

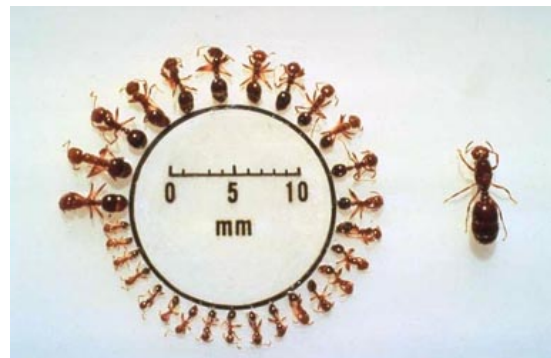
Historic Background

Red Imported Fire ant (RIFA) was introduced to the United States around 1930. They first appeared in the port city of Mobile, Alabama where they were likely introduced via shipping from their native South America. By 1960 they had spread through much of the southeastern States from Virginia across to Texas.

This ant is of particular importance to us because of its ability and tendency to inflict painful stings. The RIFA worker grabs your flesh with its mandibles and pierces your skin with its stinger. The worker will continue to sting a victim over and over until it is physically removed or killed. Stings will erupt into pustules within a day and the tendency to scratch the affected areas often results in an irritable infection.

Some individuals are highly allergic to the stings and symptoms range from a minor rash to swelling and in some severe cases anaphylactic shock can result in death. There have been reported cases of human deaths particularly in nursing home situations where invalid patients were attacked repeatedly and due to their infirm nature, were unable to defend themselves. There have also been cases where livestock have been killed by laying on their mounds.

Rubbing the bite with ammonia within 30 seconds of being bitten may eliminate the eruption by neutralizing the venom. Pure aloe vera gel applied a few times daily is an excellent salve for the skin. Note that they all have 2 “nodes” or humps on the top portion of the abdomen.



Biology

RIFA colonies consist of the brood (egg, larvae, pupae) and several types of adults.

- Workers
- Reddish-brown winged females
- Winged males; which are distinguished from the females by their smaller heads and black bodies.

Worker ants are wingless, sterile females that will vary in size throughout the colony. As their name suggests, the workers do the majority of labor within the colony. They forage for the colony's food, care for and feed the brood, feed the queen and they protect the queen by defending the nest from intruders. In serious threats the workers will physically remove the queen from danger by moving her to a secure location.

The queen choreographs the development of the ant colony through the secretion of chemical pheromones, which instruct workers to perform specific tasks. The workers will continuously adjust the colony by raising or lowering the location of the brood within the mound nest based upon moisture levels, temperature or predators. In periods of dry conditions, the brood will be moved lower into the ground to take advantage of dryer, cooler conditions. In times of wet weather the mounds will appear above ground where the brood is moved upwards within the nest to a dry location. The winged adults are often mistaken for termites. Winged adults usually disperse from the colony in the spring or fall. Typical mating flights occur on warm sunny afternoons after periods of high humidity such as a heavy spring rain shower. This biological timing coincides with many termite swarms, which accounts for their often mistaken identity. Ants can be distinguished from termites by their elbowed antennae and pinched abdomens.



Upon their dispersal male and female fire ants will pair up to mate. A fertilized queen will move off alone to find a suitable nesting site and begin digging a chamber to develop a new colony. It is not uncommon to find several fertilized queens within a single nesting site.

There are two different kinds of RIFA colonies, those with single queens and those with multiple queens. Workers in single queen colonies are territorial and will fight workers from other colonies. Workers in multiple queen colonies move freely from one mound to another, which has resulted in dramatic increases in the number of ant mounds per acre. In areas with single queen colonies there will be 40 to 150 mounds per acre while in multiple queen settings you will find 200 or more mounds per acre. The average developed colony of RIFA consists of 100,000 to 500,000 workers and up to several hundred winged forms and queens. Queen ants can live 7 years or more while workers generally live about 5 weeks.

The RIFA builds mounds in almost any type of soil, but prefers open, sunny areas such as pastures, parks and lawns. Mounds can reach 36 inches in height in some areas, depending on the soil. Occasionally you will find fire ants nesting in walls of homes or buildings where they can quickly become a significant health threat to humans. Indications of RIFA nesting in walls, under sidewalks or inside equipment are the telltale signs of sand and soil leaking out of the harborage site. Often you can find these signs between the carpet tack strip and baseboard inside homes or around electrical boxes or cracks in the pavement or sidewalk.

Prevention

Complete eradication of RIFA is practically impossible, however our professional goal is to reduce the population to eliminate risks to people or pets. This requires a long-term commitment to a combined program of broadcast baiting plus individual mound treatments. The individual mounds can be treated with granules, dusts, baits, injections, and drenches year round. Broadcast baiting is effective during dry periods, and is very effective at reducing populations especially in the spring.

Several biological controls are being utilized as well. Biological controls consist of natural phorid fly predators, various fungi and the biorational product methoprene (EXTINGUISH), which affects the queen's ability to reproduce.

The following materials are authorized for RIFA control:

- Indoxacarb = Advion Fire Ant Bait for efficient colony kill. We presently use this material for Quarterly Fire Ant Management
- Hydramethylnon = Amdro products such as Amdro Pro which interferes with the ants ability to convert food into energy, ultimately causing the colony to starve to death. This is an excellent and fast-acting bait.
- Synthetic Methoprene = Extinguish, and in Extinguish Plus, which is a growth regulator that stops the queen from producing viable eggs.
- NOTE: The above baits need to be applied when conditions are dry for a few days in between waterings and rainfall...otherwise they can become rancid.
- Bifenthrin = Talstar or Bifen granule and Liquid formulations. Both are fast acting contact residuals that rapidly permeate the mound, killing off the majority of individuals in the upper portion of the colony.
- Other Residual Granules = DeltaGard G, Demand G, that directly kill the ants when watered, however, since mounds go many feet below the ground, these granules usually only top kill the mound, allowing the ants to eventually resurface nearby in a few weeks to a month later.
- Other synthetic pyrethroids = Cy-Kick, Suspend, Tempo Ultra WP can directly kill workers and top kill mounds

Structural Applications:

- Residual dusts= Boractin, Drione, Delta Dust etc. that kill existing infestations and then act as barriers in cracks, crevices or wall voids to prevent buildup of ant populations.
- Termidor and Phantom (=non-repellent products for outdoor foundation and indoor spot treatment respectively)

The following material is not authorized for RIFA control without specific instructions from Q/A:

- Top Choice – Restricted Use long-term residual granules for up to a year of control in the area treated.

Name _____ Date _____

Pre & Post Tests

1. The RIFA were first introduced into the United States around _____.
2. The _____ tend the brood and carry developing ants up and down within the mound depending on where the water table is.
3. Single queen colonies consist of _____ mounds per acre.
4. T or F multiple queen colony workers interact and move freely within neighboring mounds.
5. List 4 ways RIFA may be detrimental to a property owner.

- _____
- _____
- _____
- _____

6. List 3 products we use to control RIFA:

- _____
- _____
- _____

7. Extinguish kills the colony by: _____



Answer Key to Pre & Post Tests

1. The RIFA were first introduced into the United States around 1930.
2. The workers tend the brood and carry developing ants up and down within the mound depending on where the water table is.
3. Single queen colonies consist of 40 to 150 mounds per acre.
4. T or F multiple queen colony workers interact and move freely within neighboring mounds.
5. List 4 ways RIFA may be detrimental to a property owner.
 - Short out electrical boxes
 - Sting children, adults, or pets
 - Nest indoors and contaminate food items
 - Create unsightly mounds and interfere with the recreational use of the lawn.
6. List 3 products we use to control RIFA:
 - Extinguish
 - Amdro
 - Advion
7. Extinguish kills the colony by: Disrupting the queen's ability to produce eggs.

April Risk Management VTM

Inattentive Driving: Small Distractions. Big Consequences.

Training Goals & Learning Objectives

By the end of this training, team members and managers will be able to:

- Understand what qualifies as inattentive driving
- Identify the most common driving distractions
- Recognize how brief distractions lead to preventable accidents
- Understand company expectations and accountability

Why This Matters for Us

Recent accident investigations show that many preventable crashes occurred while drivers were momentarily distracted—looking at phones, adjusting GPS or radios, eating, or handling paperwork. These actions increase exposure to injuries, claims, and liability.

