as a means of controlling weeds, which exposes fertile topsoil to water and wind erosion.
- ◆ Studies have estimated that mechanical weed control methods are approximately twice as costly and time consuming as chemical weed control.

Are there ecological benefits to glyphosate use?

- ◆ By chemically controlling a broad spectrum of weeds and their entire root systems, glyphosate has eliminated or reduced the need for plowing. These reduced tillage practices allow farmers to plant crop seeds directly into stubble fields.
- ◆ A large proportion of cultivated land is prone to soil erosion and minimal soil disturbance practices are sustainable alternatives that help to protect the soil from degradation and reduce greenhouse gas emissions and energy consumption.
- ◆ Several important crops worldwide, including corn and sugar beet, are predominantly managed with these practices in combination with glyphosate. This makes glyphosate a popular tool for many farmers that decide to pursue these soil conservation practices.

Why is glyphosate so important for worldwide agriculture?

- ◆ Several countries worldwide use glyphosate herbicides on roughly 50% of their total crop area.
- ◆ Recent case studies conducted by researchers in Germany and the UK predict that losing glyphosate would have a considerable effect on crop production costs and would also have an impact on international trade.
- ◆ Food prices would increase if glyphosate use was restricted.
- ◆ It is estimated that crop yields for farmers would be reduced by 5% to 40%, depending on the region and the crops, if glyphosate was no longer available.
- ◆ A limitation in the availability of glyphosate is also predicted to have potential implications for land use, biodiversity, greenhouse gas emissions, and water quality.
- ◆ By using glyphosate for weed control, farmers have been able to forgo or significantly reduce traditional plowing methods.
- ◆ Conventional plow tillage is an energy-intensive process that releases tons of carbon dioxide into the atmosphere from the soil.
- ◆ If farmers are forced to return to these weed-control methods, CO₂ emissions and fossil fuel consumption are predicted to more than double, while soil erosion could increase six times (6X).

Taking all this information into consideration, the LSU AgCenter determines, based on currently available research based data, use of glyphosate according to label directions and allowed use presents a very low risk of environmental, ecological, and human health injury.

(Continued)

Glyphosate – Let's roundup the data!

(Continued)

What might the future hold for the fate of glyphosate? Monsanto has appealed the \$289 million California court verdict. No date has been set for the appeal to be heard. CNN reported last year that more than 800 patients were suing Monsanto, claiming Roundup gave them cancer. Since then, hundreds more plaintiffs -- including cancer patients, their spouses or their estates -- have also sued Monsanto, making similar claims. The attorney from the California trial says he and other attorneys have more than 4,000 similar cases awaiting trial in various state courts. He estimates another 400 cases have been filed in federal multi-district litigation (class action). The repercussions could be astounding.

~Dr. Joe Willis

This article was excerpted from a talk given by Dr. Joe W. Willis at the 2018 Fall Garden Festival October 6, 2018 entitled "Here's the Skinny on Glyphosate".

In the Kitchen with Austin

Pumpkin Cake - Its fall y'all...time for pumpkin and warm spices!

Ingredients:

2 cup flour	¼ tsp. ground ginger
2 tsp. ground cinnamon	1 ⅔ cups granulated sugar
2 tsp. baking powder	1 cup vegetable oil
1 tsp. baking soda	4 large eggs
1 tsp. salt	1 (15-ounce) can plain pumpkin puree
¼ tsp. ground allspice	Powdered sugar



Directions:

- ♦ Adjust oven rack to the middle position and heat the oven to 350°.
- ♦ Coat a Bundt pan with non-stick baking spray.
- ♦ Whisk the flour, cinnamon, baking powder, baking soda, salt, allspice, and ginger together in a medium bowl.
- ♦ In a large bowl, beat the sugar, oil, and eggs together with an electric mixer on medium-high speed until thick and fluffy, about 5 minutes.
- ♦ Reduce the speed to low and beat in the pumpkin puree until combined, about 1 minute.
- ♦ Slowly beat in the flour mixture until just incorporated.
- ♦ Give the batter a final stir with a rubber spatula to make sure it is thoroughly combined.
- ♦ Scrape the batter into the Bundt pan, smooth the top, and gently tap the pan to settle the batter.
- ♦ Bake the cake until a toothpick inserted in the center comes out with a few moist crumbs attached, 40 minutes or so, rotating the pan halfway through baking.
- ♦ Let the cake cool completely in the pan, about 2 hours.
- ♦ Flip the cake onto a serving platter.
- ♦ Dust with powdered sugar and brace yourself for a flavor sensation.

