

What's New in Turf Insect Management?

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Dr. Pat Vittum
Stockbridge School of Agriculture
University of Massachusetts - Amherst

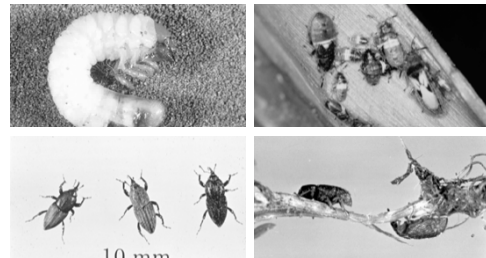
Topics to cover

- White grubs
- Chinchbugs
- Billbugs

For each insect:

- Identification
- Conditions that favor the insect
- Cultural strategies that can reduce insect damage

Turf insects

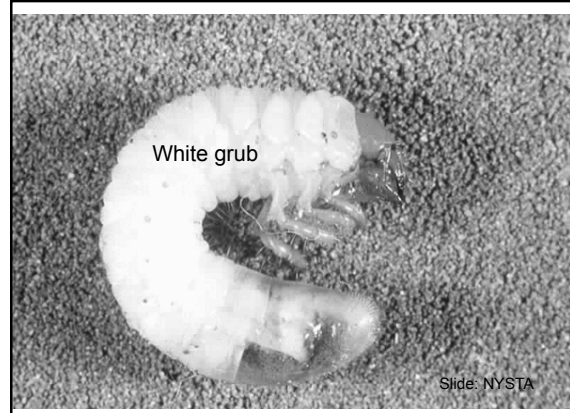


Photos: NYSTA

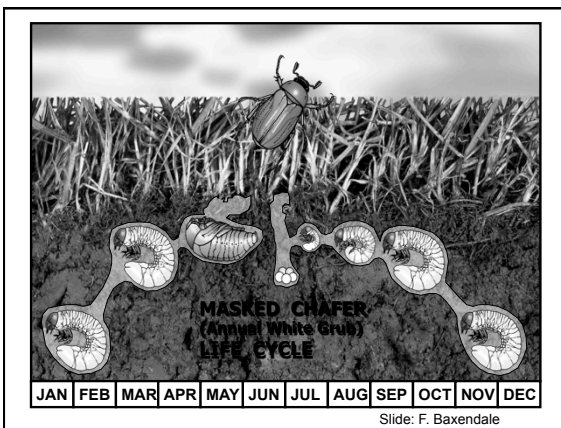
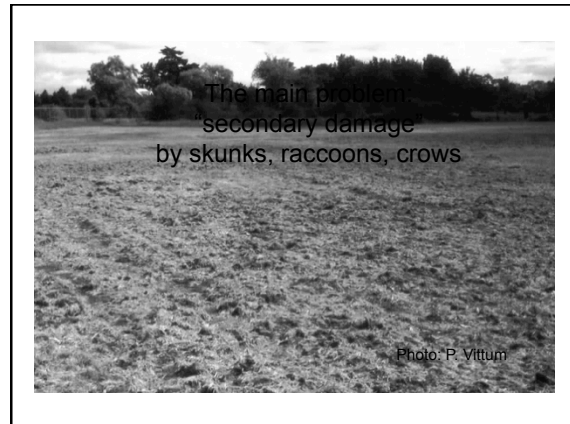
Annual White Grubs



Photos: P. Vittum



Slide: NYSTA



Tolerance levels

- 2
- 2
- 2
- 2
- 2

- About 10 grubs per 0.1 m² in most cases

Favorable conditions: white grubs

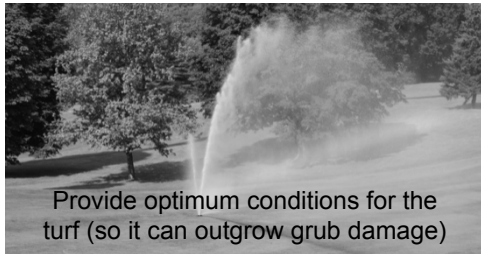
- Healthy roots
- Sunny areas (especially EC)
- Sandy soils (easier to move)