What Is Inattentive Driving

Inattentive driving includes any activity that takes your eyes, hands, or mind off the task of driving. Examples include:

- Looking at or handling a cell phone
- Adjusting radios, screens, or GPS while moving
- Eating, drinking, or unwrapping food
- Writing notes or handling paperwork
- Reaching for items in the cab
- Daydreaming or driving on autopilot

The Risk of 'Just a Second'

At roadway speeds, even a brief glance away from the road can be dangerous. In one to five seconds, a vehicle can travel the length of a city block with no reaction time. Most inattentive driving crashes occur because traffic conditions change suddenly and the distracted driver reacts too late.

At 45 mph:

- 1 second = 66 feet traveled
- 3 seconds = nearly a football field
- 5 seconds = you've driven blind for the length of a city block

Common Accident Pattern

This type of preventable accident often follows the same pattern:

1. Driver is moving with traffic
2. Driver looks away to adjust something or check a device
3. Traffic ahead slows or stops

April Risk Management VTM

4. Driver looks up too late
5. Collision occurs

These accidents are routinely classified as driver inattention and preventable.

Company Expectations

Drivers are expected to:

- Maintain full attention on driving at all times
- Set GPS, radio, and vehicle controls before moving
- Pull over safely if adjustments are needed
- Keep phones out of hand and out of view
- Never complete paperwork while the vehicle is in motion
- Only eat when safely stopped

Accountability & Consequences

Inattentive driving accidents are typically preventable. Consequences may include:

Internal

- Coaching or retraining
- Disciplinary action
- Employee record documentation
- \$500 payroll deduction if found at fault
- Escalated discipline for repeat behavior

External

- Injury risk to drivers and the public
- Claims and legal exposure
- Increased insurance costs
- Vehicle downtime and loss of productivity

Manager & Supervisor Responsibility

Supervisors and managers are responsible for reinforcing distraction-free driving expectations, addressing observed inattention, completing thorough investigations, and supporting Risk Management determinations.

April Risk Management VTM

Discussion Prompts

“What distractions are most common during your workday?”

“Why do drivers underestimate the risk of small distractions?”

“How can setting up your truck before driving reduce risk?”

“What’s a safe alternative if you need to adjust something?”

“How does inattentive driving impact your coworkers and company?”

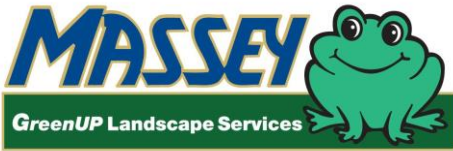
Key Takeaway

Inattentive driving is a choice — and so is prevention.

If you are driving:

- Your eyes belong on the road
- Your hands belong on the wheel
- Your mind belongs on driving

No message, adjustment, meal, or task is worth an accident.



WEEKLY TRAINING SESSION



White Grubs

Topic Category: Lawn

Recordable Verifiable Training Hours: 0.5

Objectives: This lesson is designed to teach the biology and control of White Grubs.

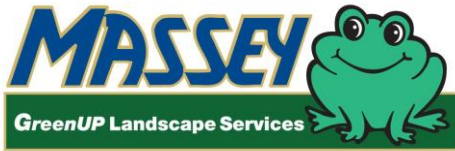
Length of lesson: Approx 30 minutes.

Materials needed:

- Training Guideline
- GreenUP Protocol for White Grubs. This document can be found in the G: Drive \Shared\GreenUp Reference Materials\GreenUp Protocols\Individual Protocols\Lawn Damaging Insects
- Collect samples of grubs from the field, if available.
- Pre- and Post- tests.

Training Guidelines:

- Make copies of the tests and training materials for all Team Members attending.
- Set up the training area in an area of the office that will minimize disruptions.
- Begin the meeting by defining the training topic and handing out the Pre-test
 - Allow a few minutes for Team Members to complete the Pre-test.
 - Collect the pre-test and hand out the Verifiable Training Record Form (VTRF)
- Distribute and review the training materials on Use the Training outline as a guide for key points.
 - Encourage active participation from all Team Members
 - Ask probing questions to develop key points
 - Encourage group reading
- After reading and reviewing all materials, ask questions to verify the lesson has been understood.
- Hand out the Post-tests. When complete, grade the tests and record the score on the VTRF.
- Collect tests and place with the verifiable materials in the Service Center Verifiable Training File.
- Make copies of the VTRF and place in each Team Member's training file.
- Complete all Weekly VTM's through Massey University.



WEEKLY TRAINING SESSION



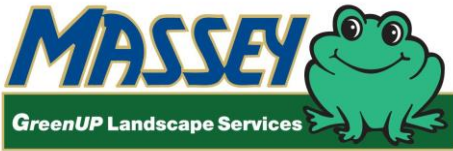
White Grubs

Name _____

Date _____

PRE & POST TEST

1. T or F White grubs are the larval stages of various beetles.
2. T or F Depending on the species, white grubs can remain in the larval stage for 1 to 4 years.
3. T or F One symptom of grub damage is wilted turf.
4. T or F If grubs are a problem, turf will lift from the soil as if it were newly laid sod.
5. T or F The presence of armadillos, moles or large flocks of birds feeding in a lawn is a certain indication that grubs are a problem.
6. T or F Grubs can be treated with Dylox G for control.
7. T or F Follow-up for grub problems is not necessary.
8. T or F The soil should be moist before a treatment with Dylox G and watered afterwards.



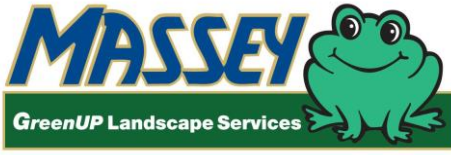
WEEKLY TRAINING SESSION



White Grubs

PRE & POST TEST ANSWER KEY

1. T or F White grubs are the larval stages of various beetles.
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WEEKLY TRAINING SESSION



Installation and Care of Grass Plugs

Topic Category: Lawn

Recordable Verifiable Training Hours: 0.5

Objectives: This lesson is designed to teach the proper installation and care of grass plugs.

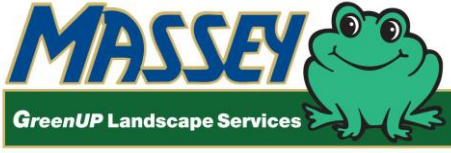
Length of lesson: Approx 30 minutes.

Materials needed:

- Training Guideline
- GreenUP Protocol – Installation and Care of Grass Plugs Training Document (G:\Shared\GreenUp Reference Materials\GreenUp Protocols\Individual Protocols\Renovation)
- Pre- and Post- tests.

Training Guidelines:

- Make copies of the tests and training materials for all Team Members attending.
- Set up the training area in an area of the office that will minimize disruptions.
- Begin the meeting by defining the training topic and handing out the Pre-test
 - Allow a few minutes for Team Members to complete the Pre-test.
 - Collect the pre-test and hand out the Verifiable Training Record Form (VTRF)
- Distribute and review the training materials on Installation and Care of Grass Plugs.
- Use the Training outline as a guide for key points.
 - Encourage active participation from all Team Members
 - Ask probing questions to develop key points
 - Encourage group reading
- After reading and reviewing all materials, ask questions to verify the lesson has been understood.
- Hand out the Post-tests. When complete, grade the tests and record the score on the VTRF.
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WEEKLY TRAINING SESSION

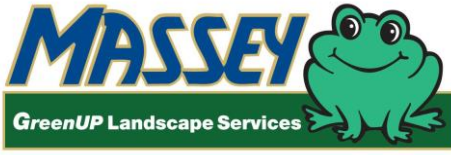


Installation and Care of Grass Plugs

Name _____ Date _____

PRE & POST TEST

1. T or F Grass plugs should be chosen to repair a customer's lawn when possible because they are less expensive than sod.
2. T or F Before an area of plugs are installed, the old turf and debris should be removed.
3. T or F Plugs may be a good option to repair thin areas of turf or areas where sod has failed previously.
4. T or F Plugs are a good choice to repair an area of St. Augustinegrass that has been taken over by Bermudagrass.
5. T or F Plugged areas should be immediately treated with pre-emergence to keep weeds from sprouting.
6. T or F Comand® must be utilized during the plug installation process.
7. T or F Our standard Agronomic Program is sufficient nutrition for quick plug grow-in.
8. T or F Immediately after installation, 12-2-14 or 12-0-14 is applied at 4 pounds per 1000 sq. ft.
9. T or F 2 Weeks after installation, 12-2-14 or 12-0-14 is applied at 4 pounds per 1000 sq. ft.
10. T or F 21-0-0 is applied at 2.5 pounds per 1000 sq. ft. every two weeks until the plugs have established.
11. T or F During the months of April through August, plugged areas should be treated for the prevention of Gray Leaf Spot and Sod Webworms.



