# August Risk Management VTM

## Proper Following Distance: Give Yourself Time to React

**Training Goals**

By the end of this training, team members and managers should be able to explain why following distance prevents rear-end collisions, apply the 2-second rule, and increase spacing when conditions require more time to stop safely.

- Maintain at least 2 seconds of following distance in normal conditions
- Increase to 3–4 seconds or more in rain, fog, darkness, heavy traffic, poor roads, or limited visibility
- Follow company expectations for safe spacing, awareness, and defensive driving

**Why This Matters for Us**

Many preventable crashes happen when drivers follow too closely and do not leave enough time to react. Rear-end collisions often occur because a driver assumes traffic will keep moving, looks away briefly, or fails to adjust spacing for speed, weather, road conditions, or traffic flow.

**What Makes Following Too Closely Risky**

Following distance is one of the easiest safety margins to control, but it is often reduced by speed, distraction, impatience, weather, traffic, or poor road conditions.

**How to Check Your Following Distance**

1. Pick a fixed object ahead, such as a sign, pole, shadow, or road marking
2. When the vehicle ahead passes it, count: “one-thousand-one, one-thousand-two”
3. If you reach the object before finishing, increase your distance
4. Use 2 seconds as the minimum; add time when conditions are not ideal

**Common Accident Pattern**

5. Driver follows too closely
6. Traffic slows or stops unexpectedly
7. Driver reacts late and brakes hard
8. A rear-end collision occurs because the safety cushion was too small

**Company Expectations**

- Maintain a minimum 2-second following distance in normal conditions
- Increase spacing up to 4 seconds or more when visibility, traction, traffic, or driver alertness is reduced
- Do not tailgate, pressure, or crowd the vehicle ahead
- Slow down gradually when more space is needed
- Avoid distractions that reduce perception and reaction time

# August Risk Management VTM

**Accountability & Consequences**

Internal

- Coaching, retraining, discipline, and employee record documentation
- $500 payroll deduction if found at fault
- Escalated discipline for repeat behavior

External

- Injury risk to drivers and the public
- Claims, legal exposure, and increased insurance costs
- Vehicle damage and downtime

**Manager & Supervisor Responsibility**

Supervisors and managers must reinforce safe spacing, coach drivers, review rear-end incidents, and support Risk Management determinations.

**Discussion Prompts**

- Why is following distance measured in seconds instead of car lengths?
- What conditions require more than 2 seconds?
- What should you do if another driver is tailgating you?

**Key Takeaway**

**A safe following distance gives you time to see, think, react, and stop.**

Use 2 seconds as the minimum, add time when conditions worsen, and protect your reaction time with space.

**If conditions are not ideal — add time. Two seconds is the minimum, not the maximum.**

## Midsize Retail/Pharmacy Service Protocols

This Service Protocol covers treatment strategies for interior and exterior of customers including, but not limited to, Walgreens, CVS and Family Dollar for insect and rodent issues.

Each service will include inspection and treatment of the interior and exterior of the structure.

Upon arrival, meet with the Manager on duty, discuss with them any issues they have observed since the last service. Do not perform any work until you met with the Manager. Begin the service with an inspection of the property searching for Conditions, Avenues and Sources of pest activity. The inspection of the property will include the interior of the structure, the exterior of the building (from the foundation out 10 feet) and the perimeter of the property (10 feet from the structure to the property line).

**Perimeter**

- Inspect the perimeter of the property including the parking lot, parking lot islands, mulch beds, edge of property, dumpster area, etc.
    - Fire ant activity
        - Treat around mounds with Advion Fire Ant Bait.
        - If fire ant activity is observed on concrete/asphalt surfaces, follow fire ants back to mound and treat with Advion Fire Ant Bait.
        - Fire ants found on dumpster or mounds found in expansion joints can be treated with Temprid.
    - Roach and other crawling insect activity- apply either Intice Granular Bait or Advion Insect Granular Bait, depending on Material Rotation Chart, to mulched areas.

**Exterior**

- Insect Activity
    - Inspect the exterior of the structure.
    - Use Webster brush to remove spider webs, wasp nests and mud dauber nests from the front door area, windows, and drive thru pharmacy area (if present).
    - Treatment of structure/foundation interface
        - Apply exterior barrier materials according to the Material Rotation Chart
            - Liquid barrier applications are to be applied 1-foot up and 1-foot out from the foundation
            - When liquid barriers are not the primary material for the month, they are to be used as spot applications directly to trailing insects.
            - Granular residual materials are to be used in turf areas up to 10-feet away from the structure in a 2 to 5 foot barrier around the structure.
            - If concrete abuts up against foundation, do not use granular products. Make spot applications with Temprid to points of entry (doors, windows, etc.)
    - Apply liquid crack and crevice materials, according to Material Rotation Chart, between building walls and sidewalks on paved areas.

- Spot treat pharmacy drive-thru as required.

- Rodent Activity
  - Place one Protecta Evo Express Rodent Bait station (containing the concrete block)
    - inside the dumpster area
    - against back wall of the structure near the service entrance
    - If rodent activity is high or exterior conditions are conducive to rodent activity, place bait stations every 15-20 feet around the foundation of the structure.
  - All rodenticide bait is to be secured on rods inside the bait station
  - Service log sticker must be inside, dated with service date and attached to the interior of the bait station lid. Initial in the required area every month when rodent bait boxes are checked.
  - Close the bait station and ensure the lid is locked and secure.

**Interior Insect**

Retail/Grocery Area

- Inspect the front counter, gondolas, beverage coolers, aisles with food items/pet food and pharmacy area.
- If roach activity is present,
  - Make the appropriate gel bait applications based on the Material Rotation Chart only to voids and cracks and crevices.
  - Do not apply in areas where people can see of come in contact with them.
- If ant activity is present,
  - Spot treat trailing ants with Phantom.
  - Go back and look for trailing on the exterior of the structure.
  - Spot treat the entry points and treat nest with appropriate materials (if possible).
  - Bait on the exterior where appropriate
- Place Insect Detection Traps (IDTs) as needed, but only place where they are completely hidden from public view.

Non-Retail Areas

- Inspect product storage areas, offices, bathrooms, etc.
- When insect activity is present, make crack and crevice treatments with products dictated by the Material Rotation Chart depending on the insect pests that are encountered.
  - If insect bait is required, apply the products to shelving in a 3 dimensional pattern (up, down, back, front).
  - If liquid ant bait is required, ensure that it is secured in an ant bait station.
  - Apply either Intice Fine Granular Insect Bait or Advion Insect Granular Bait in void and mechanical areas as appropriate for crawling insect activity.

**Interior Rodent**

- Inspect front counter, gondolas, aisles with food items (including pet food), warehouse where food is kept, etc. for travel paths, potential entry points and harborage areas throughout the structure. Inspect the back roll-up receiving door for entry points.
- Based on your findings, place snap traps and glue traps (***DO NOT PLACE GLUE TRAPS IN CVS STORES***) in protected/concealed areas in areas of rodent activity. Follow the Massey Services Rodent Protocol until all activity is eliminated.
- Use a HEPA filter vacuum to remove rodent droppings.
- Any confirmed rodent activity will require the scheduling of Proactive Follow-ups every 2 days until activity is eliminated (no activity for 3 consecutive follow-ups).
- Unless prior approval has been given by a member of the Quality Assurance Department, do not place rodenticide bait inside of the structure.

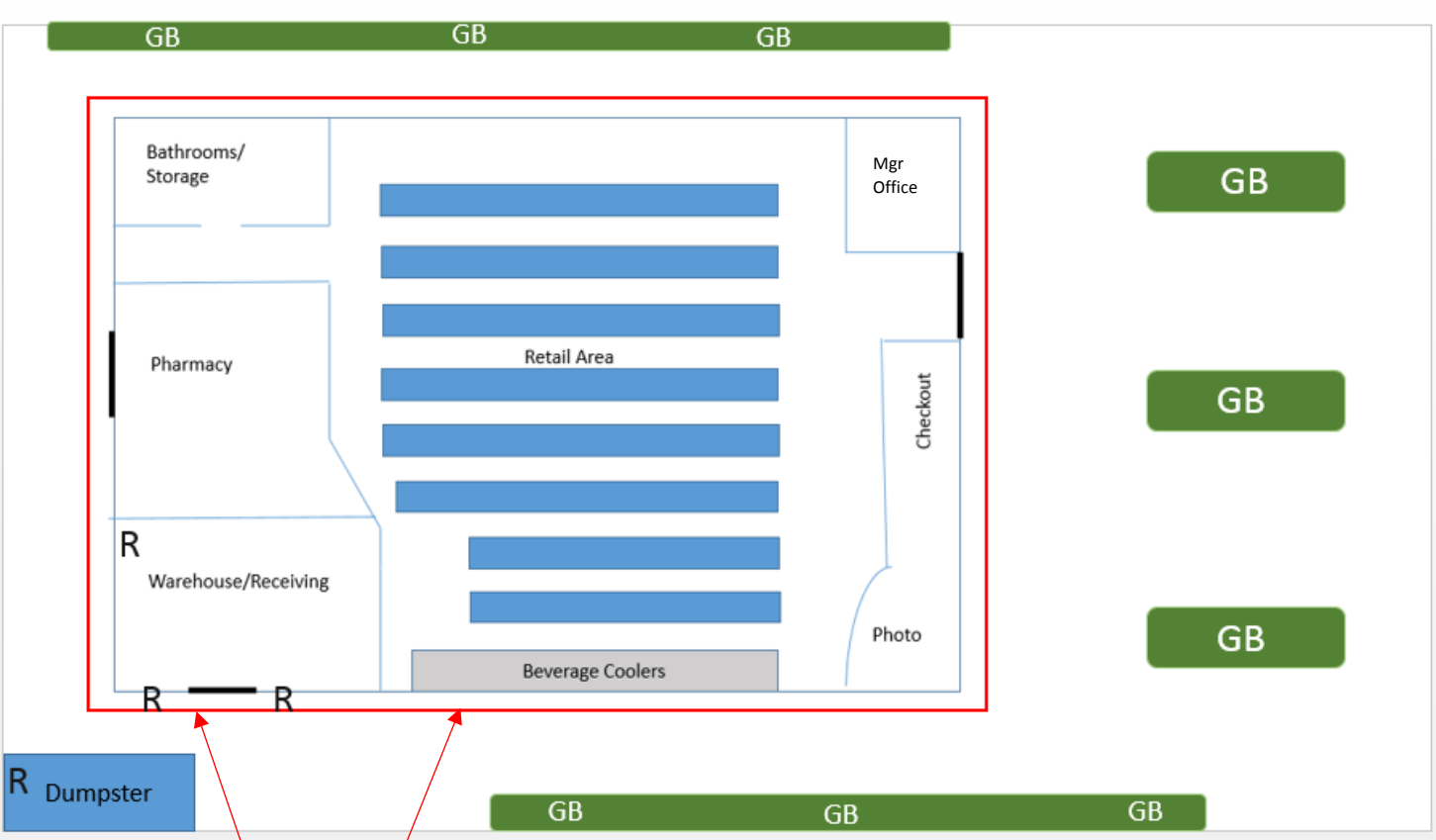
Document all activity, potential harborage areas, entry points, treatment performed, product usage, time in/time out, etc. on the Massey Services Commercial Service Report. In addition, communicate verbally with the Manager on duty your findings and efforts to eliminate potential and actual pest issues. Have the Manager on duty sign the Service Report and have them stamp it with the store stamp. Any significant pest pressure or sanitation issues must be reported to Service Center Management to determine follow-up needs.

