UNIVERSITY OF GEORGIA EXTENSION

Shades of Green

Athens-Clarke County Agriculture and Natural Resources

June 2023

Included in this issue...

A note from Athens-Clarke County Agriculture & Natural Resources

Hello readers! Each of us at the Clarke-County Extension office are very excited that summer is finally here! Our extension garden is full of beautiful roses and poppies that we are happy to share. There are also several fun events happening at the office and around Athens this month! Be sure to check out local Farmers Markets and other events happening throughout the month hosted by UGA Extension, the State Botanical Garden of Georgia, Georgia Museum of Natural History, and Sandy Creek Nature Center, among many others.

We hope you enjoy this month's issue of "Shades of Green".

Take care,
Athens-Clarke County Agriculture and Natural Resources

State Botanical Garden of Georgia

Management of Turfgrass Insect Pests and Pollinator Protection

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Insect pests can threaten or even destroy turfgrass by directly feeding on grass blades or the root system. Managing turfgrass pests can be challenging, depending on the insect's feeding site, the stage of the insect's development, and insecticide c overage. A variety of insecticides are used in early spring until late fall to control insect pests.

Insecticides may affect a wide range of insects that include both pests and beneficial insects. Beneficial insects include the insects that pollinate crops and ornamental plants, predators of pest insects (e.g., big-eyed bugs), and parasitic wasps that attack pest insects. Foraging insect pollinators are not attracted to lawns. Turfgrass rarely produces flowers and is a poor source of nectar and pollen, but grassy areas can support patches of flowering weeds within or around the grass lot. Weeds that flower yearlong, such as white clover (Trifolium repens), dandelion (Taraxacum officinale), and bird's foot trefoil (Lotus corniculatus) can attract foraging pollinators into the turfgrass lots.

Turfgrass is an important component of many landscapes. Research has shown that landscapes support diverse, abundant, and intact bee communities in New York, California, and Ohio. In fact, the abundance and diversity of bees visiting home landscapes have been observed to approach, and even exceed, numbers in nearby natural and/or agricultural systems. If the turfgrass has been treated or is being treated with insecticides, the pollinators can be exposed directly or indirectly to the insecticides on the weeds. This can cause lethal or sublethal effects on these pollinators. These guidelines will reduce insecticide exposure to pollinators as they seek nectar and pollen from plants around lawns:

Mow before application.

Mowing turfgrass before applying insecticide will remove weed flowers so that the pollinating insects will not be attracted to weeds. If the label says "Do not mow before insecticide application," consider mowing the contaminated flowers immediately.

State Botanical Garden of Georgia

Management of Turfgrass Insect Pests and Pollinator Protection (Cont.)

Watch the wind speed.

Avoid insecticide application if the wind is blowing more than 5 to 6 miles per hour. This will limit insecticide drift, reducing the risk of unintended exposure.

Manage turfgrass weeds.

Good weed control will help keep pollinators off of turfgrass. This can be achieved with a regular pre-emergence herbicide application in winter or a spot application of herbicide during the summer months. Weeds can also be mechanically removed. It is essential to periodically monitor turfgrass lots to prevent weeds from establishing. A well-irrigated and fertilized turfgrass lot will decrease the opportunity for weed establishment. Frequent mowing also discourages weed flowering.

Use timely irrigation.

Under certain circumstances, irrigating insecticide-treated turfgrass, especially during morning hours, washes off the insecticide residues or reduces the concentration of insecticide deposited on the flowers and foliage.

Apply insecticides during periods of low pollinator activity.

In general, pollinating insects actively forage during the day when it is warm. Applying insecticides during early morning and late evening will reduce direct exposure to the pollinating insects. Most weeds produce flowers during early spring. If possible, delay insecticide application by a month until weeds have completed flowering. This will reduce the risk of pollinator insecticide exposure.

Choose the right insecticide formulation.

A granular formulation is considered less hazardous to pollinators than liquid-based formulations. The insecticide residues in granules are absorbed by the roots and then move to the foliage or flowers to affect the feeding insect pests. The insecticide residues that end up in flowers or nectar are generally low enough not to harm the foraging pollinators.

Starting Plants from Cuttings for the Home Gardener

By Sherri Dorn, Bodie Pennisi and Sarah Sawyer

Department of Horticulture

Many plants can be reproduced from cuttings, or pieces, of the parent plant. This allows the gardener to produce a flowering plant faster than from seed. It also helps maintain certain characteristics of the parent plant, like flower color or growth habit, that might change if propagated by seed.

Plant propagation is the creation of new plants from existing ones. Plants can be propagated by two main methods, including sexual (seed) and asexual (vegetative) propagation. Asexual, or vegetative propagation, is done by inducing root formation on a piece of the parent plant so that a new and independent plant is created. The vegetative plant part is placed under conditions favorable for rooting. The plant part must develop its own roots to allow for water and mineral uptake.

In most cases, vegetative propagation produces a clone which is genetically and physically identical to the parent plant. The offspring is identical to the parent because there is no mixing of the gene pools as in seed propagation. For some plants, vegetative propagation is the only way to maintain the characteristics unique to the plant, such as variegation or dwarfing.

Vegetative propagation is advantageous for multiple reasons. Unique characteristics that would not continue through seed propagation, such as color variegation or contorted growth, can be preserved through vegetative propagation. New plant forms can be introduced to the market more quickly through vegetative propagation than through sexual propagation. A larger plant can be obtained in a shorter period of time, and new plants will flower faster than seed-propagated plants. Very little tissue from the parent plant is needed to produce many plants. In cases of declining specimens or historic plants, plant lineage can be maintained by vegetatively propagating replicas that have the vigor of young plants.

Before propagating plants, gardeners must confirm that they have permission to propagate them. Many plants are patented and it is unlawful to propagate them for any reason, including personal use! A patent is granted on intellectual property and prohibits anyone else but the patent owner from profiting. To find out if a plant is patented, check the U.S. Patent and Trademark Office website (www.uspto.gov). While the USPTO is considering whether to grant a patent, a cultivar is sold as "PPAF," which stands for "plant patent applied for" (e.g., Hemerocallis **'Inkheart'PPAF). This status also prohibits propagation by anyone except licensed growers.**

Starting Plants from Cuttings for the Home Gardener (Cont.)

