

What Caused that Damage?

How to determine what insects may have caused the damage

Antelope Garden Club

February 5, 2015



To determine what insect ...

It helps to know

- What type of plant?
 - Some insects are plant specific
- What type of damage?
 - Holes, stippling, puckering, brown edges
- What other signs are visible?
 - Frass, honeydew, beneficial insects, culprit



Biting / Chewing Damage

Can be caused by

- Grasshoppers
- Caterpillars
- Beetles



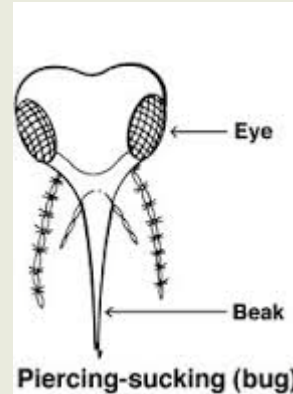
Holes in leaves or
missing leaves



Piercing / Sucking Damage

Can be caused by

- Aphids
- Thrips
- Leaf hoppers
- Spider mites



Puckered leaves



Stippled leaves



Chewing Damage



What could have caused it?



Caterpillar?



Hornworm?



Grasshopper?



Beetle?



Grasshoppers



Painted



Migratory



Management

- Row cover
- Nosema locustae bait
- Poultry
- Scissors
- Carbaryl



Blister Beetles

Signs

- Stripped plants
- Swarms of beetles on plants



Management

- Shake plant and stomp on them
- Carbaryl



Tomato Plant, Eggplant, etc.

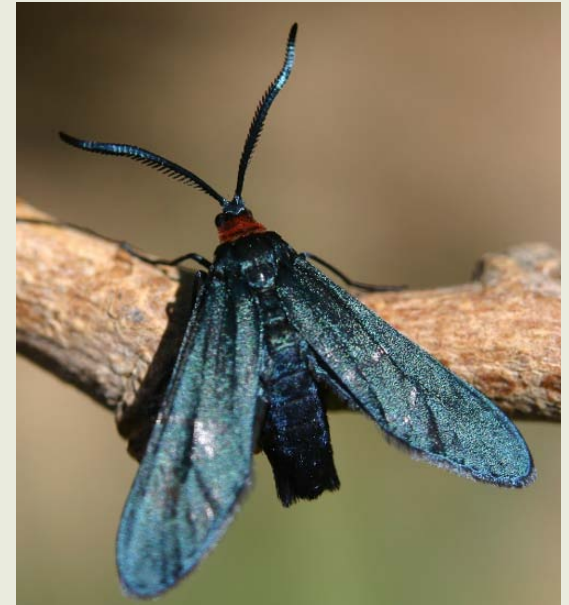


Hand removal

- Chewed or missing leaves
- Black excrement on leaves



Grape Leaves Chewed



Grape Leaf Skeletonizer

Bt



Elm Tree Leaves Chewed

Elm leaf beetle

Notice different stages



Bark-band w/
carbaryl to kill adults
crawling down tree
to pupate



Tent Caterpillar



Management:

- Prune out infected branches and destroy
- Carbaryl
- Bt



Piercing – Sucking Damage



What could have caused it?



Leafhoppers?



Aphids?



Thrips?



Spider mites?



Leafhopper Signs

- Stippling
- Pale or brown leaves
- Shoots may curl and die
- Sometimes diamond-shape yellowing from the leaf tip
- Sometimes sooty mold from honeydew



Leafhoppers also carry disease, e.g. beet leaf hopper / curly top virus



Leafhopper Management

- Plant after end of June
- Manage weeds
- Row cover
- Predators
 - Birds
 - Lizards
 - Spiders
 - Assassin bugs
 - Wasps
 - Robber or assassin flies

*Hard to manage - try
insecticidal soap*



Aphids – Look for Signs



Honeydew on leaves



Puckerd leaves



Ants



Ants (tending aphids)



