Insects and Insecticides in Utah Turf

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UTAH PESTS

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COOPERATIVE EXTENSION

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Major Turf Pests

Surface /Thatch Feeders (Leaf, stem):

- Armyworms
- Cutworms
- Sod Webworms
- Mites

Surface/Crown Feeders (burrow into stem, crown):

- **Billbugs**
- **Subterranean webworm**

Subsurface (root):

- **May/June Beetle (white grubs)**
- Masked chafers
- Japanese Beetle

Billbugs in Utah

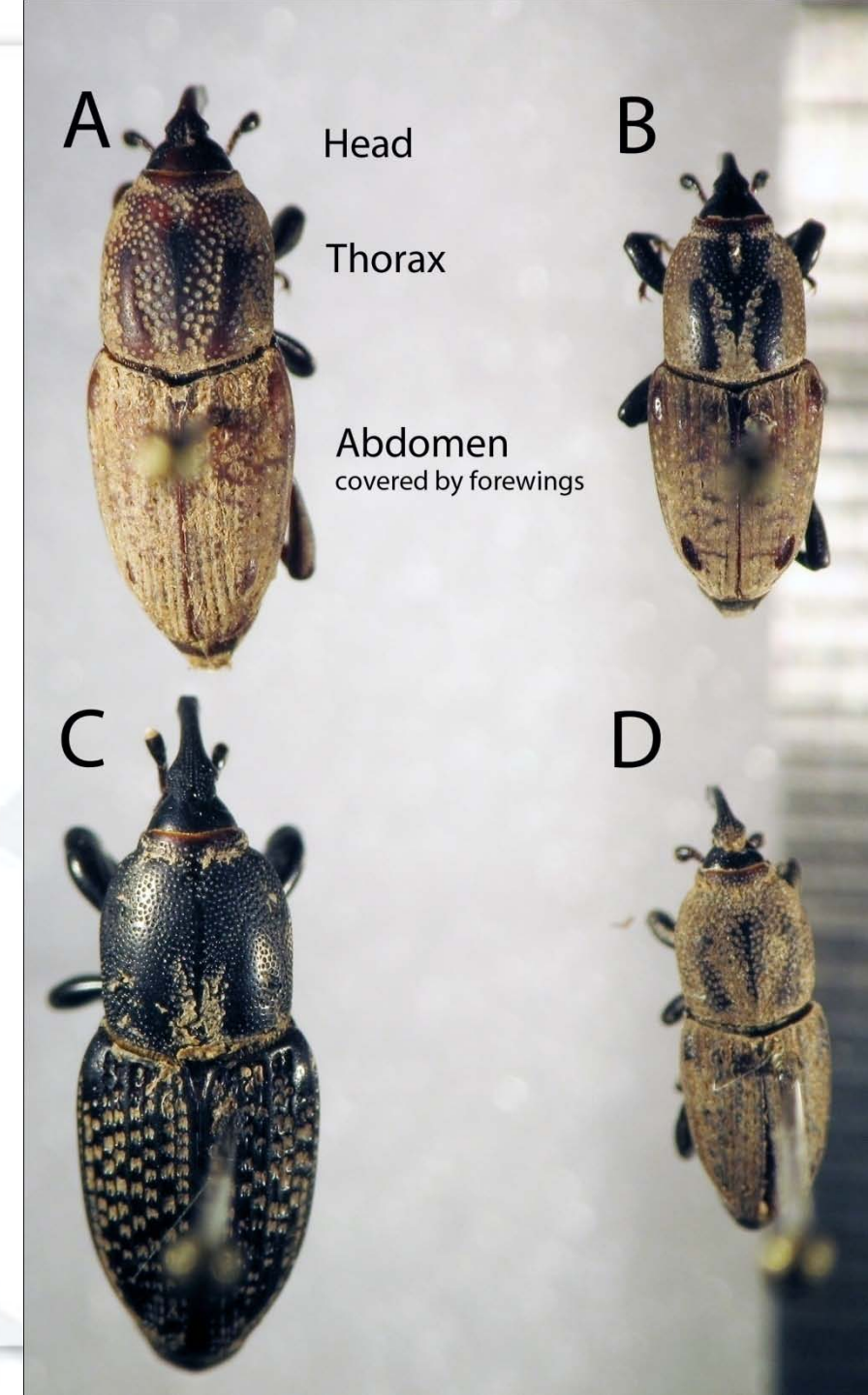
A) Hunting billbug*

B) Phoenix billbug

C) Denver (AKA Rocky Mountain) billbug*

D) Bluegrass billbug*

*common species



Billbugs

- Target young beetle stages (spring to early summer)

