

From Roots to Shoots

For The Commercial Grower
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Commercial Horticulture Extension Agent

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******ATTENTION ******

Now is the time to get CEUs!

Pesticide Applicators

Part 1 - Monday, October 31, 8 a.m. to Noon

Part 2 - Thursday, November 3, 8 a.m. to Noon

Offered at each class:

2 Private Applicator or

2 Ornamental & Turf or

2 Limited Lawn & Ornamental or

2 Limited Landscape Maintenance or

2 Commercial Lawn & Ornamental and

1 CORE

Total: 6 CEUs if you attend both programs

Location:

Volusia County Extension Service - auditorium
3100 East New York Avenue
DeLand, Florida 32724

Pre-registration is required.
DeLand: (386) 822-5778
Daytona Beach (386) 257-6012
New Smyrna Beach (386) 423-3368

Note: These programs (Part 1 & Part 2)
will qualify for the 6 CEUs you need to
take the Limited Commercial Landscape
Maintenance (Round-up) License



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KEEPING IT GREEN

In Florida, we have a diverse selection of grasses to choose from to fit our needs. Because of its wide adaptation to multiple soil types, St. Augustine is the most popular turf grass variety and is the most widely adaptable and most commonly used grass grown in Florida. Another popular grass in Florida is Centipede. Adapted to the Central and Northern Florida climates and soil types, Centipede is the most common home lawn grass in the Florida Panhandle. Other grasses are Bahiagrass, a low maintenance, drought tolerant grass that is widely used. A popular fine textured grass that also is widely used and popular is Bermuda-grass. Seashore Paspalum is another durable, salt tolerant and chinch-bug resistant grass; and, finally the grass that is growing in popularity, the lush and beautiful Zoysiagrass.

As summer ends and fall approaches, we notice a transition on the growth cycle of lawns. The growth rate slows down and the color of the grass seems to have a dull tint. This is a normal occurrence and you should not be alarmed. At this time, allow the lawn to rest from the enduring summer stress. Do not do anything that would disrupt or damage the turf such as aerification and top dressing and dethatching. Although the growth has slowed down considerably, it is still growing. An occasional mowing is good and will shape-up the lawn and maintains the proper height. When mowing, make sure the blades are in good condition and sharp. This will leave a crisp, clean appearance.

FERTILIZER:

By December, in Florida, the

St. Augustine grass is in the twilight stage of dormancy. Young, tender, new growth on grasses in the winter season is detrimental and therefore, the dormancy period is needed for the grass to survive. New growth of grass is initiated by the season and/or a response to fertilizer, so late summer and fall or winter is not a good time to fertilize with products high in nitrogen.

The late season application of fertilizer, Nitrogen in particular, will promote the grass to alter the normal stage of dormancy and promote growth. In the winter months, this could be detrimental for a lawn. In addition, the lush growth prompted by the addition of fertilizer will stimulate and encourage diseases also. For instance, high rates of nitrogen in the late summer will possibly result in a disease called Brown Patch Disease. In the fall, fertilizer with a high potassium (K) product may be used. On a bag of fertilizer, there are three numbers that represent the three major nutrients needed, nitrogen (N), phosphorous (P), and potassium (K). There are many different formulations such as 8-8-8, 13-13-13, and 15-5-10 to name a few. These are usually fast release fertilizers although there are some slow release fertilizers available, but at a premium price. By using the fertilizer 15-5-10 the number 15 represents (N), 5 represents (P) and 10 represents (K). Fertilizers with high potassium (K) are commonly called winterizers. Prior to fertilizing your lawn, the Extension Service recommends that you get a soil sample from your lawn and get it tested before you buy any fertilizer.



Photo courtesy of www.scotts.com

Some nutrients you pay for are expensive and may be those you don't need. So, if you wish to fertilize your lawn, in the fall, a soil test is recommended prior to any fertilizer application. Allow enough time to take the soil sample and have it tested and receive the results before you apply fertilizer. This should be no more than a week or two.

WEEDS:

One of the common complaints I hear about lawns in the fall is about weeds. The good news is most weeds can be controlled and won't damage your lawn. When the winter is over and summer starts, the weeds disappear. To reduce the spraying of chemicals, the weeds can be controlled, to a limited degree, by mowing on a frequent basis or at minimum prior to seed formation. For lawns that have a history of having a weed problem including weeds such as dollar weed, dandelion, oxalis, and clover, now is the time to start the control effort.

