Alabama

Commercial Pesticide Applicator

Study Manual

Supplemental Study Manual for

Ornamental & Turf

Pest Control (OTPC/OTPS)

Study in conjunction with General Standard's information and study booklets from Auburn University –ANR-796, ANR-616, and ANR- 910.

GETTING THE BUGS OUT OF HOME LANDSCAPES

Pat Cobb, Extension Entomologist

I. "Who Did It?" – Diagnosing the Problem
   a. Recognizing pests by damage
   b. Detection techniques
   c. Walk-ins, telephone ID's and science projects
   d. Sending insect samples for ID

II. What, Where, When, How, Why? – Making homeowner recommendations
   a. Why spray? – control options and strategies
   b. Proper timing
   c. The importance of water

III. Perceptions, Deceptions, Reflections
   a. Perceptions and expectations of insect control – yours and theirs
   b. Exercising your options

IV. Examples: The "Big Three' from Lawns, Shrubs (and house plants)

V. Where Do I Find Answers? References

HOW TO LOOK FOR TURF PESTS WHEN YOU ARE REALLY TRYING

For surface-feeding caterpillar pest's that5 are not visible on the turf surface: such as fall armyworms when the mid-day temperature is 90 degrees or more, sod webworms, cutworms. *Part the grass in the area where damage is more recent. Look for green pellets of grass. Caterpillars may also be visible.

*Use the soap-flush method, as described below, but remember that on hot, humid, sunny days the healthy turf may be scaled by the soap.

For mole crickets, green June beetle grubs, caterpillars, earthworm's, chinch bugs: Mix 1 or 2 tablespoons of lemon-scented dish washing soap)such as Joy) in a gallon of water. Do NOT let the soap foam up. Pour this over 1 or 2 square feet (depending on turf density, soil texture. Etc.) of area that is suspect. Wait a few minutes and note what surfaces. This is best done early in the morning or late in the day when soil-infesters are nearer the surface. Was off turf with plain water if you think weather is hot enough for the soap to scald grass.

For chinch bugs, spittlebugs: Chinch bugs prefer most varieties of St. Augustine grass, but sometimes will infest irrigated Bermuda grass. Look for damage to be confined to sunny areas. *Part the grass in "twilight" zone between damaged and undamaged grass. Look for nymphs/adults as they move rapidly in the thatch. This is best done during mid-day if the weather is cool during late March, April; during cooler hours during the summer.

*Cut a sample from zone between damaged and undamaged; float in a bucket of water. Wait 5-15min. for chinch bugs to surface.

*Cut both ends out of a can. Shove the can into the "twilight" area, fill it with water. Chinch bugs will surface.

Spittlebugs damage most any kind of grass, and damage looks similar to chinch bug damage, but it starts in shady areas. Spittlebugs adults flying over the turf, or back and forth between the lawn and landscape plantings. Damage usually begins with a few yellow spots. Look into the "squishy" spots, or the yellow spots; spittlebug nymphs will be cream-colored, feeding head-down in the mass of spittle (they have red eyes!).

Grubs: dig several square foot areas where grubs are suspected. In most lawns, if there are 3-5 grubs per square foot, damage potential exists. Grub damage may result in loose, "fluffy" turf when walked on. Areas that do not green up in the spring may have been damaged by grubs the previous fall.

LANDSCAPE ARTHROPOD PESTS:

A Few Clues to Pest ID and Non-Chemical Tactics:

1. PIERCING-SUCKING PESTS: damage will usually appear as “stippling” or molting of foliage, but distortion of new growth may be present, especially if plant is growing rapidly.

SOOTY MOLD AND/OR HONEYDEW present indicated one or more of the following:

Aphids: winged or wingless, both forms may be present on the plant. “Tail pipes” or “bumps” (cornicles) always present on top of the rear end.

*Wash off as many possible in early season. Sprays with insecticidal “soaps”, oils may help reduce populations without destroying beneficial’s.

*Watch for late-season re-infestation of plants. Control at the time eliminates egg-layers and thus part of next year’s problems.

