



Pumping & Piping Systems

# Turfgrass Insect Guide

## Turfgrass Insect Management Guide

[www.wplawinc.com](http://www.wplawinc.com)



### Introduction

Insects cause millions of dollars worth of damage each year to residential, commercial, and recreational turf. This guide covers the major insects found in South Carolina that cause injury to grasses. It contains important information about the biology of each pest in order to gain a better understanding of how best to control them and when to make pesticide applications. Although it does not cover every insect that causes damage, the ones listed are the most common and problematic.

Not all insects are considered pests in the lawn. Some insects are actually beneficial and prey on damaging insects. It is important to properly identify insects before making a pesticide application. Most lawns will tolerate a certain level of insect damage. Proper cultural practices will greatly increase the lawns ability to recover from damaging insects. Correct irrigation practices and fertility programs are crucial for minimizing pest problems. See your local W.P. Law Inc. store for the latest in irrigation equipment and fertilizer programs. This information is meant to be a guide for controlling insects in your lawn. Consult all labels for specific information in regards to insecticides and their use. Labels are subject to change and should be adhered to. Always remember, the label is the law.

## Fire Ants

Since their arrival in the 1930's, the red imported fire ant has found life in the Southeast area of the United States very inviting. The first infestations are thought to have originated from cargo ships from South America harboring in Mobile, Alabama. Since this time, fire ants have quickly spread and adapted quite nicely to the warm, humid conditions of the Southeast. The name fire ant derives from the intense stinging pain felt after their bite. Fire ant bites on humans have resulted in symptoms ranging from stinging to rashes all the way to paralysis and anaphylactic shock in some instances. Humans are not the only ones that feel the wrath of these tiny insects as pets, livestock, and wildlife are susceptible to bites as well. Fire ants are also responsible for damage to electrical equipment, agricultural implements, and crop damage in some instances.

This guide is designed to help you better understand how fire ants function in your landscape and also informative techniques you can use to seek revenge on the red imported fire ant. By understanding the biology of this pest and using the proper insecticide program, individuals can achieve maximum control.

### Background

Fire ants live in colonies that can contain single or multiple queens. Inside the colony there are various stages of the life cycle represented, ranging from eggs, larvae, pupae, to adults. Inside the colony, there are winged males and winged females along with workers and one or more queens.



A colony can produce thousands of winged male and female ants. The good news is the winged male and female ants do not sting. The bad news is these winged ants will fly as high as 2000 feet into the air and mate at some point. This usually occurs when temperatures are between 70-90 °F and the humidity is near 100%. After mating the males will die off and the females fly to find a suitable nesting area to begin the next colony. Less than 1% of the mated females will actually survive to produce a new colony. New colonies are usually within a mile from the old colony, but can be as far away as 2-3 miles. A new colony may be established for several months before mounds are noticeable. Queens can live 6-7 years and produce 250,000-350,000 eggs per year.

### Foraging

Workers can forage up to 100 feet away from the nest. Foraging usually takes place when temperatures are between 70-90°F and can occur during the day or night. Fire ants are omnivorous and will feed on carbohydrates, proteins, or lipids. Their diet will change depending on the needs of the colony and food availability during certain times of the year.

### Forming a Management Strategy

Reducing fire ant populations certainly has its challenges due to the aggressive nature of this pest. The ability to populate quickly along with its mobility make it one of the most challenging insects to battle in the landscape. The good news is there are options available to keep the red imported fire ant at bay. The strategy you employ will depend on a number of factors such as size of treated area, labor needed to treat, budget, and time required for population reduction.

### Using Baits for Fire Ant Control

There are many fire ant baits on the market today that can work well when used properly. It is important to understand how various baits work and what to expect when using these products. Some baits will work within a week, while others are part of a long term management approach that may take up to a year to see results. Some baits fall into the category of insect growth regulators (IGR's) and work by limiting the queen's ability to reproduce. Once the queen is rendered infertile, the colony lacks the necessary workers to sustain the queen. Once the queen dies, the workers die off naturally and the colony is eliminated. This process takes a while to be carried out, so baits classified as IGR's do not show immediate results.

Most baits work due to their toxicity to fire ants. Once broadcast or sprinkled on the mound, foraging workers take it back to the colony where it is consumed. Most of these types of baits are effective within 1-5 weeks. Regardless of which type of bait you choose, there are certain guidelines that will help to ensure success.