To get a jump on weed control, you must apply the proper herbicides at the proper rates to control the proper weed at the right time. Always read the label before buying the product and read it once more prior to using it. Two types of herbicides are used to control weeds: 1) pre-emergent and 2) post-emergent. Pre-emergent inhibits or kills the weed seed before germinating or emerging.

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Post-emergent herbicides kill the weed after it emerges.

There may be other problems associated with weed infestation. For instance, high weed populations and poor desired lawn grass populations may be a sign of a pH issue, either too high or too low. A sign of high clover population may be low fertility.

Pre-emergent Herbicide -

Annual cool-season weeds can be controlled if you apply a pre-emergent herbicide to kill the seeds before or at the time of their germination. The residual of a pre-emergent herbicide may last up to several months. A special precaution should be noted if you over-seed your lawn with ryegrass; do not use the pre-emergent herbicides if you use any seed winter grass such as ryegrass.

Post-emergent Herbicide -

As October approaches, perennial broadleaf weeds start to appear. The use of selective post-emergent herbicides such as Trimec, Wipeout, or Weed-B-Gone may be used to control these broadleaf weeds. As an ongoing precaution, another application can be done in February.

Always follow the label on any chemical use.

1. If the chemical can be used on your lawn type (i.e. St. Augustine, Bahia, etc.)
2. Is it labeled for control of the specific weed you need to eradicate (i.e. Dollar weed)
3. Follow the recommendation of application (i.e. timing of application, rate)

PEST:

Whenever high rates of Nitrogen (N) are applied to lawns in the spring and fall and there are prolonged times of cool, moist

weather, disease problems seem to creep into the lawn. One such disease that is prevalent in all warm-season turf grasses and especially St. Augustine and Zoysiagrass is Brown Patch disease. The lawn disease is caused by a fungus with the Genus *Rhizoctonia*. Three species of *Rhizoctonia* are *R. solani*, *R. zeae* and *R. oryzae*.

From November through May, when temperatures are below 80°F, infected lawns may have a noticeable circular pattern of dead grass caused by these pathogens. Usually, the lawn disease will start off small and the infected area will rapidly increase in diameter. Through observation, the grass in the center of the infected area will appear tan and along the outer infected circles edges will appear to have an orange tint. Although the grass blades are killed, the roots and stolon are very weak and will usually survive. With time, the lawn will regain its appearance. In the fall, if the grass is weak the turf may be susceptible to cold damage. Do not fertilize at this time for the addition of fertilizer will make the condition worse and more susceptible to winter freeze. To control the lawn disease, control measures should be done immediately after detection.

Cultural practices to avoid Brown Patch disease is to avoid excess nitrogen during potential disease development periods. Limit readily available or fast release forms of nitrogen. Do not use fertilizers such as soluble liquids or quick-release nitrogen sources, just prior to or during these cool and moist times. Instead, use slow-release nitrogen sources. Apply a balanced fertil-

izer containing equivalent amounts of potassium and nitrogen, preferably a slow-release potassium form.

The next important practice is watering. If you do need to water, irrigate only in the early morning hours (between 2 and 8 a.m.) when dew is already present. Movement of the disease can be through mechanical means. Mowers can spread this disease, so when you mow, mow the diseased areas last, and wash turf clippings off the mower before proceeding to the next site.



INSECTS:

In the fall, one pest that you may encounter is the sod webworm and fall army worm. The noticeable tan color in a healthy lawn will most likely indicate an area of infestation where they are feeding. A sure sign of infestation is by observing the blades of grass in the infected area. If the base of the blade looks like it has been chewed off, this is a positive sign of infestation. Fortunately, the runners or stolon are generally still alive and the grass will recover. An easy way to control these caterpillar pests is with *Bacillus thuringiensis* or locally known as "Bt".

Creating and maintaining a beautiful, lush lawn is challenging, but with proper care the rewards will be worth the effort for year round enjoyment.

