

## Managing Insects and Mites in Field-Grown Cut Flowers

Tina Smith, UMass Extension, Greenhouse Crops and Floriculture Program  
[tsmith@umext.umass.edu](mailto:tsmith@umext.umass.edu)

**Scouting and Early Detection.** Regular and careful observation of the plants will help detect pest problems as they are just beginning. A 10x handlens or magnifying glass is useful for detecting small insects. In greenhouses and high tunnels, yellow sticky traps may serve as a useful tool for whitefly, thrips and fungus gnats and outdoors for detecting migrating leafhoppers. Place traps among the flower crops checking them weekly to determine what pests may be present and as an indicator for the effectiveness of treatments. Plant foliage may be tapped over a white sheet of paper to look for mites and thrips. A sweep-net is used to capture plant bugs and leafhoppers.

**Insect Management.** The best approach insect management begins with good sanitation and soil management. Keep the field free of weeds and plant debris. Adjust soil fertility and pH based on soil tests and space plants to allow sufficient air circulation within plantings.

Most damaging pests are likely to attack a wide variety of plant types while a few are specific to a limited number of hosts. In any case, it is important to be able to recognize the damage that results from the feeding of particular insects so that management strategies can be applied before the damage becomes extensive, or preventative steps can be taken.

**Protecting Pollinators from Insecticides.** To avoid killing bees, avoid applying pesticides that are hazardous to bees during the blooming period. Pesticides should be applied when there is no wind and when bees are not visiting plants in the area. The time and intensity of bee visitation to a crop depends on the abundance and attractiveness of the bloom. In general, evening or early night applications are the least harmful to bees. Dust formulations and microencapsulated pesticides are usually more hazardous to bees than sprays. Wettable powders often have a longer residual effect than emulsifiable concentrates.

Pesticides for Cut flowers: <http://extension.umass.edu/floriculture/fact-sheets/pest-management>

**Insects Causing Damage by Chewing.** Pests with chewing mouthparts feed on all parts of the plant, tearing or cutting, then chewing and swallowing bits of tissue leaving a ragged leaf or flower margin in the process. In severe cases, most of the leaf may be eaten, in other cases, the insect may not be able to chew completely through the leaf surface and the result is a lacy appearance to the damaged leaf.

**Caterpillars** are the larvae of moths and butterflies. Damaging caterpillars include cutworm larvae, (newly planted annual flowers); beet armyworms which may bore into flower buds and defoliate plants; painted lady butterfly larvae; yellow woollybear; greenhouse leaf-tier; checkerspot butterfly; orange tortrix; verbena bud moth; diamondback moth; columbine skipper; corn earworm; and redbanded leafroller.

**Flies (maggots) and midges.** Maggots are the immature stage of some flies. The sunflower maggot infests the stems of *Helichrysum* causing the stem to collapse. *Chrysanthemum* gall

midge bores into the leaves, stems or buds which creating the formation of cone-shaped galls where they develop. As a result buds become distorted and stems and leaves twisted.

**Beetles.** Adult Japanese beetles feed during the day on a large number of flowering plants. Adults emerge from the soil in June and July and feed on foliage for about 30-45 days. Other beetles that cause damage include Asiatic garden beetle, various species of snout beetles, spotted and striped cucumber beetles, larvae of click beetles (wireworms), blister beetles, golden tortoise beetle, flea beetles, rose chafer, and June beetles.

**Miscellaneous chewing pests** include sawfly larvae, grasshoppers, slugs and snails.

***Insects Causing Damage by Piercing-sucking.*** Insects with piercing-sucking mouthparts do not chew plant tissue. They pierce the leaf, flower, roots or stem with sharp, needle-like structures and pump liquid such as sap into its stomach. At the same time a salivary liquid is pumped into the plant to facilitate food withdrawal. In some cases the saliva may cause a toxic reaction in the plant. This process of feeding can result in insects with piercing-sucking mouthparts to transmit viruses and mycoplasma- like organisms to healthy plants.

Damage may show up as small specks or chlorotic spots where the plant or flower was punctured. Other damage appears as twisted, curled or deformed plant or flower growth, due to the introduction of the toxic saliva. Systemic, translaminar and contact pesticides may work best. Insecticidal soaps have contact activity but must be come in contact with the pest because they have no residual activity.

