Pests of Some Common Field-Grown Cut Flowers

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Potentially, there are hundreds of varieties of annuals, herbaceous perennials, bulb, and woody plants that can be successfully grown in the field as cut flowers. Some of the more common insect pests of cut flowers include spider mites, aphids, thrips and various caterpillars. Common diseases include powdery mildew, root and stem rots, leaf spots and many others. Deer may cause extensive damage to asters, mums and other cut flowers. Particular cultivars may vary in their resistance to insects and diseases, but only lim-

ited written information on pest resistance for cut flowers is available.

Celosia, zinnia, rudbeckia, echincea, yarrow and globe amaranth are easily grown cut flowers for a new grower. Growers should be aware of the common pest problems on these crops. This knowledge will help growers to most effectively monitor and treat problems as they arise.

Celosia argentea or Plume Cockscomb is grown for its colorful plume-feathered flower spikes. In the greenhouse, young transplants may become infected with damping-off, a fungus disease caused by *Rhizoctonia solani.* Rhizoctonia may attack young seedlings on the stem, especially near the soil line. Initially stem tissue shrivels and may turn brown or black, and ultimately seedlings may wilt and die.

In the field, two spotted mite populations may build up during periods of hot, dry weather. Mites often remain unnoticed until severe damage is noticeable, i.e., stippled or discolored foliage. To monitor for mites, tap the lower leaves over a white sheet of paper. Wait a few seconds and then look for the mites crawling across the paper with a 10x hand lens. Two-spotted mites will be about the size of a period, green or greenish yellow with two lateral dark spots. When mite populations are causing stippled or discolored foliage, spot treat with insecticidal soap or malathion.

New hybrid cultivars of zinnia are gaining in popularity as cut flowers. In the greenhouse, transplants may be susceptible to both damping off and injury from fungus gnats. Fungus gnat damage usually begins at the soil surface with destruction of the root, stem or leaf tissues. Proper drainage and sanitation will help manage fungus gnat populations.

Fungal or bacterial leaf spots may be a problem on zinnias. A leaf blight caused by the fungus *Alternaria zinniae* may be seen. Small, reddish-brown spots with grayish-white centers may be observed on the leaves or stems. This fungus may girdle the stem so that the upper portions of zinnias may dieback. *Alternaria* may overwinter on seed and in the soil for at least one winter. Crop rotation is needed.

The bacterium *Xanthomonas campestris* causes a leaf spot that often appears edged by a yellow halo. This leaf spot also may infect zinnia seed and develop during warm, wet conditions. To slow leaf spot disease development, avoid overhead

irrigation to help keep plant surfaces dry. However, to confirm whether a leaf spot is caused by *Alternaria* or *Xanthomonas*, samples need to be sent to a laboratory for diagnosis.

In late summer, warm days followed by cool damp nights encourage the development of powdery mildew caused by the fungus *Erysbipae cicboracearum*. To monitor, look for white powdery patches on the upper leaf surfaces. If powdery mildew is severe, defoliation may result. Protectant fungicides such as chlorothalonil, sulfur or thiophanate-methyl may be applied every 10 to 14 days.

Insect pests of zinnia may include aphids, thrips or Japanese beetles. Aphid populations may be kept "in check" by the presence of naturally occurring predators such as braconid wasps, ladybird beetles, lacewings and syrphid fly larvae. When aphid outbreaks do occur, they tend to be "spotty" in distribution. Look for the aphid's cast skins and honeydew (a sweet, sugary liquid excreted by aphids). Sooty mold, a superficial black fungus that feeds on this honeydew, may also be seen on the leaves. Wingless adults may be found on the new growth, at the base of buds, and on the underside of leaves.

Thrips rasp plant cells and then feed on plant juices and pollen. Thrips' feeding may result in deformed flowers and streaking of the petals. To monitor for thrips, tap yellow flowers over a white sheet of paper to look for the adults. Use a hand lens to see the tiny (1/25-inch long) insects with fringed wings. Blowing gently into the open flowers will agitate the thrips, allowing them to be seen as they leave their hiding places deep within the flower buds.

Japanese beetles may feed on the foliage and flowers in July and August. Japanese beetle traps are generally not effective for controlling adults. In one study, over 50 % of the adults attracted to the traps did not enter the traps. Adults can then feed on nearby favored host plants. Treatment options include hand picking, if the planting is very small, or applications of Carbaryl or malathion.

Both echincea and rudbeckia are popular perennial cut flowers. Late in the season, powdery mildew may occur when high humidity favors disease development. Leaf spots caused by *Septoria* or *Phyllosticta* may also occur. To manage these diseases, water early in the day, avoid crowding plants,

and clean up infected leaves in the fall. Mosaic viruses may cause mottling and yellowing of the leaves. However, little is known concerning the identity and transmission of these viruses. Rogueing infected plants may be helpful.

Whiteflies may be seen on young greenhouse-grown transplants. Aphids, including the crescent marked lily aphid, a black and yellow species, may be seen. Feeding by four-lined or tarnished plant bugs may cause distinct, round spots on the leaves. (Plant bug damage is most commonly seen on mints.) The fourlined plant bug is greenish yellow with four longitudinal black lines. It is timid and usually hides under leaves or flies away when disturbed. Treat with insecticidal soap, malathion or methoxychlor if foliar damage is not acceptable to your customers.

Achillea, or yarrow, can be grown for cut or dried flowers. *A. filipendulea* and *A. millefolium* have fragrant, fresh foliage. *Achillea* is generally pest free, but powdery mildew caused by *Erysiphe cicoracearum* may occur. Yarrow may be affected by crown gall, but this disease is not very common.

Gomphrena or globe amaranth is generally pest free with no reported pest problems. Other cut flowers that are reported to be pest free include: *Echinops*, or Globe Thistle; *Erygium*, or Sea Holly; *Liatris*, or Gay feather; and *Solidago*, or Goldenrod.

Cut flowers can be grown successfully when you monitor for potential insect and disease problems.

Note: There are few specific references on pests of cut flowers, but many of the references listed below on pests of annuals, perennials and even woody plants will be helpful.

References

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