**Walgreens Specific Actions**

On initial services, place a Rodent Log Book in the Manager's office. This will serve as a central record keeping point for rodent activity. Document all rodent activity observed on any service and continue to document it until activity ceases.

**CVS Specific Actions**

Calling the CVS FIXX Line is only required for initial starts in new locations and CVS work orders related to extra service requests, not regular scheduled service. All extra service requests for CVS will be assigned a Work Order Number that is to be included on the Extra Service Report. Upon arrival at the location meet with the manager and provide them the Work Order #. After completing the corrective service meet the manager to review the service and sign the Service Report. The manager will provide a completion code which is to be written on the Service Report. Before leaving the unit the technician must call the CVS FIXX Line, go through the automated prompts submitting the Work Order # and Completion Code which closes the work order. All extra service requests must be closed by calling the CVS FIXX Line at the conclusion of the service.




Exterior Barrier according to Material Rotation Chart

**R:** Rodent Placements

**GB**: Granular Bait in turf areas (edge of property, mulched areas, parking lot islands)

**Fabric Pests**

Insects that feed on natural fibers, animal byproducts and synthetic materials are considered fabric pests. These insects can damage clothing, upholstery, carpets and drapes. In some cases, these insects will feed on hair, furs, and animal hides, including preserved animals. Insects that can be categorized as fabric pests include:

- Carpet Beetles
  - Varied carpet beetle
  - Black carpet beetle
- Clothes Moths
  - Webbing clothes moth
  - Casemaking clothes moth

**Carpet Beetles**

All beetles undergo complete metamorphosis: egg, larvae, pupae, and adult. There are 2 main species of carpet beetles that can cause serious damage to fabrics, carpets, furs, and even stored food products. These 2 species are the varied carpet beetle and the black carpet beetle.

Adult varied carpet beetle.

Varied Carpet Beetle

*Identification.* The adult varied carpet beetle is approximately 1/10 of an inch in length and oval in shape. Their bodies are white, yellowish-orange and black in color. The larvae are slightly larger than the adults. They are cream colored and their bodies are covered in in dense hair. The way the hairs are attached to the bodies of the larvae, gives them a striped look. When larvae molt, they leave behind brown, shell-like, bristly-looking cast skins.

*Biology*. Adult females will lay an average of 40 eggs which usually hatch within 18 days of being laid. The larval stage, the stage responsible for damaging goods, can last anywhere from 230 to 630 days, depending on the environmental conditions and food sources available.


Larval stage of the varied carpet beetle.

Black Carpet Beetle

*Identification*. The adult and larval stages of the black carpet beetle are completely different in physical appearance from the varied carpet beetle. The adults are approximately 1/8 to 3/16 of an inch in length and are shiny black to dark brown in color. The larvae are shiny, smooth, and hard bodied with short, stiff hairs covering the body. Their bodies taper towards the end, terminating in a cluster of long hairs.

Biology. On average, adult females will lay about 90 eggs which will hatch in 6 to 16 days. The larval stage takes from 166- 330 days, depending on food sources and environmental conditions. Adults can live between 30 and 60 days.


**Adult black carpet beetle.**

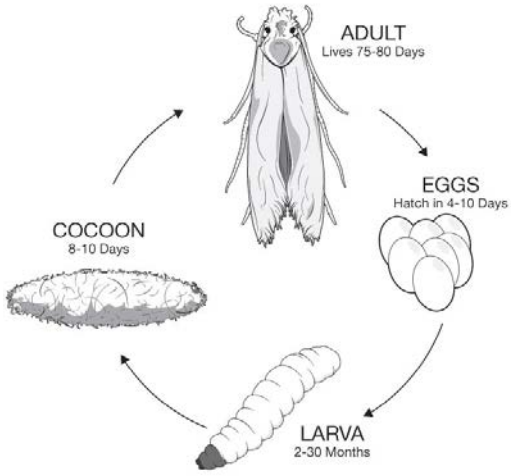
Behavior of Varied Carpet Beetle and Black Carpet Beetle

Outdoors, females will lay eggs in birds' nests, bee hives, wasps nests because they contain dead insects, feathers, beeswax, etc. that the larvae will feed on once they hatch. In many instances, these locations have been the sources of infestation for populations found inside structures. Once beetles make their way indoors, they will lay eggs on woolen items, carpets, animal skins, stuffed animals, dried plant products, etc. that the larvae will use for food.

**Clothes Moths**

Moths undergo complete metamorphosis and just as with carpet beetles, it's the larval stage of these insects that are responsible for the damage to anything consisting of natural fibers. The adult stage does not feed. There are 2 species of clothes moths most often dealt with, the webbing clothes moth and the casemaking clothes moth.

Adult clothes moths are not attracted to light but can often be observed near the source of the infestation. They prefer areas that are dark and undisturbed; attics, closets, and basements.




**Clothes moths undergo complete metamorphosis: egg, larvae, pupae and adult. The adult moths do not feed, all damage is done by the larval stage.**

Webbing Clothes Moth

*Identification*. Adult moths are about ½ inch long and cream to golden colored with a tuft of red hairs on top of the head. The edges of their wings are fringed. Larvae have a brown head and their bodies are white to cream colored. Larvae will spin silk like feeding tunnel or webbing across the fabric they are feeding on.


**The webbing clothes moth is uniformly buff/cream colored with a tuft of red hairs on its head.**

Casemaking Clothes Moth

Identification. The casemaking clothes moth adult is approximately ½ inch in length. They are similar in appearance to the webbing clothes moth. They have a tuft of hairs on their head that is slightly lighter than the webbing clothes moth and have their wings are darker with indistinct, dark specks. Larvae are white with a brown head and always carry a silken case with them as they move around to feed. They will never abandon this feeding tube and it grows as they grow. The case is spun from threads of the fabrics they are feeding on, so they can be difficult to see.

**Adult casemaking clothes moths are darker in color than the webbing clothes moth with specks on their wings and a lighter colored tuft of hair on their head.**

Biology of the Webbing Clothes Moth and Casemaking Clothes Moth

The biology of the webbing clothes moth and the casemaking clothes moth are nearly identical. Adult females can lay 40-50 eggs over a 2-3 week time period. Once they have completed laying eggs, they die. The eggs are laid directly onto the fabric and attached with a sticky secretion by the female. Once the eggs hatch, the larvae will feed anywhere from 35 days to 2 ½ years.

**The larval stage of the casemaking clothes moth is white with a brown head and they carry a silken tube with them as they eat.**

Behavior of the Webbing Clothes Moth and Casemaking Clothes Moth

The larval stage will feed on and damage nearly anything composed of wool. This includes clothing, draperies, upholstered furniture, tapestries, carpets and felt pads in pianos. Clothes moths will also consume synthetic and cotton fibers if they are mixed with wool. Damage usually occurs in hidden areas of the fabric. These areas may include: underside of rugs, crevices of furniture, carpeted areas under furniture, and seams of clothing. Fabrics that are stained with perspiration are more likely to be damaged.


**Damage to items containing wool will most likely be found on the underside or in hidden areas.**

Crickets and Silverfish

In very rare inseances, both crickets and silverfish have been known to eat into fabrics. Although much less common than the above pests they will be usually be detected in Massey's monitor traps if they are doing the damage.