Soft Scales: may appear as “bumps” on bark, twigs, etc. Identification is essential, because the most vulnerable stage to control is the newly-hatched, “crawler” stage. ID enables control at this time, with knowledge of specific life cycles. Check new growth, or adult scale females, for crawler hatch. Crawlers migrate to new growth. Tape a piece of black plastic tape, sticky side out, around new growth. Migrating crawlers get stuck on the tape and are more easily seen.

*Dormant oils may reduce over wintering scale populations. Superior oils are effective in reducing spring and fall crawlers. Do NOT expect oils to control heavy scale populations. Oils are effective in reducing populations, and in maintaining scale-free plants.

*Prune out the most infested plant parts, especially where dieback is already occurring.

*Investigate the availability of less susceptible plants for new or newly-renovated landscapes.

Mealy bugs: are scale insects, they just move around during most life stages. Mealy bugs are covered with white, waxy material and this material may be present on plant foliage. Mealy bugs usually a houseplant problem rather than a problem on landscape plantings. Occasionally, mealy bugs will become a landscape problem if bedding plants are infested when established outside.

*On houseplants: if plant is heavily infested, if it is wilting over. Cutting taken should be thoroughly cleaned (washed0 before established.

*On houseplants: use insecticidal soaps or soap “baths” on less infested plants. If adult mealy bugs are present (or large nymphs) remove them with a cotton swab dipped in rubbing alcohol.

*Outside: replace badly infested plants with non-infested new ones. Be sure to remove old soil around the infested plants.

*Insecticidal soaps may reduce mealy bug populations outside, and predators are also important outside.

Whiteflies: are close relatives of scale insects. Look for feeding stages under leaf surfaces; these are pinhead-sized, almost clear, scale-like nymphs which have settled in one place to feed. “Pupae” are black, pinhead-sized, often with a white fringe around the edge. Adult stages do little if any feeding, and quickly settle back into the plant when it is disturbed.

*On houseplants: destroy badly infested plants, especially poinsettias that have been held over from the previous Christmas.

*Outside: insecticidal soaps and oils help to reduce and control foliage first, and direct sprays to leaf undersurfaces as well as to other foliage.

IF SOOTY MOLD AND/OR HONEYDEW is NOT present, damage is typically piercing-sucking; one of the following may be present.

Spider mites: are not insects, but are close relatives of spiders. Spider mites are the size of the period at the end of this sentence, or smaller. If spider mites are suspected, shake foliage over a white sheet of paper; watch for small “specks” to crawl across the paper. Two-spotted spider mites are common on landscape and houseplants throughout the season. Yes, even during our mild winters. Two spotted spider mites get worse as the season progresses, and there are many overlapping generations. In severe infestations webbing may be present on or over plant parts. Spruce mites are often a major landscape problem on narrow leafed evergreens, such as junipers. These mites are about half the size of two-spotted spider mites, and do sometimes during fall (when daytime temperatures are below 90 degrees and it’s not freezing at night). Damage symptoms look for this world like disease damage!

*Houseplants: if webbing is preset, through the plant out and starts over. Soap “baths” are often effective on less infested plants, but usually has to be repeated.

*Outside: if insecticidal “soaps” work on anything, they work on spring populations of two-spotted spider mites. Insecticidal oils are also effective. Both treatments need to be repeated in two to three weeks.

*Clean plants seem to have fewer problems with spider mites.

*Look for spider mites populations outside now.

*Be careful if treating evergreens with soaps and oils; read label restrictions carefully.

Lace bugs: always feed on leaf undersurfaces. Azaleas, pyracanthas and hawthorns, sycamores are most commonly infested – and each with a different lace bug species. Look for the tar-colored, grainy specks of excrement left from lace bugs on the leaf undersurfaces.

*On azaleas: prune out worst-looking foliage if plant is large enough. Wait until plant has bloomed to spray; then repeat treatment three weeks later.

*Insecticidal soaps and oils may reduce populations, but are only moderately effective when plants are badly infested.

*Always direct sprays to leaf undersurfaces.

Armored scales: may look like flakes on bark, twigs and/or foliage. Although theses scales produce no honeydew, they are often difficult to control because of several overlapping generations and the “armor” coating the bodies.

*ID is essential in order to determine crawler emergence periods

*Prune out worst infested plant parts.

*Dormant oil treatments may help to reduce the population. Superior oil treatments usually help in controlling crawler stages.