WEEKLY TRAINING SESSION



Installation and Care of Grass Plugs

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White Grubs

White Grubs

Over the past few years, grubs have become increasingly important as a turfgrass pest.

Grubs are the larval stages of various beetles. They are “C” shaped, stout and worm-like with 3 pairs of legs.

Grub Biology

Eggs are laid in one to two inches of soil in May and June.

The grubs hatch from the egg and can feed on the grass roots and remain in the larval stage for one to four years depending on the species.

Grubs typically pupate in the soil in March or April and emerge from the soil as adults in May or June.

Grubs feed most actively in the spring and summer months and move deeper in the soil during the fall and winter.



Identifying Grub Damage

It is very important that all Lawn Specialists be on the lookout for grub damage. Since grub problems are less common than chinch bugs or sod webworms, we need to keep the possibility of grubs at the top of our minds.

Initial symptoms of grub damage appear as wilted areas. Anytime the turf is wilted, the soil should be checked for moisture. Never assume the cause of the wilt is lack of water; always check the soil.

If the problem is grubs, the turf will lift easily from the soil as if it were newly installed sod. Turf may even feel loose as you walk across the lawn.





White Grubs

Customers may also have concerns about Armadillos digging in the lawn or problems with moles. Large flocks of birds pecking at the soil may also be an indicator that some type of thatch or soil inhabiting insect is present. If the customer has these concerns, consider grubs as a possible problem, but also consider that these animals may be feeding on beneficial organisms like earthworms. Our treatments are not designed to kill all living organisms in the soil. This would be harmful to our environment and counter productive to the goal of creating a healthy lawn. It is entirely possible to have issues with moles, armadillos and flocks of birds feeding in the lawn and not have a lawn damaging insect problem.

To confirm the presence of grubs, find the border of the affected area. Lift the areas of loose turf until it begins to tack to the ground. This is the margin of damaged area. Cut three sides of a 1 to 2 foot area and roll the grass back from the soil. If grubs are a problem, at least 2 to 3 per square foot will be found.



Treatment for Grubs

Prevention (Florida Only) – Fortunately, the treatments we perform for chinch bug prevention in April, May and June with Imidacloprid and/or Aloft will also provide prevention for grubs.

Control – Should a problem with grubs arise after these applications, Dylox G should be used for control. If the soil is dry, the lawn must be irrigated for a full cycle the night before treatment. Dylox G is applied at a rate of 3 pounds per 1000 sq. ft. The lawn must be watered after treatment. Keep people and pets off the lawn until after irrigation until thoroughly dried. Dylox works quickly and over the next few days, dying grubs will be found on the surface of the soil.

Follow-up – After the control treatment has been performed, a follow-up inspection should be performed in 10 to 14 days. Inspect the lawn carefully to ensure control has been achieved. If 2 or more grubs per square foot can still be found, reapply the Dylox Granular and follow-up again in 10 to 14 days to ensure control. If control has not been achieved following this second treatment, contact the GreenUP Quality Assurance Team for other treatment options.

Installation and Care of Grass Plugs

Objective

Plugs provide us with a great opportunity to deliver a localized area renovation or repair while keeping the investment of the customer and/or our company to a minimum. The objective of the following information is to provide general guidelines for the plugging process. This protocol is specifically dealing with use of St Augustine plugs because of their availability and their ability rapidly spread. However, plugs may also be a viable choice for other turf varieties such as Zoysia, Bermuda or Centipede.

Plugs versus Sod

It is very important that we only utilize plugs as a means of repairing the customer's landscape when the use of plugs makes agronomic sense and will provide customer satisfaction in a timely manner. Many customers will come to the quick conclusion that you are choosing plugs vs. sod because of cost. It is important that we explain that cost is not the primary reason for plug use, but rather that plugs make the most sense for the repair of this particular situation.

Some key reasons to utilize plugs would be:

- Areas where sod has failed multiple times in the past. Many thin or bare areas have a story connected to them such as "I have re-sodded this area multiple times". In many cases the sod was installed in an area where some sort of cultural issue kept the turf from establishing. The beauty of plugs is that they come with an established root system, whereas sod must expend energy to regrow a root system.
- Incremental installs of plugs can take place at the customer's leisure, unlike sod that can be very difficult to acquire in individual pieces.
- Sod repairs typically require preparation of the soil such as the cutting out of old sod and possibly leveling of the area. While plugs can and should be installed directly into dead turf material, which acts as a moisture/weed barrier over the bare ground between plugs.
- Areas where a fair amount of viable turf still exists and simply needs additional turf to speed up the recovery.

There are times when plugs would not be a good choice and they are as follows:

- Repair of areas 200 sq. ft. or greater of bare ground should be performed with sod. Sod provides quick visual satisfaction for the customer as well as good competition for weeds, which will be sprouting in the open areas.
- When the proposed plugging site has a history of or current problem with uncontrollable weeds such as Bermudagrass or crabgrass. Many times, this can result in us losing the battle because we have no selective control of either.
- If there has been an application of a pre-emergent to the proposed site within the last 30 to 45 days. Some of the programmed pre-emergent materials can inhibit the runners from spreading or will produce "looping runners", where the stolons grow laterally without establishing roots to tack to the soil.

Choosing the Appropriate Variety of Plugs:

Our first key principle of "Right Plant Right Place" is still very much in play here. Of the St. Augustine varieties, Floratam is the best choice for full sun areas and is readily available during most of the year. Customers should be aware that it does require full sun and adequate soil moisture. Floratam will not withstand inadequate sunlight or prolonged periods of drought without adequate irrigation. The best St. Augustine variety to install in a shady location is Seville. Seville is a dwarf St. Augustine variety; it has a shorter leaf surface and tighter internodes than Floratam. Be very careful to ensure that there is adequate sunlight for the turf to flourish. Even Seville will require 4 to 5 hours of filtered sunlight to survive.

Installation and Care of Grass Plugs

Floritam and Seville are the only two St. Augustine varieties approved for purchase and installation by our company. If there is some reason that Floritam or Seville cannot be found or another variety of St. Augustine is requested by the customer, contact our Technical Department before proceeding with the installation.

The Proper Installation of Plugs

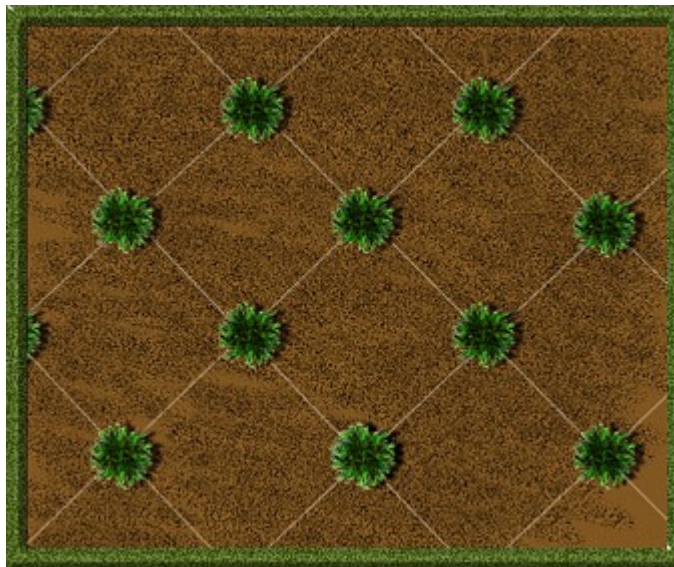
Equipment needed:

- Plant auger connected to a cordless drill or gas power auger. Small installs can be done with manual plug installers that are readily available at most Home Depot or Lowes.
- Two bags of Comand® which will treat 333 sq. ft. of turf for St Augustine plugs, or 222 sq. ft. of turf for Zoysia plugs.

Spacing of plugs:

- Plugs should be installed approximately 10 to 12 inches apart if the expected recovery timeline is three months or less. Plugs should be installed 14 to 18 inches apart if the expected recovery timeline is 4 to 6 months.
- Plugs should never be put closer than 6 inches because the recovery/growth process is actually slowed as it relates to lateral movement.
- Plugged areas larger than 40 square feet should be installed in offset rows (see picture) to encourage a repaired area that is not only full but not as bumpy under the foot.