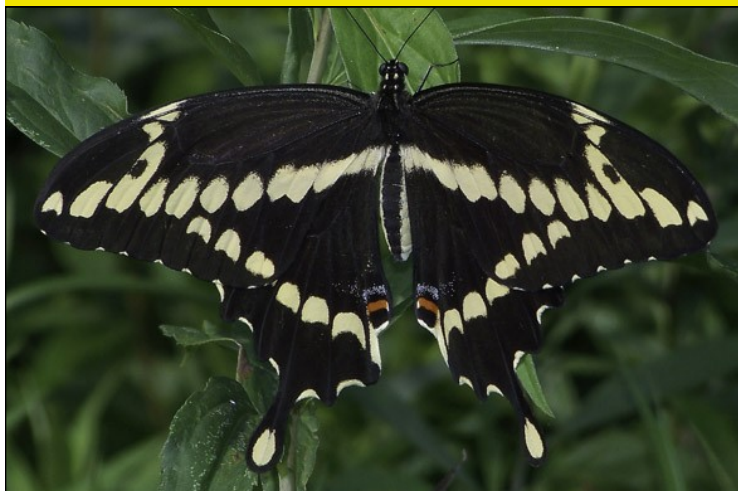


Bon Manger!

Who's Bugging You? Orange Dog Caterpillar

Recently I noticed that several leaves on the little citrus tree that I have growing in a pot near my back door had been eaten totally down to the midrib. I looked around and sure enough there I saw what looked like a big bird dropping sitting on a branch. It turns out that the bird dropping was actually a cleverly disguised orange dog caterpillar. I could not help but to touch it and as soon as I did, quick as a flash, it reared up and shot out two bright red horns from the top of its head. I immediately pulled back and soon I noticed an unpleasant smell coming from the caterpillar. I left it alone after that and in a few days I found that it had transformed into a chrysalis hanging from another branch in the tree.

The orange dog caterpillar is actually the immature form of the giant Swallowtail butterfly *Papilio cresphontes*. Think of the orange dog as the ugly duckling of the caterpillar world. Found on all varieties of citrus leaves, these caterpillars begin life very small, with an irregular brown and white coloration camouflaging them to look almost exactly like a piece of bird excrement.



Giant Swallowtail butterfly *Papilio cresphontes* Photo by: Frank Model

your yard. On average, it takes Giant Swallowtails about two months to grow from an egg to a butterfly.

Orange dog caterpillars may be an issue if a large number of them are found on new trees with just a few leaves. It does not take long for a handful of these caterpillars to strip a young tree bare. Rather than killing them, consider moving them to a larger, mature tree to finish their life cycle. Mature trees are rarely bothered by orange dog caterpillars and will regenerate their leaves once the caterpillars leave.

If you absolutely must kill them, products containing Bt Thuricide (*Bacillus thuringiensis*) work very well. But since butterflies are pollinators, it is best to let them complete their life cycle and enjoy the results!

For more information on butterfly gardening, check out the LSU AgCenter's "[Butterfly Gardening for Louisianans](http://www.lsuagcenter.com)" at www.lsuagcenter.com.

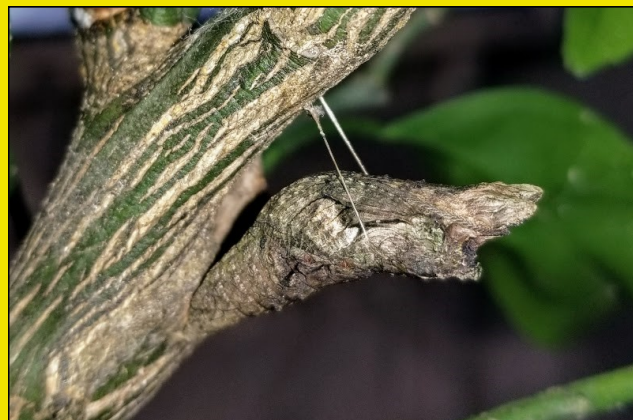


Final instar of the Orange Dog Caterpillar Photo by: Chris Dunaway

When disturbed, they produce two orange "horns" which give them their name and a strange unpleasant odor is released from a scent gland on their head. Before pupating, these caterpillars can grow to almost 2 inches long.

This time of year, these caterpillars are hungrily chowing down on citrus leaves, causing noticeable defoliation. In commercial citrus groves, the caterpillars are sprayed to control the damage.

