



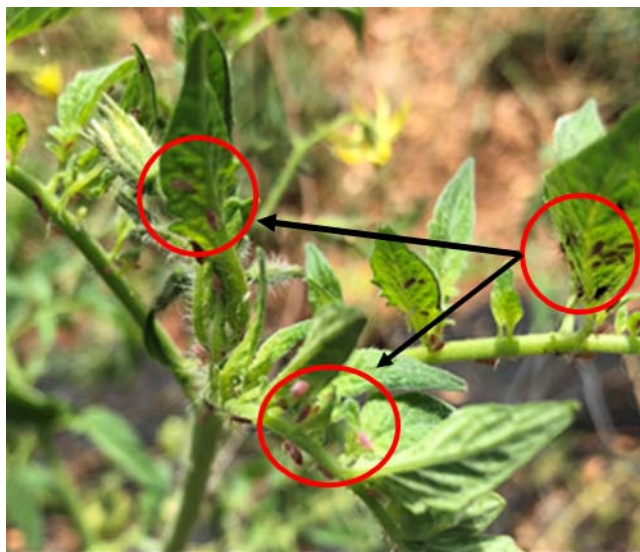
**TUSKEGEE UNIVERSITY  
COOPERATIVE EXTENSION PROGRAM**



Publication No. TUCED - **MANAGEMENT OF APHIDS IN ORGANIC VEGETABLE  
PRODUCTION IN ALABAMA**

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**Green Peach Aphid:** *Myzus persicae* (Sulzer) (Insecta: Hemiptera: Aphididae)



Adult aphids on tomato  
Photos: Anitha Chitturi, Tuskegee University



Aphid feeding damage on tomato leaves

**Introduction:** Aphids are tiny insects that infest a wide range of cultivated host plants and weeds. There are several species of aphids that infest vegetable crops including tomato, eggplant, pepper, peas, beans, corn and sweet potato. The green peach aphid (*Myzus persicae*) is the most common aphids found on tomatoes early in the growing season. Adult females give birth to live young (i.e. are viviparous); they give birth to female nymphs that are slightly smaller but similar to adults in color and shape. Females begin to reproduce quickly within a few days from the onset of summer temperatures. The exponential growth in aphid populations observed throughout the growing season is due to a number of factors including the following facts: female aphids can reproduce without having to mate with males; aphids have very short intervals between generations and have multiple generations per year; aphids have a very wide host range that enables them to survive the absence of specific host plants better than most other insect pests.

**Identification and Signs/symptoms of aphid incidence:** Adult green aphids appear in summer and are 1.8 to 2.1 mm long, soft-bodied, pear shaped insects with long legs, antennae, and a pair of long, slender tail pipe-like appendages called “cornicles” that stick out from the rear end of the abdomen. This insect has piercing-sucking mouthparts that are used to suck sap from host

plants. Aphids are usually found on young tender growth and on the underside of leaves. The adults are found in a range of colors: solid pink, green pink mottled or light green with a dark stripe. They sometimes have wings but usually wingless about 1/8-inch long with a pair of long cornicles.

The presence of honeydew, a sugary sticky substance secreted on leaf surfaces is a tell-tale sign of the incidence of this pest.

**Injury:** The insect inserts its needle-like piercing-sucking mouthpart into the leaf veins, stems, growing tips and blossoms of the tomato plant to suck sap. This type of feeding results in characteristic plant injury that are symptoms of aphid activity. Fluid feeding on young plants by high aphid populations results in water stress, wilting and reduced growth rate of infested tomato plants.. Early season infestations result in delayed maturity.. New growth on infested plants become stunted and curled inside. Leaves of severely infested plants turn brown and experience dieback (i.e. plants begin to die from the top to the bottom. Prolonged infestations can cause considerable reduction in the yield of tomatoes.