- Monitor adult activity
- Larva is the damaging stage
- Legless, small larva (key character)

Subterranean Sod Webworm

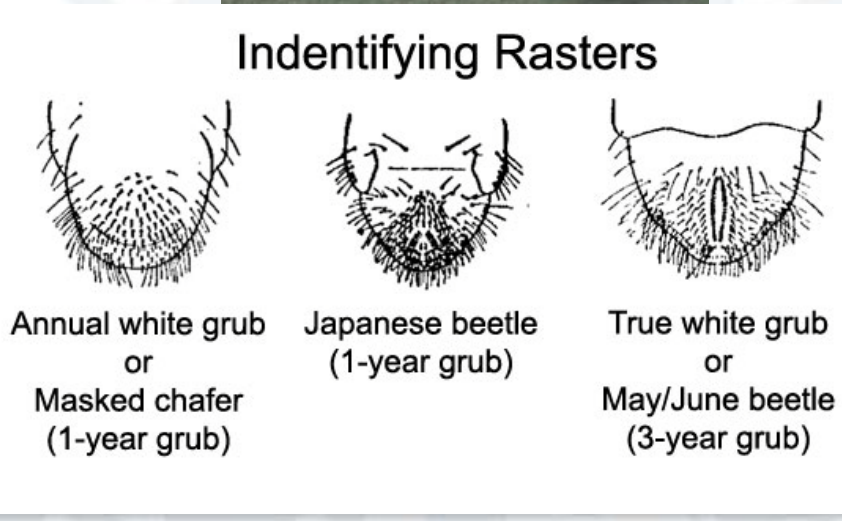
- Beige to brown moths fly in zig-zag pattern just above turf, especially around dusk
- Caterpillars are off-white to gray color
- Adults emerge mid-June, active 6-8wks

Subterranean Sod Webworm

- Target young larvae (summer to early fall)
- Consider treatment one week after peak of moth activity
- Apply insecticides late evening when adults are active

