GNO Gardening

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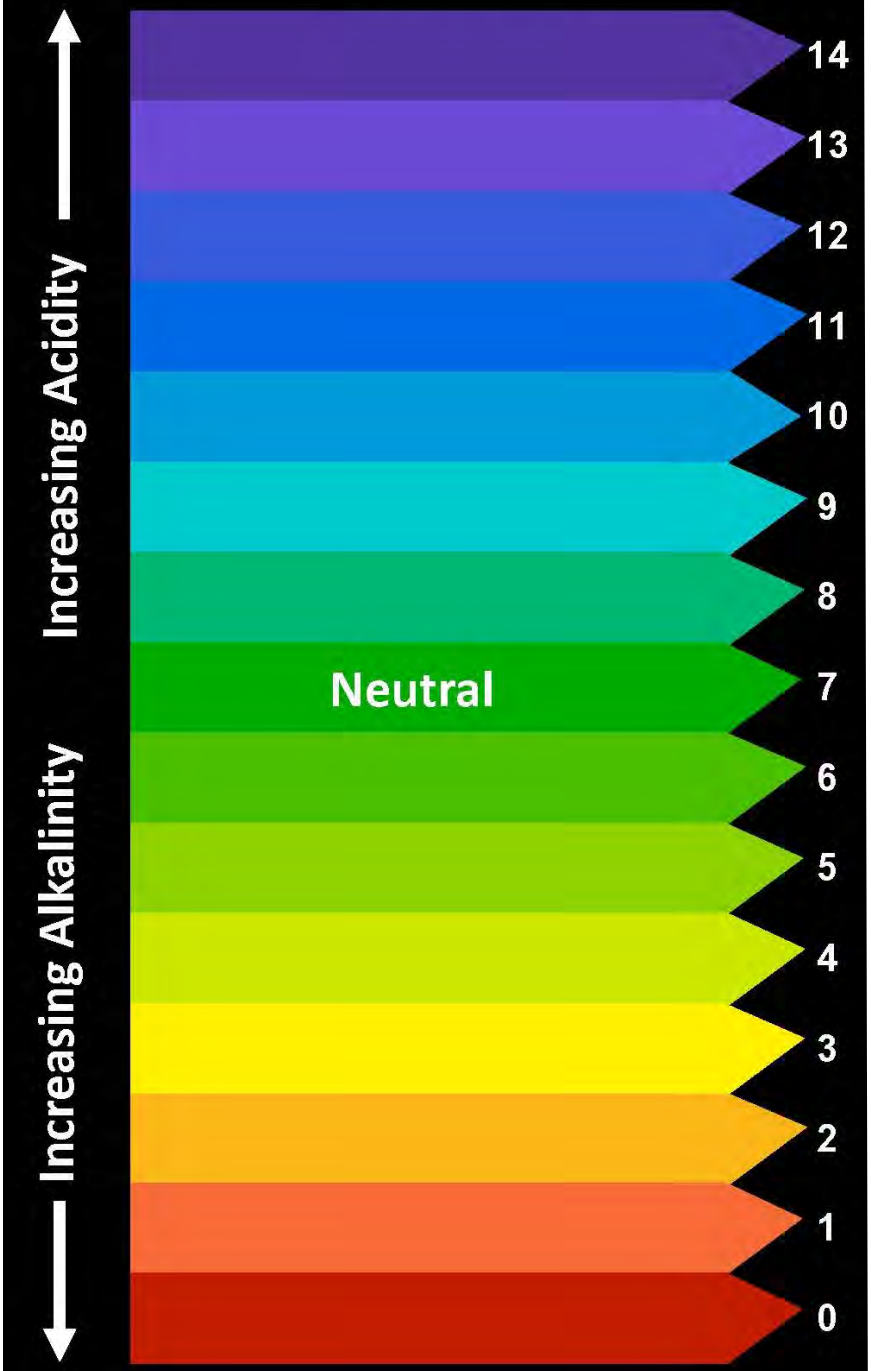
GNO Gardening Magazine

November 2021



In This Issue:

Cover photo:
pH scale. Graphic by Chris Dunaway

Lowering the Soil pH – Acidification

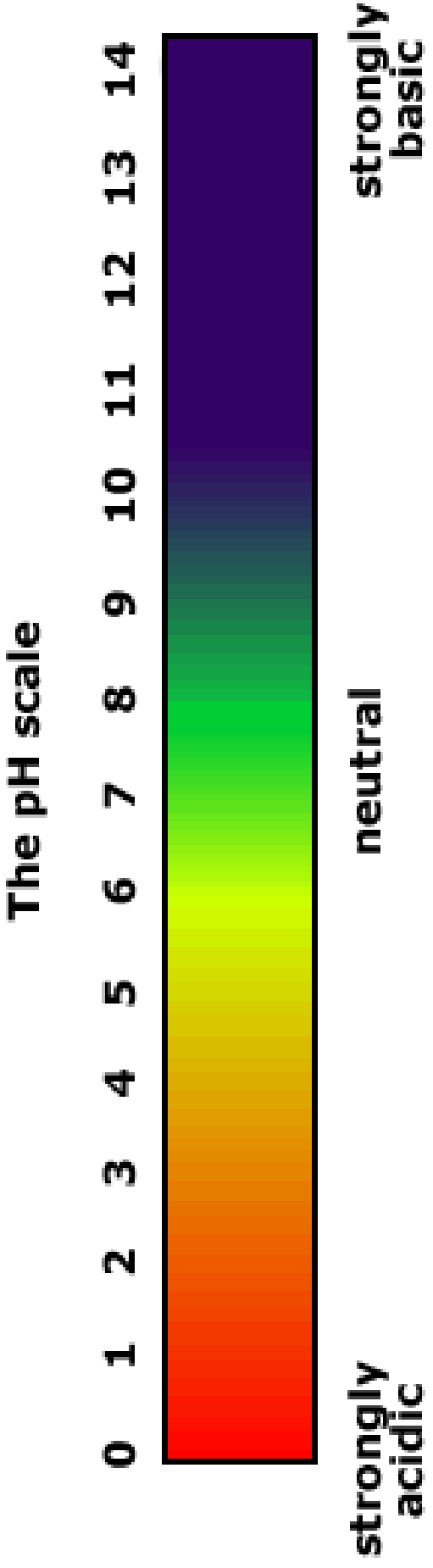
In all general horticulture courses the importance of soil pH is emphasized, and with good reason. It is the pH of the soil that determines the availability of the essential nutrients to our plants and greatly influences the soil microbiota. Most ornamental plants and vegetables prefer the soil to be in the 6.0-7.0 range. There are some acid-loving plants (e.g., gardenia, blueberry, azalea, camellia) that prefer the soil pH to be in the 4.5-5.5 range. And other plants (e.g., crapemyrtle, holly, sweet potato, Irish potato) that do better in the 5.0-6.0 range. Soil pH is one of the parameters that is measured when you have a soil test done. If you live in the Greater New Orleans area, oftentimes the soil test results come back with a soil pH of 7.0 or higher and the interpretation of High or Very High. You want to give your plants the best growing environment, so your next question is, "How do I lower my soil pH?"