Number of Grass Plugs to Plant Based On the Square Footage



SPACING DESIRED	NUMBER TO MULTIPLY YOUR SQ FOOTAGE BY
18" on center	multiply by 0.44
15" on center	multiply by 0.64
12" on center	multiply by 1.00
9" on center	multiply by 1.78
6" on center	multiply by 4.00

Installation and Care of Grass Plugs

Installation Process:

- Make sure you have taken the proper precautions as it relates to buried wires and irrigation lines prior to beginning and drilling of holes for plugs.
- Whenever possible, the areas to be plugged should be watered the evening prior to installation. This will aid in creating a uniform hole for plug installation and avoid the potential of having the dry soil wick the moisture out of the plugs and thus limiting their overall progress.
- Attention must be paid to the size of the hole that is made for each plug. If the holes are made too small in diameter, the plug will swell, push up out of the ground and die on the surface. If the holes are made too deeply, the holes will fill with water and the plugs will likely die of root rot. The hole should be deep enough as to place the lateral runners along the soil surface.
- Just like with an ornamental installation we want to have the diameter of the hole to be slightly larger than the plug. This will provide room for the plug to swell and a nice aerated area around the plug for the roots to easily establish.
- If you use a manual plugging tool you are likely to have little cubes of soil after you create the holes for the plugs. Make use of this soil by crumbling it on the top of the plugged area to act as backfill into the plug holes as it is watered in.
- Once the holes for the plugs are created, a top dressing of Comand® should be put down, prior to the Installation of plugs. Application rate will vary based on turf type being plugged.

Post-Installation Grow-in and Care

Fertility - The difference between a maintenance fertility program and a Grow-in fertility program:

- Our agronomic programs are designed to maintain a healthy landscape; they are not designed to grow-in turf. Plug installations require a more intensive fertility regime to speed up the grow-in period to quickly satisfy the customer. The intent is to deliver 1 pound of Nitrogen per 1000 square feet every 30 days. The preferred method is the "Spoon Feed" method that will allow you to deliver ¼ pound of N once a week or a ½ pound of N every two weeks.
 - During times of Nitrogen Blackout the application of Comand® will take the place of Nitrogen. Using the proper application rate of 24lbs per 100sq. ft. for St Augustine, or 36lbs per sq. ft. for Zoysia.

Suggested Fertility where shade/nitrogen restrictions are not a limiting factor:

- Immediately after installation, apply 12-2-14 (or 12-0-14 if no phosphorus is allowed by ordinance) at a rate of 4 pounds per 1000 sq. ft. Then apply Comand® using the proper application of 24lbs per 100sqft for St Augustine, or 36lbs per sq.ft. for Zoysia.
- 14 days later, repeat the 12-2-14 application at the same rate.
- Every 2 weeks thereafter until complete cover is established, apply 21-0-0 at 2.5 pounds per 1000 sq.ft.



Installation and Care of Grass Plugs

Suggested Fertility where shade is a limiting factor, but nitrogen restrictions are not:

- The fertility regime above can be utilized in shaded areas other than during the months of May through August.
- From May through August, the nitrogen rate in the grow-in program may result in excessive leaf growth that could be detrimental to the health of the plugs and any existing turf (see our GreenUP Protocol – Growing turf grass in the Shade). During this time, apply only the 2 applications of 12-2-14 to the plugged areas only and then follow the protocol for Growing Turf grass in the Shade. Comand can still be applied.

Insect and Disease Prevention

From May through August, lawn caterpillars and leaf spotting fungi are highly likely to become a concern. Acelepryn and Armada or Transom must be applied preventatively at the time of installation during this time.

Weed Control

Plugged areas must be monitored *closely* for weed intrusion; particularly for weeds that do not have selective control.

- Hand pulling is the primary means of weed control until the plugs begin to take root and may remain the most practical means of control for weeds that do not have selective treatments available.
- Do not apply any pre-emergence material such as Resolute or Pendimethalin whether liquid or granular to the plugged areas. These materials will inhibit the stolons from rooting properly.
- Granular Atrazine may be applied after rooting begins.
- When the plugs begin to root and lateral movement begins, weed control can and must be performed with the standard control methods.

Watering Recommendations: (Share with customer after installation in writing)

- Water by hand twice a day for 5 days
- Water by hand once a day for 5 days
- Water by hand every other day 10 days
- Then water via sprinkler system as per your local watering instructions

Mowing Recommendations: (Share with customer after installation in writing)

- It is likely for the plugs to be uprooted and destroyed if they are mowed before they become rooted. It is safe to mow plugs when you can grasp the leaf blades, pull upwards lightly and the plugs do not easily come out of the ground.
- After the plugs have rooted, they should be mowed every 5 to 7 days to encourage lateral fill in. Even if they are cutting off a small amount, it will contribute to a faster fill in.

Additional Comments

- If a repair is being performed for “Customer Satisfaction” reasons, meaning that we are not contractually liable for the full cost of the damage, but we are accepting some level of responsibility as a gesture of good will, have the customer share in some of the expense of the installation of the plugs. The customer may be more attentive to the care of the plugs when they are sharing in part of the investment.



WEEKLY TRAINING SESSION



White Grubs

Topic Category: Lawn

Recordable Verifiable Training Hours: 0.5

Objectives: This lesson is designed to teach the biology and control of White Grubs.

Length of lesson: Approx 30 minutes.

Materials needed:

- Training Guideline
- GreenUP Protocol for White Grubs. This document can be found in the G: Drive \Shared\GreenUp Reference Materials\GreenUp Protocols\Individual Protocols\Lawn Damaging Insects
- Collect samples of grubs from the field, if available.
- Pre- and Post- tests.

Training Guidelines:

- Make copies of the tests and training materials for all Team Members attending.
- Set up the training area in an area of the office that will minimize disruptions.
- Begin the meeting by defining the training topic and handing out the Pre-test
 - Allow a few minutes for Team Members to complete the Pre-test.
 - Collect the pre-test and hand out the Verifiable Training Record Form (VTRF)
- Distribute and review the training materials on Use the Training outline as a guide for key points.
 - Encourage active participation from all Team Members
 - Ask probing questions to develop key points
 - Encourage group reading
- After reading and reviewing all materials, ask questions to verify the lesson has been understood.
- Hand out the Post-tests. When complete, grade the tests and record the score on the VTRF.
- Collect tests and place with the verifiable materials in the Service Center Verifiable Training File.
- Make copies of the VTRF and place in each Team Member's training file.
- Complete all Weekly VTM's through Massey University.



WEEKLY TRAINING SESSION



White Grubs

Name _____

Date _____

PRE & POST TEST

1. T or F White grubs are the larval stages of various beetles.
2. T or F Depending on the species, white grubs can remain in the larval stage for 1 to 4 years.
3. T or F One symptom of grub damage is wilted turf.
4. T or F If grubs are a problem, turf will lift from the soil as if it were newly laid sod.
5. T or F The presence of armadillos, moles or large flocks of birds feeding in a lawn is a certain indication that grubs are a problem.
6. T or F Grubs can be treated with Dylox G for control.
7. T or F Follow-up for grub problems is not necessary.
8. T or F The soil should be moist before a treatment with Dylox G and watered afterwards.



WEEKLY TRAINING SESSION



White Grubs

PRE & POST TEST ANSWER KEY

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White Grubs

White Grubs

Over the past few years, grubs have become increasingly important as a turfgrass pest.

Grubs are the larval stages of various beetles. They are “C” shaped, stout and worm-like with 3 pairs of legs.

Grub Biology

Eggs are laid in one to two inches of soil in May and June.

The grubs hatch from the egg and can feed on the grass roots and remain in the larval stage for one to four years depending on the species.

Grubs typically pupate in the soil in March or April and emerge from the soil as adults in May or June.

Grubs feed most actively in the spring and summer months and move deeper in the soil during the fall and winter.



Identifying Grub Damage

It is very important that all Lawn Specialists be on the lookout for grub damage. Since grub problems are less common than chinch bugs or sod webworms, we need to keep the possibility of grubs at the top of our minds.

Initial symptoms of grub damage appear as wilted areas. Anytime the turf is wilted, the soil should be checked for moisture. Never assume the cause of the wilt is lack of water; always check the soil.

If the problem is grubs, the turf will lift easily from the soil as if it were newly installed sod. Turf may even feel loose as you walk across the lawn.





