MASTER GARDENER
COLORADO STATE UNIVERSITY
EXTENSION

CMG GardenNotes #318

Homework: Entomology

1. How do you know if a creature in your garden is an insect?
   Adult insects should have 3 body parts, 6 jointed legs, 1 pair of antennae and usually 1-2 pair of wings. Immature stages of insects often look very different than the adult stages you are familiar with. It is important to learn to recognize all life stages. For example: the larva of a ladybug will still have 6 legs, but the will have fleshy/caterpillar-like body. Each species of ladybug larva will look different, too (Colorado has about 80 species).

2. What makes an insect "beneficial"?
   Beneficial insects may supply pollinator services. Beneficial insects may be parasitic or predatory at some point in their life cycle.

3. Why can aphid populations increase so rapidly?
   During the growing season, female aphids are born pregnant. No male is needed during the growing season for reproduction services. The life cycle can last as short as a week.

4. It is July. You have correctly diagnosed a large spider mite infestation on a customer's raspberry plants. What is the most important management strategy you can recommend to the customer?
   The customer should apply water to the raspberries, as they are drought stressed.

5. Why do gardeners often report that ladybugs "disappear" shortly after releasing them in the garden?
   Ladybugs for sale are often collected from overwintering populations. They disperse, rarely remaining where released.

6. List three factors contributing to pollinator decline.
   Multiple answers, may include:
   Native pollinators
   - Loss of habitat including space, foraging plants, places to nest, and water sources
   - Loss of plants providing pollen and nectar ("double flowers" are common in the landscape but offer no pollen and nectar to pollinators)
   - Monoculture plantings vs. plant communities (some agriculture)
   - Pesticide misuse
   - Climate change
   - Interactions of all of the above

   Honey bees are a domesticated species and therefore humans have more control over their population and genetics. Honey bees have a variety of different challenges.
   - Varroa and tracheal mites, and other diseases/pathogens

- Colony collapse disorder in honey bees, likely caused by many factors including diseases and pathogens
- Honeybees are often hired out to pollinate economically important crops for long distances and may be stressed/die/weakened (i.e. honey bees hives travel by the semi truck-load to pollinate almond crops in California during the flowering period).
- Honeybees may intermingle with other bees "hired out" and pick up harmful pests
- Improper bee keeping practices

7. Why is fall garden cleanup valuable to insect pest management? How would you advise a customer who would like to leave the leaves to protect overwintering insects/pollinators?"
   - Always remove leaves from the turf grass. Excessive leaves on turf grass will smother the grass, promote turf diseases, and critter damage (e.g. voles) may be worse. You can mow the leaves to incorporate leaf nutrients back into the grass.
   - Or you can move the leaves and use them as garden mulch around your trees, shrubs, perennial or other garden beds. Advantages: leaves can be a nice mulch and return nutrients back to the soil. Leaves provide overwintering spaces for valuable insects and invertebrates including some pollinators. Leaf mulches reduce evaporation from the soil surface, inhibit weed growth, moderates soil temperatures, keep soils from eroding and crusting, and prevent soil compaction.
   - If you have plant material that was **diseased** (e.g. powdery mildew in your vegetable plants) all plant material needs to be removed. Pull these plants, roots and all; bag them and put in the trash. Spores and virus particles will overwinter causing new plants to be infected much earlier than if the diseases have to move in with the weather or insect infestations. Powdery mildew spores will overwinter on soil protected by the leaves that fall and remain in place for the winter. Do NOT compost these plants.

8. You are working in your county Master Gardener helpdesk. A customer calls about her two-year old crabapple tree. There are "a lot" of' holes in the leaves and she wants to know what could be chewing on them. She can't find any insects. How will you answer this question?

   You might ask when she first noticed the problem. Has there been any weather event (wind, hail) that could have created the holes? Can she send pictures – have her send them of a couple individual leaves as well as a branch with leaves and the entire tree. Sometimes seeing the "big picture" can provide more help.

   Generally, in these situations the insect has fed and gone or the problem is caused by wind and/or hail. If the problem is early in the year, also consider cold temperatures while the leaves were partially emerged from the bud.