#### Incorrect Bait Applications



- Watering in the bait
- Applying the bait when ants are not foraging
- Storing baits open in hot locations

#### Correct Bait Applications



- Apply in dry conditions when irrigation or rainfall will not occur within 24 hours
- Apply when ants are foraging, usually when temperatures are 70-90° F
- Store baits in cool, dry location sealed up tight

#### Advantages of Baits

- Less expensive per acre
- Not critical to cover every square inch of property to achieve control
- Less product to spread, usually only 1.5-2.0# of product per acre

#### Disadvantages of Baits

- Ants must be foraging to be effective. Because of its low use rate, may be difficult to broadcast
- Must be applied in favorable conditions
- Control time varies



Queen Fire Ant

### Fire Ant Baits

Advion	(indoxacarb)
Extinguish Plus	(hydramethylnon + methoprene)
Payback	(spinosad)

## Individual Mound Treatments

Treating mounds individually is part of an overall management strategy. This strategy is tailored more for smaller properties due to the labor it takes to treat each mound. Individual mound treatments are also part of a two-step program. In the two-step program, baits are broadcast across the property and then individual mound treatments are applied a few days later. By using this approach, individuals can have long term success with the baits and eliminate problems from workers with the individual mound treatments. It is important not to apply the mound treatments before fire ants have the opportunity to forage for the bait. Mound drenches with soluble insecticides are the most common form of individual mound treatments. Use one gallon of finished solution for mounds up to 8 inches and two gallons for larger mounds. Soak a 12 inch swath around the base of the mound and then use the remaining solution to soak the top of the mound. When soaking the top of the mound, pour the solution from a height of at least three feet in order to penetrate the insecticide into the mound.

## Broadcast Applications of Contact Insecticides

Broadcast applications of contact insecticides are very effective in controlling fire ants. Contact insecticides should be used in “zero tolerance” areas where fire ant control is critical. Contact insecticides are available in liquid and granular forms and are applied evenly across the lawn. Once the fire ants come in contact with the material, they are killed. Some insecticides work immediately, while others may take up to four weeks. To be effective, contact insecticides must be applied uniformly across infested areas. If there are parts of your property where this may be hard to achieve, consider using a combination of contact insecticides and baits. A good example of this would be spreading a contact insecticide on lawn areas and treating shrub beds with baits.

### Contact Insecticides

Bifen I/T	(bifenthrin)
Bifen L/P	(bifenthrin)
Cyzmic	(lambda-cyhalothrin)
Conserve	(spinosad)
Sevin	(carbaryl)



## Spittlebugs

There are several types of spittlebugs in South Carolina. The two-lined spittlebug causes the most damage on turf by sucking out sap from the leaf blades with their needle like mouth parts. Centipede grass seems to be the most affected, although these insects will feed on Bermuda, Zoysia, and St. Augustine.

### Life Cycle

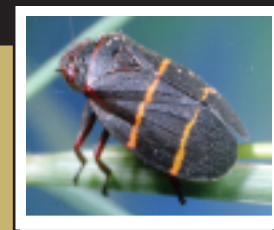
Spittlebug eggs over-winter in hollow stems of the grass and in plant debris on the soil. Eggs require high humidity for developing and hatch in May and early June. Two-lined spittlebugs are easily identified by the two orange lines across their backs. There are usually 2-3 generations per year in South Carolina. Young adults (nymphs) are also identified by spittle masses which protect it from drying and natural enemies. These masses look like spit and very indicative of spittlebug infestations.

### Controlling Spittlebugs

Most healthy stands of grass can tolerate certain levels of infestation. Regular mowing can help to reduce the population of these feeding insects. Mowing before insecticide applications can increase their effectiveness. Damage usually occurs from June through September. Grasses with high thatch and humidity levels favor spittlebug activity. Infestations result in yellowing of grasses.

### Spittlebug Insecticides

Aloft	(bifenthrin + clothianidin)
Bifen I/T	(bifenthrin)
Bifen L/P	(bifenthrin)
Cyzmic	(lambda-cyhalothrin)
Sevin	(carbaryl)





# White Grubs

## Biology

Grubs are the immature larva of several types of beetles. Grubs will mature through several stages in their life cycle that lasts 1 to 3 years depending on species. In South Carolina, Japanese beetle, masked chafers, and green June beetles all have a one-year life cycle. The only exception to this is the May and June beetles that have a 2-3 year life cycle. Beetles usually lay eggs during the summer months and the adults emerge the following spring or summer once the grubs have matured. Grubs live in the soil and receive their nourishment by feeding on grass roots, thatch, and decaying organic matter. Healthy turf can tolerate 5-7 grubs per square foot of grass.