**Management of Fabric Pests**

- Perform a complete inspection to determine the source of the infestation.
    - Inspect materials of plant and animal origin.
        - Products made of wool or feathers, rugs, tapestries, etc.
        - If the Customer has pets, inspect areas where pet hair may accumulate such as behind and under baseboards, in sofa cushions or within pocket door slider areas.
        - There have been instances where the source of the infestation was coming from outside (bird's nest outside the window or in the attic). Inspect these areas and remove the nests if possible. The use of exclusionary methods may be warranted.
    - For beetles, look for live adults and larvae.
    - For clothes moths, the silken webbing or cases will be attached under furniture or will be dangling from the ceiling. Inspect nearby air vents and door frames for the presence of larvae.
- Dust wall voids and behind baseboards.
- If found on carpets or rugs
    - Vacuum thoroughly to remove as much of the population as possible.
    - Treat carpets and rugs (both sides) with a residual.
        - In some cases it may be beneficial to recommend a professional rug cleaning to kill all stages of the pest's life cycle within the thick wool that our materials cannot reach.
        - Communicate to the Customer the importance of frequent vacuuming of carpets or rugs where activity is present to maintain control after treatment.
- If found on clothes, drapes or tapestries, the Customer must have these items dry cleaned and kept inside plastic bags (breathable polypropylene zippered bags are recommended)
- After treatment, pheromone traps to attract males specific to the pest, can be placed in areas near infested materials to determine if any more adults are present.
- Place one pheromone trap for every 2-3 rooms with infested materials, or one trap every 1,200 square feet. Placing too many traps in an area will repel the pest in question.
- Document the date of placement on the trap.
- Follow-up every 14 days until all activity has ceased.
- Record trap counts and the date on each follow-up inspection. Over time the number of adults trapped in the traps should decline.

**FL/LA**

# WEEKLY TRAINING SESSION

## Dollar Spot Fungus

**Topic Category:** Lawn

**Recordable Verifiable Training Hours**: 1

**Objectives:** This lesson is designed to teach the basic identification, biology, and management of dollar spot fungus.

**Length of lesson:** Approx 60 minutes.

**Materials needed:**

- Training outline
- Dollar spot fungus Protocol (GreenUp Protocols\Individual Protocols\Lawn Damaging Diseases)
- Samples from the field, if available
    - If samples of the disease are not available, color photos can be used.
- Pre and Post tests

**Training Guidelines:**

- This training qualifies for Department of Agriculture ID Card Holder Training. Complete a Department of Agriculture ID Card Holder Training for each Team Member and maintain it in their personnel file at your office.

Make copies of the tests and training material 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 all Team Members to complete the pre-test.
    - Collect the pre-test and hand out the Verifiable Training Record form.
- Distribute and review the training materials on dollar spot fungus. 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 the materials in the lesson, ask questions to verify the material has been understood.
- Hand out the post-tests. When complete, grade the tests and record the score on the Verifiable Training Record form.
- Collect tests and place with the verifiable materials in the Service Center Verifiable Training File.
- Make copies of the Verifiable Training Record and place in each Team Member's personal training file.
- Complete all Weekly Training through Massey University.

FL/LA

# WEEKLY TRAINING SESSION

## Dollar Spot Fungus

### Training Outline

1. Review the protocol for dollar spot fungus. Point out the key items including:
    - Description of the disease. Pass around samples or pictures to help in identification of the disease.
    - Host plants
    - Typical symptoms (how to ID this problem)
    - Conducive conditions
    - Control measures
    - Disease triangle and breaking the cycle by removing one of the three components
    - The importance of cultural control
    - Explain proper chemical control

FL/LA

# WEEKLY TRAINING SESSION

## Dollar Spot Fungus

Name _____ Date _____

**Pre/ Post Test**

1. T or F Dollar spot fungus most active in the spring.

2. Describe the symptoms of dollar spot fungus.
   a. Large circular patterns of damaged grass with yellowing on the borders.
   b. Fist sized areas of dead grass with a greasy appearance.
   c. Gray to black soot like mold with prominent white and yellow masses.
   d. Two to three inch areas of damaged grass with leaf spots on the grass blades.

3. T or F Warm temperatures, high humidity, and extended leaf wetness will favor the development of dollar spot fungus.

4. T or F Dollar spot fungus is a common problem in lawns that are low in nitrogen fertility.

5. T or F Dollar spot fungus symptoms can literally appear over night.

6. T or F Moderate rates of quick release nitrogen will encourage recovery from dollar spot fungus.

7. T or F The fungicide we use to control dollar spot fungus is Transom.

8. T or F This fungicide is applied using the backpack sprayer and the 11010 spray tip.

FL/LA

# WEEKLY TRAINING SESSION

## Dollar Spot Fungus

Answer Key

**Pre/ Post Test**

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GREENUP LAWN, TREE & SHRUB CARE
SERVICE PROTOCOLS

# Dollar Spot Fungus

In the summer, there are many fungal pathogens that will attack turf grass blades. Warm temperatures, ample rainfall and actively growing turf during this time of year meet all of the requirements for a disease to flourish. One of the more common diseases we see in the Southern U.S. is dollar spot fungus.

## DOLLAR SPOT FUNGUS

All species of warm and cool season grasses are affected by dollar spot fungus. It is typically observed from late spring to early fall and is most frequently seen during periods of warm weather, high humidity and frequent rainfall.

### Pathogen

The fungi *Lenzia* and *Moellerodiscus spp*. (formerly *Sclerotinia homoeocarpa*) causes Dollar Spot Fungus.

### Symptoms

Symptoms of dollar spot include sunken, circular patches that measure up to several inches on turfgrass. The patches turn from brown to straw color and may eventually group together, forming irregularly shaped areas. Infected leaves may display small lesions that turn from yellow-green to straw color with a reddish-brown border. The lesions are typically on the margin of the leaves, but can extend the full width of the leaf. Multiple lesions may occur on a single leaf blade. Mycelia may be present.

**Dollar Spot Fungus in fine bladed grass**

**Dollar spot fungus in St. Augustine grass**

GREENUP LAWN, TREE & SHRUB CARE
SERVICE PROTOCOLS

# Dollar Spot Fungus

## Conducive Conditions

Typical summertime conditions are required for the disease to thrive and spread. Environmental factors that favor infection include:

- Temperatures in the mid-80s to low 90s
- High humidity >80%
- Prolonged leaf wetness (3 hours or more ).
    - *Research has shown that at higher temperatures (>90°) the pathogen needs only 1 hour of leaf wetness to infect the plant.*

Turf is most susceptible to dollar spot fungus when it is deficient in nitrogen and with insufficient soil moisture (dry soil, but wet turf leaves).

The fungus can produce a large amount of spores in a very short time (up to several million spores in just a couple days). As a result, symptoms can spread suddenly once conditions become conducive. It is not uncommon for this disease to literally appear "overnight".

## Control

Once the disease has infected the plant, control is required. To control this disease, refer to the Disease Triangle (Figure 3). In order for a disease to thrive and reproduce, it needs three things:

- The Pathogen
- The Host
- The Conducive condition

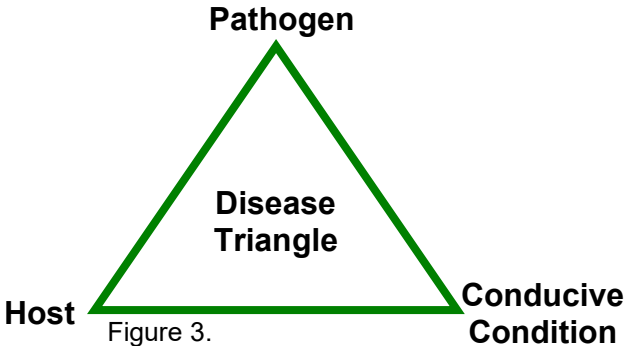

Figure 3.

GREENUP LAWN, TREE & SHRUB CARE
SERVICE PROTOCOLS

## Dollar Spot Fungus

The removal of any one of these three factors will result in the control of the disease. The Disease Triangle for dollar spot fungus is represented by Figure 4.

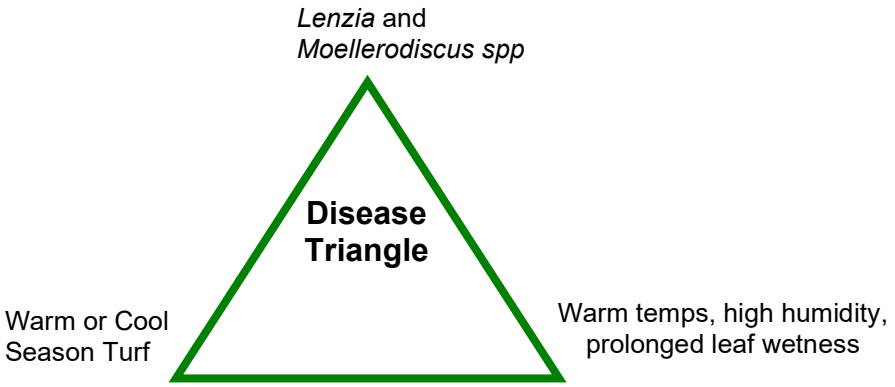


Figure 4.

Cultural methods are always preferred for disease control. The cultural control methods for dollar spot fungus include:

- Proper nitrogen fertilization.
- An application of quick release nitrogen applied at a moderate rate (0.5 pounds per 1000 sq. ft.) will benefit control efforts of dollar spot fungus.
- Avoid prolonged leaf wetness. This may be difficult during the rainy season, but educate your customers to not water just before sunset as this will provide the conducive conditions even when the rain does not.
- Avoid frequent shallow irrigation schedules
- Alleviate compacted soils by aerating. Compacted soils weaken the turf making it more susceptible to disease infestation.
- Reduce thatch
- Increase air circulation
- Avoid walking or mowing infected areas. The spores can be easily spread on the soles of shoes and mower blades. Walk through an infected area only if making a disease treatment.