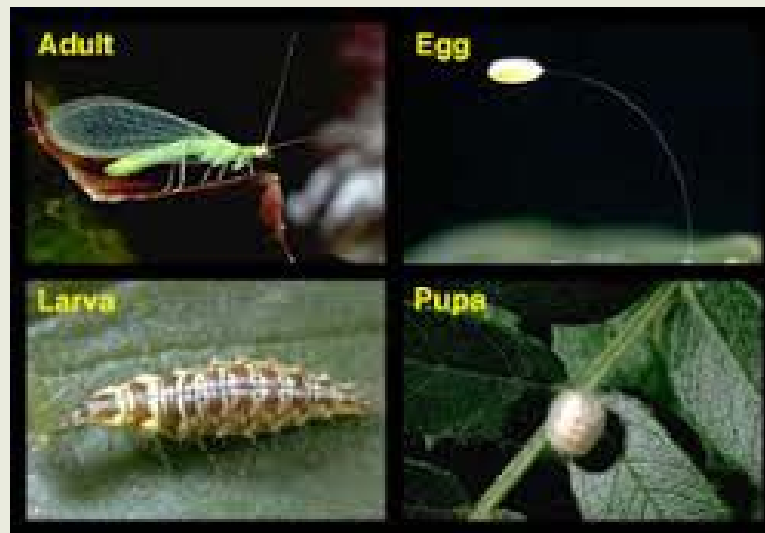
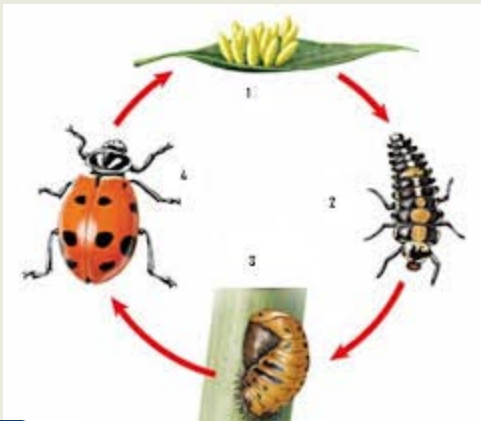
Aphids – Look for Predators



Lady beetle larva and adults eat aphids



Lacewing (larvae eat aphids)



Willow Aphid



- Look for honeydew
- Look for ants
- Look for aphids



Aphid Management

- Predators
- High pressure hose
- Insecticidal soap
- Home remedy (1 TBSP non-detergent dish washing liquid or baby shampoo, 2 drops vegetable oil, 1 gallon water – spray in evening)
- Garlic water – not science-based, but worth a try



Standard Garlic Water Recipe

- 6 cloves of garlic peeled and sliced fine
- 2 quarts water
- 1 TBSP non-detergent soap or baby shampoo
- Spray bottle

Directions

1. In a sauce pot, warm water until it begins to steam.
2. Add sliced garlic and maintain temperature for 20 minutes.
3. Cool and remove garlic (can compost it)
4. Add soap to spray bottle, fill to within $\frac{1}{2}$ inch of top with garlic-water
5. Cover and shake
6. Spray plants in evening to avoid not sun burning plants
7. Extra garlic-water can be stored in refrigerator for up to 2 weeks



Thrips – Look for Signs



Damaged fruit



- Brown edges on unopened buds
- Dark streaks on opened petals
- Buds fail to open



Discolored or distorted plant tissue



Curled leaf edges



Yellow spots, fecal matter

Test for Thrips

Shake damaged plant part over white piece of paper – if brown specks move on paper, it is thrips.



Where do thrips come from?

