

## Managing Mites in Greenhouses

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Several mite species can cause serious damage to a variety of greenhouse crops. Among the most common mite species are the broad mite, *Polyphagotarsoeneum latus* (Banks), carmine spider mite, *Tetranychus cinnabarinus*, cyclamen mite, *Phytonemus pallidus* (Banks), the Lewis spider mite, *Eotetranychus lewisi*, and especially the two-spotted spider mite, *Tetranychus urticae*.

There are many reasons why mites are problems in greenhouses. Mites are relatively small and they spend most of their time on the undersides of leaves or within tender buds or deep within the flower, which makes them difficult to detect and effectively apply a control agent. Mites typically have a rapid life cycle (populations build rapidly), they have a wide host plant range (can be found on most plant material), and are usually resistant to pesticides. All of these factors may contribute to their deserved status as a severe pest of greenhouses. In general, the biology of mites is similar, however it is crucial to understand the biology of individual species to attain effective control.



**Adult female two-spotted spider mite and egg.**

(Photo by R. Lindquist, OARDC)

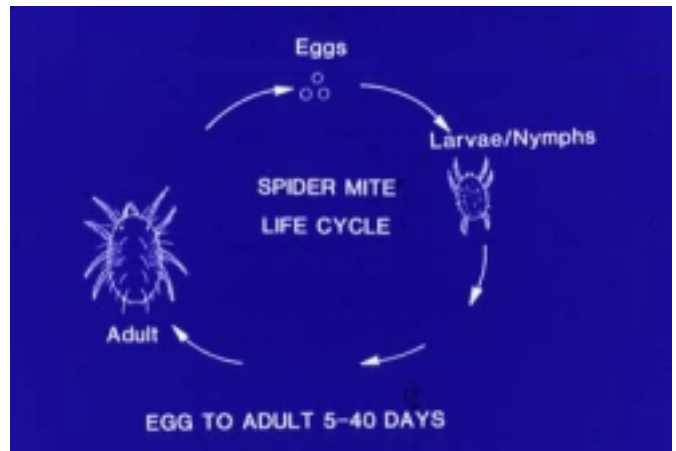
**Plants Attacked and Damage** In general, most mite species have a wide host range, attacking a variety of greenhouse crops. They feed on plant materials such as African violets, begonia, chrysanthemum, cyclamen, dahlia, fuchsia, gerbera, geranium, gloxinia, hibiscus, ivy, jasmine, impatiens, New Guinea impatiens, lantana, marigold, petunia, snapdragons, verbena, vinca, and zinnia. Mites feed on plant material by piercing plant tissue with their mouthparts and removing plant fluids. Some mite species inject a toxin from their saliva as they feed. Feeding damage varies with respect to mite and plant species. Feeding damage is often observable on the upper leaf surface as a characteristic mottled or speckled appearance.

**Life Cycle and Biology** High temperatures of 70-80 °F and lower humidity favor the development of broad mites. Female broad mites lay between 30-75 eggs on leaf surfaces over an 8-13 day period. Larvae (nymphs) hatch in 2-3 days and begin feeding. Broad mites can

complete their life cycle (egg to adult) in as little as 7 days. High relative humidity (80-90%) and temperatures of 60 °F favor the development of cyclamen mites. Severe outbreaks of cyclamen and two spotted spider mites typically occur in greenhouses in the fall and winter months. Adult female cyclamen mites may live for up to one month and can reproduce without mating. Each female lays 2-3 eggs per day for up to 2-3 weeks. The eggs are laid in moist, dark places in crevices and at the base of the plant. Most eggs will develop into females. Nymphs hatch from eggs in 3-7 days, and feed for 4-7 days. Larvae then pupate (transform) and adults emerge in 2-7 days. Their life cycle varies from 1-3 weeks depending upon greenhouse temperatures. Spider mite species such as the two-spotted, carmine, and Lewis favor hot and dry conditions. Each female can produce 100-200 eggs which hatch into larvae in 3-5 days. Spider mites remain in the larval stage for a brief period (4-7 days) before transforming into adults. The typical life cycle (egg to adult) takes 7-14 days, but varies considerably depending on temperature. All developmental stages occur on the plant. Large numbers of mites produce visible webbing, which can completely cover leaves and flowers.



**Lewis mite damage on Poinsettia**  
(Photo by R. Lindquist, OARDC)



**Spider mite life cycle**  
(Figure by R. Lindquist, OARDC)

**Control** Spider mites can be controlled on greenhouse crops chemically or biologically. A number of conventional pesticides (miticides) are labeled for mites. High volume and repeat applications may be necessary to achieve adequate control. There are some mite populations that are resistant to miticides such as abamectin. A number of excellent biological controls are available. One of the most widely used biological control agents is the predatory mite, *Phytoseiulus persimilis*. In addition, the predatory mite, *Neosililus barkeri*, has been successfully used against broad mites. Predatory mites can be obtained from many commercial biological control suppliers. If performed properly and under the right circumstances, biological control can be as effective as chemical control. Conventional pesticides that usually provide good to excellent control include abamectin, bifenazate, and pyridaben.

**For pesticide recommendations:** Contact your County Extension Agent.