White Grubs

Customers may also have concerns about Armadillos digging in the lawn or problems with moles. Large flocks of birds pecking at the soil may also be an indicator that some type of thatch or soil inhabiting insect is present. If the customer has these concerns, consider grubs as a possible problem, but also consider that these animals may be feeding on beneficial organisms like earthworms. Our treatments are not designed to kill all living organisms in the soil. This would be harmful to our environment and counter productive to the goal of creating a healthy lawn. It is entirely possible to have issues with moles, armadillos and flocks of birds feeding in the lawn and not have a lawn damaging insect problem.

To confirm the presence of grubs, find the border of the affected area. Lift the areas of loose turf until it begins to tack to the ground. This is the margin of damaged area. Cut three sides of a 1 to 2 foot area and roll the grass back from the soil. If grubs are a problem, at least 2 to 3 per square foot will be found.



Treatment for Grubs

Prevention (Florida Only) – Fortunately, the treatments we perform for chinch bug prevention in April, May and June with Imidacloprid and/or Aloft will also provide prevention for grubs.

Control – Should a problem with grubs arise after these applications, Dylox G should be used for control. If the soil is dry, the lawn must be irrigated for a full cycle the night before treatment. Dylox G is applied at a rate of 3 pounds per 1000 sq. ft. The lawn must be watered after treatment. Keep people and pets off the lawn until after irrigation until thoroughly dried. Dylox works quickly and over the next few days, dying grubs will be found on the surface of the soil.

Follow-up – After the control treatment has been performed, a follow-up inspection should be performed in 10 to 14 days. Inspect the lawn carefully to ensure control has been achieved. If 2 or more grubs per square foot can still be found, reapply the Dylox Granular and follow-up again in 10 to 14 days to ensure control. If control has not been achieved following this second treatment, contact the GreenUP Quality Assurance Team for other treatment options.



WEEKLY TRAINING SESSION



Installation and Care of Grass Plugs

Topic Category: Lawn

Recordable Verifiable Training Hours: 0.5

Objectives: This lesson is designed to teach the proper installation and care of grass plugs.

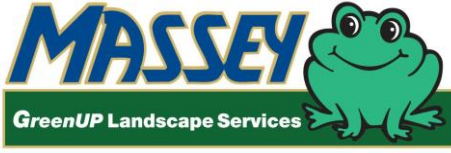
Length of lesson: Approx 30 minutes.

Materials needed:

- Training Guideline
- GreenUP Protocol – Installation and Care of Grass Plugs Training Document (G:\Shared\GreenUp Reference Materials\GreenUp Protocols\Individual Protocols\Renovation)
- Pre- and Post- tests.

Training Guidelines:

- Make copies of the tests and training materials for all Team Members attending.
- Set up the training area in an area of the office that will minimize disruptions.
- Begin the meeting by defining the training topic and handing out the Pre-test
 - Allow a few minutes for Team Members to complete the Pre-test.
 - Collect the pre-test and hand out the Verifiable Training Record Form (VTRF)
- Distribute and review the training materials on Installation and Care of Grass Plugs.
- Use the Training outline as a guide for key points.
 - Encourage active participation from all Team Members
 - Ask probing questions to develop key points
 - Encourage group reading
- After reading and reviewing all materials, ask questions to verify the lesson has been understood.
- Hand out the Post-tests. When complete, grade the tests and record the score on the VTRF.
- Collect tests and place with the verifiable materials in the Service Center Verifiable Training File.
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WEEKLY TRAINING SESSION

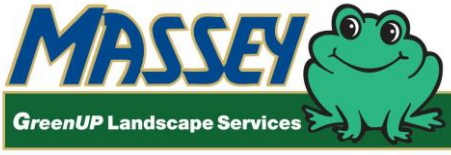


Installation and Care of Grass Plugs

Name _____ Date _____

PRE & POST TEST

1. T or F Grass plugs should be chosen to repair a customer's lawn when possible because they are less expensive than sod.
2. T or F Before an area of plugs are installed, the old turf and debris should be removed.
3. T or F Plugs may be a good option to repair thin areas of turf or areas where sod has failed previously.
4. T or F Plugs are a good choice to repair an area of St. Augustinegrass that has been taken over by Bermudagrass.
5. T or F Plugged areas should be immediately treated with pre-emergence to keep weeds from sprouting.
6. T or F Comand® must be utilized during the plug installation process.
7. T or F Our standard Agronomic Program is sufficient nutrition for quick plug grow-in.
8. T or F Immediately after installation, 12-2-14 or 12-0-14 is applied at 4 pounds per 1000 sq. ft.
9. T or F 2 Weeks after installation, 12-2-14 or 12-0-14 is applied at 4 pounds per 1000 sq. ft.
10. T or F 21-0-0 is applied at 2.5 pounds per 1000 sq. ft. every two weeks until the plugs have established.
11. T or F During the months of April through August, plugged areas should be treated for the prevention of Gray Leaf Spot and Sod Webworms.



WEEKLY TRAINING SESSION



Installation and Care of Grass Plugs

PRE & POST TEST ANSWER KEY

1. T or F Grass plugs should be chosen to repair a customer's lawn when possible because they are less expensive than sod.
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Installation and Care of Grass Plugs

Objective

Plugs provide us with a great opportunity to deliver a localized area renovation or repair while keeping the investment of the customer and/or our company to a minimum. The objective of the following information is to provide general guidelines for the plugging process. This protocol is specifically dealing with use of St Augustine plugs because of their availability and their ability rapidly spread. However, plugs may also be a viable choice for other turf varieties such as Zoysia, Bermuda or Centipede.

Plugs versus Sod

It is very important that we only utilize plugs as a means of repairing the customer's landscape when the use of plugs makes agronomic sense and will provide customer satisfaction in a timely manner. Many customers will come to the quick conclusion that you are choosing plugs vs. sod because of cost. It is important that we explain that cost is not the primary reason for plug use, but rather that plugs make the most sense for the repair of this particular situation.

Some key reasons to utilize plugs would be:

- Areas where sod has failed multiple times in the past. Many thin or bare areas have a story connected to them such as "I have re-sodded this area multiple times". In many cases the sod was installed in an area where some sort of cultural issue kept the turf from establishing. The beauty of plugs is that they come with an established root system, whereas sod must expend energy to regrow a root system.
- Incremental installs of plugs can take place at the customer's leisure, unlike sod that can be very difficult to acquire in individual pieces.
- Sod repairs typically require preparation of the soil such as the cutting out of old sod and possibly leveling of the area. While plugs can and should be installed directly into dead turf material, which acts as a moisture/weed barrier over the bare ground between plugs.
- Areas where a fair amount of viable turf still exists and simply needs additional turf to speed up the recovery.

There are times when plugs would not be a good choice and they are as follows:

- Repair of areas 200 sq. ft. or greater of bare ground should be performed with sod. Sod provides quick visual satisfaction for the customer as well as good competition for weeds, which will be sprouting in the open areas.
- When the proposed plugging site has a history of or current problem with uncontrollable weeds such as Bermudagrass or crabgrass. Many times, this can result in us losing the battle because we have no selective control of either.
- If there has been an application of a pre-emergent to the proposed site within the last 30 to 45 days. Some of the programmed pre-emergent materials can inhibit the runners from spreading or will produce "looping runners", where the stolons grow laterally without establishing roots to tack to the soil.

Choosing the Appropriate Variety of Plugs:

Our first key principle of "Right Plant Right Place" is still very much in play here. Of the St. Augustine varieties, Floratam is the best choice for full sun areas and is readily available during most of the year. Customers should be aware that it does require full sun and adequate soil moisture. Floratam will not withstand inadequate sunlight or prolonged periods of drought without adequate irrigation. The best St. Augustine variety to install in a shady location is Seville. Seville is a dwarf St. Augustine variety; it has a shorter leaf surface and tighter internodes than Floratam. Be very careful to ensure that there is adequate sunlight for the turf to flourish. Even Seville will require 4 to 5 hours of filtered sunlight to survive.

Installation and Care of Grass Plugs

Floritam and Seville are the only two St. Augustine varieties approved for purchase and installation by our company. If there is some reason that Floritam or Seville cannot be found or another variety of St. Augustine is requested by the customer, contact our Technical Department before proceeding with the installation.

