

Woolly Apple Aphid

Insect Pest of Apple Trees

The woolly apple aphid, *Eriosoma lanigerum*, is native to the United States and a major insect pest of young (2- to 3-year-old) apple, *Malus domestica*, trees (Figure 1). This publication provides information on pest biology and damage and addresses management strategies that can be used to mitigate plant damage caused by the woolly apple aphid.

Biology

There are four nymphal instars (stages between each molt) and an adult female ranging in size from 1/40 to 1/14 inches (0.64 to 1.84 mm) in length. Females produce live nymphs that are dark red-brown to salmon in color. As woolly apple aphid nymphs feed, they become purple in color (Figure 2) and covered by white, cottony, thread-like,

waxy, filaments (Figure 3) that protect them from predators and insecticide spray applications. Adults are red-brown to purple. Woolly apple aphid colonies appear as cottony masses clustered near wounds or pruning cuts (Figure 4) or on the trunks or branches of apple trees (Figure 5). Woolly apple aphids can be found on water sprouts emerging from the base of apple trees.

First-instar nymphs emerge from the soil in the spring and move up and down the trunk of apple trees. From summer through fall, woolly apple aphid nymphs feed on the roots or on the trunk, branches, and twigs. Woolly apple aphid overwinters as a nymph on the roots or as a nymph located on the trunk, main branches, pruning wounds, or cracks and crevices in the bark of apple trees.



Figure 1. Young apple trees are highly susceptible to woolly apple aphid. (Photo: Raymond Cloyd)

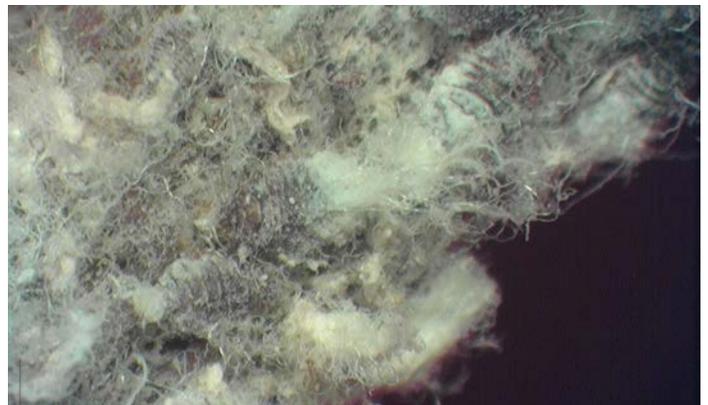


Figure 3. Close-up of woolly apple aphids covered by white, thread-like, waxy, filaments. (Photo: Raymond Cloyd)



Figure 2. Close-up of woolly apple aphid nymphs. (Photo: Raymond Cloyd)



Figure 4. Woolly apple aphid colony on pruning cut. (Photo: Raymond Cloyd)



Figure 5. Woolly apple aphid colonies on apple tree branches.
(Photo: Raymond Cloyd)

Damage

Woolly apple aphids feed on the roots and the branches and twigs of apple trees, withdrawing plant fluids using their piercing-sucking mouthparts. Root feeding by woolly apple aphids can cause severe damage to young apple trees. Yellow leaves are an indication that woolly apple aphids are feeding on the roots. Woolly apple aphids will continue feeding on plant roots throughout the year. Root feeding disrupts the ability of plants to obtain nutrients, which can affect tree growth and yields. In addition, root feeding may result in the formation of galls or swollen growth. Woolly apple aphids feed on leaves, branches, and terminal growth in summer. Woolly apple aphids feeding on branches and twigs exude a clear, sticky substance called honeydew, which serves as a substrate for black sooty mold.

Management

Strategies for managing woolly apple aphid populations include scouting, using resistant rootstocks, and applying high-pressure water sprays or contact insecticides to areas on apple trees where woolly apple aphids are present.

Scouting

During the growing season, regularly check branches, twigs, and pruning wounds on young apple trees for the presence of woolly apple aphids.

Rootstocks

A number of apple tree rootstocks are susceptible to woolly apple aphid root feeding including the B9, M9, M26, and the P series. However, several Malling-Merton (MM) rootstocks or clones, such as M111 and M106, are resistant to or less susceptible to woolly apple aphid root feeding.

High-Pressure Water Spray

Applying a high-pressure water spray twice a week will quickly dislodge woolly apple aphid populations from the branches, twigs, and trunk of apple trees.

Insecticides

High-volume spray applications and thorough coverage of the trunk, branches, and twigs is important when using contact insecticides to manage woolly apple aphid populations. Woolly apple aphid populations are difficult to manage with insecticides when feeding on roots in the soil.

Beneficial Insects

A number of beneficial insects feed on woolly apple aphids including ladybird beetles, hoverfly larvae, and lacewing larvae. The parasitoid, *Aphelinus mali*, is a beneficial insect that attacks woolly apple aphids. However, beneficial insects may not be effective in regulating woolly apple aphid populations below damaging levels, and insecticide spray applications may have an adverse effect on beneficial insect populations.

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