When the severity of the problem warrants a fungicide application, spot treat using Transom, Pillar G or Armada WDG Fungicide. Transom is the first fungicide option. Apply Transom at a rate of 3 ounces per gallon of water per 1000 sq. ft. using the 8010E spray tip. One gallon should cover 600 sq. ft. Multiple applications may be required during periods of favorable conducive conditions. After a fungicide application is made, the disease will temporarily stop spreading and the turf will begin to recover.

FL/LA

# WEEKLY TRAINING SESSION

## GreenUP Protocol – Tuttle Mealybug

**Topic Category:** Lawn

**Recordable Verifiable Training Hours**: 0.5

**Objectives:** This lesson is designed to provide information on the identification and control of the Tuttle Mealybug.

**Length of lesson:** Approx 30 minutes.

**Materials needed:**

- Training Guideline
- Tuttle Mealybug Protocol Training Document
- Collect samples of Tuttle Mealybug 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 the Tuttle Mealybug.
- 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 Training VTM's through Massey University.

FL/LA

# WEEKLY TRAINING SESSION

## GreenUP Protocol – Tuttle Mealybug

Name _____ Date _____

### PRE & POST TEST

1. T or F The Tuttle Mealybug was introduced into Florida in 2012.
2. T or F The Tuttle Mealybug is a pest of turfgrass.
3. T or F Mealybugs are similar to scales, but they have the ability to move readily across the plant.
4. T or F The mature male mealybug is a small gnat-like insect.
5. T or F Mealybugs produce a powdery white waxy substance that covers their bodies.
6. T or F The mature female mealybug is a small gnat-like insect.
7. T or F The mature female mealybug lays eggs in protected areas of the plant.
8. T or F Symptoms of Tuttle Mealybug damage appear as patches of stunted growth with reddish-purple grass blades.
9. T or F Turf infested with Tuttle Mealybug will show a white powdery substance and sooty mold at the leaf sheath area.
10. T or F Tuttle Mealybugs are very small and drop off the plant easily when inspecting.
11. T or F Tuttle Mealybugs harbor in the leaf sheath area.
12. T or F Tuttle Mealybugs are about 5 millimeters long and greenish in color.
13. T or F A magnifying glass or jeweler's loop will be needed to identify young mealybugs.
14. T or F Control for Tuttle Mealybugs is achieved with Bifenthrin.

FL/LA

# WEEKLY TRAINING SESSION

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11. T or F Tuttle Mealybugs harbor in the leaf sheath area.
12. T or F Tuttle Mealybugs are about 5 millimeters long and greenish in color.
13. T or F A magnifying glass or jeweler's loop will be needed to identify young mealybugs.
14. T or F Control for Tuttle Mealybugs is achieved with Bifenthrin.

FL/LA

GREENUP SERVICE PROTOCOLS

# Tuttle Mealybug

## Overview

The Tuttle Mealybug has been recognized as a potential turfgrass pest in Florida since 1975. However, there have been very few sightings in the years past until it was collected in 2011 and again in 2012 as a pest of Zoysiagrass in Orange County. The Tuttle Mealybug is now found in many of our service areas.

## Biology

Little is known about the exact biology of the Tuttle Mealybug, but the biology of mealybugs in general is as follows: Mealybugs are very similar to scales in many ways; they feed with piercing-sucking mouthparts, but they have the ability to move across the plant as they feed rather than remaining in one area. Mealybugs overwinter as eggs or crawlers in protected areas such as the crevices between the leaves, sheath and stem. Crawlers emerge from protected areas in the spring and begin to feed. As the crawlers begin to mature, they become covered with a whitish powdery-wax material. Mature male mealybugs are very small gnat-like insects. Mature female mealybugs do not develop wings, but remain in the same form and lay eggs in the protected areas previously mentioned.

## Symptoms of Damage

Symptoms of Tuttle Mealybug damage in Zoysiagrass appear as patches of stunted growth with reddish-purple grass blades throughout the area. See Figures 1 and 2.

## Identifying the Activity and Finding the Insect

Upon close inspection, a white powdery substance and sooty mold can be seen on the leaf sheath area. See Figure 3. The stem and leaf area should be removed from the turf using a knife or other cutting tool. Holding the plant part over a white sheet of paper, begin to peal the leaf from the sheath to look for more of the waxy substance and the small (less than 2 millimeters) pinkish mealy bugs. This is done over a white sheet of paper, because small crawlers and the more mature stages can easily drop from the plant. A loop (small magnifying glass) will be needed to identify the insect. The insects can also be found by carefully placing the tip of a knife blade into the area of the leaf that connects to the sheath to push out the small insects from within the area. See Figures 4 and 5.

## Control

Considering the habits of the insect, a systemic insecticide is required. The best treatment is Dinotefuran. Dinotefuran is the active ingredient in Safari, but Safari is not labeled for turf. Zylam contains Dinotefuran and is labeled for turf. Like Safari, Zylam is expensive; use only as required. Other treatment options would be Arena or Imidacloprid. The customer should irrigate after treatment to apply ¼ inch of water.

# GREENUP SERVICE PROTOCOLS

## Tuttle Mealybug

Figure 1 – Overview of Damage

# Tuttle Mealybug

Figure 2 – Close up of Damage

# Tuttle Mealybug

Figure 3 – Waxy Material and Location of Activity

Figure 4 – Tuttle Mealybugs Close Up

# Tuttle Mealybug

Figure 5 – Tuttle Mealybug with White Wax

GA

# WEEKLY TRAINING SESSION

## Dollar Spot Fungus

**Topic Category:** Lawn

**Recordable Verifiable Training Hours**: 1

**Objectives:** This lesson is designed to teach the basic identification, biology, and management of dollar spot fungus.

**Length of lesson:** Approx 60 minutes.

**Materials needed:**

- Training outline
- Dollar spot fungus Protocol (GreenUp Protocols\Individual Protocols\Lawn Damaging Diseases)
- Samples from the field, if available
    - If samples of the disease are not available, color photos can be used.
- Pre and Post tests

**Training Guidelines:**

- This training qualifies for Department of Agriculture ID Card Holder Training. Complete a Department of Agriculture ID Card Holder Training for each Team Member and maintain it in their personnel file at your office.

Make copies of the tests and training material 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 all Team Members to complete the pre-test.
    - Collect the pre-test and hand out the Verifiable Training Record form.
- Distribute and review the training materials on dollar spot fungus. 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 the materials in the lesson, ask questions to verify the material has been understood.
- Hand out the post-tests. When complete, grade the tests and record the score on the Verifiable Training Record form.
- Collect tests and place with the verifiable materials in the Service Center Verifiable Training File.
- Make copies of the Verifiable Training Record and place in each Team Member's personal training file.
- Complete all Weekly Training through Massey University.

GA

# WEEKLY TRAINING SESSION

## Dollar Spot Fungus

### Training Outline

1. Review the protocol for dollar spot fungus. Point out the key items including:
    - Description of the disease. Pass around samples or pictures to help in identification of the disease.
    - Host plants
    - Typical symptoms (how to ID this problem)
    - Conducive conditions
    - Control measures
    - Disease triangle and breaking the cycle by removing one of the three components
    - The importance of cultural control
    - Explain proper chemical control

GA

# WEEKLY TRAINING SESSION

## Dollar Spot Fungus

Name _____ Date _____

**Pre/ Post Test**

1. T or F Dollar spot fungus most active in the spring.

2. Describe the symptoms of dollar spot fungus.
   a. Large circular patterns of damaged grass with yellowing on the borders.
   b. Fist sized areas of dead grass with a greasy appearance.
   c. Gray to black soot like mold with prominent white and yellow masses.
   d. Two to three inch areas of damaged grass with leaf spots on the grass blades.

3. T or F Warm temperatures, high humidity, and extended leaf wetness will favor the development of dollar spot fungus.

4. T or F Dollar spot fungus is a common problem in lawns that are low in nitrogen fertility.

5. T or F Dollar spot fungus symptoms can literally appear over night.

6. T or F Moderate rates of quick release nitrogen will encourage recovery from dollar spot fungus.

7. T or F The fungicide we use to control dollar spot fungus is Transom.

8. T or F This fungicide is applied using the backpack sprayer and the 11010 spray tip.

GA

# WEEKLY TRAINING SESSION

## Dollar Spot Fungus

Answer Key

**Pre/ Post Test**

1. T or F Dollar spot fungus most active in the spring.

2. Describe the symptoms of dollar spot fungus.
   a. Large circular patterns of damaged grass with yellowing on the borders.
   b. Fist sized areas of dead grass with a greasy appearance.
   c. Gray to black soot like mold with prominent white and yellow masses.
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8. T or F This fungicide is applied using the backpack sprayer and the 11010 spray tip.

GA

GREENUP LAWN, TREE & SHRUB CARE
SERVICE PROTOCOLS

# Dollar Spot Fungus

In the summer, there are many fungal pathogens that will attack turf grass blades. Warm temperatures, ample rainfall and actively growing turf during this time of year meet all of the requirements for a disease to flourish. One of the more common diseases we see in the Southern U.S. is dollar spot fungus.

## DOLLAR SPOT FUNGUS

All species of warm and cool season grasses are affected by dollar spot fungus. It is typically observed from late spring to early fall and is most frequently seen during periods of warm weather, high humidity and frequent rainfall.