*Investigate less susceptible plants for new and newly-renovated landscapes.

*Remember, scale control in home landscapes is usually a slow process; stick with a plan.

2. CHEWING PEST: holes in leaves, “sawdust” at the base of the plant, soft leaf tissues “skeletonized” or “mined”, holes in twigs or bark, may indicate the presence of chewing pests. If injured surfaces of leaves have started “healing” or have turned dark, the damage is old, and the pest may not be around. Removing leaves is the only way to control damage.

Beetles: may chew out regular crescent-shaped patches from leaf margins, or oblong patches within the leaf. Day-time flyers include some of the leaf beetles, green June beetles, Japanese beetles. Night-time flyers include brown May and June beetles, chafer beetles, some of the leaf beetles. Snail/slug damage may resemble beetle damage. Wood-boring beetles may damage woody plant parts. Damage may result in twig dieback or holes in bark and twigs.

*Look in leaf litter if pests are not visible on plant and leaf damage is new.

*Hand remove if possible

* Wood-borers are often attracted to stresses plants, and damage may be more severe on stressed plants. Black twig borders damage landscape plantings that are stressed by drought, compaction, etc. Plants stressed because they are planted incorrectly, in the wrong place or are that are not maintained properly may be susceptible to wood-boring beetles.

Grasshoppers: chew out oval patches or tender plant parts. Holes may be in a row across a leaf if feeding occurred before leaf unfolded. Grasshoppers seem to be especially numerous in mid late summers following mild winters and moderately-wet springs.

*Hand removal is about is about the only effective control in landscapes for large grasshoppers.

*Control weeds and mowing heights in immediate area.

Caterpillars: a variety of caterpillar pests may be found in home landscapes in Alabama. Some are spring pests; others are more numerous during mid-late summer. Pest ID is important, and control of younger stages is usually easier. Formulations of Bacillus thuringiensis (B.T.) are available to homeowners, and are effective on a variety of caterpillar pests is younger stages are treated.

A. Skeletonizers, leaf miners and small sawfly larvae may feed on tender leaf parts, usually between veins.

*Wash off as skeletonizers and sawflies as possible

*With fingers, crush leaf miners in leaves as they appear

*Remove badly damaged leaves before pests mature

B. Bagworms are primarily pests on narrow leafed evergreens, but sometimes cause damage to hardwoods in landscapes (willow oaks seem to be attractive to bagworms).

*Hand remove bags in fall and winter

*Treat young larvae in the spring (May- early June) with B.T.

C. Larger leaf feeders:

*Hand remove, but do not remove with bare hands anything you cannot identify

*B.T. may be effective on younger larvae

D. Wood borers: Dogwood borers, lilac borers, and peach tree borers are “close kin”, and are among out most serious landscape pests. Most of these are attracted to stress plants. For example, dogwood trees injured with weed eaters and lawnmowers may be severely damaged or killed by one or more of these pests.

*On one or two trees, larvae can be removed

*Time insecticide treatments properly, and apply correctly

Snails and slugs: thank goodness these are not insects, but we have to deal with them anyway. These animals are a problem in wet or moist conditions.

*Do not over water plant or plant beds

*Remove and replace much frequently

*Let plant beds dry out, place a cover a moist area near but not touching plants. Snails/slugs will move to the moist area and can be removed by hand

*Stable beer has been reported as an effective “trap’ for thirsty/hungry snails/slugs by some homeowners. I am told that certain snail/slug populations are brand-specific as to the beer that works.

3. OTHERS: Thrips damage plant tissue by rasping it and sucking out the sap. Distortion of new growth, improperly opening buds and damaged blossoms may indicate the presence of thrips. Some thrips also spread diseases (tomato spotted wilt). Thrips seem to prefer light colored buds and blossoms. Shake a bud, blossom or terminal over white paper; if thrips are present, they will fall on the paper and crawl or “hop” across it. Each thrips is about the size of a grain of pepper, and the body is elongate. Adults have brushy wings, with filaments that resemble the teeth of a comb.

*Control weeds and mowing heights in the immediate area.

*Remove and destroy old buds and blossoms.