The Proper Installation of Plugs

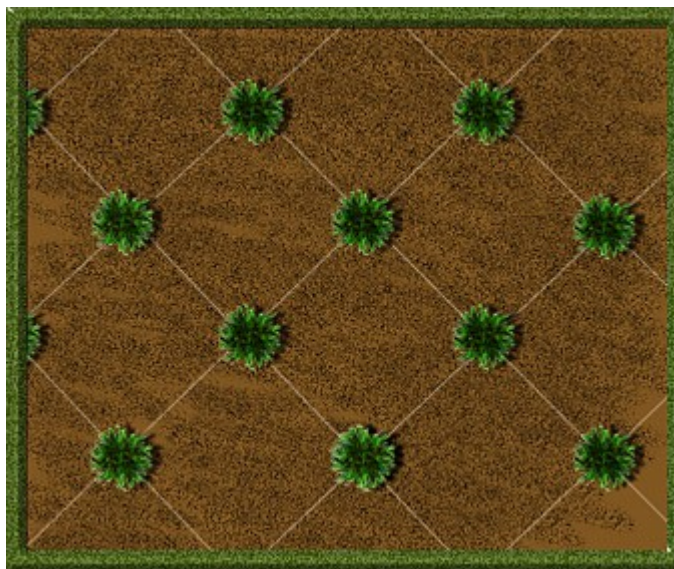
Equipment needed:

- Plant auger connected to a cordless drill or gas power auger. Small installs can be done with manual plug installers that are readily available at most Home Depot or Lowes.
- Two bags of Comand® which will treat 333 sq. ft. of turf for St Augustine plugs, or 222 sq. ft. of turf for Zoysia plugs.

Spacing of plugs:

- Plugs should be installed approximately 10 to 12 inches apart if the expected recovery timeline is three months or less. Plugs should be installed 14 to 18 inches apart if the expected recovery timeline is 4 to 6 months.
- Plugs should never be put closer than 6 inches because the recovery/growth process is actually slowed as it relates to lateral movement.
- Plugged areas larger than 40 square feet should be installed in offset rows (see picture) to encourage a repaired area that is not only full but not as bumpy under the foot.

Number of Grass Plugs to Plant Based On the Square Footage



SPACING DESIRED	NUMBER TO MULTIPLY YOUR SQ FOOTAGE BY
18" on center	multiply by 0.44
15" on center	multiply by 0.64
12" on center	multiply by 1.00
9" on center	multiply by 1.78
6" on center	multiply by 4.00

Installation and Care of Grass Plugs

Installation Process:

- Make sure you have taken the proper precautions as it relates to buried wires and irrigation lines prior to beginning and drilling of holes for plugs.
- Whenever possible, the areas to be plugged should be watered the evening prior to installation. This will aid in creating a uniform hole for plug installation and avoid the potential of having the dry soil wick the moisture out of the plugs and thus limiting their overall progress.
- Attention must be paid to the size of the hole that is made for each plug. If the holes are made too small in diameter, the plug will swell, push up out of the ground and die on the surface. If the holes are made too deeply, the holes will fill with water and the plugs will likely die of root rot. The hole should be deep enough as to place the lateral runners along the soil surface.
- Just like with an ornamental installation we want to have the diameter of the hole to be slightly larger than the plug. This will provide room for the plug to swell and a nice aerated area around the plug for the roots to easily establish.
- If you use a manual plugging tool you are likely to have little cubes of soil after you create the holes for the plugs. Make use of this soil by crumbling it on the top of the plugged area to act as backfill into the plug holes as it is watered in.
- Once the holes for the plugs are created, a top dressing of Comand® should be put down, prior to the Installation of plugs. Application rate will vary based on turf type being plugged.

Post-Installation Grow-in and Care

Fertility - The difference between a maintenance fertility program and a Grow-in fertility program:

- Our agronomic programs are designed to maintain a healthy landscape; they are not designed to grow-in turf. Plug installations require a more intensive fertility regime to speed up the grow-in period to quickly satisfy the customer. The intent is to deliver 1 pound of Nitrogen per 1000 square feet every 30 days. The preferred method is the "Spoon Feed" method that will allow you to deliver ¼ pound of N once a week or a ½ pound of N every two weeks.
 - During times of Nitrogen Blackout the application of Comand® will take the place of Nitrogen. Using the proper application rate of 24lbs per 100sq. ft. for St Augustine, or 36lbs per sq. ft. for Zoysia.

Suggested Fertility where shade/nitrogen restrictions are not a limiting factor:

- Immediately after installation, apply 12-2-14 (or 12-0-14 if no phosphorus is allowed by ordinance) at a rate of 4 pounds per 1000 sq. ft. Then apply Comand® using the proper application of 24lbs per 100sqft for St Augustine, or 36lbs per sq.ft. for Zoysia.
- 14 days later, repeat the 12-2-14 application at the same rate.
- Every 2 weeks thereafter until complete cover is established, apply 21-0-0 at 2.5 pounds per 1000 sq.ft.



Installation and Care of Grass Plugs

Suggested Fertility where shade is a limiting factor, but nitrogen restrictions are not:

- The fertility regime above can be utilized in shaded areas other than during the months of May through August.
- From May through August, the nitrogen rate in the grow-in program may result in excessive leaf growth that could be detrimental to the health of the plugs and any existing turf (see our GreenUP Protocol – Growing turf grass in the Shade). During this time, apply only the 2 applications of 12-2-14 to the plugged areas only and then follow the protocol for Growing Turf grass in the Shade. Comand can still be applied.

Insect and Disease Prevention

From May through August, lawn caterpillars and leaf spotting fungi are highly likely to become a concern. Acelepryn and Armada or Transom must be applied preventatively at the time of installation during this time.

Weed Control

Plugged areas must be monitored *closely* for weed intrusion; particularly for weeds that do not have selective control.

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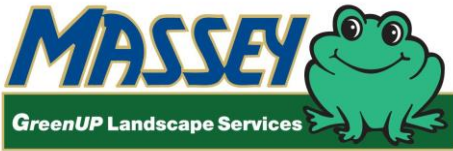
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WEEKLY TRAINING SESSION



White Grubs

Topic Category: Lawn

Recordable Verifiable Training Hours: 0.5

Objectives: This lesson is designed to teach the biology and control of White Grubs.

Length of lesson: Approx 30 minutes.

Materials needed:

- Training Guideline
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- Collect samples of grubs from the field, if available.
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WEEKLY TRAINING SESSION



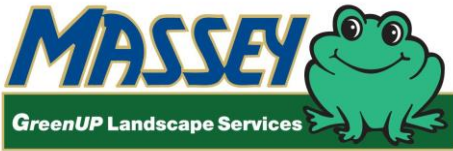
White Grubs

Name _____

Date _____

PRE & POST TEST

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WEEKLY TRAINING SESSION



White Grubs

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White Grubs

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Treatment for Grubs

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Follow-up – After the control treatment has been performed, a follow-up inspection should be performed in 10 to 14 days. Inspect the lawn carefully to ensure control has been achieved. If 2 or more grubs per square foot can still be found, reapply the Dylox Granular and follow-up again in 10 to 14 days to ensure control. If control has not been achieved following this second treatment, contact the GreenUP Quality Assurance Team for other treatment options.



WEEKLY TRAINING SESSION



Installation and Care of Grass Plugs

Topic Category: Lawn

Recordable Verifiable Training Hours: 0.5

Objectives: This lesson is designed to teach the proper installation and care of grass plugs.

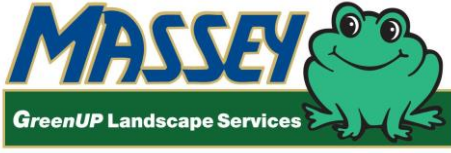
Length of lesson: Approx 30 minutes.

Materials needed:

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Training Guidelines:

- Make copies of the tests and training materials for all Team Members attending.
- Set up the training area in an area of the office that will minimize disruptions.
- Begin the meeting by defining the training topic and handing out the Pre-test
 - Allow a few minutes for Team Members to complete the Pre-test.
 - Collect the pre-test and hand out the Verifiable Training Record Form (VTRF)
- Distribute and review the training materials on Installation and Care of Grass Plugs.
- Use the Training outline as a guide for key points.
 - Encourage active participation from all Team Members
 - Ask probing questions to develop key points
 - Encourage group reading
- After reading and reviewing all materials, ask questions to verify the lesson has been understood.
- Hand out the Post-tests. When complete, grade the tests and record the score on the VTRF.
- Collect tests and place with the verifiable materials in the Service Center Verifiable Training File.
- Make copies of the VTRF and place in each Team Member's training file.
- Complete all Weekly VTM's through Massey University.