Tomato Disease - WILTS



Occasionally, in tomato production, you may identify a tomato plant or two in the field that doesn't look right. The plant may stand out from the others with leaves drooping and foliage discoloration, and you may think it needs water, fertilizer, or a prayer. However, the plant next to it may look healthy and robust. There are many conditions that may cause this. In large operations a condition like this could get out of hand quickly and severely damage the crop by reducing the availability of fresh quality produce to the consumer and the farmers' pocketbook. To ensure the best production and quality of produce, careful monitoring and Integrated Pest Management (IPM) should be in place.

In Florida, there were 29,000 acres of tomatoes that were harvested in 2010. This figure ranks Florida #2 in the United States for total harvested tomatoes. This acreage results in a total farm value of \$630 million ranking Florida #1 in the Nation. On the other hand, although this industry is significant in the Florida agricultural economy, it has a few constraints that are shared by most if not all farmers. One constraint is called "wilt". There are several wilt diseases that threaten the tomato; however, some improved tomato varieties show signs of resistance. Through research at the North Florida Research and Education Center in Quincy, Florida, some of the most significant wilt diseases in tomato production are: southern blight; sclerotinia blight; bacterial wilt; fusarium wilt; verticillium wilt; and, tomato spotted wilt.¹

Southern blight – This warm-season, soil-borne fungal disease affects diverse crops worldwide. One crop affected is tomatoes. When tomatoes wilt, many indi-

viduals may associate this with moisture stress, but that may not be the case. The southern blight disease favors high humidity, soil moisture, and warm to hot temperatures (85-95 F). In the initial stages, the base of the stem will have a necrotic section and appear to girdle the stem. At the soil line of the plant, there is a presence of a white substance that is called mycelia which grows along the collar region of the plant adjacent to the soil. This fungal disease is called southern blight – *sclerotium rolfsii*. In early stages, the white mycelia growth may not be as apparent, but in the later stage, it will. Another specific indicator of southern blight in the later stage is the presence of small structures known as sclerotia. The sclerotia can survive several years in the soil. Appearing as very small BBs, they may be white to light and dark shades of brown. If fruits are affected, the appearance will be a watery or mushy rot with sunken lesions.

Prevention: This is a difficult disease to control because of its broad host range being over 500 plant species; and therefore, making it a high probability for field inoculation. Reducing the impact of southern blight on vegetables may be possible with crop rotation and the use of Integrated Pest Management (IPM) methods. Additional means of prevention is through the method of soil solarization, using pathogen-free transplants, and resistant cultivars. Resistance has been identified for some hosts in six tomato breeding lines: 5635M, 5707M, 5719M, 5737M, 5876M, and 5913M. On the organic approach, soil amendments such as organic fertilizers, biological control agents, and compost of oat, corn straw, and cotton gin trash may help control southern blight.²

Another method of control is field fumigation with Methyl Bromide.³ However, Methyl Bromide is predicted to be taken off the marketplace in the next few years.

Sclerotinia blight – Another wilting disease is sclerotinia blight – *sclerotinia sclerotiorum*. A member of the pathogens that causes "damping-off" is a cool season pathogen. It favors excessive soil moisture either from rain or irrigation.⁴ With sclerotinia blight, the symptoms will be similar to southern blight, whereas plants will exhibit a wilting or drooping appearance. White fungal growth will be noticeable on the stem of the plant; however, the distinguishing characteristic different from southern blight is sclerotinia blight will have a black fungal growth called sclerotia inside the stem of the plant. The black sclerotia will have the appearance of rat droppings. The black growth also will have the white fungal growth.

Prevention: Another method of control is field fumigation with Methyl Bromide.⁵ However, Methyl Bromide is predicted to be taken off the marketplace in the next few years.

Bacterial wilt – Once again, the observation will be a wilting or drooping plant, but in this case there is no sign of white mycelium on the stem or at ground level along the base of the plant. There are no indications of yellowing leaves prior to the death of the plant; however, the plant may exhibit being stunted prior to the wilting. The distinguishing characteristic about this hot-season and wet-soil pathogen is that if you cut a piece of the stem and suspend the cut end of the stem into a clear glass of water and allow it to be undisturbed for 15-30 seconds, a thread-like white substance will be

Tomato Disease - WILTS



noticeable coming out of the cut end of the sample. In addition, if you closely observe the cut end with a microscope, you will see mycelium on the cut end. In the later stages, advantageous roots may be enhanced and the stem pith becomes hollow and vascular tissues turn brown. A water-soaked appearance of the dark-colored pith near the surface of the soil, in addition to a gray slippery substance that is given off from cutting the stem at the soil surface, is a sure indicator of bacterial wilt. Through increasing the soil pH and with the addition of calcium through liming, the disease incidence may be suppressed.⁶

Prevention: Use grafted plants with hybrid rootstocks.