"DISEASES OF LANDSCAPE PLANTS"

SOME COMMON LANDSCAPE PLANT DISEASES

AND DISEASE CONTROL PRACTICES

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Introduction

1. Definitions
    a. Disease: Abnormal function caused by a continuously irritating agent and expressed by noticeable symptoms
    b. Requirements for disease: (1) disease agent; (2) susceptible plant; (3) favorite environment.
    c. Symptom: The visible effect produced in or on a plant by the presence of pathogen or disease agent
    d. Sign: An indication of a disease from direct visibility of the pathogen
    e. Some Examples of Disease Symptoms: Spots, blights, cankers, diebacks, stunting, chlorosis, galls, root-knot, wilt.
2. Disease Agents (1)Living and (2) Non-living
        1. Living: Fungi, Bacteria, Viruses, Viroids, Mycoplasmas, Nematodes, Parasitic Higher Plants, Protozoa
        2. Non-living: Environmental factors, Nutrition, Pollution, etc.
    b. Fungi: small organisms (Kingdom Mycetae)
        i. 8000 species cause plant disease
        ii. Cause over 80% of plant disease
        iii. Consist of microscopic filaments called hyphae
        iv. Reproduce by spores
        v. Identified by spores and reproductive structures
        vi. Survive as parasites and saprophytes
        vii. Spread by wind/rain/insects
    c. Bacteria: primitive microscopic organisms (Kingdom – Prokaryotes)
        i. 200 species cause plant disease
        ii. Microscopic, one-celled organisms
        iii. Reproduce by binary fission
        iv. Survive as parasites/ saprophytes

v. Infect plant wounds/ natural openings
vi. Spread by wind/ insects

d. Viruses: submicroscopic structures
    i. 500 + cause plant disease
    ii. Submicroscopic organisms
    iii. Obligate parasites
    iv. Nucleic acid and protein coat
    v. Replicate within the host cell
    vi. Infect plants through wounds
    vii. Spread by insect/seed/animals

e. Nematodes: small round worms (Kingdom – Animal)
    i. Round worms – plant parasites are microscopic
    ii. Need live host to survive
    iii. Use stylet to feed on plant cells
    iv. Most plant nematodes feed on roots
    v. 4 Juvenile stages and adult form and over-winter egg stage
    vi. Generation time 30 days (1-5 generations/yr.)
    vii. Spread by soil transport

3. Disease Control
    a. Principles
        i. Exclusion
        ii. Eradication
        iii. Protection
        iv. Resistance
    b. Practices/Methods
        i. Cultural: modifications in planting, soil fertilization, irrigation, soil preparation, etc.
        ii. Chemical: most are protective sprays; some chemicals provide eradication
        iii. Genetic: plant resistant varieties or cultivars
        iv. Biological
4. Plant Disease/ Problem Diagnosis
    a. Field Diagnosis
        i. Observe Plants carefully
            1. Check foliage for spots, yellowing, mosaics, marginal burns, growth abnormalities, insect damage
            2. Examine stems and crowns for internal discoloration, external discoloration, fungal structures, bacterial ooze.
            3. Examine roots for discoloration, swelling, stunting, absence of secondary roots

ii. Considerations – recent weather, chemicals/fertilizers applied, soil conditions, insect problems, animal damage disease, nematodes, patterns of the damage

b. Collecting/ Packages Mailing Samples
    i. Collecting
        1. If spots, collect affected plant parts
        2. If poor growth, collect whole plants
        3. Include development stages of the problem
        4. Include damage but not dead plants
        5. If large plants, collect 1-3
        6. If small plants, collect several – many
        7. Collect and record and include information
    ii. Packaging
        1. Gently shake soil from roots
        2. Package plants in dry plastic
        3. May need to wrap root ball separately
        4. Packaging loose soil separately
        5. Package fruits/crucifiers in newspaper
    iii. Mailings
        1. Use a sturdy padded envelope or box
        2. Mail early in week
        3. Address properly

            The Plant Diagnostic Lab
            101 Extension Hall
            Auburn University, AL 36849-5624

c. Laboratory Diagnosis
    i. Activities of the Plant Diagnosis Lab
        1. Plant problem/disease-diagnosis
        2. Soil nematode analysis
        3. Insect Identification
        4. Weed/plant identification
    ii. Routine Lab Procedures for Plant Sample Problems
        1. Visual exam
        2. Microscopic exam
        3. Soil pH
        4. Soil soluble salts
        5. Culture isolations – selective media
        6. ELSA
        7. Nematode analysis
        8. Ref. for soil or tissue tests for minerals