Let's begin with a quick refresher on soil pH. Acidity refers to the concentration of hydrogen ions (H^+) in the soil and alkalinity is the concentration of hydroxyl ions (OH^-) in the soil. Remember pH is the negative log of the concentration of hydrogen ions (pH = -log [H^+]) and refers to "the **p**ower of **H**ydrogen". Neutral pH is 7.0, acidic is less than 7.0 and basic is greater than 7.0. As hydrogen ion concentration goes up, pH goes down and vice versa.

In soils, there are three important types of acidity: active acidity, exchangeable acidity, and residual acidity. Active acidity is the H^+ activity in the soil solution (liquid or water phase of soil) and is measurable with litmus paper or a pH meter. It is the "active" hydrogen ion concentration that determines solubility and availability of many of the soil nutrients. It is also a very small fraction of the soil acidity. But, as active acidity is neutralized, it is replenished by acidity from the other two types.

Exchangeable acidity is composed of the H^+ and Al^{3+} bound to exchangeable sites in the soil; think clay. This pool of acidity is 100 times or more greater than the active acidity. This is where soil cation exchange capacity (CEC) comes into play. Through cation exchange reactions, these ions are released into the soil to become part of the active acidity.

Residual acidity is the largest pool of acidity and is 1,000 to 100,000 times greater than active acidity. This pool is made up of H^+ and forms of Al^{3+} bound in nonexchangeable forms. Nonexchangeable hydrogen is mainly in the form of hydroxyl (-OH) groups on clay minerals, organic matter or as iron and aluminum oxides. Residual



Lowering the Soil pH – Acidification

Al activity comes from structural aluminum in clay minerals. As weathering and other soil reactions release this H^+ and Al^{3+} into the soil solution they become part of the active acidity; thus, lowering soil pH.

Aluminum Sulfate

I told you soil acidity is the concentration of hydrogen ions in the soil solution, yet several times I've talked about aluminum ions being an important player in determining soil pH. So, what is the role of aluminum in determining soil acidity. Aluminum is sometimes referred to as an acidic element though it contains no acid (no H^+). It is acidic because when Al^{3+} is added to the soil or released from the exchange complex, it generates hydrogen ions in the soil through hydrolysis. Hydrolysis is the splitting of a water molecule into its H^+ and OH^- components. One Al^{3+} ion can split three molecules of water generating three H^+ ions and binds the three OH^- ions to generate one molecule of aluminum hydroxide ($Al(OH)_3$).

Elemental Sulfur

Aluminum sulfate is one material recommended for lowering soil pH. Generally, it is a better idea to use elemental sulfur to lower soil pH because some plants may be sensitive excess soil Al. When elemental S is added to the soil, soil microorganisms oxidize sulfur to sulfate. Most agricultural soils contain some microorganisms that can oxidize S. However, the most important organisms in this respect are a group of bacteria belonging to the genus *Thiobacillus*. These bacteria are autotrophs that use sulfur as an energy source. The oxidation reaction is the combination of sulfur, water and oxygen to generate sulfuric acid. Sulfuric acid in the soil solution releases two H^+ ions lowering the pH. The rate at which this conversion takes place is determined by three main factors - the microbiological population of the soil; the physical properties of the S source; and the environmental conditions in the soil.

When a source of S is added to a soil, it stimulates the growth of S-oxidizing bacteria, and the population of these organisms increases.

The physical property that has the greatest effect on the rate of S oxidation is particle size. The smaller the particle size, the more surface area available for microbial activity. Most agricultural elemental sulfur products are made of powdered sulfur that has been formed into aggregates containing expandable clay. When these particles come into contact with the soil solution, they expand releasing the sulfur powder.

Since sulfur oxidation is a biological process, the environmental conditions that affect microbial growth affect the rate of oxidation. These factors include temperature, soil moisture and aeration, soil pH, and fertility status of the soil.

Ammonium Containing Fertilizers

Ammonium containing fertilizers also lower soil pH due to microbial activity. Nitrifying soil bacteria, primarily *Nitrobacter* and *Nitrosomonas*, convert ammonium and oxygen to nitrate, water and H^+ ions. Each molecule of ammonium (NH_4) releases four molecules of H^+ ions.

Changing Soil pH

Table 1 provides information on amount of acidifying material needed to lower soil pH to a desired level.

Table 2 indicates how much of each of the listed acidifying materials are needed to equal the acidifying capacity of one pound of sulfur. For example, to lower the soil pH of a loamy soil from 8.0 to 5.5 you would add 0.5 lb. sulfur/10 ft^2. To get the same effect you would use 1.4 lbs. of ammonium sulfate, 1.9 lbs. urea, 2.3 lbs. diammonium phosphate, 2.6 lbs. ammonium nitrate, 3.5 lbs. aluminum sulfate, or 3.0 lbs. ferric sulfate.

A final note. Sulfates (SO_4^{-2}) or sulfate ions have no effect on soil pH. Sulfate is the form of sulfur that is taken up by plants. Sulfate ions do not result in the release of hydrogen ions. For example, gypsum

Lowering the Soil pH – Acidification

(calcium sulfate) has no effect on soil pH but aluminum sulfate does. The difference is in the action of the aluminum ion in contrast to the calcium ion.

I hope you enjoyed this foray into soil nerd talk and that these tables will be helpful the next time your soil test indicates that your soil pH is too high. If you live on the North Shore, your soil test pH results are often too low (acidic). Hey Will, next month, why don't you tell us how to raise the soil pH.

