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"W207-Vegetable Pests - Melon Aphid," The University of Tennessee Agricultural Extension Service, W207-4/09 09-0137, http://trace.tennessee.edu/utk_agexgard/34

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UT Extension

W207

Vegetable Pests

Melon Aphid (also called Cotton Aphid)

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The melon aphid, *Aphis gossypii* Glover, is found throughout most of the temperate, subtropic and tropic regions of the world. Although it is a cosmopolitan species, its origin is unknown. The melon aphid has a wide host range and can feed on watermelon, cucumber, cantaloupe, squash, pumpkin, asparagus, spinach, bean, beet, cowpea, tomato, pepper, eggplant, okra, citrus, cotton, hibiscus and many weeds (such as jimsonweed and pigweed). In the South, cotton is an important host, which explains the use of the second common name, "cotton aphid."

Damage

This insect is a typical aphid (Family Aphididae) with piercing-sucking mouthparts. They can feed on plants of all ages, but younger plants may be more susceptible to their feeding. The destructive stages (nymphs and adults), which feed on the underside of leaves or on growing tips of vines, insert their needle-like mouthparts into plants, withdrawing important nutrients. Damage caused by the melon aphid includes leaf curling/puckering, wilting and discoloration/chlorotic coloration (due to aphid feeding), stunting (due to nutrient loss from aphid feeding), production of honeydew and sooty mold (covers leaves, reducing gas exchange and photosynthesis), disease (various diseases are transmitted by melon aphids, including cucumber mosaic, zucchini yellow mosaic and watermelon mosaic virus), and plant death. Melon aphids can transmit viruses within 15 seconds after initiating feeding. Melon aphid effectively transmits potyviruses, although it is only one of dozens of species implicated in the spread of plant viruses in cucurbits.

Figure 1. Melon aphid. A-B, winged adults, C, wingless adult, D-E, nymphs (Images courtesy of North Carolina Cooperative Extension Service).

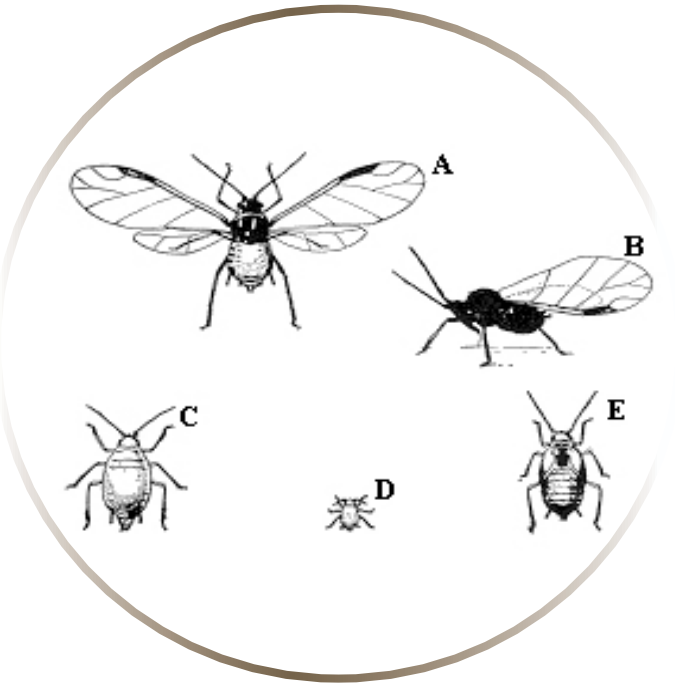

Figure 2. Color forms of the melon aphid (photographs by P. Choate, L. Buss, and J. L. Castner, University of Florida).

winged adult (black morph)

winged adult (yellow morph)

wingless adult (yellow morph)

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Description and Life Cycle

The melon aphid develops in colonies comprised of many individuals of all stages. They undergo a gradual metamorphosis with nymphs (resembling adults but smaller) and adults, which give birth to live young in Tennessee (in some areas, adults also may produce eggs). Adults are usually wingless, pale to dark green in cool seasons, and yellow in hot, dry summers. Winged adults may be produced when overcrowding occurs or a food shortage exists. These winged adults leave the plant to seek a new host. Cornicles (two small tubes protruding from the posterior of the body) are present. Winged individuals are somewhat slender and are not as robust as wingless aphids. The melon aphid is small (adults are about 0.08 inch long), and overwinters as eggs (where present − probably not present in Tennessee; aphids give birth to live young mostly here), nymphs and adults. Many generations can occur each year (exact number unknown and variable).