WEEKLY TRAINING SESSION

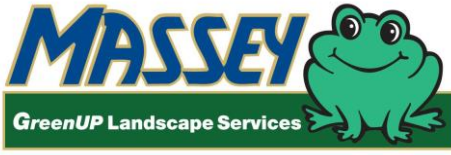


Installation and Care of Grass Plugs

Name _____ Date _____

PRE & POST TEST

1. T or F Grass plugs should be chosen to repair a customer's lawn when possible because they are less expensive than sod.
2. T or F Before an area of plugs are installed, the old turf and debris should be removed.
3. T or F Plugs may be a good option to repair thin areas of turf or areas where sod has failed previously.
4. T or F Plugs are a good choice to repair an area of St. Augustinegrass that has been taken over by Bermudagrass.
5. T or F Plugged areas should be immediately treated with pre-emergence to keep weeds from sprouting.
6. T or F Comand® must be utilized during the plug installation process.
7. T or F Our standard Agronomic Program is sufficient nutrition for quick plug grow-in.
8. T or F Immediately after installation, 12-2-14 or 12-0-14 is applied at 4 pounds per 1000 sq. ft.
9. T or F 2 Weeks after installation, 12-2-14 or 12-0-14 is applied at 4 pounds per 1000 sq. ft.
10. T or F 21-0-0 is applied at 2.5 pounds per 1000 sq. ft. every two weeks until the plugs have established.
11. T or F During the months of April through August, plugged areas should be treated for the prevention of Gray Leaf Spot and Sod Webworms.



WEEKLY TRAINING SESSION



Installation and Care of Grass Plugs

PRE & POST TEST ANSWER KEY

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Installation and Care of Grass Plugs

Objective

Plugs provide us with a great opportunity to deliver a localized area renovation or repair while keeping the investment of the customer and/or our company to a minimum. The objective of the following information is to provide general guidelines for the plugging process. This protocol is specifically dealing with use of St Augustine plugs because of their availability and their ability rapidly spread. However, plugs may also be a viable choice for other turf varieties such as Zoysia, Bermuda or Centipede.

Plugs versus Sod

It is very important that we only utilize plugs as a means of repairing the customer's landscape when the use of plugs makes agronomic sense and will provide customer satisfaction in a timely manner. Many customers will come to the quick conclusion that you are choosing plugs vs. sod because of cost. It is important that we explain that cost is not the primary reason for plug use, but rather that plugs make the most sense for the repair of this particular situation.

Some key reasons to utilize plugs would be:

- Areas where sod has failed multiple times in the past. Many thin or bare areas have a story connected to them such as "I have re-sodded this area multiple times". In many cases the sod was installed in an area where some sort of cultural issue kept the turf from establishing. The beauty of plugs is that they come with an established root system, whereas sod must expend energy to regrow a root system.
- Incremental installs of plugs can take place at the customer's leisure, unlike sod that can be very difficult to acquire in individual pieces.
- Sod repairs typically require preparation of the soil such as the cutting out of old sod and possibly leveling of the area. While plugs can and should be installed directly into dead turf material, which acts as a moisture/weed barrier over the bare ground between plugs.
- Areas where a fair amount of viable turf still exists and simply needs additional turf to speed up the recovery.

There are times when plugs would not be a good choice and they are as follows:

- Repair of areas 200 sq. ft. or greater of bare ground should be performed with sod. Sod provides quick visual satisfaction for the customer as well as good competition for weeds, which will be sprouting in the open areas.
- When the proposed plugging site has a history of or current problem with uncontrollable weeds such as Bermudagrass or crabgrass. Many times, this can result in us losing the battle because we have no selective control of either.
- If there has been an application of a pre-emergent to the proposed site within the last 30 to 45 days. Some of the programmed pre-emergent materials can inhibit the runners from spreading or will produce "looping runners", where the stolons grow laterally without establishing roots to tack to the soil.

Choosing the Appropriate Variety of Plugs:

Our first key principle of "Right Plant Right Place" is still very much in play here. Of the St. Augustine varieties, Floratam is the best choice for full sun areas and is readily available during most of the year. Customers should be aware that it does require full sun and adequate soil moisture. Floratam will not withstand inadequate sunlight or prolonged periods of drought without adequate irrigation. The best St. Augustine variety to install in a shady location is Seville. Seville is a dwarf St. Augustine variety; it has a shorter leaf surface and tighter internodes than Floratam. Be very careful to ensure that there is adequate sunlight for the turf to flourish. Even Seville will require 4 to 5 hours of filtered sunlight to survive.

Installation and Care of Grass Plugs

Floritam and Seville are the only two St. Augustine varieties approved for purchase and installation by our company. If there is some reason that Floritam or Seville cannot be found or another variety of St. Augustine is requested by the customer, contact our Technical Department before proceeding with the installation.

The Proper Installation of Plugs

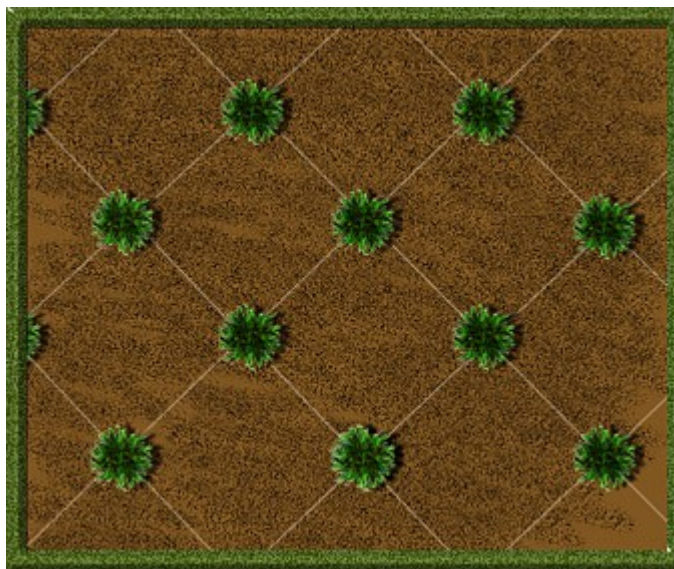
Equipment needed:

- Plant auger connected to a cordless drill or gas power auger. Small installs can be done with manual plug installers that are readily available at most Home Depot or Lowes.
- Two bags of Comand® which will treat 333 sq. ft. of turf for St Augustine plugs, or 222 sq. ft. of turf for Zoysia plugs.

Spacing of plugs:

- Plugs should be installed approximately 10 to 12 inches apart if the expected recovery timeline is three months or less. Plugs should be installed 14 to 18 inches apart if the expected recovery timeline is 4 to 6 months.
- Plugs should never be put closer than 6 inches because the recovery/growth process is actually slowed as it relates to lateral movement.
- Plugged areas larger than 40 square feet should be installed in offset rows (see picture) to encourage a repaired area that is not only full but not as bumpy under the foot.

Number of Grass Plugs to Plant Based On the Square Footage



SPACING DESIRED	NUMBER TO MULTIPLY YOUR SQ FOOTAGE BY
18" on center	multiply by 0.44
15" on center	multiply by 0.64
12" on center	multiply by 1.00
9" on center	multiply by 1.78
6" on center	multiply by 4.00

Installation and Care of Grass Plugs

Installation Process:

- Make sure you have taken the proper precautions as it relates to buried wires and irrigation lines prior to beginning and drilling of holes for plugs.
- Whenever possible, the areas to be plugged should be watered the evening prior to installation. This will aid in creating a uniform hole for plug installation and avoid the potential of having the dry soil wick the moisture out of the plugs and thus limiting their overall progress.
- Attention must be paid to the size of the hole that is made for each plug. If the holes are made too small in diameter, the plug will swell, push up out of the ground and die on the surface. If the holes are made too deeply, the holes will fill with water and the plugs will likely die of root rot. The hole should be deep enough as to place the lateral runners along the soil surface.
- Just like with an ornamental installation we want to have the diameter of the hole to be slightly larger than the plug. This will provide room for the plug to swell and a nice aerated area around the plug for the roots to easily establish.
- If you use a manual plugging tool you are likely to have little cubes of soil after you create the holes for the plugs. Make use of this soil by crumbling it on the top of the plugged area to act as backfill into the plug holes as it is watered in.
- Once the holes for the plugs are created, a top dressing of Comand® should be put down, prior to the Installation of plugs. Application rate will vary based on turf type being plugged.