Fusarium wilt – If you don't have white mycelium on the stem and soil line and there is no thread-like mycelium extending in the water test, as with the bacterial wilt, but there is an indication of yellowing leaves and discoloration of the vascular system, the disease may be either fusarium wilt or verticillium wilt, more specifically: 1) *fusarium oxysporum*, 2) *verticillium dahlia*, and/or, 3) *verticillium albo-atrum*. The distinct characteristic of these three pathogens is the discoloration of the vascular system. With young plants, stunting is the first indicator of fusarium wilt. As the plant matures, and mostly between the interval of blossoming and fruit maturation, the symptoms of leaf yellowing begin to appear. The yellowing may first occur on the lower half or possibly on one side of the lower portion of the plant. Sometimes even the leaflets on one side of a petiole may turn yellow, while the other side remains green. With time, there is a progression of the yellowing into the plant and then wilting occurs.

This is usually apparent during the hottest time of the day.

Prevention: Use for 1) fusarium wilt – resistant varieties, field fumigation, grafting with resistant rootstocks (increasingly used in organic and greenhouse production); 2) verticillium wilt – resistant varieties, field fumigation, and grafting with resistant rootstocks.

Tomato spotted wilt – If the plant is wilting, drooping, and the leaves are curled with a purple coloration and patterned throughout the leaf, the disease is tomato spotted wilt caused by a tospovirus.

The tomato spotted wilt virus occurs frequently in numerous crops in northern Florida. In the later stages, the spotty purple colorations will join as one large blotch. Other symptoms of tomato spotted wilt are chlorotic and necrotic ringspots, meristem necrosis, leaf bronzing, stem necrosis, stunting, and fruit spotting. There may be circular patterns on the fruit and leaves.⁷ Thrips are a vector of this disease and with early monitoring and control, thrips populations will be at a minimum. Other indicators are on the fruit. Infected fruit will appear to have concentric rings of brown and lighter green colorations.

Prevention: Use resistant varieties, reflective mulches, thrips pesticide management, kaolin, and, SAR inducer.⁸ The most effective means of controlling the virus is through controlling the thrips with the use of spinosyns class insecticides. No other insecticide class provides this level of control. Although there are some levels of resistance cases, follow the recommendation on the label. Only use group 5 insecticides (spinosyns) a maximum of six sprays and no more than two consecutive sprays before rotating to an insecticide in

a different class. Avoid sequential sprays on sequential crops.

Cyazapyr[®] and acetamiprid have performed best after the spinosyns in the trials. Other insecticides that have shown significant suppression against the adults and larvae of western flower thrips include flonicamid, spirotetramat, and Requiem[®] (extract of *chenopodium ambrosioides* near *ambrosioides*). Azadirachtin and potassium salts of fatty acids are available commercially, and these provide some suppression of western flower thrips.⁹

¹Mathews Paret, Gary Vallad, Shouan Zhang, Nick Dufault, Rosemary Loria, Jim Marois, Steve Olson, Hank Dankers, Hands-on identification of vegetable diseases: Tomato, North Florida Research and Education Center, Quincy, FL - Department of Plant Pathology, University of Florida, Gainesville, FL

²Chenzhao Xie et.al. Gary Vallad, UF/IFAS, PP272 - Integrated Management of Southern Blight in Vegetable Production

³Mathews Paret, Gary Vallad, Shouan Zhang, Nick Dufault, Rosemary Loria, Jim Marois, Steve Olson, Hank Dankers, Hands-on identification of vegetable diseases: Tomato, North Florida Research and Education Center, Quincy, FL - Department of Plant Pathology, University of Florida, Gainesville, FL

⁴Richard Raid and Tom Kucharek, UF/IFAS, PDMG-V3-36, 2006 Florida Plant Disease Management Guide: Celery