- Adults overwinter in protected places on the ground
- Emerge in spring & seek out flowering plants / fruit trees
- Females lay eggs on flowers
- Fruit: larvae feed within the calyx end of the young fruit & by rasping the fruit surface or laying eggs on fruit



Thrips Management

- Predators



Thrips Predator Mite

Predator mite



Pirate bug



Lacewing



Larva



Eggs

- Home remedy
- Destroy infected buds and blooms
- Neem oil



Spider Mite Signs



Stippling on upper
leaf surface



Webbing around branch ends

To help determine if there are spider mites –
beat leaves over white paper –
look for moving specks



Spider Mite Management

- Predators: lady beetles, predatory thrips, predatory mites
- Hard spray of water (moisture/humidity)
- Horticultural oil and insecticidal soap will kill the mites and eggs (must come in direct contact)
- Chemical sprays will kill beneficials and could result in larger infestation
- Miticides kill nymphs and adults but not the eggs



Squash bugs



Management:

- Collect and destroy eggs on undersides of leaves
- Difficult to kill adults (trap under board or burlap @ night and destroy in AM)
- Insecticidal soap
- Neem or permethrin when insects are small



Other Sucking/Piercing Vegetable Garden Pests

False chinch bugs	Stunted or wilted plant Grape, squash, melon tomato, corn, potato	Eliminate mustard and other annual weeds
Stink bugs	<ul style="list-style-type: none">•Eggs on stems & undersides of leaves•Black or dried out leaves•Cosmetic scars on fruit	Remove debris, manage weeds, hard stream of water, home remedy, hand pick, vacuum, Surround (kaolin clay mineral covers leaves) , carbaryl
Mites	Webbing, white or yellow speckles on leaves; leaf drop if high population	Weekly spray with water, home remedy, insecticidal soap Predators: lady beetles, predatory mites, big-eyed bugs, predatory thrips



Additional Signs



Leafminer



- Larva create a “mine” on the leaf
- Often on: carrot, celery, cucumber, broccoli, cabbage, lettuce, melon, onion, pepper, potato, squash, and tomatoes

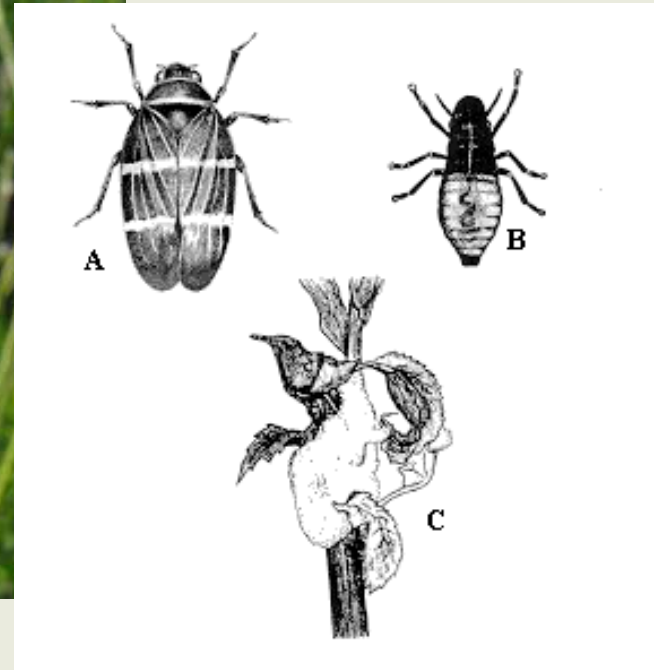


Management:

- Yellow sticky traps
- Neem oil



Spittlebug



Twolined spittlebug. A, Adults. B, Nymph. C, Spittle formed by nymph.



Leafcutter Bee



Lesser Goldfinch



Chemical Management - Summary

- Chewing mouthparts

Stomach poison

- ✓ Bt – caterpillars
- ✓ Carbaryl (either ingested or by direct contact)

- Piercing / sucking mouthparts

Burning, asphyxiation, or paralysis

- ✓ Insecticidal soap / home remedy (damages outer membrane causing dehydration & starvation)
- ✓ Horticultural oil (suffocates; primarily used on eggs & immature stages)
- ✓ Carbaryl (either ingested or by direct contact)
- ✓ Neem oil (enters the system & blocks the real hormones from working properly; insects "forget" to eat, to mate, or they stop laying eggs; some forget that they can fly; if eggs are produced they don't hatch, or the larvae don't moult)

