

APHIDS

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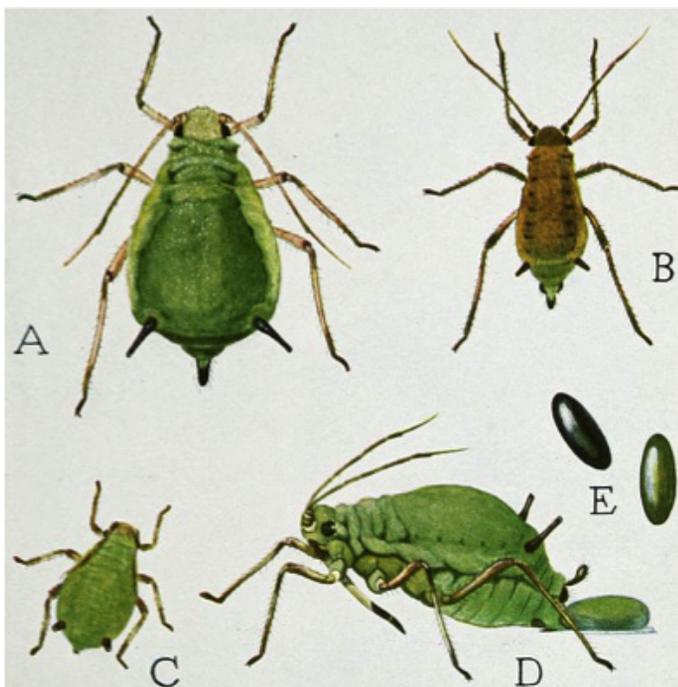


Figure 1. Aphid life stages: A, adult sexual female; B, adult male; C, young female; D, female laying an egg; E, eggs, which turn from green to black after they are laid

Photo of Illustration by USDA, Plate 2 from *Insects, their way and means of living*, R. E. Snodgrass.



Figure 2. Ant cultivating aphids.
Photo by Fir0002 from Wikimedia Commons.

Aphids are small soft-bodied insects that come in many colors and live on a variety of plants. They are members of the insect family Aphididae and the insect order Hemiptera. Their close relatives include psyllids, whiteflies, adelgids, and phylloxerans. Another name for aphids is plant lice because they parasitize the plants they inhabit. They are generally pear shaped and they have what looks like two tailpipes called cornicles on their back end (Figure 1). Like many other insects, aphid species prefer certain types of plants in their diet and so they are usually found associated with those types of plants.

Damage

Aphids have piercing-sucking mouthparts that allow them to suck the nutritious sap from flowers, leaves, stems, and sometimes roots, of many plants in our landscapes and gardens. However, they only process a portion of the sap they ingest due to nutritional needs and to maintain constant water content in their bodies. The leftovers are excreted from

the anus as waste in a similar form. This excreted liquid that we euphemistically call “honeydew” then falls on whatever is below; leaves, stems, your car, etc. The honeydew is colorless and sticky because it contains sugars from the plant. The first indication of the presence of aphids is usually this shiny, sticky material on the leaves below where they are feeding. This sticky material is an excellent substrate for the second clue that you may have aphids: sooty mold. In time, excess honeydew may build up on surfaces, fungal spores in the air settle on it, and a black fungus we call sooty mold may begin growing. Sooty mold, a name applied to several black fungi that feed on honeydew, may cover leaves, stems or other areas where honeydew has accumulated. If left on painted surfaces, sooty mold can result in damage or discoloration. In some cases, the honeydew will attract ants that feed on it, and the ants may become protective of the aphid colony, farming them like cattle so they can have ready access to this food source (Figure 2). Some ants will protect aphids and carry them from one plant



Figure 3. Green lacewing larva. Photo by USDA from Wikimedia Commons.



Figure 4. Syrphid fly (flower fly) on yucca with aphids. Photo by Stan Shebs from Wikimedia Commons.



Figure 5. Aphid mummies (large and lighter in color) with healthy aphids. Photo by Alton N. Sparks, Jr., University of Georgia, Bugwood.org

to another. In this way they cultivate honeydew. Sometimes, ants will carry aphid eggs to their nest for the winter and transport them to a food plant the following spring. Another sign of aphid presence and feeding is curled, stunted leaves on new growth in the spring and shorter spaces between stem nodes. Close inspection will usually reveal the insect itself, but don't be in a hurry to use pesticides. Aphids and the damage they cause may appear unsightly; however, this damage is usually not serious and causes little long-term harm to the plants they colonize. Exceptions occur when aphids are injecting toxins or transmitting diseases through their saliva. In these cases, many of which are well documented, additional symptoms such as yellowing at the feeding site may be seen. In the case of virus transmission, there may be symptoms associated with that particular virus, such as stunted plants. Quick diagnosis and treatment may be critical to preventing economic damage where there is virus transmission.

Lifecycle

Aphids can reproduce rapidly by using a unique and complex strategy. Aphids typically overwinter as eggs that hatch in the spring, producing only females. These females then reproduce asexually by parthenogenesis (egg development without fertilization), essentially cloning themselves without mating. Another feature of aphids is that they have "telescoping generations", meaning that young nymphs inside the female body already bear eggs of the next generation. These characteristics allow aphids to multiply rapidly during the growing season. This can go on for several generations before they produce males again. Once the males are mature they will mate with females that then lay the eggs that will overwinter until the next year.

Management

Gardeners may not appreciate the value of aphids as ants do. Even so, we should not be in a great hurry to control them with pesticides. While many synthetic pesticides will effectively kill aphids, these insecticides will also kill beneficial predators that provide natural aphid control. Most gardeners are aware that lady beetles, ant lions, and lacewing larvae (Figure 3) are effective predators of aphids, but there are many others. Earwigs, assassin bugs, minute pirate bugs, some stinkbugs, soldier beetles, syrphid flies (Figure 4), aphid flies, and parasitic wasps are natural enemies of aphids.

Keep an eye out for "aphid mummies" (Figure 5), tan colored, dead, swollen aphids. These are slightly larger than live, healthy aphids and sometimes have an obvious hole in the abdomen where parasitic wasps have exited. These mummies are evidence that there are tiny parasitic wasps at work in the area, even though they are seldom seen. With this assortment of "good guys," chemical control methods should only be used as a last resort to control aphids.

The simplest management tool for aphids is a good blast of water from a high-pressure hose nozzle. This knocks most of them off the plant while not creating a toxic residue that could harm natural enemies. Insecticidal soap and oil sprays

can also be effective at controlling aphids and pose minimal risk to natural enemies. Check with your local Cooperative Extension office for a more extensive list of products to manage aphids if needed.

Some aphids protect themselves with a waxy substance giving them a cottony white appearance. The wax protects them from the environment and predators. Other aphids cause leaves to roll and create a protective shelter for the aphids inside. These can be more difficult to control. In severe infestations, pesticide application may be warranted to control these types of aphids. They include wooly apple aphids and wooly ash aphids. When pesticides are used it is important to read the pesticide label and carefully follow the instructions to maximize effectiveness, ensure personal and public safety and to abide by the law.

If ants are tending the aphids, then it may become necessary to manage the ants. Ants can be managed by using a sticky barrier, such as tanglefoot (a sticky substance that creates a physical barrier). If they persist, you can use baits or apply pesticides to the soil or base of the plant. These strategies target the ants while limiting pesticide exposure to natural enemies. By monitoring aphid and ant populations, carefully choosing types and timing of control methods, and encouraging natural enemies, you are practicing integrated pest management (IPM).



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