Cultural Control of Grubs

- Use cultural controls to mask damage or minimize secondary damage
 - Irrigation – deter or delay egg laying
 - Fertilization – Milorganite™ ???
 - Mowing – raise mowing height
 - Aerification – mechanical destruction of grubs
 - Manage the secondary varmints

Photo: B. McGraw

Irrigation



Provide optimum conditions for the turf (so it can outgrow grub damage)

Photo: P. Vittum

Soil moisture and grubs



- soil moisture to survive
- If soils are too dry, females will delay oviposition for several weeks, until moisture improves

Soil moisture and grubs

- European chafers prefer dry soils (but can tolerate flooding for 7 days too!!!)
- Oriental beetles quick to move down in soil profile when too hot or dry
- Japanese beetles prefer irrigated sites



Photos: NYSTA

Milorganite™ ???



- (formerly PSU, now OSU) reports that Milorganite™ deters skunks from rummaging in a grub-infested area

Raise mowing height

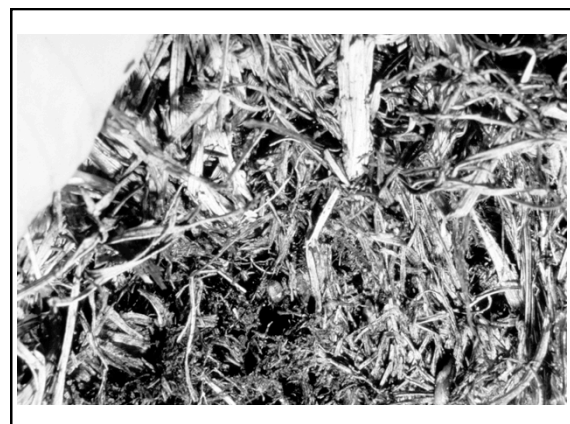
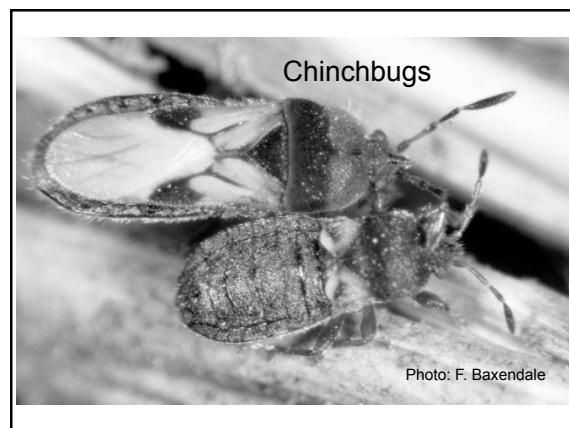
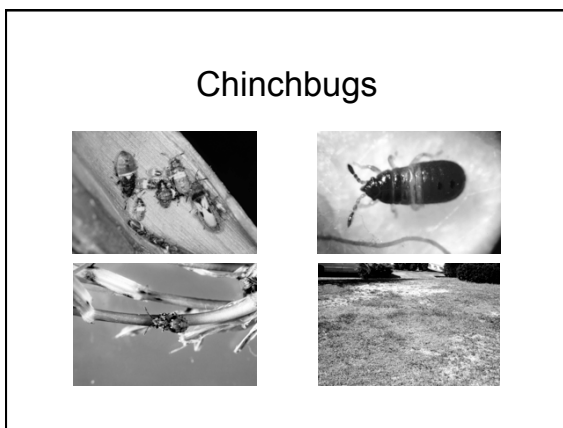
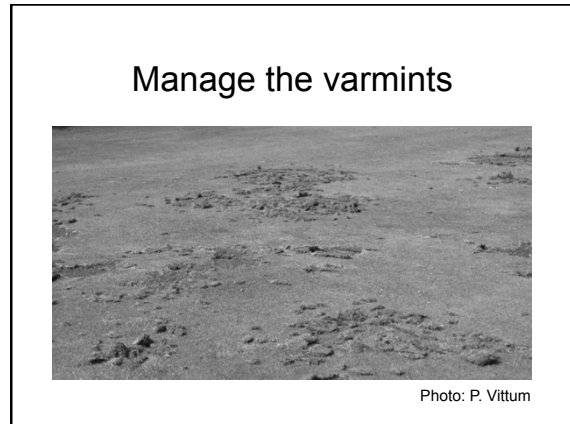


Photo: P. Vittum

Can aerification mechanically destroy grubs?