Grub

## Types of Grubs

### Japanese Beetle

**Calendar of Life Cycle:** Once eggs hatch, the first stage of the grubs development results in 0.1 inch small grubs that are translucent. At this stage they begin feeding on grass roots. After 2-3 weeks the grubs will develop to the next stage and will become blackish to gray in appearance. This second stage will last for 3-4 weeks before they begin the 3rd and final grub stage. Mature grubs reach about 1 inch in length. Feeding will continue into fall and early winter. Colder weather will force grubs deeper in the soil. In March and early April, the grubs will move back up into the root zone and resume feeding. After 1-3 weeks, the adults emerge from the soil, mate, feed, and begin their life cycle all over again by laying eggs.



Adult beetle

### May and June Beetles

**Calendar of Life Cycle:** May and June Beetles usually have a two to three year life cycle. Adults are active at night and feed on herbaceous plants, shrubs, and trees. Adults lay their eggs in the upper surface of the root zone. Hatching usually occurs in a few days and young grubs begin to feed on grass roots. The first and second stage of these grubs only lasts for a short time. Most of the life cycle is spent in the third stage. Adult beetles emerge in May or June depending on species. These grubs spend nearly a year in the third stage. Because they feed more aggressively in this stage and it last so long, damage to grasses can be considerable. Insecticide applications should be aimed at the first and second stages because they are easier to kill and cause less damage.



Grub



Adult beetle

### Green June Beetle

**Calendar of Life Cycle:** Green June beetles have a one year life cycle. Adults are present from mid to late June through early August. Eggs are laid in the upper soil layer. The egg and first two stages are quite short. By the end of August, nearly all the grubs will be in the third stage. Mature grubs measure two inches in length and rarely assume the "C" position and usually lie on their backs. Green June beetle grubs prefer to feed on decaying organic matter instead of grass roots. They are known for extensive tunneling which can disturb grass roots, making them more susceptible to drought conditions.



Adult beetle

### Southern Masked Chafer

**Calendar of Life Cycle:** Newly hatched grubs are white in appearance but quickly turn gray after feeding. Grubs reach 1 inch in length upon maturity. Masked chafers have a one year life cycle. The egg stage lasts 2-3 weeks while the grub stage lasts 10-11 months. The feeding cycle of masked chafers is similar to that of Japanese beetles. Damage in late summer and fall is common due to grubs feeding on roots just below the thatch layer.



Grub



Adult beetle

## White Grub Control

Successfully controlling grubs in the landscape depends on several factors. Timing, application, and product selection are crucial in limiting the impact grubs can have on grasses. In addition to using insecticides, proper cultural practices can limit any adverse effects grubs may have. Healthy stands of grass are more resistant to stress inflicted from grub infestations. If grub populations become too high, then an insecticide application will be needed for control.

When applying an insecticide, it is important to note what stage of growth the grubs are in. Some products work best when adult activity is at its peak while others work better after egg hatch. Another common problem with insecticide applications is getting the product down to the grubs. Since grubs live in the soil, some insecticides tend to bind to the thatch layer of the grass. Insecticide applications should be watered-in after applying to get the active ingredient down to the root system.

### White Grub Insecticides

Aloft	(bifenthrin + clothianidin)
Dylox	(trichlorfon)
Grubs Away	(imidacloprid)
Sevin	(carbaryl)
Zenith	(imidacloprid)



### LEGEND



Red box indicates optimum time for insecticide applications. During this period, grubs are in the early stages of growth. Insecticide applications provide maximum control at this time.

Recommended products for control during this time period are:

Aloft Zenith Grubs Away Sevin Dylox

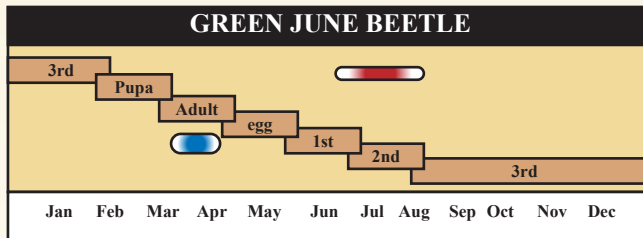


Blue box indicates time period for controlling mature grubs. During this period, grubs move closer to the surface before the adult beetle stage begins. Because grubs have over-wintered and matured at this point, control results from insecticides may vary.