### Pathogen

The fungi *Lenzia* and *Moellerodiscus spp*. (formerly *Sclerotinia homoeocarpa*) causes Dollar Spot Fungus.

### Symptoms

Symptoms of dollar spot include sunken, circular patches that measure up to several inches on turfgrass. The patches turn from brown to straw color and may eventually group together, forming irregularly shaped areas. Infected leaves may display small lesions that turn from yellow-green to straw color with a reddish-brown border. The lesions are typically on the margin of the leaves, but can extend the full width of the leaf. Multiple lesions may occur on a single leaf blade. Mycelia may be present.

**Dollar Spot Fungus in fine bladed grass**

**Dollar spot fungus in St. Augustine grass**

GREENUP LAWN, TREE & SHRUB CARE
SERVICE PROTOCOLS

# Dollar Spot Fungus

## Conducive Conditions

Typical summertime conditions are required for the disease to thrive and spread. Environmental factors that favor infection include:

- Temperatures in the mid-80s to low 90s
- High humidity >80%
- Prolonged leaf wetness (3 hours or more ).
    - *Research has shown that at higher temperatures (>90°) the pathogen needs only 1 hour of leaf wetness to infect the plant.*

Turf is most susceptible to dollar spot fungus when it is deficient in nitrogen and with insufficient soil moisture (dry soil, but wet turf leaves).

The fungus can produce a large amount of spores in a very short time (up to several million spores in just a couple days). As a result, symptoms can spread suddenly once conditions become conducive. It is not uncommon for this disease to literally appear "overnight".

## Control

Once the disease has infected the plant, control is required. To control this disease, refer to the Disease Triangle (Figure 3). In order for a disease to thrive and reproduce, it needs three things:

- The Pathogen
- The Host
- The Conducive condition

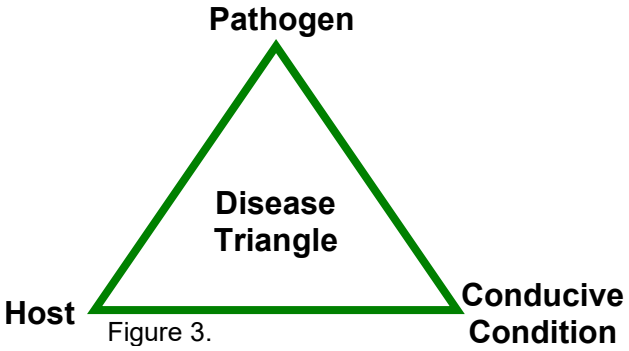

Figure 3.

GREENUP LAWN, TREE & SHRUB CARE
SERVICE PROTOCOLS

## Dollar Spot Fungus

The removal of any one of these three factors will result in the control of the disease. The Disease Triangle for dollar spot fungus is represented by Figure 4.

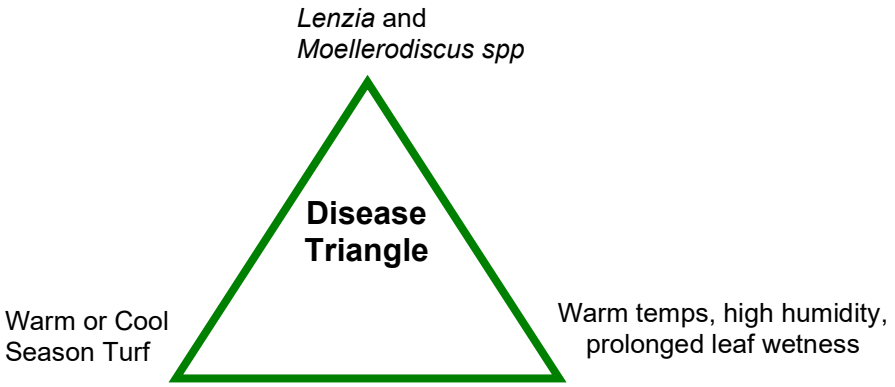


Figure 4.

Cultural methods are always preferred for disease control. The cultural control methods for dollar spot fungus include:

- Proper nitrogen fertilization.
- An application of quick release nitrogen applied at a moderate rate (0.5 pounds per 1000 sq. ft.) will benefit control efforts of dollar spot fungus.
- Avoid prolonged leaf wetness. This may be difficult during the rainy season, but educate your customers to not water just before sunset as this will provide the conducive conditions even when the rain does not.
- Avoid frequent shallow irrigation schedules
- Alleviate compacted soils by aerating. Compacted soils weaken the turf making it more susceptible to disease infestation.
- Reduce thatch
- Increase air circulation
- Avoid walking or mowing infected areas. The spores can be easily spread on the soles of shoes and mower blades. Walk through an infected area only if making a disease treatment.

When the severity of the problem warrants a fungicide application, spot treat using Transom, Pillar G or Armada WDG Fungicide. Transom is the first fungicide option. Apply Transom at a rate of 3 ounces per gallon of water per 1000 sq. ft. using the 8010E spray tip. One gallon should cover 600 sq. ft. Multiple applications may be required during periods of favorable conducive conditions. After a fungicide application is made, the disease will temporarily stop spreading and the turf will begin to recover.

GA

# WEEKLY TRAINING SESSION

## GreenUP Protocol – Tuttle Mealybug

**Topic Category:** Lawn

**Recordable Verifiable Training Hours**: 0.5

**Objectives:** This lesson is designed to provide information on the identification and control of the Tuttle Mealybug.

**Length of lesson:** Approx 30 minutes.

**Materials needed:**

- Training Guideline
- Tuttle Mealybug Protocol Training Document
- Collect samples of Tuttle Mealybug 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 the Tuttle Mealybug.
- 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 Training VTM's through Massey University.

GA

# WEEKLY TRAINING SESSION

## GreenUP Protocol – Tuttle Mealybug

Name _____ Date _____

### PRE & POST TEST

1. T or F The Tuttle Mealybug was introduced into Florida in 2012.
2. T or F The Tuttle Mealybug is a pest of turfgrass.
3. T or F Mealybugs are similar to scales, but they have the ability to move readily across the plant.
4. T or F The mature male mealybug is a small gnat-like insect.
5. T or F Mealybugs produce a powdery white waxy substance that covers their bodies.
6. T or F The mature female mealybug is a small gnat-like insect.
7. T or F The mature female mealybug lays eggs in protected areas of the plant.
8. T or F Symptoms of Tuttle Mealybug damage appear as patches of stunted growth with reddish-purple grass blades.
9. T or F Turf infested with Tuttle Mealybug will show a white powdery substance and sooty mold at the leaf sheath area.
10. T or F Tuttle Mealybugs are very small and drop off the plant easily when inspecting.
11. T or F Tuttle Mealybugs harbor in the leaf sheath area.
12. T or F Tuttle Mealybugs are about 5 millimeters long and greenish in color.
13. T or F A magnifying glass or jeweler's loop will be needed to identify young mealybugs.
14. T or F Control for Tuttle Mealybugs is achieved with Bifenthrin.

GA

# WEEKLY TRAINING SESSION

## GreenUP Protocol – Tuttle Mealybug

Name _____ Date _____

### PRE & POST TEST

1. T or F The Tuttle Mealybug was introduced into Florida in 2012.
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14. T or F Control for Tuttle Mealybugs is achieved with Bifenthrin.

GA

GREENUP SERVICE PROTOCOLS

# Tuttle Mealybug

## Overview

The Tuttle Mealybug has been recognized as a potential turfgrass pest in Florida since 1975. However, there have been very few sightings in the years past until it was collected in 2011 and again in 2012 as a pest of Zoysiagrass in Orange County. The Tuttle Mealybug is now found in many of our service areas.

## Biology

Little is known about the exact biology of the Tuttle Mealybug, but the biology of mealybugs in general is as follows: Mealybugs are very similar to scales in many ways; they feed with piercing-sucking mouthparts, but they have the ability to move across the plant as they feed rather than remaining in one area. Mealybugs overwinter as eggs or crawlers in protected areas such as the crevices between the leaves, sheath and stem. Crawlers emerge from protected areas in the spring and begin to feed. As the crawlers begin to mature, they become covered with a whitish powdery-wax material. Mature male mealybugs are very small gnat-like insects. Mature female mealybugs do not develop wings, but remain in the same form and lay eggs in the protected areas previously mentioned.

## Symptoms of Damage

Symptoms of Tuttle Mealybug damage in Zoysiagrass appear as patches of stunted growth with reddish-purple grass blades throughout the area. See Figures 1 and 2.

## Identifying the Activity and Finding the Insect

Upon close inspection, a white powdery substance and sooty mold can be seen on the leaf sheath area. See Figure 3. The stem and leaf area should be removed from the turf using a knife or other cutting tool. Holding the plant part over a white sheet of paper, begin to peal the leaf from the sheath to look for more of the waxy substance and the small (less than 2 millimeters) pinkish mealy bugs. This is done over a white sheet of paper, because small crawlers and the more mature stages can easily drop from the plant. A loop (small magnifying glass) will be needed to identify the insect. The insects can also be found by carefully placing the tip of a knife blade into the area of the leaf that connects to the sheath to push out the small insects from within the area. See Figures 4 and 5.

## Control

Considering the habits of the insect, a systemic insecticide is required. The best treatment is Dinotefuran. Dinotefuran is the active ingredient in Safari, but Safari is not labeled for turf. Zylam contains Dinotefuran and is labeled for turf. Like Safari, Zylam is expensive; use only as required. Other treatment options would be Arena or Imidacloprid. The customer should irrigate after treatment to apply ¼ inch of water.