Ben McGraw, now turf entomologist at Penn State University

Slide: B. McGraw





Favorable conditions: Chinchbugs

- sandy soils, soils that drain well
- exposed areas
- thick or dense thatch
- fine fescues, creeping bentgrass (and other cool season grasses)



Cultural strategies - chinchbug

- Use endophytic cultivars (perennial ryegrass, some fescues)

Endophytes

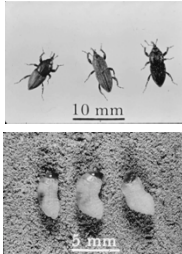


- Fungi that produce substances toxic to insects
- Available in some fescues and perennial ryegrasses
- Effective against chinchbugs and billbugs
- More drought tolerant

Cultural strategies - chinchbug

- Use endophytic cultivars (perennial ryegrass, some fescues)
- Manage thatch
- Avoid drought conditions if possible (!)
- Raise mowing height

Billbugs



Photos: NYSTA



Photo: NYSTA



Damage looks like summer dormancy

Photo: D. Shettler

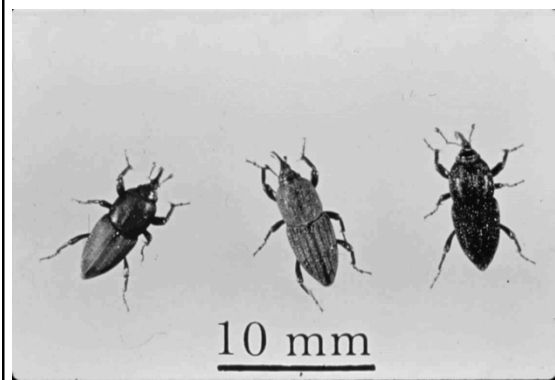


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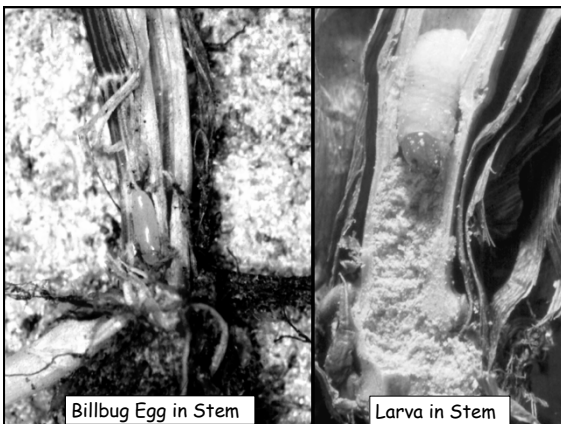
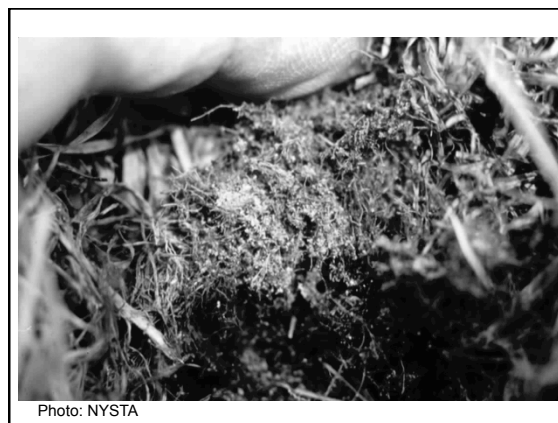


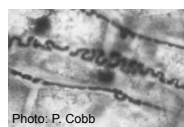
Photo: R. Baxendale



Favorable conditions bluegrass billbugs

- Kentucky bluegrass, perennial ryegrass, fescues
- lawn-type maintenance (or native areas or bunker surrounds)
- thick or dense thatch

Endophytes



- Fungi that produce substances toxic to insects
- Available in some fescues and perennial ryegrasses
- Effective against chinchbugs, billbugs, and some webworms
- More drought tolerant

Cultural Control bluegrass billbugs

- use other resistant cultivars (Kentucky bluegrass)
- manage thatch

pvittum@umass.edu

extension.umass.edu/turf

413-545-0268