9. Ref. to agronomists, horticulturists, entomologists

iii. Response to Plant Sample Problems
    1. Identify problem or disease
    2. Give control recommendations
    3. To client, usually by regular mail
    4. To count agent, email or phone
    5. Service charge invoice included in letter to client ($10-$15)

iv. Soil Nematode Analysis
    1. In field appearance – poor growth
    2. Collecting, Packages, Mailings soil samples
        a. Collect moist root zone soil in late summer, earl fall
        b. Mix soil and remove 1 pint
        c. Place soil into plastic bag; seal
        d. Enclose in nematode carton
        e. Provide information on nematode carton and nematode questionnaire
        f. Include service charge payment of $10
        g. Keep samples cool
        h. Mail to the Plant Diagnostic Lab early in the week
    3. Response to soil nematode samples
        a. Identify plant damaging nematodes present and give counts per 100cc soil
        b. Give control recommendations
        c. Typically respond by letter to client

SOME COMON LANDSCAPE DISEASES IN ALABAMA, DISEASE DIAGNOSIS, AND DISEASE CONTROL RECOMMENDATIONS

I. Foliar Diseases

- Azalea- Gall (Exobasidum)
  Diag: Symptoms
  Control: Sanitation; open canopy; prot. Sprays

  Botrytis Blosssom Blight; Ovulinia Blossom Blight
  Diag: (Symptoms); Microscopy; Culture
  Control: Sanitation
- Camellia - Virus
  Diag: Symptoms
  Control: Remove plants
- Crabapple- Cedar Apple Rust (Gymnosporangium)
  Diag: Symptoms; Signs
  Control: Sanitation and eliminate alternate host; protective spray
- Dogwood- Spot Anthracnose
  Diag: Symptoms
  Control: Sanitation
- Holly- Leaf Spot (Fungal)
  Diag: Symptoms, Culture
  Control: Sanitation
- Juniper- Phomopsis Blight
  Diag: Microscopy; Culture
  Control: Sanitation, protective sprays
- Maple- Anthracnose (Kabatiella)
  Diag: Symptoms, Microscopy, Culture
  Control: Sanitation, protective sprays
- Pear- Fireblight (Erwinia)
  Diag: Symptoms, Microscopy, Culture
  Control: Sanitation, blossom sprays
- Photinia- Fireblight (Erwinia)
  Diag: Symptoms, Microscopy, Culture
  Control: Sanitation

  Entomosporium Leaf Spot
  Diag: Symptoms, Microscopy
  Control: Sanitation, protective sprays

- Privet- Cercospora Leaf Spot
  Diag: Symptoms, Microscopy, Culture
  Control: Sanitation, protective sprays
- Rose- Black Spot (Diplocarpon)
  Diag: Symptoms, Microscopy
  Control: Sanitation, mulching, protective sprays

  Cankers (Fungal)
  Diag: Symptoms, Microscopy, Culture
  Control: Sanitation, Protective sprays

  Crown Gall (Agrobacterium)
  Diag: Symptoms, Culture
  Control: Sanitation, avoid wounding, control root feeding insects, crop rotation

  Virus
  Diag: Symptoms
  Control: Sanitation

  Downy Mildew (Peronospora)
  Diag: Symptoms, Micrososcopy
  Control: Sanitation, protective sprays
- Sycamore- Scorch Disease (Xylella)
  Diag: ELISA; culture
  Control: Sanitation, crop rotation
- Many Crops- Powdery Mildew
  Diag: Hand Lens, Microscopy, Culture
  Control: Sanitation, environment, protective sprays
- Many Crops- Botrytiis Blight
  Diag: Hand Lans, Microscopy, Culture
  Control: Sanitation, Environment, Protective Sprays
- Marigold- Alternaria Leaf Spot; Bacterial Leaf Spot
  Diag: Microscopy; Culture
  Control: Sanitation
- Periwinkle & Petunia- Aerial Phytophtora Blight
  Diag: Symptoms, Microscopy, Cultural
  Control: Sanitation, Aliette Sprays