I'd like to thank Dr. Brenda Tubana, LSU Professor of Soil Science, for her invaluable help in preparation of this article.

~Dr. Joe Willis

Present pH	Desired pH				
	6.5	6.0	5.5	5.0	4.5
8.0	0.3	0.4	0.5	0.6	0.7
7.5	0.2	0.3	0.4	0.5	0.6
7.0	0.1	0.2	0.3	0.4	0.5
6.5		0.1	0.2	0.3	0.4
6.0			0.1	0.2	0.3

Table 1: Pounds of Sulfur per 10 ft^2 to Lower the Soil pH to the Desired Level
These amounts are pounds/10 ft^2 in a loamy soil. For sandy soils, decrease the amount by one third. For clayey soils, increase the amount by one half.

Material	Pound Equivalents in Acidifying Ability to 1 lb. S
Elemental sulfur	1.0
Ammonium sulfate	2.8
Urea	3.9
Diammonium phosphate	4.5
Ammonium nitrate	5.2
Aluminum sulfate	6.9
Ferric sulfate	5.9

Table 2: Acidifying Equivalents for Common Soil Amendments and Fertilizers

Selected References

Combs, S. 2019. Reducing Soil pH. University of Wisconsin-Madison

Coyne, M.S. and J.A. Thompson. 2006. Fundamental Soil Science. 403 pp.

Hart, J., D. Horneck, R. Stevens, N. Bell, and C. Cogger. 2003. Acidifying Soil for Blueberries and Ornamental Plants in the Yard and Garden. Oregon State and Washington State University.

Longstroth, M. Lowering the Soil pH with Sulfur. Michigan State University Extension.

Mullen, R., E. Lentz and M. Watson. 2016. Soil Acidification: How to Lower Soil pH. Ohio State University Extension.

Shober, A.L., C. Wiese, G.C. Denny and R. Mylavarapu. 2018. Soil pH and the Home Landscape or Garden. UF-IFAS Extension.

Sulfate Sulfur vs Elemental Sulfur. Mosaic. https://www.cropnutrition.com/resource-library/sulfate-sulfur-vs-elemental-sulfur-part-i-theres-a-difference

Understanding Soil pH. 2021. Alabama Cooperative Extension.

Williamson, J. 2012. Changing the pH of Your Soil. Clemson University Extension.

November Vegetable Planting Guide

Crop	Recommended Variety
Beets	Detroit Dark Red, Kestrel, Red Ace F1, Ruby Queen
Cabbage	Blue Vantage, Platinum Dynasty, Stonehead, Cheers, Red Dynasty, Emblem, Savoy King
Carrots	Danvers 126, Purple Haze, Thumbelina, Apache, Enterprise, Maverick, Sugar Snax 54
Celery	None Given
Chinese Cabbage	None Given
Collards	Champions, Flash, Georgia Southern, Top Bunch, Vates, Blue Max, Heavi-Crop
Garlic	**Creole:** Early, Louisiana, White Mexican; **Italian:** Italian Late, Early Red Italian, Lorz Italian; **Large:** Elephant
Kale	Siberian, Vates
Kohlrabi	Early Purple Vienna, Early White Vienna, Winner
Leeks	Alora
Lettuce	**Head:** , Ithica, Great Lakes 118; **Leaf-Red:** New Red Fire, Red Sails, Red Salad Bowl; **Leaf-Green:** Nevada, Salad Bowl, Sierra, Tango, Grand Rapids; **Romaine:** Tall Guzmaine Elite, Cimarron Red, Coure, Flashy Trout Back, Green Towers, Paris Island Cos, Sunbelt; **Butterhead:** Buttercrunch, Esmeralda
Mustard Greens	Florida Broadleaf, Greenwave, Red Giant, Southern Giant Curled, Savannah, Tendergreen
Onions	**Red:** Red Creole, Southern Belle, Red Hunter; **White:** Candy, Savannah Sweet; **Vidalia:** Amelia, Candy Ann, Caramelo, Century, Georgia Boy, Goldeneye, Granax 33, Honeybee, Mata Hari, Miss Megan, Mr. Black, Nirvana, Ohoopee Sweet, Sweet Caroline, Sweet Harvest, Sweet Jasper
Radishes	Cherriette, Champion, White Icicle, April Cross
Shallots	Matador, Prism
Spinach	Bloomsdale Long Standing, Melody, Tyee, Unipak 151, Chesapeake Hybrid, Early Hybrid #7,
Swiss Chard	None Given
Turnips	**Greens and Root:** Just Right, Shogoin, Tokyo Cross; **Greens:** Alamo, White Lady, Seven Top, Purple Top White Globe, Royal Crown

To find vegetable gardening tips from LSU click here

or enter the terms **Vegetable + LSU AgCenter** in your internet search engine.

What's Bugging You: Cabbage Aphid (*Brevicoryne brassicae*)

Though many of us are still harvesting the last produce from our late warm-season vegetables, we also have already started our cool-season crops. Many of these cool-season vegetables are in the Brassicaceae family and includes broccoli, Brussels sprouts, cabbage, cauliflower, collards, kale, mustard, radishes, rutabagas, and turnips. My bet is, if you grow these veggies, at some point you're going to see the cabbage aphid (*Brevicoryne brassicae*) (Figure 1). The cabbage aphid is native to Europe but is now distributed worldwide. The cabbage aphid is distributed throughout the U.S. and has been found to be more of a pest in southern states including Louisiana. The cabbage aphid is one of three aphids that can be found feeding on brassica plants both cultivated and wild (Figure 2). The other two are the turnip/mustard aphid (*Lipaphis erysimi*) and the green peach aphid (*Myzus persicae*). However, the cabbage aphid is the most commonly found.

Figure 1. Cabbage aphids (*Brevicoryne brassicae*)

The cabbage aphid is 2.0 to 2.5 mm long and has a grayish waxy covering. This distinguishes it from the mustard aphid which is slightly smaller (1.6 to 2.2 mm long) and does not have the waxy covering. The cabbage aphid can sometimes be confused with the green peach aphid. But the cabbage aphid is waxy with short cornicles while the green peach aphid lacks the waxy covering and has long cornicles. Cornicles are a pair of small upright backward-pointing tubes found on the dorsal side of the aphid abdomen. These abdominal tubes exude droplets of a quick-hardening defensive fluid containing triacylglycerols called cornicle wax (Figure 3).