GROWING PLANTS FROM CUTTINGS

Some plants can be reproduced by cutting propagation. Cutting is a general term used in vegetative propagation and can be any portion of the vegetative plant body used to create new plants. In most plants, the areas that contain meristems (growing points) have to be included in the cutting. The meristems are found at the shoot tip, the tips of side branches (usually at a node, the point on the stem where the leaves are attached), and the root tips.

Propagation by cuttings relies on a plant's ability to form adventitious shoots or roots. These shoots and roots are wound-induced or preformed and occur in places where they were not originally found, such as at a node or the base of a leaf. Wounding induces hormones to form in the cutting at the wound site. These hormones in turn cause cells to proliferate and form a dense mass of tissue called a callus. Adventitious roots form from calluses.

Both herbaceous and woody plants can be propagated vegetatively by cuttings. It is important to use the correct type of cutting for the plant you are trying to propagate.

Shoot Cuttings

Shoot cuttings may be made from branch tips or stems (Figures 1A and 1B). They also may be made from tip cuttings, which consist of the apical bud and the first one or two nodes on the stem, or they may be made from a stem section containing a single node or several nodes.

Remove the lower most leaves, as they tend to rot once under the soil line. Some people remove the smallest, most tender leaves along with the tip, because they tend to lose water very quickly and wilt. This practice may be used with plants with tender young growth. When taking stem cuttings, include at least two nodes, as the lower node should be beneath the soil surface. Any flower or seed heads also should be removed, as they divert the plant's energy to themselves and away from the process of making roots. This method of propagation is very popular for herbaceous plants with stems that have an apical bud from which the plant grows.

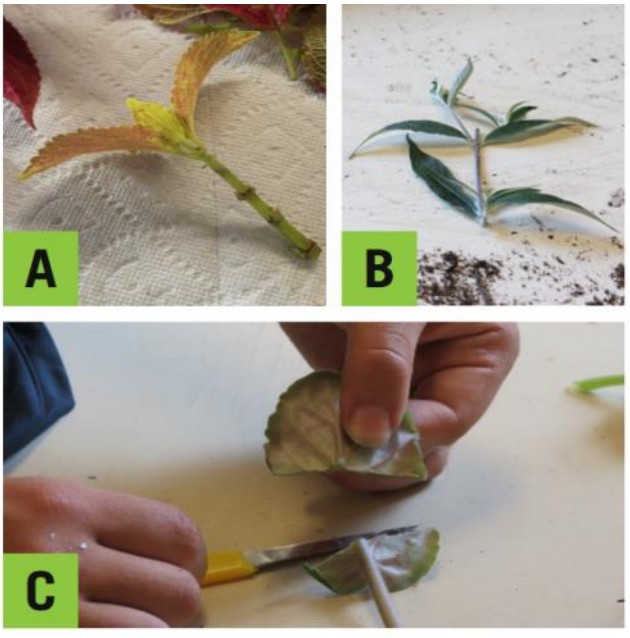

Figure 1. Examples of shoot cuttings made from branch tips (A), stems (B), or leaves (C).

Starting Plants from Cuttings for the Home Gardener (cont.)

Leaf Cuttings
Some plants can be propagated from leaf cuttings (Figure 1C), such as begonia, African violets, and many succulents, such as jade plant and Christmas cactus. The ability of plants to propagate via leaf cuttings is related to the presence of adventitious buds in their leaves. Not all plants have these small, dormant, meristematic areas in their leaves. Under favorable conditions, the adventitious buds within the tissues of the leaf "awaken" and prompt development of an entire miniature plant. Leaf cuttings from succulent plants and those with a multitude of epidermal hairs generally do not need misting to form roots. In fact, they tend to rot if placed under excessive moisture.

Root Cuttings
Some plants are propagated from sections of root that have the ability to generate adventitious buds and shoots. The cutting is literally a section of root placed in rooting media or a propagation bed. This propagation method is less common.

TIMING
While most herbaceous plants can be propagated at any time of the year, timing is critical for the success of woody ornamental propagation from cuttings. Woody plants have different types of shoot cuttings, depending on the season. Cuttings for woody plants are termed softwood, semi-hardwood, and hardwood, depending upon the time of year when plant material is collected.

Softwood cuttings are taken early in the growing season. Softwood is the emerging shoots of shrubs, trees, and evergreens. The wood is still green and easily bruised with a fingernail. This tissue is often too tender and succulent, and will not propagate well for all species. These cuttings root faster compared to other types, but need to be kept cool and moist during collection. Once cut, these soft shoots will lose water quickly. Softwood cuttings that are excessively wilted during collection likely will not root. Examples of woody plants that can be propagated by softwood cuttings are beautyberry, crape myrtle, and butterfly bush.

Semi-hardwood, or greenwood, cuttings are taken laterin the growing season. The best time to take semi-hardwood cuttings is in summer, from June to September. The growth flush is completed, the wood is firm, and leaves are mature. If working with larger branches, use only the semi-hardwood cuttings. This category applies to broadleaf evergreens, such as those in genera Rhododendron, Photinia, Ilex, Magnolia, and Camellia.

Hardwood cuttings are taken later in the dormant season. This category applies to deciduous, broadleaf, and needle evergreens. Generally, last season's growth is collected during the fall and winter.

Starting Plants from Cuttings for the Home Gardener (cont.)

Following the recommendations in Table 1 can increase the success of propagating new plants. When choosing to create new plants vegetatively, gardeners must determine the best method for the particular plant being reproduced. Many resources, such as those included in the Resources section of this publication, will provide these plant-specific recommendations and guidance. The directions may include multiple methods of propagation for some species, while other species may have only one propagation method.

TOOLS AND SUPPLIES

To propagate plants, some basic tools are necessary. They do not have to be expensive or of commercial grade to be effective.