Control

No threshold has been established for melon aphid. Non-chemical and chemical controls are available for management of melon aphid. A discussion of these management tools follows.

Non-chemical Controls

Several non-chemical control methods are available to help to reduce populations of melon aphid. These include the use of cultural controls, physical controls, mechanical controls and biological controls. Cultural controls include avoiding planting susceptible crops on or near an infested site, avoiding planting susceptible crops downwind from infested plants (winged adult aphids are usually blown downwind), destroying weeds that serve as alternate hosts for aphids, allowing heavily infested sites to lie fallow after harvest to reduce aphid numbers, maintaining vigorous and healthy plants (they are more tolerant to attack by melon aphids) and avoiding excess nitrogen fertilization. To encourage establishment of beneficial insects, maintain and preserve plants attractive to them around the field. Physical controls include the use of mulches that reflect light and heat. Mechanical controls include the use of water sprays to kill aphids and dislodge them from the plant (a heavy, driving rain will serve the same purpose). Silver reflective mulches and row covers have successfully been used to repel aphids from plants. Mulches help plants get off to a healthy start, and are effective until expanded foliage covers the reflective surface. Also, plow or disc fields infested with melon aphid after harvest.

Biological controls are effective in reducing population densities of melon aphids. Lady beetles, lacewing larvae and syrphid fly larvae are vigorous predators of aphids. Naturally occurring populations of these predators provide pest reduction during the growing season, but these biological control agents also can be purchased from several sources, including some home garden stores. It is important to note that ants may feed on the honeydew of melon aphids and will protect the aphids from predators. Braconid wasps, such as *Lysiphlebus testaceipes* Cresson, also are known to parasitize melon aphids. Some fungal pathogens can affect melon aphids when wet conditions persist. Although biological control agents may reduce pest populations, they will not eradicate them. Thus, virus transmission by the melon aphid is still possible.

Other non-traditional approaches include the use of insecticidal soap. Repeat applications may be necessary to reduce populations throughout the season. Applications may be repeated at weekly to biweekly intervals up to three times. Do not make more than three sequential applications over a two-week period. Insecticidal soap should not be applied during the heat of the day or when temperatures exceed 90 degrees F. There is no minimal interval between the last application of insecticidal soap and harvest. Other controls include the use of petroleum-based horticultural oils and plant-derived oils, such as rosemary and soybean oils.

Chemical Controls

Early treatment with an insecticide does not prevent virus introduction. Several chemical insecticides provide melon aphid control; the availability of these pesticides changes regularly. Always consult your local county Extension agent for a list of currently approved and recommended chemical insecticides. The following links provide access to listings of recommended chemical control options for homeowners and commercial production growers:

- "UT Extension Insect and Plant Disease Control Manual" (vegetables, home garden insects): http://eppserver.ag.utk.edu/redbook/pdf/homegardeninsects.pdf

- "Southeastern U.S. Vegetable Crop Handbook" (commercial growers): http://www.sripmc.org/docs/SoutheasternVegetableGuide.pdf

Always use pesticides according to the label; also use protective clothing and dispose of remaining pesticide in a properly approved manner.

References (and Internet Sites)

North Carolina State University, Insect and Related Pests of Vegetable Crops
(edited by K. A. Sorensen and J. R. Baker):
http://ipm.ncsu.edu/AG295/html/index.html

Rutgers University:
http://www.rcre.rutgers.edu/pubs/publication.asp?pid=FS248

University of Florida:
http://creatures.ifas.ufl.edu/veg/aphid/melon_aphid.htm

University of Georgia:
http://www.gaipm.org/top50/melonaphid.html

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W207-4/09 09-0137

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