Aphids can reproduce parthenocarpically. During warm periods females give birth to female nymphs without mating and all aphids are females. As the weather cools, males are also produced. The males and females mate and fertilized eggs are laid. These eggs are also the overwintering stage of the aphids. The total life cycle duration is 16 to 50 days depending on temperature. Generations are overlapping and as many as 15 generations may occur during the year. If the food source begins to deplete or a plant is overcrowded

What's Bugging You: Cabbage Aphid (*Brevicoryne brassicae*)

Figure 2. A variety of different aphids. A = Cabbage aphid (*Brevicoryne brassicae*), B = Turnip aphid (*Lipaphis erysimi*), C = Green peach aphid (*Myzus persicae*)

with aphids, winged forms are produced that then fly to other plants.

Aphids have piercing-sucking mouthparts and feed by sucking the sap from host plants. They also produce a sugary waste called honeydew that attracts ants and sooty mold fungi. Heavy infestations can severely weaken and even kill plants. They feed on leaf undersides and inside of cabbage, broccoli, cauliflower, and Brussels sprouts heads. This can make the harvest unusable.

Another huge concern with the cabbage aphid is that it has been shown to transmit at least 20 plant viruses including, turnip mosaic virus (TuMV), and cauliflower mosaic virus (CaMV).

There are several control measures that can be used with the cabbage aphid. Syrphid fly larvae, lady beetles, lacewing larvae, and the parasitic wasp, *Diaeretiella rapae*, are all natural enemies. Growing in a habitat that fosters survival of these natural enemies can keep the cabbage aphid population in check. If the population reaches a threshold of about 50 aphids per plant, then chemical controls may be needed. These would include insecticidal soaps, pyrethroids and neonicotinoids. Use of a spreader/sticker will greatly increase the effectiveness of these pesticides. Always follow label directions when using any pesticide.

~Dr. Joe Willis

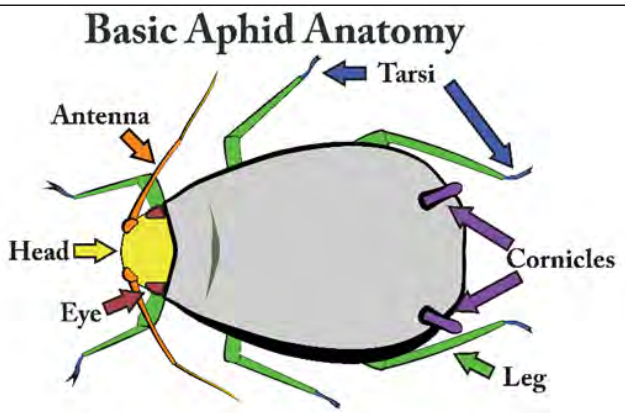


Figure 3. Basic aphid anatomy. Jason Thomas, Texas A&M University.

Selected References:

Carter CC, Sorensen KA. 2013. Insect and related pests of vegetables. Cabbage and turnip aphid. Center for Integrated Pest Management. North Carolina State University, Raleigh, NC.

Gill, H.K., H. Garg, J.L. Gillett-Kaufman. Cabbage Aphid, *Brevicoryne brassicae*. UF-IFAS Extension #EENY577

Griffin RP, Williamson J. 2012. Cabbage, Broccoli & Other Cole Crop Insect Pests. HGIC 2203, Home & Garden Information Center. Clemson Cooperative Extension. Clemson University, Clemson, SC.

Natwick ET. 2009. Cole crops: cabbage aphid. UC Pest Management Guidelines. University of California Agricul-ture & Natural Resources.

Weed of the Month
Doveweed *Murdannia nudiflora*

The common name doveweed sounds innocent enough but in reality, this particular lawn weed is far from innocent. In fact, ever since the floods of 2016 doveweed has been invading St Tammany Parish lawns without much resistance. It can invade warm season turfgrass fairly easily and there aren't many herbicide options readily available for a homeowner to manage it.

Photo of a dense matt of flowering doveweed.

Doveweed, *Murdannia nudiflora*, is not from Louisiana. It is native to southern Asia and tropical Pacific regions. It has become naturalized in many areas around the globe including Africa, Oceania, and the Americas. In North America, it can be found throughout coastal areas in North Carolina down to Florida and then westward to the Gulf region of Texas. It is a member of the plant family, Commelinaceae, which some might know as the dayflower or spiderwort family. It includes 41 genera and over 700 know species, some of which are native to Louisiana such as smooth spiderwort (*Tradescantia ohiensis*) and whitemouth dayflower (*Commelina erecta*).

Doveweed is a warm-season annual weed that starts showing up late spring and early summer in South Louisiana. It resembles a grass, but upon closer inspection, it is actually a broadleaved plant. The grass -like leaves resemble the leaves of St. Augustine grass due to their wider appearance. However, in contrast to St. Augustine grass, doveweed foliage is more succulent and is a much lighter color of green. It spreads by way of fleshy, creeping stems (stolons) that root at each node. The stolons and leaves eventually grow into a dense intertwined mat that smothers out lawn grass. Towards the latter half of summer, doveweed will begin to flower. It produces clusters of blue/purple flowers that arise from leaf nodes.

Doveweed tends to grow in wetter areas of the lawn. More experienced horticulturists use doveweed as an indicator plant for areas that experience poor soil drainage. This can be areas that collect surface water (puddles) or areas with a compacted soil layer that prevents normal percolation. Poor drainage also negatively impacts the desired turfgrass species which gives doveweed the growing advantage.

Control and management of doveweed should begin with keeping and maintaining a healthy turfgrass.

Weed of the Month
Doveweed *Murdannia nudiflora*

Determine the species of turfgrass growing in the lawn and take soil samples of the general area. Each species of turfgrass has a desired soil pH range and each has their own preferred concentrations of essential nutrients. Supplement deficient elements using various fertilizers and soil amendments. Manage soil compaction during the growing season through aerification and hollow tine aerators. Improve surface drainage by adding soil to raise low spots and depressions. Utilize gravity to help drain wet areas by creating drainage swales and adding strategically placed trenches. Smaller areas with little surface contour may need the help of French drains and other underground drainage devices to move water. Improving drainage and maintaining proper turfgrass fertility will allow your lawn to better compete with a growing doveweed population.