Stock Plant

A healthy plant is essential for plant propagation. It should be free of insects and disease and be in a state of good nutrition. Though unhealthy plants can be propagated in an effort to save them, they likely will take longer to form roots and recover, and they are more likely to die during the propagation process.

Table 1. Examples of Species-Specific Propagation Information.

Species	Type of cutting	Timing	Conditions	Rooting period
Chinese Holly (*Ilex cornuta*) Japanese holly (*Ilex crenata*) Inkberry (*Ilex glabra*)	4-in. terminal stem cutting with semi-hardwood, rooting hormone applied	June, August, or September (firm wood after each growth flush)	In shade, in soil, under mist, or other suitable setting	10–12 weeks
Smooth Hydrangea (*Hydrangea arborescens*)	Softwood, rooting hormone applied	June–July	Under mist, peat:perlite	3–4 weeks
Bigleaf Hydrangea (*Hydrangea macrophylla*)	Terminal stem cutting (soft, semi, or hardwood), rooting hormone applied	May–July	Under mist, peat:perlite	3–5 weeks
Panicle Hydrangea (*Hydrangea paniculata*)	Terminal stem cutting, rooting hormone applied	May–July	Under mist, peat:perlite	4–5 weeks
Roses (*Rosa*)	Softwood, wounded, rooting hormone applied	Spring and summer	Under mist, peat:perlite	3–4 weeks
Rosemary (*Rosmarinus officinalis*)	2- to 3-in. semi-hardwood terminal cutting with half of the leaves removed, rooting hormone applied	Fall and winter	Mist or open bench, sand or well-drained medium	
Spirea (*Spiraea*)	Softwood, rooting hormone applied	When plants are in leaf (May to early September)	Well-drained medium	2–4 weeks

Note. **Do not propagate patented, PPAF, or trademarked plants.** From *The reference manual of woody plant propagation: From seed to tissue culture*, by M. Dirr and C. Heuser, 2006. Copyright 2006 by Timber Press.

Starting Plants from Cuttings for the Home Gardener (cont.)

Tools to Cut or Sever
The tools used to cut or sever propagules (the cutting that propagates the plant) will depend upon the type of cutting being made or the plant material being used (Figure 2). Simple scissors or needle-nosed floral snips may be used to collect herbaceous tip and leaf cuttings, while pruning shears and loppers may be necessary for softwood or hardwood cuttings. Inexpensive paring knives or grafting knives also can be used to collect softwood or herbaceous cuttings. It is important to keep tools as sharp as possible to ensure good cuts.

Media
Propagation media needs to be sterile, fine-textured, weed-free, and without fertilizer to give young plants the best chance for success (Figure 3). Weeds compete with the germinating seedlings for water and nutrients, and disease organisms can kill seedlings in the early stages of germination. Fertilizers can dehydrate embryos or plant tissues.

There are several choices for propagation media. The easiest option is to purchase a bag of premixed propagation media without fertilizer. These media provide air/water relationships of 25% to 40% air space and are suitable for plant propagation.
Alternatively, materials can be purchased separately and mixed together to create a media that has good moisture-holding capacity and good drainage.

Sand should be sterile; use sharp builder's sand with a particle diameter of 0.5 to 2 mm. Sand has no buffering capacity; its pH varies with source and can change with the water being applied to the plant. Sand contains no nutrients and has no water-holding capacity. It is suitable when mixed with peat, perlite, and other components.

Perlite is a crushed aluminum-silica volcanic rock thatis heated rapidly to 1800 °F. It is sterile, lightweight and chemically inert. Perlite contains no nutrients, has low water-holding capacity, and a pH of 7 to 7.5.
For propagation, use horticultural grade #2. Similar to perlite, scoria is a naturally occurring volcanic rock, crushed and screened for size. Pumice is a white, natural volcanic glass. Both have similar qualities to perlite.

Vermiculite is a clay mineral that is heated to 1400°F. It is sterile and lightweight. Vermiculite has high nutrient- and water-holding capacity, and a pH of 7 to7.5. For propagation, use coarser grades.

Peat may come from several types of plants: sphagnum moss, hypnaceous moss, reed and sedge, and humus or muck, all collectively are called peat. Peat moss is excellent when mixed with sand and perlite; peat provides water and nutrient-holding capacity, while perlite provides aeration.

Starting Plants from Cuttings for the Home Gardener (cont.)

Bark (hardwood or pine) is relatively sterile and lightweight when dry. It has high nutrient- and water-holding capacity, and a pH of 3 to 4.5. The fine shredded form is popular for propagation—70% to 80% of the particles are between 1/40 and 3/8-in., and 20% to 30% of the particles are smaller than 1/40 in. Bark can be used alone or mixed with other media.

Other amendments are used to adjust pH; provide calcium, magnesium, and other nutrients; and improve the wettability of the mix. These can include lime, gypsum, starter charge (fertilizer), and wetting agents.

Propagation media can be mixed to meet your personal preferences. Sphagnum peat moss often is combined with perlite (2 parts coarse perlite to 1 part peat) for seed-starting media. Another popular recipe is 3 parts bark, 2 parts peat, and 2 parts perlite. The propagation medium should have a pH of 5.0 to 6.5. A good recipe for making propagation media includes 4 quarts of shredded sphagnum peat moss, 4 quarts of fine vermiculite, 1 tablespoon of superphosphate, and 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.

Gardeners often use homemade mixes made of garden soil. While it will work, it is not the preferred medium as it is heavy, holds a tremendous amount of water, and often contains weed seeds or disease. If using garden soil, it needs to be prepared before use. Put moist soil through a 1/4-in. sieve, place a layer up to 3 in. deep in a baking tray, and bake for 30 min at 400°F. A microwave also may be used—seal the soil in a pierced roasting bag and heat on high power for 10min. Some plants will even root in water alone. Use a clean container and fresh water at room temperature. It is helpful to change the water every 3 to 5 days.