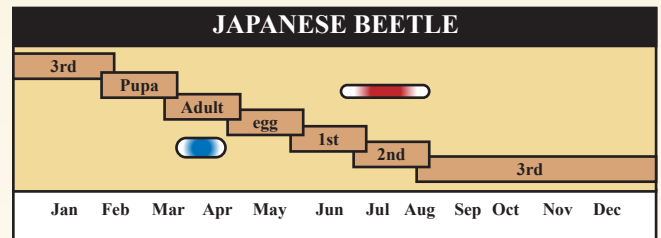
Recommended products for control during this time period are:

Aloft Dylox

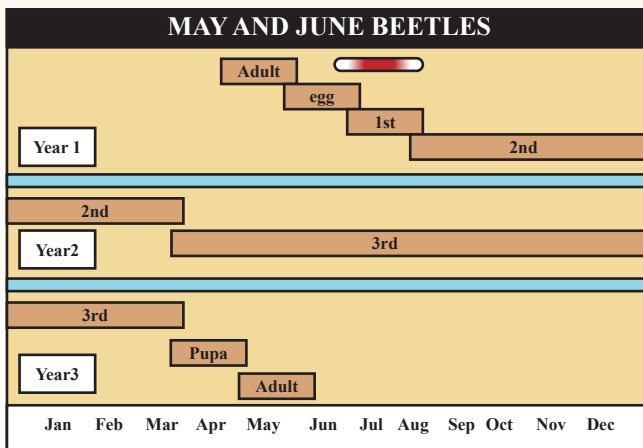
### GREEN JUNE BEETLE



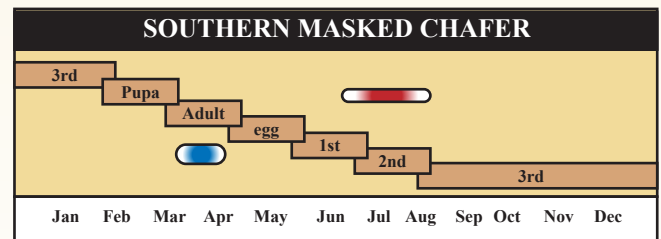
### JAPANESE BEETLE



### MAY AND JUNE BEETLES



### SOUTHERN MASKED CHAFER



# Mole Crickets

Mole crickets were first introduced into the US in the early 1900's. Cargo ships from South America brought the first mole crickets into port at Brunswick, Ga. Since then, mole crickets have adapted to southeastern US. Mole crickets prefer sandier soils as they are easier to tunnel through, but can be found in clay soils such as those in the upstate. Each year, mole crickets cause millions of dollars worth of damage to recreation, residential, and commercial sod. Mole crickets can be found in coastal plain soils from Texas to North Carolina.



Tawny Mole Cricket



Tawny Mole Cricket Legs



Southern Mole Cricket

## Types

The two types of mole crickets we are primarily concerned with in South Carolina are the southern and tawny mole cricket. Unlike the southern, the tawny mole cricket actually feeds on grasses and causes the most damage of the two. Both mole crickets cause most of their damage to turf by tunneling through the soil. There is also native northern mole cricket in South Carolina, but it has very little economic impact. The easiest way to identify the differences between these species is to examine the claws on their front legs. Northern mole crickets have four distinct claws or toes, while the southern and tawny have two. Southern mole crickets have a "U" shaped opening between their toes, while tawny mole crickets have a "V" shape to their opening.

## Biology

Mole crickets spend the winter deep in the soil primarily as adults or large nymphs (young adults). Those that over-winter as nymphs complete development and become adults in the spring time. Mating takes place in late winter and early spring as soil and air temperatures warm. At this time, male mole crickets produce calls or songs to attract females. On warm, humid nights both males and females will fly in search of a mate and new areas to lay their eggs. The peak of tawny mole cricket flight activity is in March and early April. Southern mole cricket flight peaks in April and early May with some individuals flying through June. After approximately 14 days, females construct egg chambers 6-18 inches deep in the soil and lay an average of 35 to 40 eggs. A single female can lay several clutches of eggs and has the potential to produce more than 100 offspring. Adults of both sexes die after mating. Eggs take three to four weeks to hatch, depending on temperature. Most egg hatches will occur in late May or early June, although some southern mole crickets hatch as late as August. Newly-hatched nymphs resemble adults but are smaller and lack wings. They begin to tunnel and feed immediately after hatching. Mole crickets will spend the winter in the soil feeding and waiting for warmer weather.