Lastly, herbicides can be helpful in getting a head start on managing weed populations in lawns. Look to use sulfentrazone + metsulfuron-methyl (Blindside) or thiencarbazone + dicamba + iodosulfuron (Celsius) in St Augustinegrass, centipedegrass, zoysiagrass, and bermudagrass. Atrazine is labeled for doveweed control in St Augustine grass, centipedegrass, and zoysiagrass. Remember to always read and follow label instructions before applying a pesticide product. You will find information on how to mix, how to apply, when to apply, applicator PPE requirements, and how to store the left-over product.

~Will Afton

The blue, purple flowers of doveweed appear in late summer .

The fleshy, creeping stems of doveweed allow it to grow into dense mats due to ease of rooting at each node. (Red arrows point to some of the nodes.)

Plants with Potential
The Ultimate List of Pass Along Plants

Now in it's seventh year, the Hammond Research Station works to highlight easy to propagate plants that thrive in southern Louisiana's gardens. What I love about Plants With Potential is that they are selected to be sharable- these are plants that are not patented by the big nurseries or large corporate plant breeders. There is no limit to their distribution, and all are selected because they add beauty and interest to the current selections of landscape material in Louisiana. And did I mention, they are easy to propagate? That is music to my ears- these are plants that I can make more of and share with my friends, family, and community.

A solitary clump of Shooting Star Lilies (Anthericum saundersiae).

Each year, the staff at the Hammond Research Station select a handful of plants that they think are worthy of the Plants With Potential list. These plant selections are announced to the Hammond Horticulture Field Day and "samples" of each plant are sent home with nursery and horticulture industry professionals to scatter throughout the state, and hopefully further afield. A more diverse palette of plants for Louisiana's increasingly challenging climate and landscape is a good thing. We need resilience in our gardens as we face increasing amounts of rain, more frequent storms, and "polar vortex" events with increasing frequency.

Enlarged photo of Shooting Star lily (*Anthericum saundersiae*) flowers.

Plants with Potential can be any kind of plant- a shrub, a small tree, a bedding plant, a bulb, wildflower, or some long forgotten foliage plant from someone's grandmother's house. The Hammond Research Station evaluates heirloom cultivars, long-forgotten pass-along plants, old or forgotten cultivars, and non-patented releases from plant breeding programs. They are planted into the trial gardens, and left to do their thing. When they thrive, a Plant with Potential is born.

Master gardener groups, garden clubs, public gardens, and universities can all get stock plants to grow and eventually propagate new

Plants with Potential
The Ultimate List of Pass Along Plants

plants from. It is hoped that stock plants sent to wholesale and smaller local nursery producers will thrive and make it into the hands of gardeners throughout the state. I've obtained a few Plants With Potential, which I can potentially propagate over the winter months and share with folks who stop by my 9th Ward "free plant table". Gardeners love to share, and the tradition of the pass-along plant is one that is still going strong.

The two 2021 Plants With Potential winners that I was lucky enough to nab at this year's Hammond Horticulture Field Day are thriving so far, and I hope in time to be able to pass them along. For a full listing of all seven years of Plants With Potential Winners, please visit the website.

Chinese Ground Orchid (*Bletillia striata*)

Shooting Star Lily (*Anthericum saundersiae* or *Chlorophytum saundersiae*). Are you tired of liriope and mondo grass? The Shooting star lily could be an excellent plant for you. This lily has the same grassy, dark green foliage of a liriope, but it blooms in delicate arches of white star-shaped blossoms all summer and into fall. It is perennial and evergreen in the GNO area. It is easy to propagate by dividing it in fall but does not grow so aggressively that it will take a landscape over. Shooting star lily prefers sun or partial shade, and moist soil. For now it is not locally available, but can be found through online vendors. Originally this plant is from Africa.

Chinese Ground Orchid (*Bletillia striata*). A terrestrial orchid, I'm beginning to see the Chinese ground orchid used more in landscapes in our area. The upright, dark green foliage looks a lot like that of the *Aspidistra*, or cast iron plant. In the spring, it puts out large spikes of bright purple orchid blossoms up to eighteen inches long. Over time, each plant will form a clump which can be divided. In the GNO area, they prefer to grow in partial shade, and even full shade. They are root hardy in our zone and the foliage reemerges after a freeze. Chinese ground orchids are becoming increasingly easy to find at the local garden centers.

~Anna Timmerman

Growing Media for Containers
Part 4: Media Recipes

It is more practical to use a commercially prepared potting soil than to buy ingredients and formulate your own. However, potting soils sold through retail garden supply outlets vary widely in their performance as growing media. In the three previous installments, we discussed the different physical and chemical parameters of container media and the different organic and inorganic components that are commonly used in media. In this installment, we give you some growing media recipes that have been used successfully over the years. You can use these recipes to make your own container growing media or tweak them to fit your own special conditions.

Seed Starting Media

In order to germinate, seeds have some basic needs. All need water and oxygen. Regarding light, some need light, some need darkness, and some will germinate either way. As the seed begins to sprout, the tender shoot grows upward and the root (radical) grows downward. The easier it is for the shoot to emerge and the root to dig deeply, the better it is for the seedling. Large seeds can usually push through about anything as they germinate. This would be seeds like oaks, squash, pumpkins, etc. Smaller seeds aren't as strong and need an easy route. This would be seeds like broccoli, lettuce, peppers, tomatoes, cauliflower, etc. Having a seed starting medium with small particle size and no large chunks will work well for all seed types. Since the germinating seeds need both water and oxygen, a good medium has a high water-holding capacity but also good drainage and high air-filled porosity (see GNO Gardening October 2021).

Once your seedlings germinate and emerge, they will need nutrients to grow. This can be a part of your initial media mix or you can begin fertilizing after the seedlings emerge, usually about two weeks.

Basic Recipe for Seed-Starting Mix #1

- 4 parts compost or worm castings (screened to remove large pieces)
- 1 part perlite
- 1 part vermiculite

2 parts peat moss or coconut coir

Basic Recipe for Seed-Starting Mix #2

1 part sphagnum peat moss (or coconut coir)

1 part perlite

1 part vermiculite

Univ. of Georgia Seed Starting Mix

4 quarts shredded sphagnum peat moss

4 quarts fine vermiculite

1 tablespoon of superphosphate

2 tablespoons of ground limestone

Mix thoroughly, then wet completely. Leave the soil to drain and do not plant for 5 to 6 days. This allows the lime to react with the peat moss and create a favorable environment for the seedlings.