- Many Bedding Plants- Impatiens Neurotic Spot Virus
  Diag: Symptoms, ELISA
  Control: Sanitation
- Common Turf Disease- Brown Patch
  Diag: Microscopy, Culture, Sometimes Symptoms
  Control: Environment, Protective Sprays

  Helminthosporium Leaf Spot
  Diag: Symptoms, Hand Lens, Microscopy
  Control: Environment, Protective Sprays

  Pythium Blight
  Diag: Microscopy, Culture, ELISA
  Control: Environment, Protective Sprays

  Dollar Spot (Sclerotinia)
  Diag: Symptoms, Microscopy
  Control: Environment, Protective Sprays
- Patch Disease (Take-all)- Diag: Microscopy, Culture
  Control: Environment, Sanitation, Protective Sprays

- Fairy Rings- Diag Symptoms
  Control: Environment, Sanitation, Protective Sprays

II. Vascular Diseases
  1.Fusarium, Verticillium, Ceratocytsis, Pseudomonas
  Diag: Symptoms – external and internal; culture
  Control: Sanitation, Crop Rotation, Resistance

III. Crown/Root Diseases
- Abiotics – nutrient, environment, chemical
- Biotics – Armillaria, Sclerotium, Phytophthora, Pythium, Rhizoctonia, Thielaviopsis, Fusarium, Nematodes
  1.Armillaria- Mushroom Root Rot
    Diag: Symptoms, Culture
    Control: Sanitation, Crop Rotation
  2.White Mold (Sclerotium rolfsii)
    Diag: Symptoms, Microscopy, Culture
    Control: Sanitation, Chemical
  3.Phytophthora
    Diag: Microscopy, Culture, ELISA

Control: Sanitation, Environment, Crop Rotation, Resistance, Protective Drenches

4.Pythium-

Diag: Microscopy, Culture, ELISA

Control: Sanitation, environment, crop rotation, protective drenches

5.Rhizoctonia

Diag: Microscopic, Culture, ELISA

Control: Sanitation, crop rotation, Protective chemical drenches

6.Thielaviopsis – Black Root Rot

Diag: Symptoms, Microscopy, Culture

Control: Sanitation, Protective Drenches

7.Fusarium

Diag: Microscopy, Culture

Control: Sanitation, Crop Rotation, Resistance, Protective Chemical Drenches

8.Nematodes (11 Genera)

Diag: Symptoms, Soil Nematode Analysis

Control: Crop Rotation, Fallow, Resistance, Chemical Treatment- Fumigation, Soil Amendment- Biological

TURFGRASS WEED PROBLEMS

Large Crabgrass

- Summer annual
- Germination – late March to early April
- Fibrous root system and roots at lower nodes
- Lower sterns flattened, pale green, with hairy sheaths that form unsightly patches

Goosegrass

-Summer annual grass
- Silver crabgrass
-Thrives in compacted soil areas
- Germination may be 4 to 6 weeks later than crabgrass
- Fibrous root system and roots at lower nodes
- Lower sterns strongly flattened and crown is silver-white
- At maturity, 4 or 5 flattened finger-like seed heads produced at end of sterns

Prostrate Spurge

-Summer annual broad leaf weed
- Prostrate, spreading weed common in waste places
- Late germinating weed (later spring to early summer)
- Leaves and sterns purple to green in color (sometimes spotted)
-Plants have white milky (latex) sap
- Tiny, inconspicuous, pinkish- white flowers are produced and many seeds

Gripeweed

-Summer annual broadleaf weed
- Phyllanthus species
- Often referred to as “little mimosa”