## Sampling for Mole Crickets

In order to determine if mole crickets are present, conduct a soap flush test. Mix 2 tablespoons of liquid detergent such as Dawn® in one gallon of water. Pour over a 2 to 3 square foot area. If any mole crickets are present, they should surface within a few minutes. This is best performed in the early morning or late afternoon.

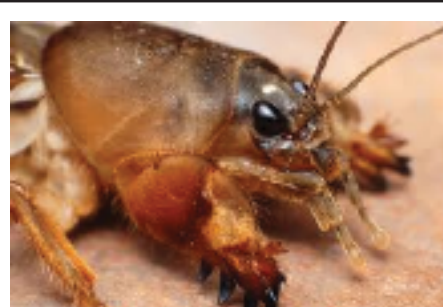
## Controlling Mole Crickets

Control options for mole crickets will vary depending on the time of year. For maximum control, contact insecticide applications should be made when the nymphs (young adults) are present. This usually occurs in late June and July. Mole crickets are easier to control when in the juvenile stage. Insecticide applications can be made late summer into fall (Aug.-Oct.). As mole crickets mature throughout the season, higher rates may be needed to achieve acceptable control. Granular contact insecticides should not be applied to dry soils. If necessary, irrigate prior to spreading granular insecticides and also irrigate following applications to move the insecticide into the root zone. Applications are best made in late afternoon. Spring applications of a contact insecticide can also be made to limit the number of adults that have over-wintered. Control is much more difficult during the spring due to mole crickets mature stage. By limiting the number of adults, there will be less eggs deposited during the early summer months. Spot treatments work well in the spring, followed by broadcast treatments in late June or July.

## Mole Cricket Insecticides

Aloft	(bifenthrin + clothianidin)
Bifen I/T*	(bifenthrin)
Bifen L/P*	(bifenthrin)
Cyzmic	(lambda-cyhalothrin)
Dylox	(trichlorfon)
Grubs Away	(imidacloprid)
Zenith	(imidacloprid)

\* Only controls smaller mole crickets (nymphs)



Chinch bugs feed on various types of grass, but are most problematic on St. Augustine. Adult and nymphs (immature adults) suck sap from the host plant and then inject a toxin that causes it to turn yellow and then eventually die. Symptoms start out small, but can grow as populations reach their peak around mid-summer. Infestations are usually in groups spread throughout the lawn. Multiple life cycles can occur throughout the calendar year with one generation being produced in as little as six weeks.

## Life Cycle and Identification

Adults and nymphs are relatively easy to control, but new populations from eggs may require retreating with an insecticide in 2-3 months. In South Carolina, there are usually 2-3 generations per year. Chinch bugs change significantly in appearance during the five stages of growth. During the first two stages, chinch bugs have an orange appearance with a white band across their abdomen. During the fourth and fifth stages, they appear darker red in color, while finally turning black in color during the fifth and final stage. Adults will have shiny white wings that can be short or long in appearance. Adults will reach a maximum of 6 mm in length.

## Sampling for Chinch Bugs

Chinch bugs feed primarily on the area of the grass between the thatch and the soil. The float method is used to sample for infestations. To test for chinch bugs, take a metal can or cylinder such as a coffee can with both ends open and drive it 2-3 inches into the soil. Fill the can with water. Remove any debris that floats to the surface. Keep the water level at least 2-3 inches deep in the can for a period of 10 minutes. If chinch bugs are present, they will float to the surface.

## Controlling Chinch Bugs

St. Augustine lawns should be monitored on a regular basis. If an area is suspected of having chinch bugs, test the area on the edges of where damage has occurred. In addition to the use of insecticides, there are cultural practices that will help your lawn to resist infection from these tiny insects. Avoid over-fertilizing with nitrogen based fertilizers as this can produce succulent tender growth that chinch bugs prefer. Also over irrigating can lead to infestations as chinch bugs prefer moist humid conditions.

On St. Augustine lawns, it is important to maintain proper mowing heights of 3-4 inches. Using sharp mower blades can also prevent unnecessary stress to the grass, making it more able to recover from chinch bug damage. Reducing thatch layers also helps reduce chinch bugs infestations, by removing the area they prefer to lay their eggs.