University of Florida Seed Starting Mix with slow-release nutrients added

4 gallons screened worm castings or screened compost

4 gallons fine vermiculite

8 oz. greensand or kelp meal for potassium

8 oz. supplement with full spectrum of micro-nutrients (e.g. Azomite)

8 oz. phosphate rock for phosphorus

8 oz. alfalfa meal for early nitrogen

Container Growing Media

You can find a lot of recipes online for container growing media and all have their ardent followers. Here are a few that you may find useful.

Growing Media for Containers
Part 4: Media Recipes

UC (University of California) Mix 1

This mix has been an industry standard for over 35 years and is still popular today.

- 13.5 ft^3 plaster sand
- 6.75 ft^3 bark
- 6.75 ft^3 peat moss
- 0.11 lb. Copper
- 0.13 lb. Iron
- 0.07 lb. Magnesium
- 0.03 lb. Manganese
- 0.05 lb. Zinc
- 0.25 lb. KNO_3
- 1.5 lb. Phosphate
- 0.25 lb. Potash

Most of us aren't going to be making potting mix by the cubic yard and don't want to buy and store all the individual micronutrient and macronutrient fertilizers. The following recipe is a good approximation of the UC Mix 1 recipe.

- 2 gal. Sand
- 1 gal. Bark
- 1 gal. Peat
- ½ tsp. Potassium nitrate
- 1 Tbs. Super Phosophate
- ½ tsp. Muriate of Potash
- 1 Tbs. Micronutrient product (e.g. Azomite)

University of Florida Potting Mixes

Foliage Plant Mix

- 2 parts Peat
- 1 part Perlite
- 1 part Sand

OR

- 1 part Peat
- 1 part Pine bark
- 1 part Sand

Succulent Mix

- 2 parts Compost
- 1 part Peat
- 1 part Perlite
- 1 part Sand

Bromeliad Mix

- 1 part Peat
- 1 part Bark
- 1 part Sand

Basic Potting Mix

- 2 parts peat moss or coir (pre-moistened)
- 2 parts compost or composted manure
- 1 part perlite
- 1/4-1/2 parts vermiculite
- 1 tablespoon garden lime for each gallon of peat moss

Basic Potting Mix for Acid-Loving Plants

- 4 parts peat moss
- 2 parts compost or composted manure
- 1 part perlite
- ¼ to ½ part vermiculite

Dan Gill's Potting Mix for Blueberries

- 15 gallon container
- 1/2 peat moss
- 1/2 soil conditioner (composted bark)
- 8 ounces Osmocote 17-7-12 or 16-4-8
- 2 ounces dolomitic lime
- 1 ounce trace elements (Micromax or other trace element fertilizer)

Growing Media for Containers
Part 4: Media Recipes

Basic Potting Mix for Cacti and Succulents

- 3 parts compost
- 2 parts coarse sand (use 3 parts for cactus plants)
- 1 part perlite

Anna T's Basic Potting Soil Recipe

- 1 Part Compost
- 1 Part Garden Soil
- 1 Part Peat Moss
- 1/2 Part Vermiculite or Perlite (Use perlite for water retention and drainage. Use vermiculite to increase water and nutrient retention and aerate the soil.)

Gardenia Potting Mix (I had to throw this one in)

- 2 parts Peat
- 1 part Compost
- 1 part Sand of Perlite

This is just a few of the potting mix recipes you can find that others have used successfully. Sometimes you may need to tweak it to make it better suited for your particular environment or particular plant species. When you tweak a potting mix recipe, it's a good idea to first make a small batch and test it on some of your plants before you make a wholesale changeover.

And of course, there's always LSU Brand Tiger Greaux. Tiger Greaux has aged and composted forest products, peat moss, perlite, vermiculite, sand, fertilizer and micronutrients.

~Dr. Joe Willis

Young blueberry shrubs planted in Dan Gill's Blueberry Mix.

Selected Resources:

7 Easy DIY Potting Soil Recipes to Mix Your Own. https://getbusygardening.com/diy-potting-soil/#cactus-succulents

Azomite Fertilizer and Soil Amendment Products. https://azomite.com/azomite-home-page/azomite-mineral-fertilizer-products/

Homemade Potting Mixes – UFL. https://sfyl.ifas.ufl.edu/lawn-and-garden/homemade-potting-mix/

Plant Potting Mixes. https://medium.com/age-of-awareness/plant-potting-mixes-a41a4a8187fa

UC Soil Mixes and Available Ingredients. https://agops.ucr.edu/soil-mixing

In the Kitchen with Austin

Butternut Squash Soup

With October comes all manner of pumpkins. Although not exactly a pumpkin, butternut squash makes a great fall soup. This one features loads of herbs, so I'm sure you'll enjoy it.

Ingredients:

2 Tbs. olive oil
1 yellow onion, chopped
1 butternut squash, peeled, seeded, and cubed
3 garlic cloves, chopped
1 Tbs. sage
½ Tbs. rosemary
1 tsp. ginger
3 to 4 cups vegetable broth
Salt and pepper, to taste

A bowl of butternut squash.

Directions:

Sauté onion in the olive oil over medium heat until soft. Add the squash and cook until it begins to soften, stirring occasionally; about 10 minutes.

Add the garlic, sage, rosemary, and ginger. Stir and then add the vegetable broth. Bring to a boil, cover, and simmer until squash is tender; about 20 to 30 minutes.

Let soup cool slightly and blend until smooth. Season to taste with salt and pepper and enjoy with a piece of crusty bread.

Bon Manger!

Coming Events

NEW ORLEANS BOTANICAL GARDEN
CITY PARK

Pelican Greenhouse Plant Sales

Visit the Pelican Greenhouse for a large selection of plants for sale. Many of plants are propagated from cuttings, seeds, and divisions from plants already growing in the Botanical Garden

Saturdays 9am - 1pm
Last Sale November 20th
Location: Pelican Greenhouse
2 Celebration Drive.