GA

# GREENUP SERVICE PROTOCOLS

## Tuttle Mealybug

Figure 1 – Overview of Damage

GREENUP SERVICE PROTOCOLS

# Tuttle Mealybug

Figure 2 – Close up of Damage

GREENUP SERVICE PROTOCOLS

# Tuttle Mealybug

Figure 3 – Waxy Material and Location of Activity

Figure 4 – Tuttle Mealybugs Close Up

GREENUP SERVICE PROTOCOLS

# Tuttle Mealybug

Figure 5 – Tuttle Mealybug with White Wax

TX

# WEEKLY TRAINING SESSION

## Dollar Spot Fungus

**Topic Category:** Lawn

**Recordable Verifiable Training Hours**: 1

**Objectives:** This lesson is designed to teach the basic identification, biology, and management of dollar spot fungus.

**Length of lesson:** Approx 60 minutes.

**Materials needed:**

- Training outline
- Dollar spot fungus Protocol (GreenUp Protocols\Individual Protocols\Lawn Damaging Diseases)
- Samples from the field, if available
    - If samples of the disease are not available, color photos can be used.
- Pre and Post tests

**Training Guidelines:**

- This training qualifies for Department of Agriculture ID Card Holder Training. Complete a Department of Agriculture ID Card Holder Training for each Team Member and maintain it in their personnel file at your office.

Make copies of the tests and training material 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 all Team Members to complete the pre-test.
    - Collect the pre-test and hand out the Verifiable Training Record form.
- Distribute and review the training materials on dollar spot fungus. 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 the materials in the lesson, ask questions to verify the material has been understood.
- Hand out the post-tests. When complete, grade the tests and record the score on the Verifiable Training Record form.
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- Make copies of the Verifiable Training Record and place in each Team Member's personal training file.
- Complete all Weekly Training through Massey University.

TX

# WEEKLY TRAINING SESSION

## Dollar Spot Fungus

### Training Outline

1. Review the protocol for dollar spot fungus. Point out the key items including:
    - Description of the disease. Pass around samples or pictures to help in identification of the disease.
    - Host plants
    - Typical symptoms (how to ID this problem)
    - Conducive conditions
    - Control measures
    - Disease triangle and breaking the cycle by removing one of the three components
    - The importance of cultural control
    - Explain proper chemical control

TX

# WEEKLY TRAINING SESSION

## Dollar Spot Fungus

Name _____ Date _____

**Pre/ Post Test**

1. T or F Dollar spot fungus most active in the spring.

2. Describe the symptoms of dollar spot fungus.
   a. Large circular patterns of damaged grass with yellowing on the borders.
   b. Fist sized areas of dead grass with a greasy appearance.
   c. Gray to black soot like mold with prominent white and yellow masses.
   d. Two to three inch areas of damaged grass with leaf spots on the grass blades.

3. T or F Warm temperatures, high humidity, and extended leaf wetness will favor the development of dollar spot fungus.

4. T or F Dollar spot fungus is a common problem in lawns that are low in nitrogen fertility.

5. T or F Dollar spot fungus symptoms can literally appear over night.

6. T or F Moderate rates of quick release nitrogen will encourage recovery from dollar spot fungus.

7. T or F The fungicide we use to control dollar spot fungus is Transom.

8. T or F This fungicide is applied using the backpack sprayer and the 11010 spray tip.

TX

# WEEKLY TRAINING SESSION

## Dollar Spot Fungus

Answer Key

**Pre/ Post Test**

1. T or F Dollar spot fungus most active in the spring.

2. Describe the symptoms of dollar spot fungus.
   a. Large circular patterns of damaged grass with yellowing on the borders.
   b. Fist sized areas of dead grass with a greasy appearance.
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TX

GREENUP LAWN, TREE & SHRUB CARE
SERVICE PROTOCOLS

# Dollar Spot Fungus

In the summer, there are many fungal pathogens that will attack turf grass blades. Warm temperatures, ample rainfall and actively growing turf during this time of year meet all of the requirements for a disease to flourish. One of the more common diseases we see in the Southern U.S. is dollar spot fungus.

## DOLLAR SPOT FUNGUS

All species of warm and cool season grasses are affected by dollar spot fungus. It is typically observed from late spring to early fall and is most frequently seen during periods of warm weather, high humidity and frequent rainfall.

### Pathogen

The fungi *Lenzia* and *Moellerodiscus spp*. (formerly *Sclerotinia homoeocarpa*) causes Dollar Spot Fungus.

### Symptoms

Symptoms of dollar spot include sunken, circular patches that measure up to several inches on turfgrass. The patches turn from brown to straw color and may eventually group together, forming irregularly shaped areas. Infected leaves may display small lesions that turn from yellow-green to straw color with a reddish-brown border. The lesions are typically on the margin of the leaves, but can extend the full width of the leaf. Multiple lesions may occur on a single leaf blade. Mycelia may be present.

**Dollar Spot Fungus in fine bladed grass**

**Dollar spot fungus in St. Augustine grass**

GREENUP LAWN, TREE & SHRUB CARE
SERVICE PROTOCOLS

# Dollar Spot Fungus

## Conducive Conditions

Typical summertime conditions are required for the disease to thrive and spread. Environmental factors that favor infection include:

- Temperatures in the mid-80s to low 90s
- High humidity >80%
- Prolonged leaf wetness (3 hours or more ).
    - *Research has shown that at higher temperatures (>90°) the pathogen needs only 1 hour of leaf wetness to infect the plant.*

Turf is most susceptible to dollar spot fungus when it is deficient in nitrogen and with insufficient soil moisture (dry soil, but wet turf leaves).

The fungus can produce a large amount of spores in a very short time (up to several million spores in just a couple days). As a result, symptoms can spread suddenly once conditions become conducive. It is not uncommon for this disease to literally appear "overnight".

## Control

Once the disease has infected the plant, control is required. To control this disease, refer to the Disease Triangle (Figure 3). In order for a disease to thrive and reproduce, it needs three things:

- The Pathogen
- The Host
- The Conducive condition

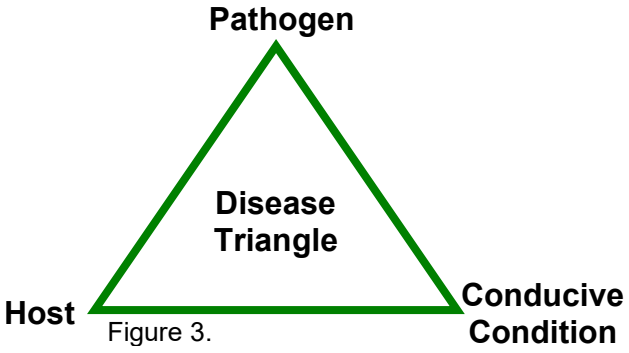


Figure 3.

## Dollar Spot Fungus

The removal of any one of these three factors will result in the control of the disease. The Disease Triangle for dollar spot fungus is represented by Figure 4.

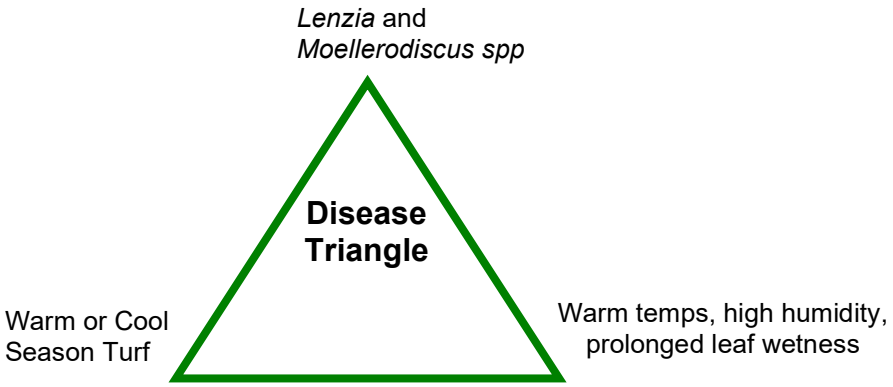



Figure 4.

Cultural methods are always preferred for disease control. The cultural control methods for dollar spot fungus include:

- Proper nitrogen fertilization.
- An application of quick release nitrogen applied at a moderate rate (0.5 pounds per 1000 sq. ft.) will benefit control efforts of dollar spot fungus.
- Avoid prolonged leaf wetness. This may be difficult during the rainy season, but educate your customers to not water just before sunset as this will provide the conducive conditions even when the rain does not.
- Avoid frequent shallow irrigation schedules
- Alleviate compacted soils by aerating. Compacted soils weaken the turf making it more susceptible to disease infestation.
- Reduce thatch
- Increase air circulation
- Avoid walking or mowing infected areas. The spores can be easily spread on the soles of shoes and mower blades. Walk through an infected area only if making a disease treatment.

When the severity of the problem warrants a fungicide application, spot treat using Transom, Pillar G or Armada WDG Fungicide. Transom is the first fungicide option. Apply Transom at a rate of 3 ounces per gallon of water per 1000 sq. ft. using the 8010E spray tip. One gallon should cover 600 sq. ft. Multiple applications may be required during periods of favorable conducive conditions. After a fungicide application is made, the disease will temporarily stop spreading and the turf will begin to recover.