In a home citrus situation, the best course of action is likely to leave them be. In a short time, you will be rewarded by beautiful Giant Swallowtail butterflies in



Giant Swallowtail chrysalis attached to branch suspended from its own hammock. Photo by: Chris Dunaway

Coming Events

Date	Event	Cost	Link
Saturday, Nov 3 rd , 9:00 AM-NOON	We Bite Blowout Plant Sale @ Bird's Nest Café Hosted by We Bite Rare and Unusual Plants	Free	https://www.facebook.com/events/179343279643407/
Saturday Nov 3 rd , 9:00 AM- NOON	Briarwood Annual Plant Sale @ Briarwood Nature Preserve (Saline, LA)	Free	https://www.facebook.com/events/292521758039864/
Saturday Nov 3 rd plus ongoing dates	Open hours @ Ninth Ward Nursery , featuring non-invasive bamboo and tropical plants	Free	https://www.facebook.com/events/368378333958752/
Saturday, Nov 10 th , 1:30-3:00 PM	Mushroom Growing on Logs @ The Green Project Hosted by All You Need	\$40	https://www.facebook.com/events/558381261283388/ *Master Gardener Continuing Ed Credit!
Saturday, Nov 10 th , 11:00 AM-5:00 PM	FORESTival: A Celebration of Art and Nature @ A Studio in the Woods	\$10 suggested donation	https://www.facebook.com/events/198418937650938/
Tuesday, Nov 13 th , all day!	Louisiana Plant Materials Conference @ Delgado Community College hosted by: Louisiana Landscape and Nursery Association	\$50	https://www.facebook.com/events/245762166093411/ *Master Gardener Continuing Ed Credit
Saturday, Nov 17 th , 1:00-2:00 PM	Monarchs, Milkweed, and Nectar Plants @ Crosby Arboretum (Picayune, MS) Hosted by: Mississippi Native Plant Society	\$5	http://crosbyarboretum.msstate.edu/events/2018/11/monarchs-milkweed-nectar-plants-gulf-coast-region *Master Gardener Continuing Ed Credit!
Tuesday, Nov 20 th , 9:00 AM-2:00 PM	Fall Garden Workshop @M.A. Edmond Livestock Arena (Baton Rouge) hosted by: Southern University Agriculture Re- search and Extension Center	Free	https://www.facebook.com/events/713349392357975/ *Master Gardener Continuing Ed Credit!
Friday, Nov 30 th - Jan 1, 2019		See website for infor- mation	http://neworleanscitypark.com/celebration-in-the-oaks

November Checklist

Now is a good time to divide and transplant most hardy perennials. Do not divide perennials in active growth now, such as Louisiana irises, acanthus, Easter lilies, calla lilies and lycoris.

Cut back chrysanthemums after they finish flowering to remove the old faded flowers. Sometimes the plants will set a new crop of flower buds and produce more flowers during the winter if weather is mild.

As leaves fall from trees, be sure to keep them off of your lawn grasses by raking or mowing (mower should have a bag attached) as needed. If they are left on the lawn, considerable damage to the grass could result. Once they are matted down by winter rains, they can form a cover that seals off the light. Put the leaves in your compost pile.

Don't forget to hose off and check outdoor container tropicals carefully for pests and critters before moving them inside for the winter.

Paperwhite narcissus (and other Tazetta narcissus such as Soleil d'Or) may be planted in pots this month and are easily grown for winter bloom indoors.

Don't worry about those yellowing and dropping leaves on broad leaved evergreens such as gardenia, citrus, magnolias, azaleas, cherry laurel, hollies and others. Many of these plants shed their older leaves in the fall, and will often lose some more this spring.

Harvest broccoli when the largest buds in the head are the size of the head of a kitchen match. Do not focus on the size of the head itself as that is not an indication of when the broccoli is ready to harvest. If you begin to see yellow flowers you waited too long.

Make sure you mulch new beds of cool season bedding plants as soon as they are planted to control weeds. It's also helpful to water them in with a soluble fertilizer to get them off to a good start. Repeat the application every 7 to 10 days until the plants begin to grow well.

Cut garden mums back to remove the old flowers after the blooms fade. Left in place and given good care, they will bloom for you again next fall and in years to come.

Finish planting spring flowering bulbs such as daffodils, Dutch irises, narcissus, lilies, etc. this month.

Harvest sweet potatoes before a frost browns the leaves. Freshly harvested sweet potatoes will not bake properly until they are cured. To cure them, keep them in a warm location with high humidity for a couple of weeks.

Keep compost piles evenly moist and turn them every month, if possible, to speed decomposition. The compost will be finished when it has turned into a crumbly, dark brown material. If you need organic matter for bed preparation before you have any finished compost, you can use partially decomposed organic matter and the composting process will finish in the bed.

Dormant amaryllis bulbs become available in the fall, but they should not be planted into the garden now. Plant amaryllis bulbs into pots using a well drained potting soil with the neck above the soil surface. The pot should be large enough that there is a one inch clearance between the pot rim and the bulb. Place the pot in a sunny window and keep the soil evenly moist. When the flower stalk begins to emerge rotate the pot one-half turn every few days so it will grow straight. Flowering generally occurs in December or early January. Sometime . After the flowers have faded cut the stalk at the point where it emerges from the bulb, but do not cut any foliage. Keep the plant inside and continue to provide plenty of light or the leaves will be weak. Water regularly when the soil begins to feel dry. Plant bulbs into the garden in April, where they will get into the normal cycle of blooming in April each year.