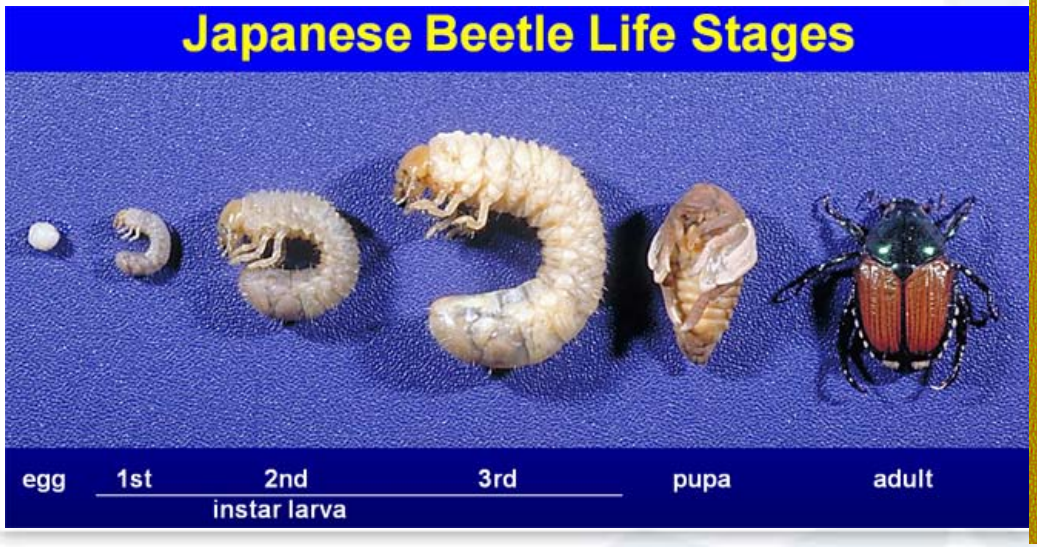
White grubs

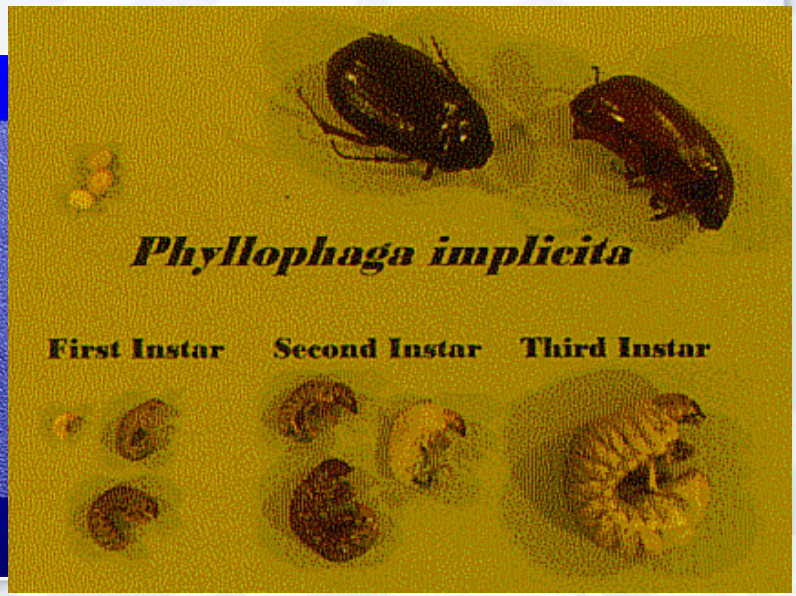
- Scarab beetle family
- C-shaped white larvae
- Brown head, legs
- 1-3 year life cycle



White grubs

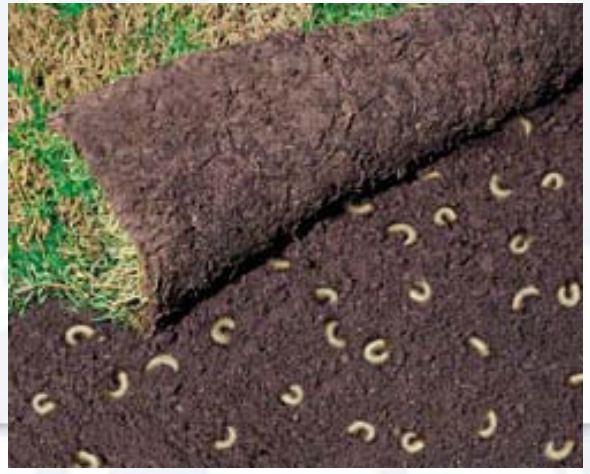
- Target small larvae (late spring-early summer)
- Target larvae before they dig deep for winter (late summer-early fall)





Turf Insect Control

- Target young stages (i.e., small larvae)
  - Billbugs: spring to early summer
  - Webworms: summer-early fall
  - White grubs: summer-early fall before larvae move deep into soil
- Irrigate to move materials to larvae in thatch and upper root zone



Active ingredients with most products

For turfgrasses (lawns and golf course) and related insects (white grubs, billbugs, sod webworms)

1. Imidacloprid (100+)
2. Bifenthrin (100+)
3. Lambda-cyhalothrin (30+)
4. Permethrin (20+)
5. Carbaryl (20+)

Sod webworms fairly susceptible to these insecticides but not beetles

Notable Products

- Bifenthrin* (available to homeowner)
- Chlorantraniliprole (available to homeowner)
- Clothianidin* (available to homeowner)
- Imidacloprid* (available to homeowner)

*Some restricted use products:

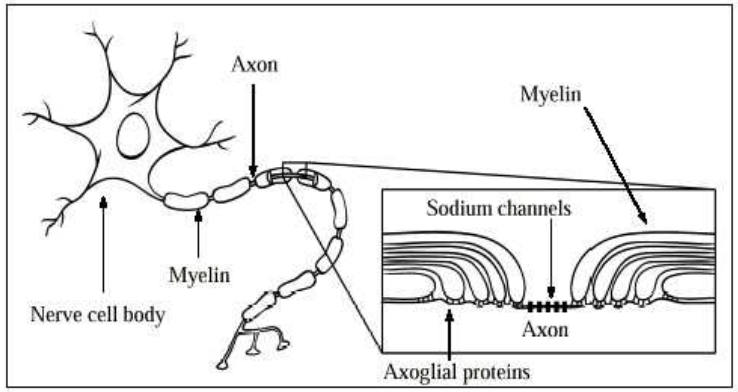
Some bifenthrin ONLY products

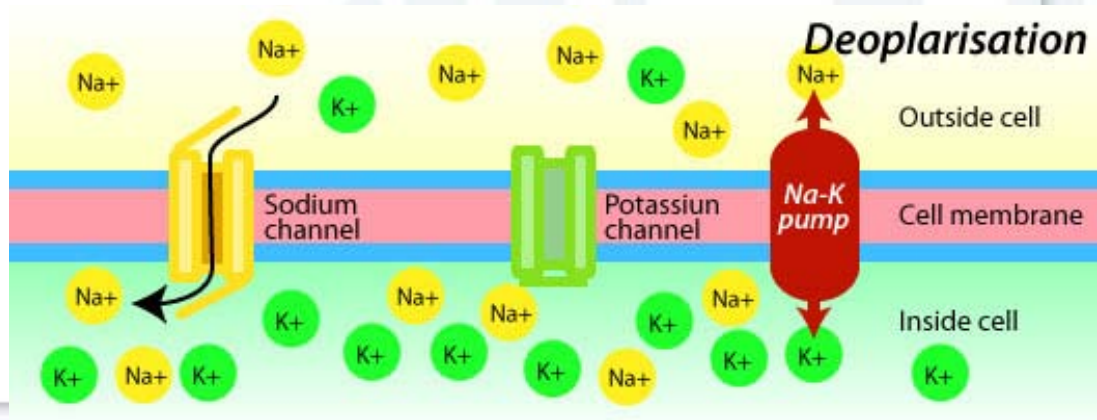
imidacloprid + bifenthrin

clothianidin + bifenthrin

Mode of Action Group 3A (pyrethroids/pyrethrins)

- Bifenthrin, cyfluthrin, lambda-cyhalothrin, deltamethrin, permethrin
  - Active through ingestion and contact
  - No systemic activity
  - Sodium channel modulators, keep sodium gates open in nerve cells





Be aware…

- Not good success when products contain ONLY lambda and gamma-cyhalothrin, bifenthrin, permethrin, deltamethrin, cyfluthrin for grub control.

- Thought to bind to organic matter at the soil surface and are difficult to move down where larvae feed.

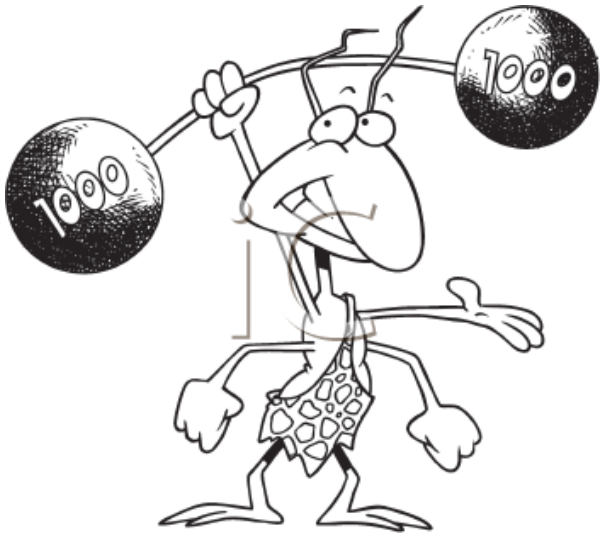
- Least reliable in the soil

Mode of Action Group 28 (Diamides)

- Chlorantraniliprole
  - Preventative Control
  - Newer active ingredient, not very water soluble so apply early to allow product to enter the soil
  - Ingestion required has little contact activity
  - Foliar and systemic activity
  - Very low toxicity to vertebrates

Mode of Action

- Chlorantraniliprole
  - Binds to and activates ryanodine receptors in muscle cells causing an uncontrolled release of stored calcium.
  - Depleted calcium stores leads to muscle paralysis and death