The feeding activity of aphids poses health problems for tomato hosts in multiple ways. First of all the removal of sap and the associated water stress is unhealthy for the plant. The honeydew released through the anus makes leaf surfaces sticky and thus trap a number of fungal spores that result in black sooty molds on the leaves. These sooty molds reduce the ability of the tomato leaves to produce food through photosynthesis. The trapping of fungal spores on the leaves also result in a number of fungal diseases. Disease transmission is another major issue associated with the feeding activity of aphids. Aphid infestation tends to spread rapidly from one field to another and transmit a large number of plant viruses that cause mosaics, leaf roll, spindle tuber and unmottled curly dwarf. Mosaics refer to patches of different shades of color ranging from yellow through light green to deep green observed on infected leaves. Even though a number of aphids are only able to transmit one type of virus, the green peach aphid and some others are able to transmit several different viruses

**Management:**

Monitoring is a key step in successful management of aphids. The cryptic nature of this tiny insect which typically prefers the underside of host leaves makes it easy to miss. Scouting tomato fields several times a week, paying particular attention to prime infestation/damage sites such as the underside of leaves and tender new growth will allow early detection and more effective management of aphids. The presence of ants on the plant can also serve as a good indicator of the incidence of aphids. Ants are attracted by the honeydew produced by aphids. They therefore care for and protect aphids from ladybugs which feed on aphids. . It must be noted that aphid infestations are spotty in appearance during the early parts of the growing season; treating such plants promptly may prevent and limit the spread of aphid-borne diseases later in the season. There are no pesticide options for the management of virus diseases in plants. The most effective management method for insect-borne viruses is the management of insect to prevent or reduce transmission of the virus. Some recommended management methods are suitable for farms of all sizes but there are some that are most suitable for small-sized tomato farms. On small farms, leaves bearing aphid groups can be cut, crushed or dropped in a soapy solution to prevent further spread to other leaves. Reflective mulches (permitted for use in certified organic production) can be used in the management of aphids and the virus diseases they transmit to tomatoes. Aphids have several natural enemies such as ladybird beetles, lacewings, syrphid flies and parasitic wasps which feed on them and thus help keep their populations in check. Tiny parasitic wasps lay eggs inside aphid bodies and the emerging larvae feed on the aphids from inside out leaving

brown or black mummified aphids. Irrespective of whether crops are produced conventionally or under organic production systems, pesticides should be used as a last resort in an Integrated Pest Management program. The non-pesticidal IPM tactics are even more crucial in organic than conventional vegetable production. This is because organic insecticides are generally not as quick-acting and effective as their conventional (i.e. synthetic) counterparts. More frequent and effective monitoring of aphids is needed on organic farms to ensure early detection of aphids; this affords the organic pesticides more time to achieve aphid reductions necessary to keep their populations below the economic threshold. Spray applications must target the underside of leaves in order to ensure direct contact with the aphids. This is particularly important because organic insecticides are neither systemic nor translaminar (i.e. able to penetrate leaves from one side of a leaf and kill insects on the other side of the leaf). Spinosad has been reported to have some translaminar activity but using a sprayer that is capable of ensuring complete coverage of plants is still very critical. Recommended organic insecticides include insecticidal soaps, neem, and pyrethrins. Their effectiveness has been reported; they knock down aphids. Insecticidal soaps show appreciable effectiveness against soft-bodied insects such as aphids but spraying should be directed to only areas with aphids rather than the entire plant., care should be taken to ensure that spraying is carried out only during the cooler time of the day. Pyrethrins are an effective choice to help reduce large populations of aphids but spraying should be done only in the early morning or late in the evening to avoid targeting natural predators and pollinator populations. Pyrethrins are broken down into less effective products in the presence of sunlight. Spraying in the evening or late afternoon reduces exposure to sunlight and allows the product to remain effective overnight. Certified organic tomato producers must use OMRI-listed insecticides or check with their certifying organizations prior to using organic insecticides that are not OMRI-listed. Also contact your local extension agent for more information on recommended/approved insecticides for your area.

#### **Selected References:**

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