November Checklist

Tulips and hyacinths go into paper or net bags in the lower drawers of your refrigerator by the end of November. This is necessary because our winters are not cold enough long enough to satisfy the chilling requirements of the bulbs. Without this cold treatment, the bulbs will not bloom properly. Do not place apples, pears or other fruit into the same drawer with the bulbs. Ripening fruit give off ethylene gas which can cause the bulbs to bloom abnormally (too short, blasted buds). Plant in late December or early January.

Lettuces, especially the leaf and semi-heading varieties are very productive in the cool season garden. Fall is the best time to plant lettuces as they mature during progressively cooler temperatures. Problems with bitterness that often affect spring grown lettuce do not occur in the fall. Keep lettuce growing vigorously with regular watering and occasional side dressing with a nitrogen containing fertilizer such as ammonium sulfate or blood meal.

Don't overlook the ornamental qualities of many of the cool season vegetables and herbs. Curley parsley makes a great edging plant for flower beds. Curley leaf mustard and red leaf mustard are outstanding mixed with cool season bedding plants. Bronze fennel is used as often in flower beds and perennial borders as it is in the herb and vegetable garden. Bright Lights Swiss chard, Bull's Blood beets, Red Bor kale and many leaf lettuces have colorful foliage. Watch your use of pesticides on vegetables in ornamental beds if you intend to harvest them.

Mums are still available at local nurseries. Buy plants with few open flowers and mostly buds. The plant will be attractive longer. Do not buy mums if all the flowers are fully open, especially if some of them have begun to fade, as the display will be short-lived. Plant in a sun to part sun location and keep well watered. When all of the flowers have faded cut the plant back about a third. Sometimes we get a few more flowers. Cut chrysanthemum plants back hard in late January and they will bloom again for you next year in the fall.

November is an active month for planting beds of annuals. Plant heights should be considered when selecting and placing bedding plants into the landscape. Low growing flowers, which include sweet alyssum, lobelia, pansy, Johnny-jump-up, viola, ageratum and dwarf stock, generally grow to about 6 to 8 inches and should be planted in the front of beds. Medium height plants that will reach 8 to 15 inches include dwarf snapdragons, candytuft, calendula, annual phlox, blue bonnet, dianthus, sweet William, ornamental kale and cabbage, nasturtium and California poppy. Cool season bedding plants that will grow 15 inches or taller include Iceland poppy, Shirley poppy, peony-flowered poppy, stock, snapdragons, statice, larkspur and sweet peas



School Garden

BOOT CAMP

CLICK
HERE TO
REGISTER

Date: Saturday December 1st.

Time: 8 am - 4 pm

Location: Delgado Greenhouse Classroom

Delgado CC City Park Campus

A full day program available to Greater New Orleans teachers, administrators, and school volunteers.

Topics include:

- Site planning and garden design.
- Funding sources and grant writing.
- Planting schedule and garden maintenance.
- Food safety and cafeteria compliance.



*Pre-Registration
Required!*

November Lawn Care

Do:

1. Collect grass clippings and dispose of them if there are weeds setting seed in the lawn.
2. Apply pre-emergent herbicides to prevent winter weed germination including burweed and annual bluegrass. Click on the button to find out more information on winter weed control.
3. Continue to scout for insect damage and control with insecticides if necessary.
4. Continue to scout for fungal damage and control with fungicides if necessary. The most prevalent is called Large Patch of Warm-Season Turfgrass. [Click here to find information about large patch disease from the LSU AgCenter.](#)
5. Take a soil test.
6. Apply sulfur or lime to adjust the pH if necessary according to soil lab recommendations.
7. Use a bagging mower to shred and collect fallen leaves. Put them in your compost pile or use them as mulch in your gardens.



Do Not:

1. Do not apply fertilizer until mid-February or March of next year.
2. Do not put down fill dirt until the late spring when the grass is actively growing.
3. Do not lay sod.
4. Do not spread warm-season turfgrass seed.
5. Do not dethatch the lawn.
6. Do not aerate the lawn.
7. Do not overseed St. Augustine grass with winter ryegrass. In these lawns, ryegrass can compete with the turfgrass as spring comes on.

Your Local Extension Office is Here to Help

[E-mail us at: GNOGardening@agcenter.lsu.edu](mailto:GNOGardening@agcenter.lsu.edu)



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[For more information visit LSUAgCenter.com](http://LSUAgCenter.com)

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