- Upright growing with strong taproot

- Round capsule at base of each leaf

- Each capsule contains 6 seeds

Annual Lespedeza

-Summer annual broadleaf weed

- Japanese clover

- Prostrate, spreading growth habit with strong taproot

- Plants are tough, wiry, dark green resembling clover

- Looks like barbed wire with small brown stipules at each node

- Leaves consist of 3 leaflets with distinct white parallel veins

-Very small pinkish-purple flowers at each node

Annual Bluegrass

-Low growing plant with fine stems and leaves

- Leaf blades are week and are boat-shaped at tip

- Grows in clumps which merge into large patches in early spring

- Whitish-green colored seed heads produced below mowing height

- Dies unsightly patches in late spring

Bittercress

-Winter annual broadleaf weed

- Upright square sterns with opposite leaves

- Basal rosette of small segmented leaves

- Sharp pointed oppressed capsules on stems

- Distinctive seed dispersal

Henbit

-Winter annual broadleaf

- Upright square sterns with opposite leaves

- Leaves are rounded, coarsely toothed, deeply veined, and hairy

- At top of plant, leaves directly clasp the stem

- Pinkish-purple trumpet-shaped flower in clusters at the end of stems

- Early spring blooming weed

Chickweed

-winter annual broadleaf weed which roots at nodes

- Creeping habit of numerous branched stems forms dense patches

- Leaves are opposite, oval shaped, and bright shiny green

- White flowers are 5 pedaled (deeply notched); appearing as 10 petals

Carolina Geranium

-Winter annual broadleaf weed

- Simple leaves are deeply divided or segmented

- Stems erect and much branched

- Basal cluster of leaves with reddish-green hairy stems

- Bears cluster of white to pale purple flowers at end of stems

Spur weed

-Winter annual broadleaf weed

- Frequently referred to as sandspur

- Prostate growth with finely dissected leaves

- Leaves and stems covered with fine hairs

- Fruits with spines produced from inconspicuous green flowers

- Weed is not evident for most of growing period (spreads rapidly)

- Plants grow in tufts and produce small 5 pedaled yellow flowers

- As flowers mature, square pointed capsules are produced

Hop Clover

-Winter annual broadleaf weed

- Mat-forming legume with trifoliate leaves

- Numerous small white and yellow flowers produced in spring

Black Medic

-Winter annual broadleaf weed

- Dark blue-green, prostrate, spreading weed with square stems

- Legume with 3 wedge shaped leaflets with spur or tooth at tip

- At maturity, bright yellow flowers are compressed into cluster

- Each flower develops into a tightly coiled black seedpod

Cudweed

-Biennial broadleaf weed

- Basal rosette of leaves with grayish-white appearance

- Leaves are long, narrow, and blunt tipped

- During second year, branched flowering stems produced with small narrow leaves

- Flowers are tan to white in color and appear at the base of the upper leaves

False Dandelion

-Biennial broadleaf weed

- Basal rosette of round lobed, dissected leaves

- During second year, branched leafy stem produced with several yellow flowers

- Mature seed head strongly resembles dandelion

Bahia grass

-Perennial grass weed

- Mat-forming grass with stout rhizomes covered with persistent

- Stems and leaves essentially hairless with leaves up to 10 inches long

- At maturity, 2 seed heads in V-shaped arrangement (sometimes 3)

Dallisgrass

-Perennial grass that grows in clumps

- Thick woody rhizomes with upright stems

- Leaves and stems usually hairless

- 3 to 7 finger-like seed heads produced alternately at end of stm

- Long hairs present at base of each finger-like seed head

Torpedo Grass

-Perennial grass weed

- Stems stiff up to 3 feet tall

- Stems borne on robust, horizontal, creeping stems

-Rhizomes covered with leafless, hairy sheaths

- At maturity, flowers and fruits are borne in open panicles

Wild Garlic

-Perennial weed with 3 methods of reproduction

- Hollow stem with 2 or 3 round hollow leaves developing from basal bulb

- Basal bulb covered by thin, whitish papery coat

-At maturity, small yellow bulbs or bulblets over the basal bulb below ground

- Above ground, aerial bulblets are produced at the tips of stems and greenish-pink small flowers

Yellow Nutsedge

-Perennial sedge

- Slender, triangular, pale green stems up to 24 inches tall

-Most leaves basal except for yellow seed head

- Leaves have sharp pointed “hypodermic” tip

- Plants reproduce by seeds, rhizomes, and tubers (nuts)

-Rhizomes end individual tubers (no chain of tubers)

Purple Nutsedge

-Perennial sedge

-Smooth, triangular, dark green stems

- Smaller stems than yellow nutsedge and leaves have dull, blunt, or boat-shaped leaf tips