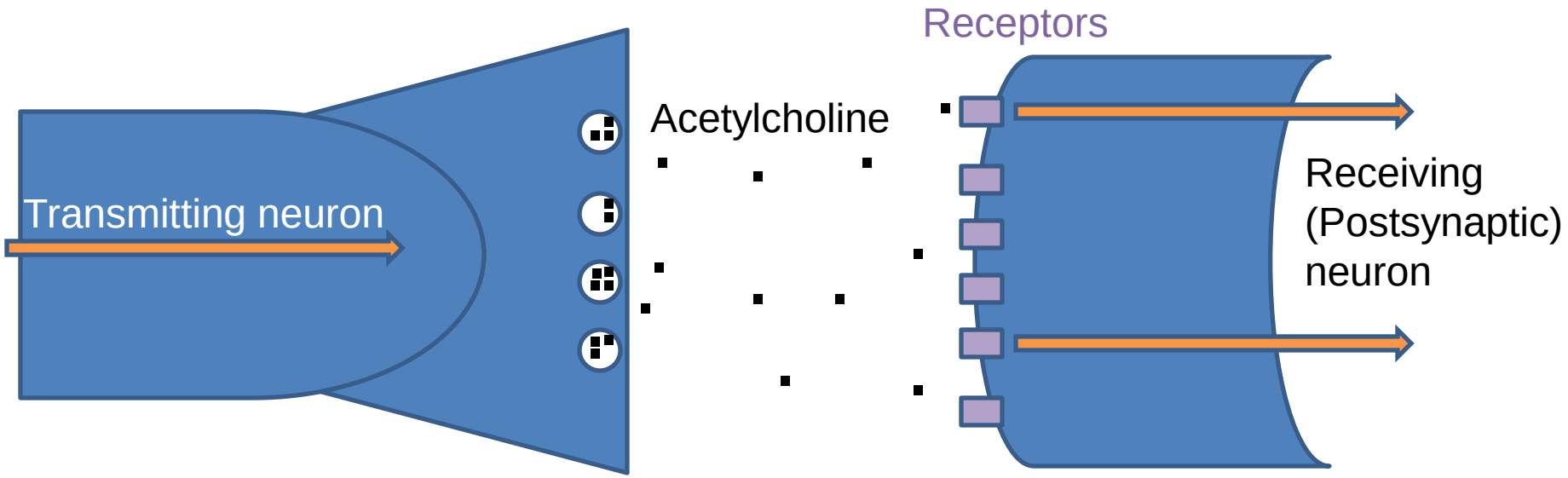


Mode of Action Group 4A (neonicotinoids)

- Clothianidin, Dinotefuran, Imidacloprid, Thiamethoxam
  - Active through ingestion and acute contact
  - Translaminar and root systemic
  - Low toxicity to vertebrates
  - Preventative Control and Curative (clothianidin)

Mode of Action

- Clothianidin, Dinotefuran, Imidacloprid, Thiamethoxam
  - Binds to specific nicotinic acetylcholine receptors on postsynaptic membrane connecting nerve cells causing excitation of nerves and eventually paralysis and death



Preventative Products

- Chlorantraniloprole, Imidacloprid, Clothianidin, Halofenozide*
  - Will not control established larvae in the spring or large larvae
  - Do work very well against newly hatched larvae

* Seven products registered in Utah; mimics hormone that regulates insect molting

Curative Products

- Carbaryl*, trichlorfon*, clothianidin
  - Multiple applications may be required
  - Mixed results

*Potential issue with Utah soils (pH 7.6-8.2)