Rooting Hormones

Vegetative propagation methods are often enhanced by the use of plant hormones. Natural hormones occur in plants and are known to regulate various growth processes. Some hormones are present in buds and in leaves and are involved in the formation of adventitious roots. When cuttings are treated with rooting hormones, they tend to root more quickly and may form more roots than if no rooting hormone is used.

Rooting hormones are available as powder or liquid formulations with varying strengths of active ingredient for use with different plant tissues (Figure 4). Rooting hormones can be purchased at most garden supply stores. Rooting products are only used in small amounts at a time. For sanitation purposes, avoid sticking plant materials into the main container of the rooting product. Instead, pour a small amount into a paper cup or onto a piece of paper before dipping cuttings into the rooting powder. Discard any leftover powder.

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In general:

- Auxin concentrations of 500 to 1,250 ppm are used to root the majority of softwood and herbaceous cuttings.
- Auxin concentrations of 1,000 to 3,000 ppm with a maximum of 5,000 ppm are used to root semi-hardwood cuttings.
- Auxin concentrations of 1,000 to 3,000 ppm with a maximum of 10,000 ppm are used to root hardwood cuttings.

Starting Plants from Cuttings for the Home Gardener (cont.)

Figure 2. Propagation tools include knives, scissors, and pruning shears.

Figure 3. Propagation media.

Figure 4. Powder and liquid rooting hormones .

Rooting Chamber

When propagating plants by cuttings, leaves need to be kept wet to maintain a favorable water status and to remain cool. The objective is not to water the cuttings, but to minimize transpiration and loss of moisture from the plant tissues. Permanent, commercial systems use intermittent mist-within a tented or otherwise enclosed container (Figure 5). A mist system usually includes a water supply, a cutoff valve, a pressure regulator, a filter (to screen small particles), a solenoid valve, and mist-nozzles. A timer also is needed, which should be installed away from the mist. It is important to use a timer designed for mist systems as it can be set for short durations, such as 20 seconds every 10 minutes.

In lieu of a permanent, plumbed mist system, simple propagation chambers can be created from readily available materials. Chambers will need to be closed to create a high-humidity environment for plant tissues as they are forming roots—like miniature greenhouses. Containers can be made from purchased or recycled materials, such as clear plastic bins with lids or soft drink bottles (Figure 6).

The containers need to be clear for light penetration, have enough space for the cutting and rooting media, and be able to be closed to hold water and raise and maintain humidity. Media and cuttings can be placed in smaller pots or trays that are placed within the chamber, or the chamber itself can serve as a container for the rooting process. As the cuttings root and grow, the lid gradually can be opened and then removed to harden-off plant tissues and prepare them for planting outside.

Starting Plants from Cuttings for the Home Gardener (cont.)

Sanitation is critical in the propagation process. Disease-causing fungi can attack cuttings and kill them at an early stage. To reduce the chance of fungal attack, use disease- and insect-free plants, sterile media, and sanitized tools and containers. To sanitize used containers, wash them to remove any soil or debris and rinse with a solution of 1 part chlorine bleach to 9 parts water. Rinse thoroughly with clean water.

Figure 5. A mist propagation system supplies timed bursts of fine water droplets to propagules. Flats of prepared cuttings are placed on the bench in the mist until rooting occurs.

PREPARING CUTTINGS

Preparing cuttings is a multistep process (Figure 7). To remove the plant material from the mother plant, cut just above a node so that a stub is not left behind on the mother plant. Once the cutting is removed from the parent plant, use a sharp knife or clippers to make a slanting, smooth cut just below a node. The angled cut serves to increase the surface area of the cut, which helps with water uptake during propagation. Remove any flower buds. Wound the lower 1/2 in. of stem on the opposite side of the last node by gently scraping the outer layer (Figure 8). The scraping of the stem exposes the cambial layer (tissue layer composed of thin-walled cells involved in cell division) underneath the bark to the rooting hormones. This layer also generates the roots. Remove lower leaves and/or cut leaves in half to reduce transpiration. Some leaves should be left because they are the source of internal hormones that help initiate adventitious roots. Once the cutting is prepared, it is dipped in a rooting hormone to hasten the formation of roots.

Figure 6. Propgation chambers can be created from readily available materials.

Figure 7. Directions *for Starting Cuttings*

1. Choose healthy plant stock that is free from insects and diseases and is in a state of good nutrition.

2. Select a healthy stem for the cutting. Using sharp shears or a knife, remove the cutting from the parent plant. Then cut it just below a node (where leaves originate on stem), preferably at a slight angle.

3. Finish preparing the cutting by reducing the length of the stem to 2-3 in. Remove the lower leaves, leaving those at the top of the cutting.

4. If leaves on the cutting are large, cut them in half perpendicular to the midvein. This helps reduce the surface area for moisture loss.

5. Portion a small amount of rooting hormone powder onto a paper towel. Dip the cut end of the plant stem into the rooting hormone. Tap the cutting lightly to shake off any excess.

6. Stick the cutting into a pot of moist potting media. Place the pot in a clear, zip-top plastic bag or cover with a clear plastic or glass cloche to maintain high humidity. Mist as needed to maintain a humid environment until the cutting forms roots.

Starting Plants from Cuttings for the Home Gardener (cont.)

HARDENING OFF

Once cuttings have successfully rooted, they are capable of supporting themselves and need to be prepared for their intended location. Plants raised in a high-humidity, sheltered location need to be prepared prior to planting in drier, harsher conditions, such as outside in the garden. This preparation process is referred to as hardening off. One way to prepare plants is to move them outside to a shady location, gradually increasing the amount of sunlight over a period of several days. Alternatively, young, tender plants can be brought outside on an overcast day, and then brought back inside after a few hours. Repeat daily, extending the length of time that plants remain outside by an hour each day until the plants have acclimated to the brighter, drier outdoor conditions.

This transition also can be accomplished by reducing temperatures (to between 45 and 50 °F) and reducing water. The idea is to slow growth and thicken plant cell walls. Start this process 1 to 2 weeks prior to planting seedlings in the garden. Take care to transition plants gradually as extreme changes can slow growth to the point of plant death.