Post-Installation Grow-in and Care

Fertility - The difference between a maintenance fertility program and a Grow-in fertility program:

- Our agronomic programs are designed to maintain a healthy landscape; they are not designed to grow-in turf. Plug installations require a more intensive fertility regime to speed up the grow-in period to quickly satisfy the customer. The intent is to deliver 1 pound of Nitrogen per 1000 square feet every 30 days. The preferred method is the "Spoon Feed" method that will allow you to deliver ¼ pound of N once a week or a ½ pound of N every two weeks.
 - During times of Nitrogen Blackout the application of Comand® will take the place of Nitrogen. Using the proper application rate of 24lbs per 100sq. ft. for St Augustine, or 36lbs per sq. ft. for Zoysia.

Suggested Fertility where shade/nitrogen restrictions are not a limiting factor:

- Immediately after installation, apply 12-2-14 (or 12-0-14 if no phosphorus is allowed by ordinance) at a rate of 4 pounds per 1000 sq. ft. Then apply Comand® using the proper application of 24lbs per 100sqft for St Augustine, or 36lbs per sq.ft. for Zoysia.
- 14 days later, repeat the 12-2-14 application at the same rate.
- Every 2 weeks thereafter until complete cover is established, apply 21-0-0 at 2.5 pounds per 1000 sq.ft.



Installation and Care of Grass Plugs

Suggested Fertility where shade is a limiting factor, but nitrogen restrictions are not:

- The fertility regime above can be utilized in shaded areas other than during the months of May through August.
- From May through August, the nitrogen rate in the grow-in program may result in excessive leaf growth that could be detrimental to the health of the plugs and any existing turf (see our GreenUP Protocol – Growing turf grass in the Shade). During this time, apply only the 2 applications of 12-2-14 to the plugged areas only and then follow the protocol for Growing Turf grass in the Shade. Comand can still be applied.

Insect and Disease Prevention

From May through August, lawn caterpillars and leaf spotting fungi are highly likely to become a concern. Acelepryn and Armada or Transom must be applied preventatively at the time of installation during this time.

Weed Control

Plugged areas must be monitored *closely* for weed intrusion; particularly for weeds that do not have selective control.

- Hand pulling is the primary means of weed control until the plugs begin to take root and may remain the most practical means of control for weeds that do not have selective treatments available.
- Do not apply any pre-emergence material such as Resolute or Pendimethalin whether liquid or granular to the plugged areas. These materials will inhibit the stolons from rooting properly.
- Granular Atrazine may be applied after rooting begins.
- When the plugs begin to root and lateral movement begins, weed control can and must be performed with the standard control methods.

Watering Recommendations: (Share with customer after installation in writing)

- Water by hand twice a day for 5 days
- Water by hand once a day for 5 days
- Water by hand every other day 10 days
- Then water via sprinkler system as per your local watering instructions

Mowing Recommendations: (Share with customer after installation in writing)

- It is likely for the plugs to be uprooted and destroyed if they are mowed before they become rooted. It is safe to mow plugs when you can grasp the leaf blades, pull upwards lightly and the plugs do not easily come out of the ground.
- After the plugs have rooted, they should be mowed every 5 to 7 days to encourage lateral fill in. Even if they are cutting off a small amount, it will contribute to a faster fill in.

Additional Comments

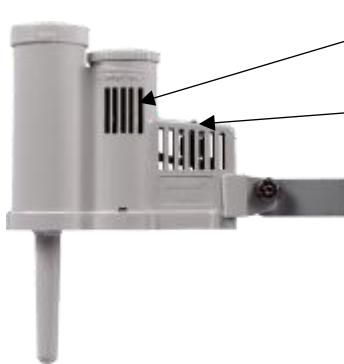
- If a repair is being performed for “Customer Satisfaction” reasons, meaning that we are not contractually liable for the full cost of the damage, but we are accepting some level of responsibility as a gesture of good will, have the customer share in some of the expense of the installation of the plugs. The customer may be more attentive to the care of the plugs when they are sharing in part of the investment.

Rain Sensors and State Statutes

Rain Sensors

Rain sensors postpone the scheduled operation of the irrigation system they are connected to, based on the amount of rainfall.

- Rain sensors have disks that absorb and dry out in a way similar to the turf and soil they are monitoring.
- When the equivalent of ½” of rainfall has occurred, the sensor will suspend the operation of the controller. After the disks dry out, the suspension is lifted and the controller resumes operation as programmed.



Location of disks

Button to press to test sensor.

Turn on a zone that can be seen operating from the rain sensor location. Press and hold down the button—the zone should turn off. Release the button—the zone should come back on. This is the best way to test a rain sensor.

Florida State Statute for Rain Sensors Chapter 373.62, Florida Statutes

“Any person who operates an automatic landscape irrigation system shall properly install, maintain, and operate technology that inhibits or interrupts operation of the system during periods of sufficient moisture.”

- We must also test anytime we do anything with any part of the system and report any problems to the owner.
- Quote the repair.
- A soil moisture sensor also qualifies as a rain shutoff device.

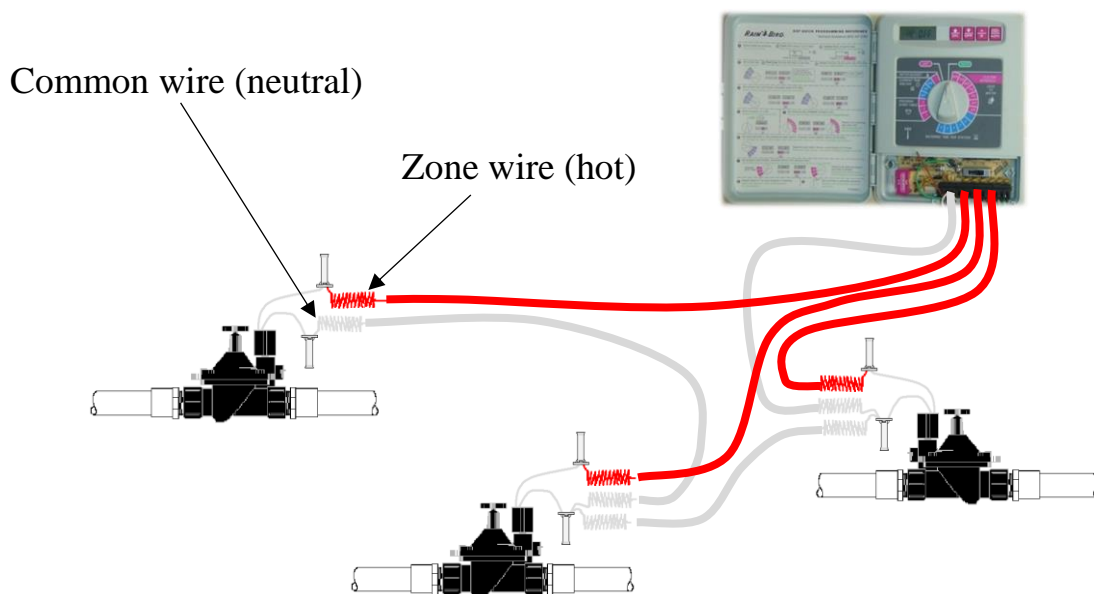
Irrigation Electricity

Line Voltage

- Line voltage is the standard 120V 20amp that is found at every receptical.
 - It supplies the power to irrigation controllers.
 - The controllers have transformers that turn the line voltage into 24V at .5amps.
 - Outdoor controllers have internal transformers
 - Indoor controllers have external transformers



The controllers run on 24 to 28 volts at .5amps. A zone will activate when 24 volts are sent to that particular zone.



Irrigation Electricity

Checking Irrigation Valve Circuit Stability with a Multimeter

To check the stability of the alternating current (AC) circuit—specifically the hot and common wire connection between the controller and the valves—you can use a multimeter to measure resistance.

1. Set Up Your Multimeter:

- Turn your multimeter to the **200 OHM setting**.
- Place the **black lead** on the **common wire** and the **red lead** on the **zone wire** you wish to test.

2. Take the Reading:

- The OHM reading you obtain reflects the **total resistance in the circuit**—from the controller to the valve solenoid, including any wire splices along the path.

3. Interpreting the Reading:

- A **normal resistance** reading for an irrigation valve is between 20 and 60 OHMs.
- Readings **below 20 OHMs** or **above 60 OHMs** may indicate an issue, such as:
 - A short circuit
 - A broken wire
 - Corrosion at a splice
 - A faulty solenoid

4. Next Steps if the Reading is Out of Range:

- If the resistance is outside the acceptable range, further diagnostics will be required to isolate and resolve the issue.

