Japanese beetle and other landscape pests in Utah

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Outline

- Utah quarantined pests
- Common landscape pests
- Japanese beetle
  - Biology
  - Damage
  - Control

UT quarantine pests

- African honey bee
  - $1.3 million honey industry, health risks
- Apple maggot/cherry fruit fly
  - $27.5 million fruit industry
- Cereal leaf beetle
  - $315 million small grain industry
- European corn borer
  - $35 million corn harvest

UT quarantine pests

- Mormon cricket/grasshopper
  - $315 million forage crop industry
- Gypsy moth
  - Destroy watersheds, forests, landscapes
- Japanese beetle
  - $25 million nursery and floriculture industry
- Red imported fire ant
  - U.S. >$5 billion damage

Concept of IPM

- Integrated pest management
  - Use multiple tactics to reduce pests
  - Promote plant health
  - Plan ahead with regular scouting
  - Get a proper diagnoses
  - Use thresholds (economic or aesthetic)

- Limit chemical applications
  - Follow rates/harvest intervals, mix up chemical classes
  - Think about good timing

Cultural Control recommendations

- Rotate crops, planting locations
- Seek resistant/tolerant plants
- Avoid susceptible plants (even favorites!)
- Start out with pest-free plants
- Diversify plant selection
- Set up zones for H_20, fertilization

Landscape pests

- It is impossible to have a clean garden
- Quick ID and management is key
- Cultural disorders can flare pests
- Cultural control can minimize pests
  - Keep plants healthy
  - Diversify plant selection
  - Target weak links in life cycle

Other landscape pests

- aphids
- bark beetles
- boxelder bugs
- earwigs
- grasshoppers
- mealybugs
- scales
- spider mites
- tree borers
- strawberry root weevil
- webworms
- white grubs

Aphids

- Many species on ornamentals
- Overwinter as eggs on woody plants
  - Parthenogenic during the summer
  - Give live birth, only females produced
- 10+ generations/year
- Piercing-sucking mouthparts
  - Fluid feeders, remove phloem/plant sap
  - Can vector disease

Aphids, cont.

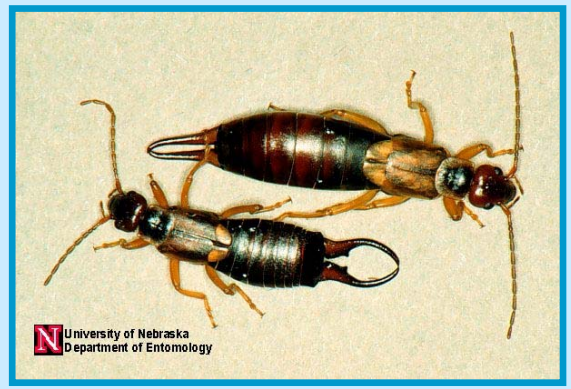
- Feed in clusters on the underside of leaves
- Excrete honeydew, ants are attracted
- Control options
  - Natural enemies: predators, parasitoids, pathogens
  - Strong stream of H_20
  - Delayed dormant oil + pyrethroid at bud break
  - Summer horticultural oils, insecticidal soaps
  - Imidacloprid, Conserve®, Bonide®, Align®, Aria®, Orthene®

Earwigs, *Furficula auricularia*

- Feed on a wide variety of plants
- Attracted to decaying animal matter
- 1 generation/year
- Overwinter as adults
  - Chewing mouthparts
  - Dark red/brown, small wing pads
  - Generally crawl
  - Nocturnal, hide under debris

Earwigs, cont.

- Nymphs and adults cause damage
- Look for holes in foliage
- Check garden at night
- Simple traps will work
  - Bran flakes, fish oil, toxicant
  - Rolled newspapers
  - Flat boards
  - Surround®



Grasshoppers, *Melanopus* spp.

- Several species found in UT
- Prefer tall broadleaf plants, weeds
  - Will feed on most veggies
- Chewing mouthparts
  - Plant defoliaters
- Overwinters as eggs in undisturbed soil




Grasshoppers, cont.

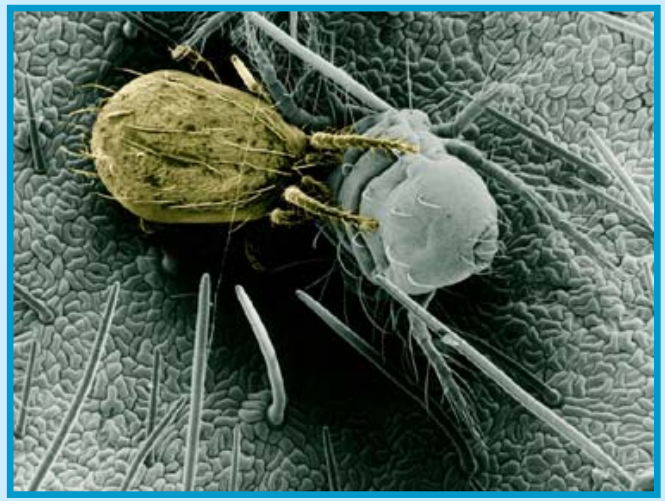
- Like hot/dry weather, susceptible to disease
- Control options (large scale)
  - Natural enemies: parasitoids of nymphs
  - Wheat bran + toxicant on borders
  - *Nosema locustae*
  - Bonide®, Botanigard®

Spider mites, *Tetranychus* spp.