SUMMARY

Reproducing plants can be fun, rewarding, and economical. Many plants can be reproduced vegetatively, such as from cuttings. Using rooting hormones, new roots are encouraged to develop on the leaves and stem of the parent plant. It is satisfying for gardeners to grow new plants to fill in a garden area. Sharing new plants with friends and neighbors generates much pride. Following these simple directions can increase your success in propagating new plants!

Resources for further reading:

Dirr, M., & Heuser, C. (2006). The reference manual of woody plant propagation: From seed to tissue culture. Timber Press.

Davies, F. T., Geneve, R. L., Kester, D. E., & Hartmann, H. T. (2011). Hartmann and Kester's plant propagation: Principles and practice. Prentice Hall.

Biology and Management of Carpenter Ants

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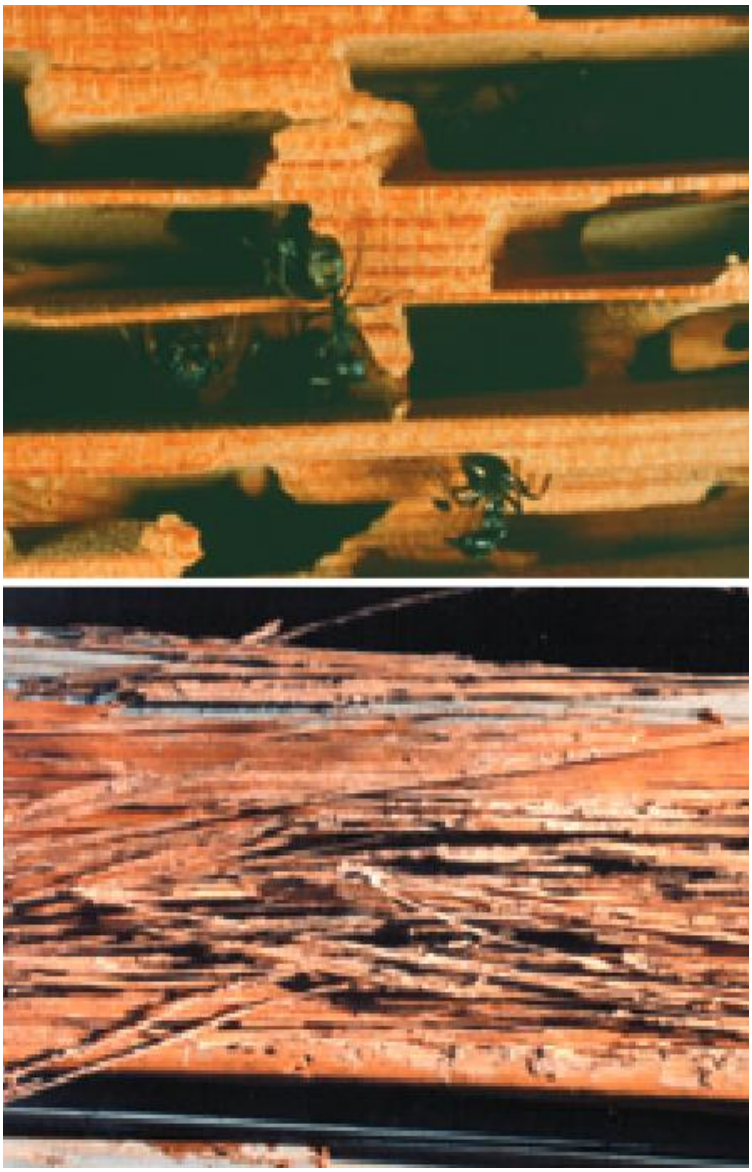


Figure 1. Damage to wood caused by carpenter ants (above left) is dif-rent than the damage to wood caused by subterranean termites (bottom left). Carpenter ants chew wood with and across the grain, while termites only damage wood with the grain. Furthermore, termites often line their galleries with mud, while carpenter ant galleries are smooth, clean, and devoid of mud and other debris.

CARPENTER ANTS are so-called because of their habit of chewing wood to create nest sites. They do not eat wood, like termites, but excavate it with their strong, saw-like jaws to create random galleries where they nest (Figure 1). Carpenter ants are also a nuisance because of their abundance and large size.

IDENTIFICATION

Carpenter ants are the largest of the pest ants found in Georgia. In Georgia, there are two pest species of primary importance: the black carpenter ant (Camponotus pennsylvanicus) and the Florida carpenter ant (Camponotus floridanus). Black carpenter ants are dull black and their abdomen is covered by yellowish hairs, while the Florida carpenter ant has a deep reddish-colored head and thorax and a shiny black abdomen (Figure2). Since ants from a single carpenter ant nest vary greatly in size, ant size alone is usually not a good characteristic for identification. Carpenter ants vary in size from about 1/4 to 1/2 inch (Figure 3). To confirm their identity, a few ants should be collected in a small vial filled with a preservative, such as rubbing alcohol, and sent to a Cooperative Extension Service county agent. Look in the white pages under county name for the phone number of the nearest Cooperative Extension Service office.

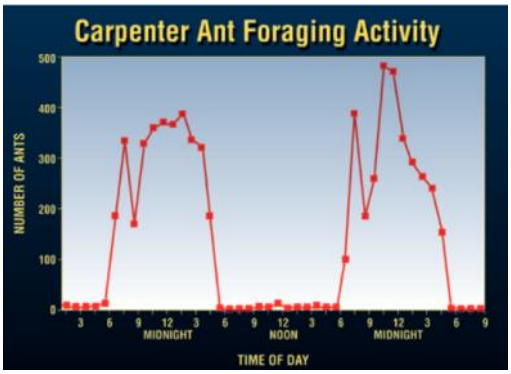
Biology and Management of Carpenter Ants (Cont.)

Figure 2. In Georgia, the black carpenter ant (top) is more common than the Florida carpenter ant (bottom).

Figure 3 Ants from a single carpenter ant colony vary in size considerably. Identification of ants should not be based on size alone.