TX

# WEEKLY TRAINING SESSION

## GreenUP Protocol – Tuttle Mealybug

**Topic Category:** Lawn

**Recordable Verifiable Training Hours**: 0.5

**Objectives:** This lesson is designed to provide information on the identification and control of the Tuttle Mealybug.

**Length of lesson:** Approx 30 minutes.

**Materials needed:**

- Training Guideline
- Tuttle Mealybug Protocol Training Document
- Collect samples of Tuttle Mealybug 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 the Tuttle Mealybug.
- 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 Training VTM's through Massey University.

TX

# WEEKLY TRAINING SESSION

## GreenUP Protocol – Tuttle Mealybug

Name _____ Date _____

### PRE & POST TEST

1. T or F The Tuttle Mealybug was introduced into Florida in 2012.
2. T or F The Tuttle Mealybug is a pest of turfgrass.
3. T or F Mealybugs are similar to scales, but they have the ability to move readily across the plant.
4. T or F The mature male mealybug is a small gnat-like insect.
5. T or F Mealybugs produce a powdery white waxy substance that covers their bodies.
6. T or F The mature female mealybug is a small gnat-like insect.
7. T or F The mature female mealybug lays eggs in protected areas of the plant.
8. T or F Symptoms of Tuttle Mealybug damage appear as patches of stunted growth with reddish-purple grass blades.
9. T or F Turf infested with Tuttle Mealybug will show a white powdery substance and sooty mold at the leaf sheath area.
10. T or F Tuttle Mealybugs are very small and drop off the plant easily when inspecting.
11. T or F Tuttle Mealybugs harbor in the leaf sheath area.
12. T or F Tuttle Mealybugs are about 5 millimeters long and greenish in color.
13. T or F A magnifying glass or jeweler's loop will be needed to identify young mealybugs.
14. T or F Control for Tuttle Mealybugs is achieved with Bifenthrin.

TX

# WEEKLY TRAINING SESSION

## GreenUP Protocol – Tuttle Mealybug

Name _____ Date _____

### PRE & POST TEST

1. T or (F) The Tuttle Mealybug was introduced into Florida in 2012.
2. (T) or F The Tuttle Mealybug is a pest of turfgrass.
3. (T) or F Mealybugs are similar to scales, but they have the ability to move readily across the plant.
4. (T) or F The mature male mealybug is a small gnat-like insect.
5. (T) or F Mealybugs produce a powdery white waxy substance that covers their bodies.
6. T or (F) The mature female mealybug is a small gnat-like insect.
7. (T) or F The mature female mealybug lays eggs in protected areas of the plant.
8. (T) or F Symptoms of Tuttle Mealybug damage appear as patches of stunted growth with reddish-purple grass blades.
9. (T) or F Turf infested with Tuttle Mealybug will show a white powdery substance and sooty mold at the leaf sheath area.
10. (T) or F Tuttle Mealybugs are very small and drop off the plant easily when inspecting.
11. (T) or F Tuttle Mealybugs harbor in the leaf sheath area.
12. T or (F) Tuttle Mealybugs are about 5 millimeters long and greenish in color.
13. (T) or F A magnifying glass or jeweler's loop will be needed to identify young mealybugs.
14. T or (F) Control for Tuttle Mealybugs is achieved with Bifenthrin.

TX

GREENUP SERVICE PROTOCOLS

# Tuttle Mealybug

## Overview

The Tuttle Mealybug has been recognized as a potential turfgrass pest in Florida since 1975. However, there have been very few sightings in the years past until it was collected in 2011 and again in 2012 as a pest of Zoysiagrass in Orange County. The Tuttle Mealybug is now found in many of our service areas.

## Biology

Little is known about the exact biology of the Tuttle Mealybug, but the biology of mealybugs in general is as follows: Mealybugs are very similar to scales in many ways; they feed with piercing-sucking mouthparts, but they have the ability to move across the plant as they feed rather than remaining in one area. Mealybugs overwinter as eggs or crawlers in protected areas such as the crevices between the leaves, sheath and stem. Crawlers emerge from protected areas in the spring and begin to feed. As the crawlers begin to mature, they become covered with a whitish powdery-wax material. Mature male mealybugs are very small gnat-like insects. Mature female mealybugs do not develop wings, but remain in the same form and lay eggs in the protected areas previously mentioned.

## Symptoms of Damage

Symptoms of Tuttle Mealybug damage in Zoysiagrass appear as patches of stunted growth with reddish-purple grass blades throughout the area. See Figures 1 and 2.

## Identifying the Activity and Finding the Insect

Upon close inspection, a white powdery substance and sooty mold can be seen on the leaf sheath area. See Figure 3. The stem and leaf area should be removed from the turf using a knife or other cutting tool. Holding the plant part over a white sheet of paper, begin to peal the leaf from the sheath to look for more of the waxy substance and the small (less than 2 millimeters) pinkish mealy bugs. This is done over a white sheet of paper, because small crawlers and the more mature stages can easily drop from the plant. A loop (small magnifying glass) will be needed to identify the insect. The insects can also be found by carefully placing the tip of a knife blade into the area of the leaf that connects to the sheath to push out the small insects from within the area. See Figures 4 and 5.

## Control

Considering the habits of the insect, a systemic insecticide is required. The best treatment is Dinotefuran. Dinotefuran is the active ingredient in Safari, but Safari is not labeled for turf. Zylam contains Dinotefuran and is labeled for turf. Like Safari, Zylam is expensive; use only as required. Other treatment options would be Arena or Imidacloprid. The customer should irrigate after treatment to apply ¼ inch of water.

# GREENUP SERVICE PROTOCOLS

## Tuttle Mealybug

Figure 1 – Overview of Damage

GREENUP SERVICE PROTOCOLS

# Tuttle Mealybug

Figure 2 – Close up of Damage

GREENUP SERVICE PROTOCOLS

# Tuttle Mealybug

Figure 3 – Waxy Material and Location of Activity

Figure 4 – Tuttle Mealybugs Close Up

GREENUP SERVICE PROTOCOLS

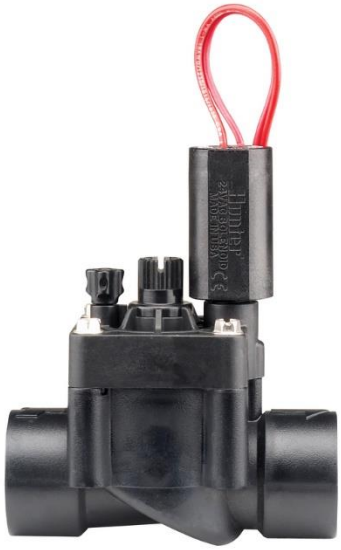
# Tuttle Mealybug

Figure 5 – Tuttle Mealybug with White Wax

# WEEKLY TRAINING SESSION

## Valves For Residential Irrigation Systems

The most common valves we run into.

