Empire Turf Study Guide Maintenance Provider Exam

General Information

A. Thatch
   a. Intermingled layer of dead and living shoots, stems, and roots that develops between the zone of green vegetation and the soil surface
   b. ¼" to ½", will not lead to severe problems in Empire Turf
   c. Thick thatch layers lead to scalping of Empire Turf
   d. Benefits of thatch
      i. Retains moisture
      ii. Protects the crown of the plant from temperature extremes
      iii. Protects the crown of the plant from physical damage
      iv. Provides a cushion for athletic activity

B. Growth Habits of Turfgrass
   a. Rhizomatous Growth Habit
      i. Spreads by producing below ground stems
   b. Stoloniferous Growth Habit
      i. Spreads by lateral stems that creep over top of the ground
   c. Bunch-Type Growth Habit
      i. Spreads primarily or entirely by the production of tillers, grass growth is sometimes patchy
   d. Empire Turf Growth Habit
      i. Rhizomatous and Stoloniferous Growth Habits

C. Sunlight Requirement
   a. 5-7 hours of sunlight

D. pH Requirement
   a. 5.5-7.5

Installation and Post Installation

A. Preparing Empire Turf Site
   a. Pull soil sample and send to an approved laboratory for analysis
   b. Apply the appropriate soil amendments once getting the results from the soil analysis
   c. Site should have a smooth grade

B. Installing Empire Turf
   a. Stagger sod pieces and install with tight edges
   b. Avoid gaps. These gaps will allow weeds to germinate
   c. Avoid overwatering because excessive moisture can lead to disease and cause thatch issues.

d. Spray a preventative fungicide or insecticide application when conditions are favorable

C. Begin mowing once Empire Turf is rooted
   a. Mow within 10 days (or as soon as Empire Turf is rooted)
   b. Promotes "knitting" of turf
   c. Reduces weed pressure
   d. Prevents scalping that occurs when initial mowing is delayed

D. Using a starter fertilizer that has a lot of phosphorus and SOME potassium
   a. Use a starter fertilizer blend
   b. Avoid quick-release nitrogen blends
   c. Pay attention to soil samples

Fertilization

A. Shade areas
   a. Grass will grow slower in shaded environments, and therefore needs less fertilizer than grass growing in the full sun.
   b. When too much nitrogen is applied, the nitrogen depletes carbohydrates and produces a weaker turf system.

B. Soil types
   a. A newer lawn on a sandy soil, with little organic matter, requires more fertilizer than a lawn that has been fertilized for years.
   b. If site has sandy soil, the soil can be modified by adding a soil amendment such as organic matter (compost), or peat.
   c. Fertilization is affected by soil type, organic matter in soils and practices such as clipping management.

C. Application of fertilization
   a. Do not apply fertilizer too early in the growing season, particularly in regions subject to late season frosts that may damage the grass. Research conclusively demonstrates that nutrients applied to dormant turf are not assimilated into the plant.
   b. Take the annual quantity of nutrient needed and to apply it in small doses throughout the growing season (spring green-up through fall)
   c. Iron should be used for greening instead of nitrogen, which will cause a flush in growth

D. Summer fertilizer blackout for Florida

a. Most successful way to divide and apply the annual quantity of fertilizer needed for Empire Turf
    i. Apply half of the quantity in the spring and half of the quantity in the fall

Water Requirements and Drought Response

A. St. Augustine grass and centipede grass drought response
    a. Possess wilt avoidance
    b. When water is cut off, these grass varieties will hold green color longer and then begin to brown and die off.
B. Zoysiagrass, bermudagrass, bahiagrass drought response
    a. Typically begin to go off color faster than St. Augustine grass and centipedegrass.
    b. When water is cut off, the grass varieties aren't dying, but going dormant where they will begin to live off stored carbohydrates.
C. Empire water requirements
    a. 1" per week
        i. In a sandy loam water once per week. In pure sand watering can be broken into two waterings per week, a 1/2" at both times.
    b. Do not over water

Mowing

A. Mowing height
    a. ½" to 2"
        i. Anything over 2 inches will increase thatch buildup, which will produce extra disease and insect pressure
    b. Higher mower heights will lead to thatch issues
    c. Mature EMPIRE lawn, "scalp" down the grass by lowering the mower for the first mowing of spring (after all chances of frosts pass) and bag the clippings. This will reduce thatch.

Fungicide Usage/Management

A. Common diseases for Empire Turf
    a. Large Patch
    b. Rust
    c. Dollar Spot
B. Chemical Control
    a. Excessive nitrogen application during potential disease development periods should be avoided
    b. Preventative fungicide
        i. Apply in the spring and in the fall to prevent an onset of disease
        ii. Fungicide examples
            1. Trifloxystrobin + Triadimefon
            2. Flutolanil
            3. Trifloxystrobin
            4. Azoxystrobin

5. Propiconazole
6. Pyraclostrobin

C. Large Patch
   a. Factors and contributions
      i. Excessive thatch
      ii. High N
      iii. Rainfall, excessive irrigation, or extended periods of high humidity resulting in the leaves being continuously wet for 48 hours
   b. Symptoms and signs
      i. Fungus infects the leaf area closest to the soil, eventually killing the leaf
      ii. A soft, dark rot occurs at the base of the leaf
      iii. Leaves can easily be pulled off the stem
      iv. Begins as small patches that turn yellow and then reddish brown, brown, or straw colored as the leaves start to die
      v. There are numerous yellow/orange pustules on the leaf blade
      vi. Patches can expand to several feet in diameter
      vii. It is not uncommon to see rings of yellow or brown turf with apparently healthy turf in the center.
      viii. Turf at the outer margin of a patch may appear dark and wilted
   c. Cultural Control
      i. Nutrient and water management can be adjusted to control brown patch
      ii. Irrigation should only occur when necessary and during the early morning hours when dew is already present
      iii. Diseased areas should be mowed last since mowers can spread this disease
      iv. The mower should be washed of all turf clippings before proceeding to the next site

Insects

A. Hunting Billbugs
   a. Characteristics
      i. Adults are Charcoal Gray to black
      ii. Weevil-like insect that measures roughly 3/8" long
      iii. Larval forms are legless, white grubs with tan head capsules
   b. Life cycle
      i. 30 days from egg hatch to adult form
   c. Overwinter as larval
   d. Adults create problems in the early spring and the late spring is also problematic with newly emerged adults
   e. Hunting Billbug damage
      i. Damage especially noticeable during drought stress
      ii. Turf easily pulls up when tugged on
      iii. Adult/larval forms are present at soil level
      iv. Sawdust-like frass and chewings on the stems of turf

f. Chemical Control
    i. Hunting Billbug adult form
        1. Bifenthrin
    ii. Hunting Billbug larvae form
        1. imidacloprid

B. Sod Webworm
    a. Life cycle
        i. 5-6 weeks (Egg lay, egg hatch, larval instars, pupation, adult=moth)

C. Fall armyworm
    a. Larvae
        i. Grayish-green to brownish black
        ii. Dark stripes along their sides
        iii. Has a yellow inverted "Y" marking on the front of the head as larvae mature

D. Mole Crickets
    a. Species (4)
        i. Tawny (most descrutctive)
        ii. Southern (Carnivorous)
        iii. Short-winged (Herbivore)
        iv. Northern

Herbicides

A. Broadleaf herbicide
    a. 2,4-D

B. Suppression of bermudagrass establishment in zoysiagrass
    a. Fusilade
    b. Acclaim
    c. Turflon Ester

C. Nutsedge control
    a. Trifloxysulfuron