### Chinch Bug Insecticides

Aloft	(bifenthrin + clothianidin)
Bifen I/T	(bifenthrin)
Bifen L/P	(bifenthrin)
Cyzmic	(lambda-cyhalothrin)
Grubs Away*	(imidacloprid)
Sevin	(carbaryl)

\* Suppression only





# Fall Armyworms

## Life Cycle

Fall armyworms are the larvae form of adult moths. Armyworms do not over-winter in South Carolina, so they are generated when moths migrate upward into the state in the month of June. Adult moths can lay up to 1,000 eggs that take from 2-10 days to hatch. Once hatched, small larvae begin to spread in search of food. Fall armyworms prefer lush tender grasses with bermuda being their favorite. Fall armyworms are most active during morning and late afternoon, but continue to feed throughout the day. Fall armyworms feed for 2-3 weeks before they burrow down into the soil and pupate. Within two weeks, adult moths emerge and the life cycle begins all over again. Fall armyworms usually have several generations throughout the year.

Armyworms received their name due to their ability to quickly march in and rapidly consume large amounts of turf. Most grasses will recover from fall armyworm damage. Warm-season grasses can be more susceptible to winter kill if damage occurs in late fall. Fall armyworms can damage cool season grasses down to the growing point causing them to die. Fall armyworm pressure may vary from year to year. Cool, wet springs favor the pest due to an absence of natural parasites. Armyworms feed on the above ground tissues of grasses. Areas along wood lines generally are the first to show symptoms of feeding.

## Identification

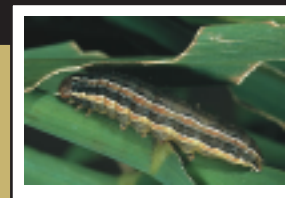
Fall armyworms are identified by an inverted "Y" mark on the back of their head. Colors of fall armyworms vary from green, to gray, to black. They have a black longitudinal stripe down their back and four distinct black dots on the dorsal side of each segment.

## Controlling Fall Armyworms

Controlling fall armyworms with insecticides should begin as soon as minimum threshold levels are met. Generally applications should begin when populations reach one armyworm per square foot. Insecticides work best during the early stage of fall armyworm development. Armyworms can grow quickly over a period of two weeks and insecticide applications will not be as effective on larger armyworms. Repeat applications of insecticides are necessary in some situations.

### Fall Armyworm Insecticides

Aloft	(bifenthrin + clothianidin)
Bifen I/T	(bifenthrin)
Bifen L/P	(bifenthrin)
Cyzmic	(lambda-cyhalothrin)
Sevin	(carbaryl)



This guide is an informal reference to herbicides available for controlling common insects. It is not meant to supplement any product labels. Insecticide labels should always be consulted before being applied. Labels are subject to change. Due to differences in grass varieties, environmental conditions, temperature, stress, moisture conditions, plant health, and other factors insecticide applications may cause undesirable injury to grasses. W.P. Law Inc. does not guarantee or warranty the use of insecticide listed in this guide. Please remember that the label is the law.

Please visit our web site for more information

[www.wplawinc.com](http://www.wplawinc.com)

#### MAIN OFFICE - LEXINGTON

303 Riverchase Way, Lexington, SC 29072  
Phone 803-461-0599  
Fax 803-461-0598  
e-mail [lex@wplawinc.com](mailto:lex@wplawinc.com)

#### CHARLESTON BRANCH

3636 Belvedere Rd., John's Island, SC 29455  
Phone 843-559-3945  
Fax 843-559-2740  
email [coastal@wplawinc.com](mailto:coastal@wplawinc.com)

#### GREENVILLE BRANCH

1330 Grove Rd., Greenville, SC 29605  
Phone 864-295-3810 / 800-660-7569  
Fax 864-295-6990  
e-mail [gville@wplawinc.com](mailto:gville@wplawinc.com)

#### GREER BRANCH

2400 Highway 101 S., Greer, SC 29651  
Phone 864-879-1045 / 877-835-0714  
Fax 864-879-1046  
e-mail [greer@wplawinc.com](mailto:greer@wplawinc.com)



1-800-476-4515



Get the free mobile app at  
<http://gettag.mobi>

After downloading  
the app, scan this  
tag to visit our  
website