BIOLOGY In Georgia, carpenter ants become active in the spring (March/April) and remain active through the early fall (September/October). During the winter, ants become inactive and hibernate in their nest to survive the cold. The habitat where carpenter ants are most common are those areas abundant in mature hardwood trees, typified by older, well-established suburban neighborhoods (Figure 4).

Carpenter ants are most active at night, when it is not uncommon to see 10 to 20-fold or more ants than would be seen during daylight hours (Figure 5). Ants emerge about 15 minutes after sundown and leave the nest in large numbers in search of food, traveling up to hundreds of feet from the nest on semi-permanent trails Unlike other pest ant species, carpenter ants create semi-permanent trails through the grass from their nest to areas where they collect food. Movement between nest sites and between nest sites and feeding sites is often facilitated by the use of these well-maintained, semi-permanent trails. In the evening, ants can be seen using these trails as they emerge from and return to their nest. Colonies may even use the same trail in different years. Carpenter ants also follow man-made guides, such as wall edges, when foraging.



Biology and Management of Carpenter Ants (cont.)

Carpenter ants feed mainly in the tops of trees where they consume the sweet, sugar-rich honeydew directly from aphids and scale insects that are found feeding on the tree's sap. Honeydew is nearly pure sugar, and is excreted by aphids and scale insects in large quantities during the spring and summer months. Many ant species depend on honeydew as a stable, predictable source of food throughout the warm season.

NEST HABITS Carpenter ants may establish nest sites inside and/or outside the home. Some examples of where carpenter ants have been found nesting inside are in moisture-damaged wood around chimneys and skylights, under bathtubs, inside dishwashers, in wall voids beneath window sills, inside hollow doors and door frames, under fiberglass insulation in crawlspaces and in wall voids, in wood porch supports and columns, under siding and wood shingles, and in moisture-damaged eaves. In general, wood suffering from moisture damage will attract and be used by carpenter ants as nest sites because damp wood is easier for the ants to chew than sound, dry wood. Damp wood, combined with warm temperatures, also promotes the survival, growth, and reproduction of carpenter ant colonies.

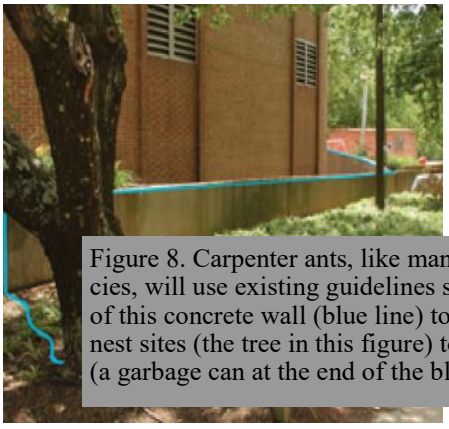


Figure 8. Carpenter ants, like many other ant species, will use existing guidelines such as the edge of this concrete wall (blue line) to forage from nest sites (the tree in this figure) to foraging sites (a garbage can at the end of the blue line)

Outdoors, nests are most commonly found in hardwood trees containing tree holes (Figure 9). Most large hard-wood trees contain a tree-hole or other imperfection where ants might nest. In tree holes, ants find an environment that is ecologically stable (consistent humidity and temperature) and protected from adverse environmental conditions and natural enemies. There they chew dead wood to create galleries for nest sites. Colonies are less commonly found in stumps, logs, railroad ties, or similar large pieces of wood.

Figure 9. Outdoors, the most common nest site of black carpenter ants is in hardwood trees containing one or more

FINDING NESTS IS THE KEY TO ELIMINATING CARPENTER ANTS

The key to eliminating carpenter ant infestations is to find the nest and remove it, either physically (e.g., by vacuum) or by treating it with an insecticide. Inspect all locations listed as indoor and outdoor nest sites in the previous section. To find nest sites indoors, follow a few foraging ants to learn where they might be nesting. Tap the void suspected of harboring the nest. This excites the ants, allowing the inspector to detect

Biology and Management of Carpenter Ants (cont.)

their presence by hearing their raucous movements. Look for small piles of wood debris, resembling sawdust, that ants drop from the nest during excavation of the wood. Close examination of the debris may also reveal parts of dead carpenter ants and the uneaten, discarded pieces and parts of prey insects brought into the nest for food.

Carpenter ants found in the home often times can be found nesting outdoors in trees. To find outdoor nest sites inspect each large tree (greater than 6 inches in diameter), beginning 15 to 20 minutes after sundown, by walking around it while shining a flashlight up and down the trunk. If a nest is present, ants will be seen moving up and down the trunk as they leave from and return to the nest with food (Figure 10).

Figure 10. The presence of numerous carpenter ants moving up and down a tree trunk in more or less a single file line is a strong indication of colony presence.

Since carpenter ants use permanent trails, use a flashlight to find ants on the trail and then follow them as they move to and from their nest. Finding just part of the trail can be a tremendous help in finding the nest. After locating several points along a trail a directional pattern will emerge, and often lead directly to the nest. Look for sawdust at the base of trees. Since carpenter ants must excavate wood to expand their galleries, it is common to find piles of sawdust on the ground at the base of a tree where carpenter ants nest (Figure 11). As mentioned previously, carpenter ants do not consume wood but must chew it to build and expand nest galleries. Galleries are created by biting off small pieces of wood and disposing of it to the outside. The small bits of wood often pile up at the base of a tree and take on the appearance of sawdust.

Figure 11. Since carpenter ants do not eat the wood they chew, piles of sawdust-like wood shavings are commonly found at the base of trees where carpenter ants nest.

Biology and Management of Carpenter Ants (Cont.)

TREATING NEST SITES INDOORS

Either physically remove indoor nests or treat them with an insecticide labeled for ant control indoors. Use insecticidal dusts and/or aerosols to eliminate carpenter ant infestations indoors. Apply small amounts of dust into voids where the ants are known to be nesting, are suspected of nesting and/or in voids that they use when foraging. Dusts must be placed into voids so that they will not be contacted. Since dusts become airborne very easily, it is advisable to wear a protective mask when applying dusts.