⁵Mathews Paret, Gary Vallad, Shouan Zhang, Nick Dufault, Rosemary Loria, Jim Marois, Steve Olson, Hank Dankers, Hands-on identification of vegetable diseases: Tomato, North Florida Research and Education Center, Quincy, FL - Department of Plant Pathology, University of Florida, Gainesville, FL

⁶Tim Momol and Ken Pernezny, UF/IFAS, PDMG-V3-53, 2006 Florida Plant Disease Management Guide: Tomato, Bacterial Wilt (*Ralstonia solanacearum*)

⁷Tim Momol and Ken Pernezny, UF/IFAS, PDMG-V3-53, 2006 Florida Plant Disease Management Guide: Tomato, Bacterial Wilt (*Ralstonia solanacearum*)

⁸Mathews Paret, Gary Vallad, Shouan Zhang, Nick Dufault, Rosemary Loria, Jim Marois, Steve Olson, Hank Dankers, Hands-on identification of vegetable diseases: Tomato, North Florida Research and Education Center, Quincy, FL - Department of Plant Pathology, University of Florida, Gainesville, FL

⁹Joe Funderburk, Stuart Reitz, Steve Olson, Phil Stansly, Hugh Smith, Gene McAvoy, Ozan Demirozer, Crystal Snodgrass, Mathews Paret, and Norm Leppla UF/IFAS, ENY859, Managing Thrips and Tospoviruses in Tomato, Insecticides

Pesticide CEUs

What are they, who needs them, and when and where can I get them?

A **Continuing Education Unit (CEU)** is 50 minutes of instructional credit used to make up the total credits required for pesticide applicator recertification. In Florida, depending on the license type, a certified pesticide applicator is required by law to accumulate from four to twenty continuing education units (CEUs) per license type and cycle. Depending on the license type and specific category, the license cycle may vary from one to four years. The two methods of obtaining CEUs are either through facility training sites, such as the local extension office, or on-line. In Volusia County, the CEUs can be obtained through attending educational programs conducted and sponsored by the University of Florida/IFAS Volusia County Extension. Check times and dates for scheduled training at <http://www.volusia.org/extension/horticulture.htm> (under the commercial heading). If you currently hold a license, it's advisable to obtain the required CEUs needed for recertification before the expiration dates on your current license.

Types of Restricted Use Pesticide (RUP) CEU training available:

- 1) CORE
- 2) Ornamental and Turf Applicator (commonly known as O & T Applicator)
- 3) Private Applicator

- 1) **CORE:** General knowledge of proper pesticide use and pesticide safety.
- 2) **ORNAMENTAL & TURF APPLICATOR:** Within the O & T Applicator training, there are two divisions of certification: Public and Commercial.

The Public certification is directed towards personnel that apply pesticides to golf courses, parks and cemeteries, and work for federal, state, county, or municipal public agencies.

The Commercial certification is for independent contractors who are paid specifically to apply pesticides in the same areas as with the public (i.e. golf courses, parks and cemeteries). **To become certified, you are required to take the Core and Private Applicator exams.**

CEUs needed for renewal of licenses: 4 Core and 12 O & T every four years.

- 3) **PRIVATE APPLICATOR:** This license is directed towards individuals who apply RUP to their own property or property rented to them for agricultural production such as: nursery, greenhouse, sod farms, cattle farms, fruit farms, and vegetable farms. **To become certified, you are required to take the Core and Private Applicator exams.**

CEUs needed for renewal of licenses: 4 Core and 4 Private every four years.

If you are interested in obtaining or renewing your **ORNAMENTAL & TURF or PRIVATE APPLICATOR LICENSE** or need more information about obtaining a license for the first time, please contact Brent Jeansonne - UF/IFAS Volusia County Extension Agent at (386) 822-5778 for the next training date.

Note: Mention of a commercial or proprietary product or chemical does not constitute a recommendation or warranty of the product by the authors or the University of Florida, Institute of Food and Agricultural Sciences, nor does it imply its approval to the exclusion of other products that may also be suitable. Products should be used according to label instructions and safety equipment required on the label and by federal or state law should be employed. Users should avoid the use of chemicals under conditions that could lead to ground water contamination. Pesticide registrations may change so it is the responsibility of the user to ascertain if a pesticide is registered by the appropriate state and federal agencies for an intended use.

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