- Reproduces by seed, rhizomes, and tubers (nuts)

- Tuber chains develop from rhizomes

Dandelion

-Perennial broadleaf weed with thick, fleshy orange taproot

-Produces rosette of long, narrow variably lobed or serrated leaves

- Plants have no stems and yellow flowers borne at end of long, bare, and hollow stalk

- Flowers mature into round, white puffballs full of seeds

Florida Betony

-Perennial broadleaf weed

- Also called “rattlesnake weed”

- Square stem with opposite leaves produced from large, white, constricted tubers

- Leaves are hairy, shaped, and serrated

- White to purple two lipped (trumpet-shaped) flowers produced at top of plants

- During hot weather, top growth disappears but plant reproduces by seed or underground tubers

Buckhom Plantain

-Perennial broadleaf weed with taproot and strong lateral roots

- Basal rosette of long, narrow pointed leaves that often twist or curl are produced

- Leaf veins are ribbed or prominent on the lower surface

- At maturity, leafless, hairy, and erect stems are produced with dense, compacted, and tapered seed heads

Wild Strawberry

-Perennial broadleaf weed

- Hairy, prostrate stolon's produced with trifoliate leaves

- Leaflets oval shaped with serrated margins and are borne on long petioles

-Single yellow flowers with 5 petals are borne on long stalks

- Small, red, fleshy, and tasteless fruit produced by mature flowers

Dichondra

-Perennial broadleaf weed that spreads by slender, creeping stems that root at the nodes

- Kidney shaped leaves grow opposite each other along the horizontal stems

-Small, green, and inconspicuous flowers produced along the stem

- Thrives in moist soils but cannot tolerate freezing temperatures

Ground Ivy

-Perennial broadleaf weed that forms dense patches usually in shaded areas

- Plants have creeping or spreading square stems that root at the nodes and produce opposite leaves

- Leaves are round with scalloped margins, rough upper surface, and heavily veined leaf surface

- Produces bluish purple trumpet shaped flowers

Pennywort

-Perennial broadleaf weed with creeping or spreading branched stems that root at the nodes

- Leaves are round, fleshy, and bright green that resemble an "umbrella" with a central petiole

- Produces open clusters of tine 5 pedaled star shaped flowers

Virginia Buttonweed

-Perennial broadleaf weed

- Stems somewhat fleshy and green-white in color

- Elliptically shaped leaves are oppositely arranged on the stem

- 4 pedaled white flowers are borne in the leaf fork or axils

- Flowers develop into round “button-like” seed capsules

Wild Violets

-Perennial broadleaf weed

- Plant has spreading or creeping growth habit by rhizomes or stolons

- Leaves are heart- shaped, serrate and frequently borne directly from rhizome

- Violet or pansy like flowers of many different colors or shades produced

Common Greenbriar

-Perennial broadleaf weed

-Woody vine with occasional thorns

-Woody convoluted rootstock that must be removed manually or mechanically

- Leaves thick, dark green, and oval to heart or shield shaped

- Prominent ribbed veins on lower surface of leaves

- Male and female plants that produce small flowers and occasionally produce black berries

Some Commonly Used Ornamental and Turf Pesticides

Please study and learn the following pesticide names and to what category of pesticide each belongs. The ADAI is not recommending the use of any of these products as some may have been cancelled.

Herbicides:

Roundup – Princep – Lasso – Ronstar – Drive – Dimension – Glyphosate – MSMA – DSMA – PreM – Balan – Rodeo-2, 4-D Dicamba, Paraquat – Surflan – Terfaln – Betasan – Diquat Atrazine – Prometon – Dacthal

Insecticides:

Dursban – Diainon – Malathion – Merit – Talstar – Sevin – Spectracide – Orthene – Acehate – Proxal – Dasanit* - Demand – Astro – Cyfluthrin – Isophenfos – Permethrin – Pyrethrin – Milky Spore

Fungicides:

Dyrene – Daconil 2787 – Dexon – Tersan SP – Banner – Subdue – Banrot – Mancozeb – Ziram – PCNB – Sulfur

Nematocide:

Nemagon – Clandosan – Nemacure – Dasanit*

*has uses in more than one class of pesticides