- 4 pairs of legs, hairy body
- Overwinter in debris
- Wide host range
- Feed on lower leaf surface
  - Piercing mouthparts
  - Plants look dirty, webbed
  - Can look speckled, yellowed

Spider mites, cont.

- Very successful pests
  - Small size, many generations per year
  - Tolerance of pesticides
  - Like hot and dry weather



- Control options
  - Many natural enemies
  - Keep plants healthy, remove weeds
  - Strong stream of H_20, kaolin clay (Surround®)
  - Kanemite®, Tetrasul®, Floramite®, Hexygon®

Strawberry root weevil

- Adults make irregular notches in leaves
  - Lilac, peony, yew, dogwood, privet, conifers
  - Drop to the ground if disturbed, can't fly
- Use foliar spray in late spring
  - Orthene®, Merit®,
  - Sevin®, pyrethroids

Strawberry root weevil, cont.

- Larvae feed on roots
  - Legless larvae, brown head
  - Can kill plants abruptly
- Use soil drench in late spring/early fall
- Merit®, *Beauveria bassiana* (fungus)

Japanese beetle in UT

- Initially detected in Orem, July 2006
- UDAF set up trapping network
- Not detected outside original “hot spot”
- More than 600 adults have been trapped

JB biology

- Adults have a broad host range
  - Rose, apple, stonefruits, Virginia creeper, willow, elm, birch, maples, pin oak, sycamore
  - Strongly attracted to ripening fruit
  - Release a mating/feeding pheromone

- Grubs feed on turfgrass roots
  - Overwintering stage
  - Can weaken turf system