Insecticide degrades quickly in pH 7.8 or higher

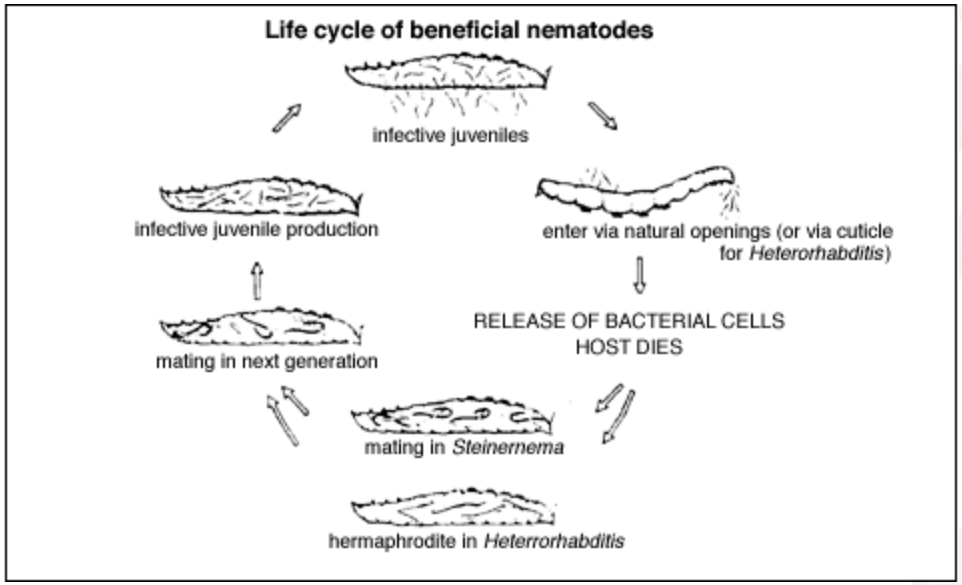
Be aware of…

Timing: Products are often sold from spring to fall however, the window of opportunity to effectively target the pest may be gone.

Product active ingredient changes: Same name different stuff

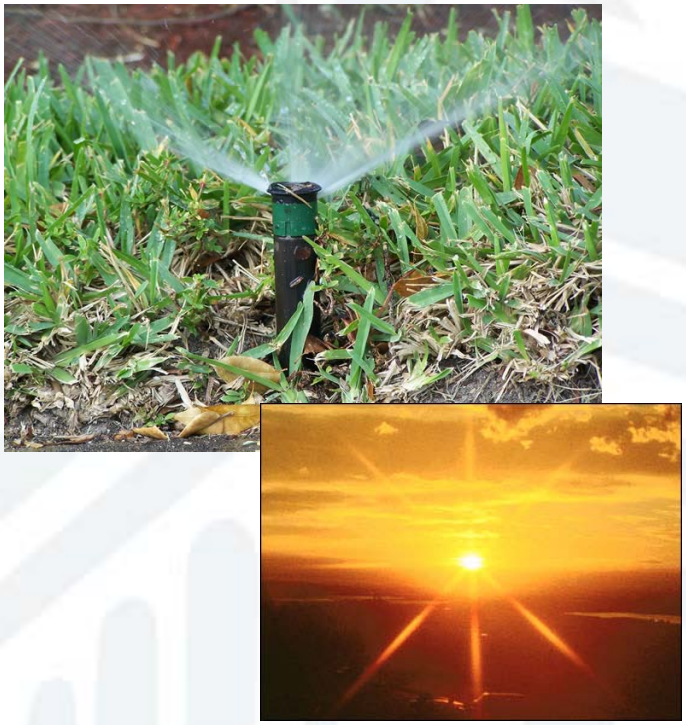
Beneficial Nematodes

- Life cycle and grub infection
- Associated with a bacterium that kills the insect



Beneficial nematode considerations

- Moisture important
  - Irrigation before and after application (soil)
  - Foliar application difficult
- Avoid UV exposure
- Compatible with standard spray equipment
  - Careful with high pressure
  - Remove fine screen

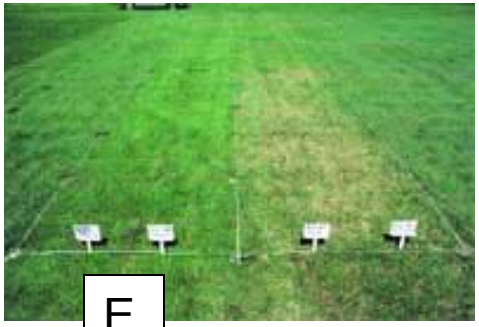


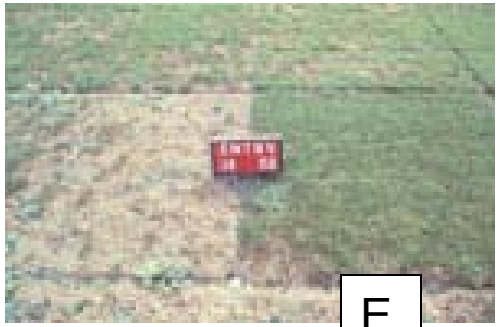
Be aware of…

- Milky spore disease
  - Also an insect pathogen
  - Only effective against Japanese beetle grubs
  - Other white grubs are not susceptible

Endophyte Enhanced Turfgrasses

- Beneficial fungus that lives in turfgrass and contributes to the production of defensive chemicals that can be toxic to insects or deter insect feeding.
- Limited to fescues and perennial rye but Kentucky bluegrass can be protected when seeded/mixed together.





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