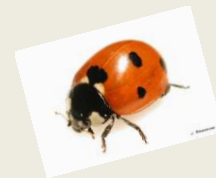




Vegetable Garden Insects



Chino Valley
April 18, 2013

Mary Barnes
Master Gardener



Getting Started on Managing Pests

- Identify the pest
- Can the pest be manually controlled (trapping, handpicking, squashing, shop vac, etc.)?
- Would physical barriers such as floating row cover or cardboard collars at the plant base protect the crop?
- Have you applied excessive quantities of readily available nitrogen that might unduly attract plant feeding insects?
- Least toxic options are the first choice – even some of those can harm beneficials

How to Identify from Damage



Piercing / sucking mouthparts damage



Chewing mouthparts damage

Chewing Examples

- Blister beetles
- Cabbage loopers
- Corn earworms
- Cut worms
- Earwigs
- Flea beetles
- Grape leaf skeletonizer
- Grasshoppers
- Leaf miner grubs
- Slugs/snails
- Tomato hornworms
- Weevils



Blister beetles



- Shake off plant and step on them
- Shop vac
- Carbaryl on beetles and host plants



Bean, beet, carrot, cabbage, Chinese cabbage, corn, eggplant, melon, mustard, pea, pepper, potato, radish, spinach, squash, sweet potato, tomato, turnip

Cabbage Loopers

- Ragged holes in leaves
- Hand pick; Bt



Broccoli, cabbage, turnip, radish

Corn earworms



- Moths active at night; full grown larvae up to 1 ½" long
- Hatch from eggs laid on fresh corn silks; feed on leaves, tassels, whorl within ear, and ear
- Developing kernels within ears are eaten; extensive excrement at ear tip
- Plant early
- Bt; 5% carbaryl dust by hand brush to individual ear silks starting when new silks first appear and continuing at 2-3 day intervals until silks stop growing
- Lacewings; pirate bugs; damsel bugs

Cutworms

- Larvae of several species of night-flying moths; ½ to 1-1/2" long; live underground; nocturnal
- Young stems severed at ground level
- Collar buried 1" below ground and 3" above around seedlings
- Place boards on ground at night – collect worm in AM
- Bt; carbaryl
- Predators: beetles, birds, parasitic wasps

Asparagus, cabbage, squash, tomato



Earwigs



- Feed on live or dead insects and decaying or live vegetation
- Lay out rolls of newspaper in evening & collect earwigs in morning
- Carbaryl

Not selective

Flea beetles



- Manage weeds
- Cover plants
- Surround (kaolinitic clay)
- Carbaryl

Eggplant, tomato, potato

Grape Leaf Skeletonizer

- Chewed upper and lower leaf, all but veins
- Bt
- Pyrethrum dust
- Carbaryl



Grasshoppers



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

Leaf Miner Damage



- Small maggots of tiny flies hatch from eggs and live in leaves
- Light colored trails in leaves
- Yellow sticky traps

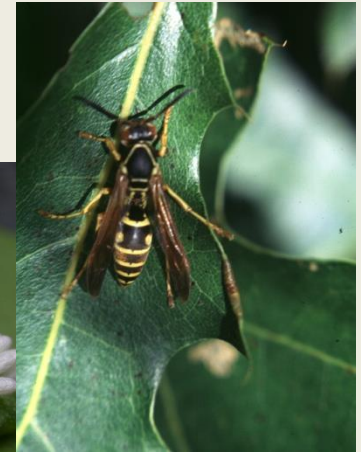
Cantaloupe, lettuce, tomato, pepper, eggplant, bean

Lesser Goldfinch Damage



Sunflower, squash, and rhubarb leaves

Tomato hornworm



- Hand pick
- Lady beetles & lacewings eat eggs
- Bt; carbaryl
- Tilling soil after harvest causes up to 90% mortality

Tomato, eggplant, pepper, potato

Piercing / Sucking Examples

- Aphids
- Beet leaf hoppers
- Grape leaf hoppers
- Squash bugs
- Stink bugs
- Thrips



Aphids



- Give birth to live aphids
- Population declines with heat
- Honeydew, ants
- Lady beetle, lacewing
- Insecticidal soap; high pressure hose

Cabbage, collard, kale, turnip, mustard, broccoli, cauliflower, Brussel sprout, radish

Beet Leafhopper



- Manage weeds
- Plant after end of June
- Protect young plants
- Remove infected plants



Tomato, beet, pepper, squash, bean, squash, melon, cucumber, spinach, potato

False Chinch Bugs

- Tendency to sit in large masses on soil at base of attacked plants
- Stunting and/or wilting
- Eliminate mustard & other annual weeds



Adults and nymphs

Grape, squash, melon, tomato, corn, potato

Spider mites

- Suck sap from undersides of leaves
- Webbing; speckles on leaves
- Spray w/ water; home remedy; insecticidal soaps; several predators



Melon, raspberry, eggplant, bean

Squash bugs

- Yellow specks, then wilting, ultimately black or dried out leaves
- Collect/destroy egg clusters on underside of leaves; insecticidal soap, Neem when insects small; trap adults under board or burlap



Pumpkin , squash, cucumber, melon

Thrips



- Overwinter under litter on ground
- Edges of leaves curled; discolored or distorted plant tissue; black specks of excrement around stippled leaf surfaces
- Home remedy; destroy infected buds and blooms; Neem; lady beetles

Bean, garlic, onion, pepper, pumpkin, squash, cucumber, melon

Beneficials – Lady Beetle



Adults & larvae feed on aphids



Beneficials - Lacewings

Adults feed on nectar,
pollen, and honeydew



Larva feed on aphids,
other small insects, eggs,
& mites

Beneficials - Ground beetle

Prey on vegetable and field crop insects (e.g. army cut worm, cutworms, corn ear worms, small crickets) at night



Products for Chewing Insects

Stomach poison (must be ingested)

–Bt for caterpillars (*bacterium*)

–Carbaryl (either ingested or on contact) (*chemical*)

Products for Piercing/Sucking Insects

Contact poison (kills by burning, asphyxiation, or paralysis)

- Insecticidal soap (damages outer membrane; causes dehydration & starvation)
- Insecticidal oil (suffocates; primarily used on eggs and immature stages)
- Home Remedy
- Neem oil (poison, repellent, deterrent to feeding)
- Carbaryl (either by ingestion or contact)

Least Toxic – Protects Beneficials & Pollinators