Visit NewOrleansCityPark.com for park map

Farmers Markets in the GNO Area

Orleans Parish

Crescent City Farmer's Market- Mid-City
500 N. Norman C. Francis
Thursdays from 3-7PM
Walk-up and curbside pre-orders at
www.crescentcityfarmersmarket.org

Crescent City Farmer's Market- City Park
Tad Gormley Stadium parking lot at Marconi and Navarre
Sundays from 8AM-Noon
Preorder contact-free drive through only, info at
www.crescentcityfarmersmarket.org

Crescent City Farmer's Market- Uptown
200 Broadway
Tuesdays from 8AM-Noon
Walk-up and curbside pre-orders, info at
www.crescentcityfarmersmarket.org

SPROUT NOLA ReFresh Market-Truck Farm Table
200 N. Broad (In Whole Foods lobby or in parking lot, weather permitting)
Walk up

SPROUT NOLA ReFresh Market-Lafitte Greenway
2606 St. Louis
Mondays from 3-6PM
Walk up and pre-orders at https://app.sourcewhatsgood.com/markets/refresh-farmers-market/products

Vietnamese Farmer's Market
14401 Alcee Fortier Blvd., New Orleans East
Saturdays, 5:30AM-8:30AM

Marketplace at Armstrong Park
901 N. Rampart
Thursdays from 3-7PM

New Orleans French Market
Lower Decatur Street
Daily, 9AM-6PM

Know Dat Grow Dat Microgreens & Produce
Online Sales
https://www.knowdatgrowdat.com/shop

Mid-City Arts and Farmer's Market
Comiskey Park, New Orleans
Market dates vary and are on hold due to Covid-19, check http://midcityaf.org

Laughing Buddha Farm Hubs
Pick up points vary, pre-orders available
Bywater, Broadmoor, Lakeview, Irish Channel, Mid-City, Algiers Point, Uptown Locations
https://www.laughingbuddhanursery.com/events

Barcelo Gardens Farmer's Market- Upper 9th Ward
2301 Gallier Street
Saturdays from 10AM-1PM

Bywater Market at Trap Kitchen-Bywater
1043 Poland Ave
Sundays from 10AM-3PM

Paradigm Farmer's Market-Central City
1131 S. Rampart
Sundays 9AM-Noon

Lot 1701 Small Business and Farmer's Market-Central City
1701 Oretha Castle Haley Blvd.
Every 1st and 3rd Saturday from 11AM to 3PM

BOUNYFUL Farmer's Market-Algiers Point
149 Delaronde St.
First and Third Sundays of the month, from 11AM-3PM

Edgewood Park Market-Edgewood
3317 Franklin Ave.
First market Sunday, May 2nd from 11AM-3PM

New Orleans East Hospital Farmer's Market- New Orleans East
5620 Read Blvd.
First Tuesday of the Month- 3PM-Dusk
Third Thursday of the Month- Noon-3PM

Sheaux Fresh Sustainable Foods- Treme-Laffite
585 N. Claiborne at Lafitte Greenway (under overpass)
Wednesdays from 2-5PM
Saturdays from 10AM-2PM
Check for current dates/times at www.sheauxfresh.org

Holy Cross Farmer's Market- Holy Cross/Lower 9th Ward
533 St. Maurice
First & Third Saturday of the month, 10:00AM-2PM

St. Charles Parish

German Coast Farmer's Market at Westbank Bridge Park-Luling
13825 River Road
Wednesdays, from 1-5PM

German Coast Farmer's Market at Ormond Plantation-Destrehan
13786 River Road
Saturdays, from 8AM-Noon

Farmers Markets in the GNO Area

Jefferson Parish

Gretna Farmer's Market
739 Third Street, Gretna
Every Saturday, except the Saturday of Gretna Fest,
8:30AM-12:30PM

Nawlins Outdoor Market
1048 Scotsdale Dr., Harvey
Every Saturday & Sunday, 9AM-5PM

Old Metairie Farmer's Market
Bayou Metairie Park, Between Metairie Lawn Dr. and Labarre
3rd Tuesday of the month, 3:30PM-7:30PM

Westwego Shrimp Lot
100 Westbank Expressway at Louisiana St., Westwego
Daily Mon-Thurs 8AM-6PM, Fri 8AM-7PM, Sat 7AM-7PM,
and Sun 7AM-6PM

Lafreniere Park Market-Metairie
3000 Downs Blvd.
Wednesdays, from 3-7PM

Laughing Buddha Farm Hub-Clearview
4516 Clearview
Store Pickups, preorder online at https://
www.laughingbuddhanursery.com/buy-groceries-1

Jean Lafitte Town Market-Lafitte
920 Jean Lafitte Blvd.
Last Saturday of the month, 9AM-1PM

Harahan Farmer's Market
6437 Jefferson Hwy., Harahan, LA
Sundays, Noon-4PM

Good Time Guild Farmer's Market at St. Martin's Episcopal Church-Metairie
2216Metairie Rd.
1st Thursdays monthly, 2PM-7PM
3rd Saturday monthly, 10AM-3PM

Local Independent Garden Centers

Orleans		
Urban Roots	2375 Tchoupitoulas St., New Orleans, LA 70130	(504) 522-4949
The Plant Gallery	9401 Airline Hwy., New Orleans, LA 70118	(504) 488-8887
Harold's Plants	1135 Press St., New Orleans, LA 70117	(504) 947-7554
We Bite Rare and Unusual Plants	1225 Mandeville St., New Orleans, LA 70117	(504) 380-4628
Hot Plants	1715 Feliciana St., New Orleans, LA 70117	www.hotplantsnursery.com
Delta Floral Native Plants	2710 Touro St., New Orleans LA 70117	(504) 577-4290
Pelican Greenhouse Sales	2 Celebration Dr., New Orleans, LA 70124	(504) 483-9437
Grow Wiser Garden Supply	2109 Decatur St., New Orleans, LA 70116	(504) 644-4713
Jefferson Feed Mid-City	309 N. Carrollton Ave., New Orleans, LA 70119	(504) 488-8118
Jefferson Feed Uptown	6047 Magazine St., New Orleans, LA 70118	(504) 218-4220
Ninth Ward Nursery	2641 Deslonde St., New Orleans, LA 70117	(504) 296-8398
Crazy Plant Bae	800 N. Claiborne Ave., New Orleans LA 70119	(504) 327-7008
Canopy Plant Company	6030 St. Claude, New Orleans, LA 70117	(504) 381-4033
Too Tall Nursery	2817 N. Roman, New Orleans, LA 70117	tootallfarm@gmail.com
Nice Plants Good Pots	Pop Up and Online Sales	Etsy.com/shop/NicePlantsGoodPots
Plantery NOLA	Pop Up Locations	www.planterynola.com
Canopy Plant Co.	Pop Up and Online Sales	www.canopyplantco.com
New Orleans Succulent Boutique	Online Sales	https://sites.google.com/view/nolasucculentshop/home
Root Life Mobile Plant Nursery	Pop Up Locations	https://rootlifeplantnursery.com/
New Orleans Green LLC	www.neworleans-green.com	
Plaquemines		
Southern Gateway Garden Center	107 Timber Ridge St., Belle Chasse, LA 70037	(504) 393-9300
Belle Danse Orchids	14079 Belle Chasse Hwy., Belle Chasse, LA 70037	(504) 419-5416
St. Charles		
Plant & Palm Tropical Outlet	10018 River Rd., St. Rose, LA 70087	(504) 468-7256
Martin's Nursery & Landscape	320 3rd St., Luling, LA 70070	(985) 785-6165
St. Bernard		
Renaissance Gardens	9123 W. Judge Perez Dr., Chalmette, LA 70043	(504) 682-9911
Plant Pricks	Pop Up Locations	https://plantpricks.com/