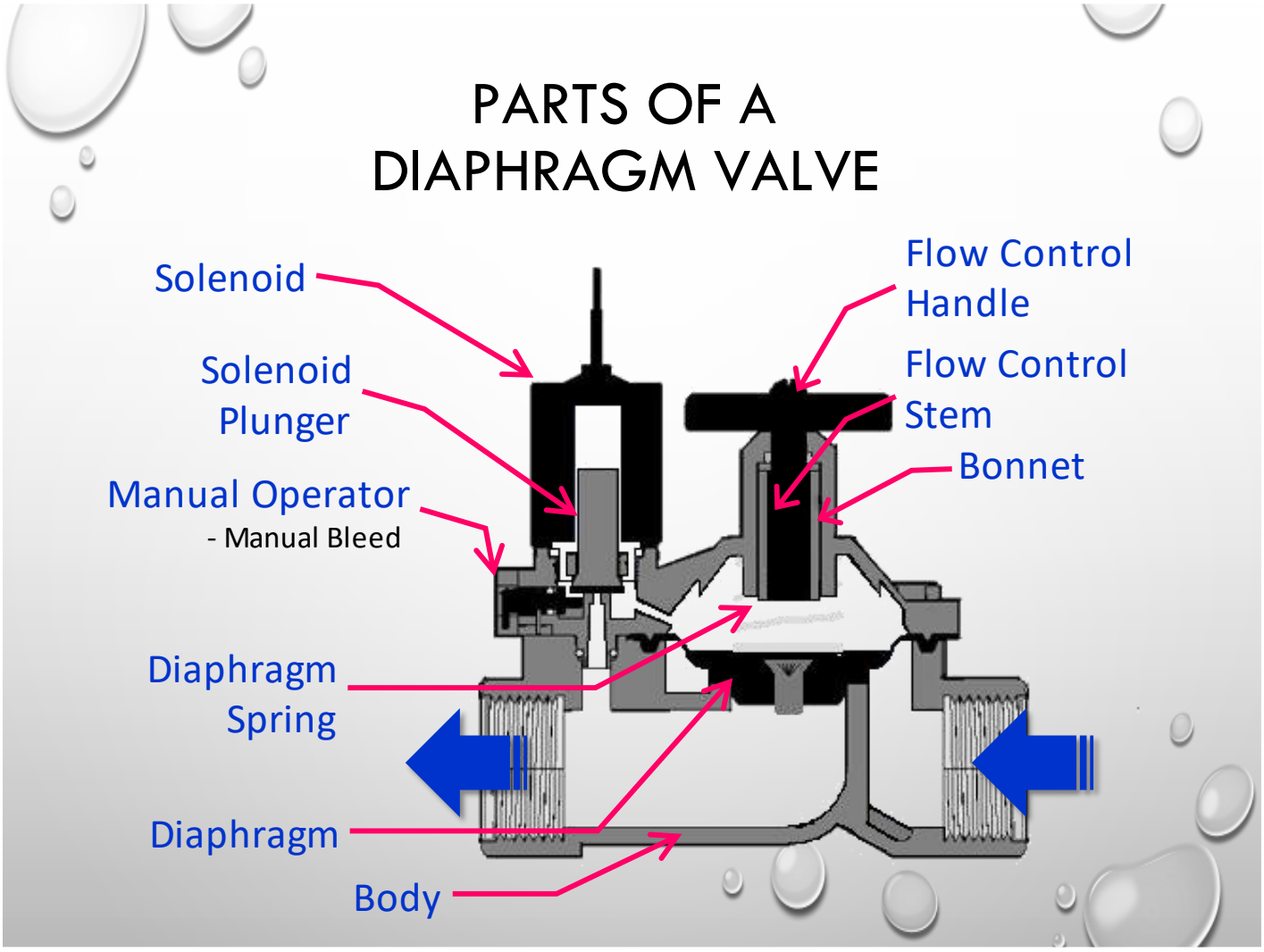



# WEEKLY TRAINING SESSION

## Valves For Residential Irrigation Systems

**WEEKLY TRAINING SESSION**

## Valves For Residential Irrigation Systems



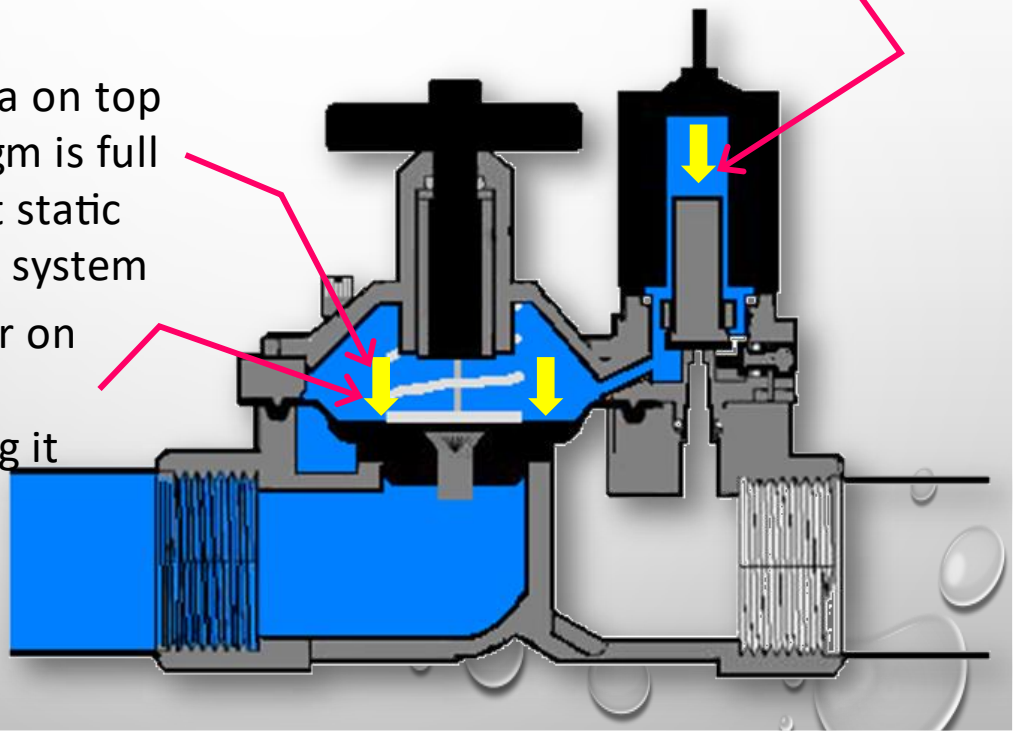
## Valves For Residential Irrigation Systems

# FORWARD-FLOW VALVE CLOSED

The plunger is seated over the exit port, held down by the static water pressure and a spring

The bonnet area on top of the diaphragm is full of water and at static pressure of the system

The force is greater on the top of the diaphragm, holding it against the seat



## Valves For Residential Irrigation Systems

# HOW A FORWARD-FLOW VALVE OPENS

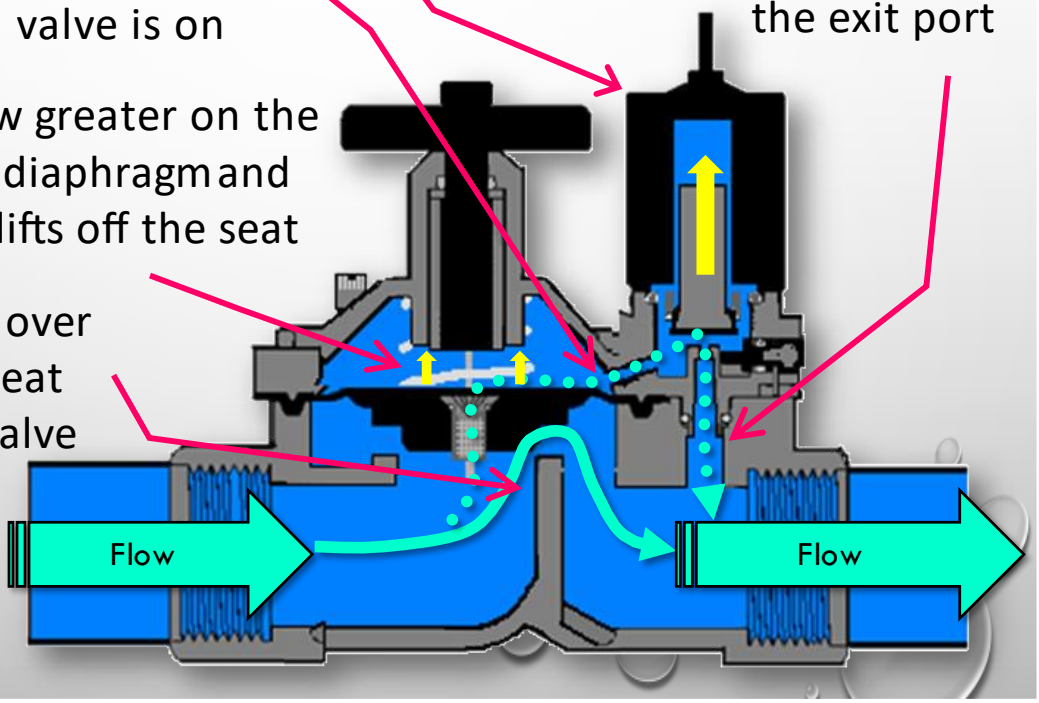
The controller energizes the solenoid and lifts and holds up the plunger

The water continues to flow through the diaphragm and out the exit port while the valve is on

The water from ontop of the diaphragm flows out through the exit port

The force is now greater on the bottom of the diaphragm and it lifts off the seat

The water flows over the diaphragm seat and out of the valve



## Valves For Residential Irrigation Systems

# MANUAL OPERATOR CONFIGURATIONS

- A VALVE CAN BE OPERATED MANUALLY INA NUMBER OF DIFFERENT WAYS

Twisting the solenoid¼ turn

Opening the external bleed screw

Flip the bleed lever


*Courtesy of Hunter Industries, Toro, Weathermatic*

## Valves For Residential Irrigation Systems

# THE FLOW CONTROL

- ONE INCH VALVES ARE AVAILABLE WITH OR WITHOUT A FLOW CONTROL (FC)
  - STANDARD ON ALL 1½" AND LARGER VALVES

WITHOUT FC

WITH FC

*Courtesy of Toro*

- THE FLOW CONTROL "FINE TUNES" THE VALVE TO THE FLOW
- THE FLOW CONTROL IS NOT AN EMERGENCY OFF
  - USING IT AS AN EMERGENCY "OFF" WILL RISK DAMAGING THE DIAPHRAGM AND DIAPHRAGM SEAT

## Valves For Residential Irrigation Systems

# JAR TOP CONFIGURATION

- A JAR TOP VALVE USES A THREADEDBONNET TO SCREW ONTO THE VALVE BODY
  - STANDARD RESIDENTIAL VALVES USE BOLTS OR SCREWS TO SECURE THEBONNETTO THE BODY

*Courtesy of Toro*

## Valves For Residential Irrigation Systems

# THE SOLENOID

- RECEIVES POWER FROM THE CONTROLLER
- CREATES AN ELECTROMAGNETIC FIELD WHICH LIFTS THE PLUNGER
- THE RAISED PLUNGER OPENS AN EXIT (EXHAUST) PORT TO OPEN THE VALVE

## Valves For Residential Irrigation Systems

# IDENTIFYING SOLENOID VALVE PROBLEMS

**ONLY TWO SYMPTOMS**

1. VALVE WILL NOT OPEN
2. VALVE WILL NOT CLOSE

**WELL, SORT OF 2 MORE**

1A. VALVE PARTIALLY OPENS

2B. VALVE PARTIALLY CLOSES (WEEPS)

## Valves For Residential Irrigation Systems

# IDENTIFYING SOLENOID VALVE PROBLEMS

- THE CAUSE CAN ONLY BE ELECTRICAL OR MECHANICAL
  - MECHANICAL PROBLEMS
    - SOMETHING IS CLOGGED
    - SOMETHING IS LEAKING
    - SOMETHING IS NOT MOVING THAT SHOULD
    - SOMETHING IS MOVING THAT SHOULDN'T
    - SOMETHING IS BROKEN, CRACKED, OR TORN
  - ELECTRICAL PROBLEMS
    - POWER SOURCE
    - CONTROLLER CIRCUITRY
    - VALVE WIRES
    - SOLENOID

**SOMETIMES BOTH!**