**Leafhoppers.** The aster leafhopper (six-spotted leafhopper) is the primary vector of aster yellows disease. It does not overwinter here, but migrates from more southern regions each season. The amount of aster yellows is related to the disease incidence occurring in the southern United States at the time if migration and levels can vary from year to year.

Aster yellow symptoms may appear as distorted leaves and flowers, flowers that fail to form, and/or foliar yellowing. The disease affects many cut flowers such as Annual statice, Gomphrena and Asters. The best method for disease management is to monitor for and control leafhoppers as soon as they appear.

**Thrips** are very tiny, (about the size and shape of a grass seed), cream to dark colored insects that prefer to feed in opening leaf and flower buds. Some species will feed on leaf tissue where they produce silvery depressed areas that frequently contain black specks. Thrips will attack many cut flowers. Feeding damage appears as a dull discoloration. Flowers can be streaked, mottled or flecked with off-color areas. New growth may become misshapen and deformed, or buds may fail to open. Thrips also transmit impatiens necrotic spot virus (INSV), a serious disease in greenhouses. Since thrips prefer to feed in tight, protected places such as expanding flower buds, multiple applications of insecticides are often necessary for adequate management.

**Aphids.** Aphids can occur in large numbers very quickly. Most aphids are about 1/16-1/8 inch long, rounded or almond shaped with two "tailpipes" cornicles at the rear of the abdomen. Aphids damage plants by removing plant juices, and also are effective vectors of many virus diseases. Plants can generally cope with small numbers of aphids.

**Plant bugs.** Fourlined and tarnished plant bugs attack a large number of different cut flowers. Plant bugs cause spotting on the upper leaf surface and deformed blossom heads as a result of feeding. In some instances the injury resembles fungal spotting.

**Mites.** Two spotted spider mite, cyclamen mites and broad mites. Two spotted mites are most active on the underside of the leaves, their presence being apparent by the fine stippling caused by their feeding and seen on the upper surface of the leaves. Fine webbing is produced by the mites. Leaves turn yellow or bronze, and many drop.

**Cyclamen mites and broad mites** are invisible to the naked eye but cause a great deal of damage, particularly to Delphiniums, Aconitum, Dahlia, Chrysanthemum, and Verbena. Mite feeding causes the leaves to curl, twist, and become brittle and scabby. Flower buds may dry up and die. Light infestations may result in discolored or dark-flecked flowers. On Delphinium, leaves cup or curl and are blackened. Flower spikes are stunted and blackened. Cyclamen mites are most active during high relative humidity and cool temperatures, while broad mites are most active during high temperatures.

**Whiteflies.** The greenhouse whitefly and sweet potato whitefly can be important pests on greenhouse-grown transplants or when outdoor temperatures become favorable and they leave the greenhouse to infest suitable hosts outdoors.

### ***Mining Insects***

**Leafminers.** Females deposit eggs on the underside of leaves and the maggots burrow between the upper and lower leaf surfaces and feed. Many leaves may have light green or white winding trails that eventually turn brown and die. The mature larva emerges through a slit in the leaf surface and enters a resting stage where it passes as a pupa in the soil. There are many species and lifecycles may vary a bit. Susceptible plants include Chrysanthemum, Dahlia, Dianthus, Salvia, Verbena, Delphinium, Gypsophila and Aconitum. Elimination of alternate weed hosts also helps reduce populations of leafminers in the field.

**Boring Insects.** The larval stage of some moths and beetles cause damage by boring into stems and other parts of plants. There are many borers that attack cut flowers. Stalk borers, burdock borer, iris borer, and European corn borer are common borers found in cut flowers. Flowers such as Aster, Dahlia, Iris, Monarda, Centaurea, Chrysanthemum, Delphinium, Rudbeckia, Alcea, Phlox and Salvia are all susceptible to borers. To help reduce borer populations, it is advisable to destroy old leaves and other debris in the fall or before hatching of the eggs in the spring.

### **Resources**

<http://extension.umass.edu/vegetable/soil-crop-pest-management/insects>

<http://extension.umass.edu/floriculture/fact-sheets/pest-management>

2011 Cornell Guide for the Integrated Management of Greenhouse Floral Crops

<http://ipmguidelines.org/greenhouse/>

2011 Cornell Pest Management Guide for Production and Maintenance of Herbaceous Perennials

<http://ipmguidelines.org/HerbaceousPerennials/>

2011-2012 New England Greenhouse Floriculture Guide

<http://extension.umass.edu/floriculture/pest-management/new-england-pest-management-guide>