



CMG GardenNotes #318

Homework ANSWERS: Entomology

Possible answers are below.

1. How do you know if a creature in your garden is an insect?
Adult insects have three body sections (head, thorax, abdomen), six jointed legs (attached to the thorax), one pair of antennae and usually one to two pairs of wings. Immature stages of insects often look very different than the adult stages; it is important to learn to recognize all life stages.
2. What makes an insect "beneficial"?
Beneficial insects are considered to provide some sort of service to the gardener. They may pollinate crops or may be parasitic or predatory on garden pests at some point in their life cycle.
3. Why can aphid populations increase so rapidly?
Aphids are parthenogenic (females able to reproduce without mating) and during the growing season give live birth to offspring that are often already developing the next generation (i.e., they are "born pregnant"). The life cycle can be 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. Drought-stressed plants are more susceptible to spider mites, and high humidity can help control mites.
5. Why do gardeners often report that ladybugs "disappear" shortly after releasing them in the garden?
Ladybugs are highly mobile insects and able to travel long distances. Ladybugs for sale are often also hungry and thirsty, so they disperse to find food and water, rarely remaining where released. If a gardener is lucky, some adults will lay eggs near high aphid populations in the garden.
6. List three gardening practices that can improve habitat for native pollinators in personal gardens.
**Multiple answers may include:
Provide food for adults – nectar and pollen sources.
Provide food for juveniles – host plants for caterpillars.
Control European Paper wasps.
Provide nesting sites.
Bare ground.
Cavities in trees, shrubs, or purchased nest boxes.
Avoid pesticide use.**

Increase structural complexity of garden habitats by planting many types of plants, perennials, trees, and shrubs. Nativity is less important than structural diversity.

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?" **It is complicated! Insect pests (and diseases) can overwinter in garden debris just as beneficial insects do. Targeting cleanup in areas where known pests prefer to overwinter can help control the next year's numbers. Overwintering beneficial insects will help control pests the next year too. If a customer would like to leave the leaves:**
- **Plant material that was diseased (e.g., powdery mildew) all plant material needs to be removed. Pull these plants, roots, and all; bag them and put in the trash. Spores and virus particles can overwinter in debris, causing new plants to be infected much earlier than if the diseases have to move in with the weather or insect infestations. Do not compost these plants; home piles don't usually get hot enough to kill disease.**
 - **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.**
 - **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.**
8. While volunteering as a Master Gardener, someone asks you about their two-year old crabapple tree. There are "a lot" of holes in the leaves and they want to know what could be chewing on them. The client cannot find any insects. How will you answer this question?
- You might ask when the person first noticed the problem. Has there been any weather event (wind, hail) that could have created the holes? Can the person send pictures – including of individual leaves, a branch with leaves, and the entire tree. Sometimes seeing the "big picture" can provide more context.**
- Generally, in situations like this it can be hard to pinpoint a cause. If insect-caused, it seems that the insect has fed and gone. The problem may have been 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, when cold damage may have caused partial necrosis and distorted the shape of expanding leaves.**
- If insects seem likely, have the person closely monitor the tree to see if the damage worsens, indicating the problem is still ongoing. In this case, check the tree in multiple places and at multiple times of day and night to try to find the culprit in the act.**