Apply dusts so that a very thin film settles in treated areas. Place dusts behind electrical outlets and switch plates, and in the voids under window sills. Small holes (1/8 inch) may also be drilled into drywall in areas where ants are suspected of nesting, dust placed into the void and the hole patched with drywall cement.

Aerosol formulations may also be used when indoor ant nests are visible and accessible. For example, when nests are uncovered during inspection spray all ants with an aerosol before they can disperse. Never use water-based or other wet formulations in voids. Wet formulations not only damage drywall, insulation, and wood molding but there is a danger of electrical shock and/or fire when using liquids around electricity.

TREATING NEST SITES OUTDOORS

Out doors, pour a water-based, liquid insecticide directly into carpenter ant nests located in tree holes. Use enough insecticide to thoroughly saturate the entire nest and all ants inside. This may require pouring one gallon or more of liquid insecticide into the nest. It is important to saturate all nest galleries with insecticide. If the nest is awkwardly positioned and difficult to reach with a liquid spray, it may be necessary to drill a small hole (one-quarter to one-half inch) into the top of the suspected nest location so that the liquid insecticide can be introduced and allowed it to flow downward through the nest.

When treating carpenter ant nest sites inside or outside, the choice of a particular product or brand name is not as important as the choice of formulation and the direct treatment of ants and/or nest sites. Carpenter ants are not resistant, or immune, to any insecticide.

CONTROL ATTEMPTS WHEN THE NEST CANNOT BE FOUND

Often times the nest cannot be found or, if found, cannot be easily treated. Under these circumstances, use baits and/or treat outside with a liquid spray.

Biology and Management of Carpenter Ants (Cont.)

Baits are an effective means of controlling ants in some cases. Indoors use liquid baits and baits contained in childproof, plastic bait stations; outdoors use liquid and granular baits. For liquid baits, soak a small cotton ball and place it on a piece of aluminum foil in areas where ants have been seen. Granular baits should be delivered from two or three small piles (about the size of a quarter) placed in areas where ants have been seen (e.g., next to semi-permanent trails and trees containing nests) (Figure 12).

Figure 12. Since carpenter ants rarely deviate from their foraging trail (see Figure 7), baits should be placed next to the trail and as close to the suspected colony location as possible. Baits should be delivered from several points sources and not scattered.

Perimeter treatments are used as a means of keeping ants from entering the structure. To conduct a perimeter treatment spray the outside walls with a water-based, liquid insecticide two to three feet up and spray the ground (including shrubbery, mulch, flower beds, etc.) five feet away from each wall. Spray as many areas traveled by carpenter ants as possible, and concentrate spray treatments to areas where ants might enter the structure (e.g., around doors and windows). As part of the perimeter spray program, apply a liquid insecticide to the trunk of each tree on which carpenter ants have been seen. This treatment strategy will kill ants moving up and down the tree trunk.

Perimeter treatments should be re-applied every 4 to 6 weeks during the summer and within a week following a heavy rain. Typical perimeter treatments often require 7 to 10 gallons of liquid spray.

PREVENTION

Homeowners can take several measures to help prevent future problems with carpenter ants. Eliminate sources of excess moisture to help make the home a less desirable nesting site to ants and other pests. Fix leaks around attic vents, pipes, sinks, and around chimneys and skylights. Replace water-damaged wood. Dry-out the crawlspace by installing a vapor barrier and foundation vents. Keep rain gutters clean and adjust drain spouts so water flows away from the building. Install rain gutters if they do not already exist. Trim tree limbs away from the structure. Foraging carpenter ants often enter structures by bridging to roofs and siding from tree branches in contact with these surfaces.

Hands-On Drip Irrigation Workshop

Wednesday, June 7th
5:00- 7:00 PM

ACC Extension Office
275 Cleveland RD
Bogart GA 30622

Overview:

The UGA Clarke County Extension office, Athens Land Trust, and Athens Clarke County Water Conservation Office are teaming up to provide a workshop covering topics including

- Why homeowners should use drip irrigation
- The basic components of a drip irrigation system
- Hands-on drip irrigation demonstrations and practice

Instructor: Laura Ney,PhD
UGA Cooperative Extension
Agriculture and Natural Resources Agent

register online by June 5th

@gardenwithclarke

AthensClarkeCountyExtension

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UNIVERSITY OF GEORGIA EXTENSION

Public Utilities

Athens Land Trust

lney@uga.edu
706-613-3640

Local June Events

Drip Irrigation Workshop

Instructor—Dr. Laura Ney

June 7th

5:00 PM—7:00 PM

Athens-Clarke County Extension Office

275 Cleveland Road

UGA Extension offices around the state are working hard at developing quality online presentations on various topics.

Visit the UGA Extension event calendar to see events happening local to our county as well as virtual opportunities.

June Friends First Friday The Magical Mystery of Rose Fragrances

June 2, 9 AM—10:30 AM

State Botanical Garden of Georgia

2450 S. Milledge Ave

$12 general admission, $10 for members

Forest Heights Blueberry Festival

Saturday, June 3, 2023

9:30 AM—9:30 PM

Forest Heights Dr, Athens GA

This year the Festival will again include **The Blueberry Jam concert** and **The Blueberry Cook-off competition** at Holly Court in Forest Heights. It will also include **Garden Tours** focused on food production and effective landscaping, and a the **BikeAthens Blueberry Rally** for kids!

For more information, visit https://www.regenerators.earth/festival

Athens Repair Café

Athens-Clarke County Recycling Division partners with community organizations to put on Repair Cafes. Attendees can bring a range of broken items to try and have repaired: bicycles, electrical appliances, toys, clothing, furniture, computers, and more.

