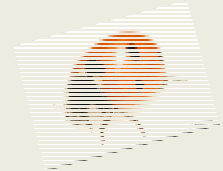


# Vegetable Garden Insects



# 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

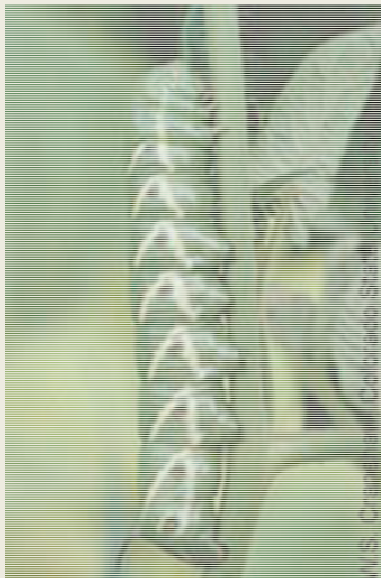


Sunflower, squash, and rhubarb leaves

# Tomato hornworm



Parasitic wasp eggs



- 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

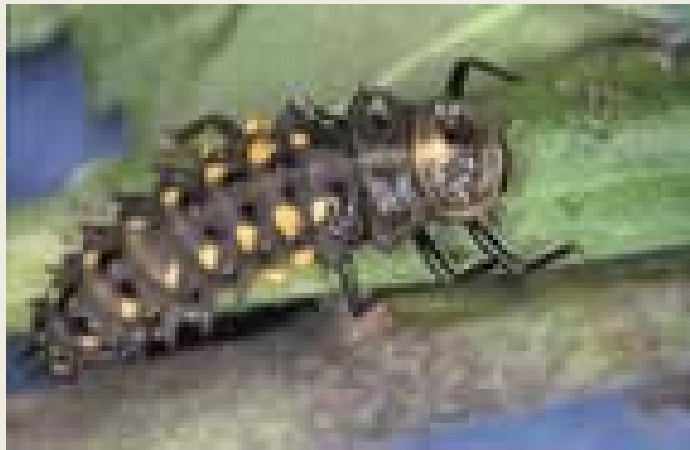
*Bean, garlic, onion, pepper, pumpkin, squash, cucumber, melon*



# 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