Local Independent Garden Centers

Jefferson

Perino's Garden Center	3100 Veterans Memorial Blvd., Metairie, LA 70002	(504) 834-7888
Rose Garden Center	4005 Westbank Expressway, Marerro, LA 70072	(504) 341-5664
Rose Garden Center	5420 Lapalco Blvd., Marrero, LA 70072	(504) 347-8777
Banting's Nursery	3425 River Rd., Bridge City, LA 70094	(504) 436-4343
Jefferson Feed	4421 Jefferson Hwy., Jefferson, LA 70121	(504) 733-8572
Nine Mile Point Plant Nursery	2141 River Rd., Westwego, LA 70094	(504) 436-4915
Palm Garden Depot	351 Hickory Ave., Harahan, LA 70123	(504) 305-6170
Double M Feed Harahan	8400 Jefferson Hwy., Harahan, LA 70123	(504) 738-5007
Double M Feed Metairie	3212 W. Esplanade Ave., Metairie, LA 70002	(504) 835-9800
Double M Feed Terrytown	543 Holmes Blvd., Terrytown, LA 70056	(504) 361-4405
Sunrise Trading Co. Inc.	42 3rd St., Kenner, LA 70062	(504) 469-0077
Laughing Buddha Garden Center	4516 Clearview Pkwy., Metairie, LA 70006	(504) 887-4336
Creative Gardens & Landscape	2309 Manhattan Blvd., Harvey, LA 70058	(504) 367-9099
Charvet's Garden Center	4511 Clearview Parkway, Metairie, LA 70006	(504) 888-7700
Barber Laboratories Native Plants	6444 Jefferson Hwy., Harahan, LA 70123	(504) 739-571
Plumeria Insanity Nursery	https://www.facebook.com/Plumeria-Insanity-Nursery-102123651930419	

Soil Vendors

Schmelly's Dirt Farm	8301 Olive St., New Orleans, LA 70118	(504) 535-GROW
Laughing Buddha Garden Center	4516 Clearview Pkwy., Metairie, LA 70006	(504) 887-433
Reliable Soil	725 Reverand Richard Wilson Dr., Kenner, LA 70062	(504) 467-1078
Renaissance Gardens	9123 W. Judge Perez Dr., Chalmette, LA 70043	(504) 682-9911
Rock n' Soil NOLA	9119 Airline Hwy., New Orleans, LA 70118	(504) 488-0908
Grow Wiser Garden Supply	2109 Decatur St., New Orleans, LA 70116	(504) 644-4713

If you would like your licensed retail nursery listed, please email gnogardening@agcenter.lsu.edu

November Checklist/Garden Tips

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.

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.

November Checklist/Garden Tips

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.

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.

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.

As the leaves fall, maintain a balance of on-site composting vs. smothering the lawn in leaf mulch. As a way to return organic material back to the soil and reclaim the nutrients locked away in the leaves we do recommend in situ composting. Use a lawnmower to shred the leaves in place to reduce the volume and accelerate decomposition.

Do not let the leaves build up to a depth that will completely block the sunlight from the underlying turf. Wet leaves can quickly create a mat covering that can severely damage the turfgrass.

Do not through away the leaves. Your soil desperately needs the organic material. Most lawns are horribly compacted. The best solution is to make your own compost from the leaves and spread it out over the lawn after having it aerated in the spring. You can also bag the leaves and add them back slowly to the lawn each time that you mow.

Lawn Care Do's & Don't's

Do's:

1. You may apply selective herbicides to eliminate broad leaf weeds in the lawn.
2. Cool damp weather is ideal for the appearance of Large Patch Disease in your lawn. Click here to find information about large patch disease from the LSU AgCenter.
3. Irrigate as necessary to moisten the soil to a depth of 4-6 inches. The best time to water is in the morning.
4. Set your mower to the correct height for your turfgrass type.
5. Mulch fall leaves and let them decompose in place if possible or collect them with a bagging mower and add them to your compost pile or use them as mulch in your gardens.
6. Take a soil test. Test kits are available in our offices in the Botanical Gardens, the Yenni Building, and New Orleans City Hall as well as local garden centers. Follow this link to see Dr. Joe demonstrate how to take a soil sample: https://www.facebook.com/1030624690304124/videos/1452161988150390/

This photo from a local homeowner shows the classic presentation of large patch disease. As the fungal growth spreads outward, the center will often begin re-growing

Don't's

1. Do not spread fill over the lawn until it is actively growing again in the spring.
2. Do not apply fertilizer to the lawn again until April of next year.
3. Do not apply phosphorous winterizer to the lawn without taking a soil sample first. We have ample amounts of phosphorous in our soil already.
4. Do not attempt to install a new lawn until spring.
5. Do not cut more than 1/3 of the height of lawn grass at a single time.
6. Do not aerate the lawn.
7. Do not dethatch the lawn.

Your Local Extension Office is Here to Help

E-mail us at: GNOGardening@agcenter.lsu.edu

Follow us on Facebook at GNOGardening

For more information visit LSUAgCenter.com

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