Sunday, June 25th, 2-5 PM at the CHaRM

1005 College Ave, Athens GA 30601

Sandy Creek Nature Center "Mud Day"

June 17th, 2023

1:00 PM—4:00 PM

205 Old Commerce RD

Athens, GA 30607

Diamond Hill Farm Stand

June 8th & 22nd

4:00 PM—6:00 PM

Authentic Brewing Company

108 Park Avenue, Athens GA

Garden Tours:

State Botanical Garden of Georgia

Themes include Garden Tour Sampler, Edible Gardening, Gardens in Bloom, or A Walk on the Wild Side. To schedule, contact Andrea Fischer @afischer@uga.edu or 706-542-6195

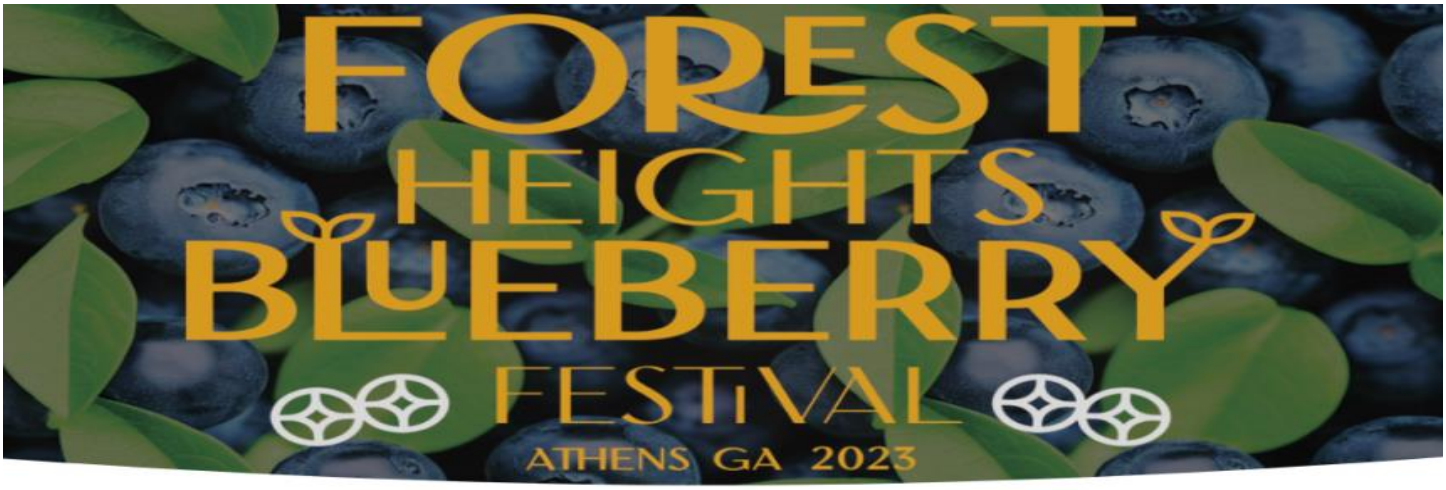
West Broad Farmers Market

Juneteenth Celebration

June 17th

11:00 AM—2:00 PM

300 S Rocksprings Street, Athens GA



Saturday, June 3, 2023
9:30 a.m. - 9:30 p.m.

Local Farmers Markets

The **Athens Farmers Market** is taking place on Saturdays from 8am-12pm at Bishop Park. Make sure to visit **their website** for updates and details.

Find them on Facebook: **@AthensFarmers-Market**

Follow them on Instagram: @athensfarmersmarket

West Broad Farmers Market

Returns to in-person markets beginning Sat. April 1—December 16

Visit **their website** for more information.

Find them on Facebook: **@WestBroadMarketGarden**

The **Winterville Farmers Market** is taking place on Saturdays from 10am-2pm starting May 1 at Pittard Park. Visit **their website** for more information.

Find out more on Facebook: **@marigoldmarketwinterville**

Instagram: @marigoldmarketwinterville

Join Athens-Clarke County 4-H!

Students in 5th - 12th grades in Athens-Clarke County can sign up for 4-H now. The mission of Georgia 4-H is to assist youth in acquiring knowledge, developing life skills, and forming attitudes that will enable them to become self-directing, productive and contributing members of society. 4-H meetings will look different this year and are online. There is no charge to be a member or participate in a competition.

To start your 4-H Adventure e-mail the ACC 4-H Agent, Elizabeth Conway, at ebarber@uga.edu today!

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Athens-Clarke County

The University of Georgia is committed to the principals of equal opportunity and affirmative action.

Virtual 4-H Programs can be viewed on the ACC 4-H website:
https://tinyurl.com/acc4hvirtual



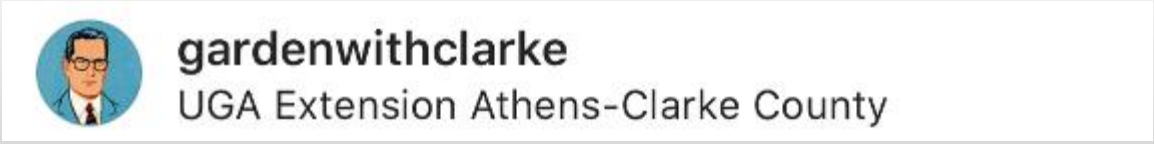


Concerned about the state of your garden?

Are weeds taking over your landscape?

No need to fear, Clarke is here!

Follow @gardenwithclarke on Instagram and learn how to battle pests, identify weeds, build your soil and so much more as you garden alongside Clarke, Athens-Clarke County's super gardener!



Helpful resources online:

Find My Local Extension Office

Bugwood— Pest Images

Landscape Alerts Online

Georgia Turf

Pest Management Handbook

Free Online Webinars

Pesticide Applicator Info

Georgia Certified Plant Professional

SE Ornamental Horticulture Production & IPM Blog

UGA Center for Urban Agriculture

Extension Publications

Athens-Clarke County Extension
Agriculture and Natural Resources

Mission Statement

The UGA Athens-Clarke County Extension's mission is to respond to the people's needs and interest in Agriculture, the Environment, Families, and 4-H/youth in Athens-Clarke County with unbiased, research-based education and information.

Visit us online:

UNIVERSITY OF GEORGIA EXTENSION

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