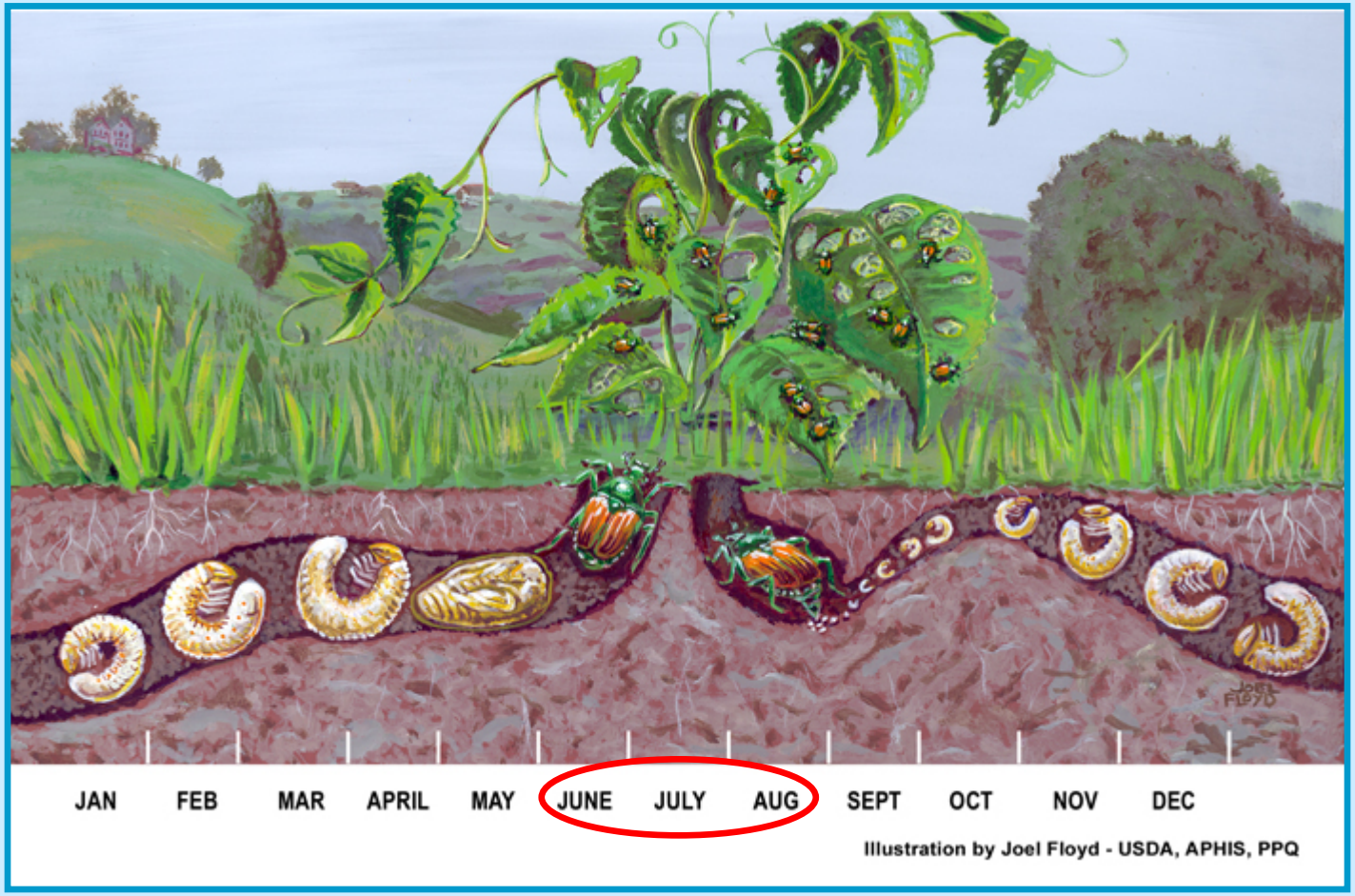
JB description

- Adults
  - oval, ~1/2” long scarab beetle
  - Metallic green with bronze wing covers
  - Six white tufts along each side
  - Clubbed antennae

JB description, cont.

- Eggs – white, laid in small clusters
- Larvae (grubs)
  - C-shaped, ~1” long fully developed
  - Creamy white, brown head, dark “butt”
  - 3 pair of thoracic legs, no prolegs
- Pupae – white, fragile

JB life cycle



JB damage - adults

rose

blueberry

Virginia creeper

linden

JB damage - grubs

- Small patches of turf destroyed
- Patches coalesce, quickly
- Spongy turf, easily pulled back

JB IPM

- Keep plants healthy
  - Follow fertilization/irrigation schedules
- But not “too healthy”
  - Over fertilized turf becomes attractive
  - i.e., golf courses, parks
- Include non-attractive plants
  - Lilac, forsythia, dogwood, magnolia

JB sampling

- Start scouting for grubs in June
- Scout for adults weekly
- Start scouting for eggs, grubs in August

JB trapping

- Use a pheromone trap (catch ~75%)
- Start monitoring early, look for damage
- Trece Inc.

P.O. Box 129
Route 1, Box 1765
Adair, OK 74330

P: 866.785.1313
F: 918.785.3036
www.trece.com

JB control

- Adult control is difficult
  - Wide host range
  - Continuous feeding/mating movement
  - Insecticides are not recommended (at this time!)

- Many insecticides are available
  - Bayer Advanced®, Baythroid®, Concern®, malathion 5, Merit 2.5 G ®, Orthene®, Pounce®, Proaxis®, Sevin 4F®, Warrior®
  - Insecticidal soap, Conserve®

JB adult control options

- Flight is greatest on clear days, 84 - 95°F, winds <12 mph.
- A few beetles on plants will attract more; keeping numbers and damage low can mean fewer new arrivals.
- Adults begin feeding on plant tops and then move down – can pose coverage problems on large trees. Be aware of spray drift and applicator exposure.
- Some insecticides (carbaryl/permethrin) may flare non-targets. Use acephate or malathion if needed. Repeated applications may be necessary with short-residual products. Also, significant rainfall shortly after an application may reduce the effectiveness.

JB grub control

- Grub control is difficult
  - Threshold is 8-10/ft^2 with obvious damage
  - Treat if persistent grub damage is visible
  - Pushing product down in the soil
  - Insecticides are not recommended (at this time!)

- Insecticides are available
  - Merit 0.5G®, GrubEx® before egg hatch
  - Dylox 6.2G® for grub outbreaks

JB grub control

- Light aerification if thatch > ½”
- Pre-irrigate 48 hours
- Post-irrigate ½ - ¾”, then mow
- Repeat irrigation every 4 – 5 days

Summary

- Many landscape pests in UT
- Some are incidental/nuisance
- Some are persistent problems
  - Start scouting early
  - Target wink links
  - Mix up chemical classes

More Information

- http://extension.usu.edu/cooperative/ipm/
- *Handbook of Vegetable Pests*. 2001. J.L. Capinera. ISBN 0121588610.
- *Garden Insects of North America*. 2004. W. Cranshaw. ISBN 0691095612.
- *Insects that feed on trees and shrubs*. 1991. W.T. Johnson and H.H. Lyon. ISBN 0801426022.

Thank you!

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