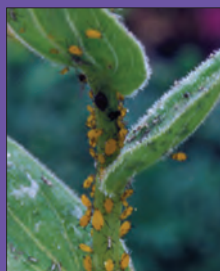


A Pocket Guide for IPM Scouting in Herbaceous Perennials

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Chewing pests Blister beetle

Blister beetle adults are 19 mm long and elongated. They vary in color from black and blue to brown, with or without stripes. They possess a characteristic constricted neck. These beetles overwinter as larvae in the soil.



19 mm
Adult beetles with stripes.



Color variations include black like these adult beetles.



Blister beetle – continued

Adults feed on flowers and leaves, creating small rounded or irregularly shaped holes.



Management:

Adults can be hand picked, but it is important to wear gloves because these insects release a caustic substance when crushed that can cause blisters and welts on the skin. Contact insecticides may be used to control the adults.

Chewing pests

Caterpillars

Caterpillars are the larval stages of moths and butterflies. They cause damage by feeding on plant leaves. The adults feed on pollen and nectar. Color and size will vary, depending on the species.



Caterpillars – continued



Many types of caterpillars feed on herbaceous perennials, including cutworms, corn earworms, imported cabbageworms, diamondback moths, cabbage loopers, saddleback caterpillars and American lady caterpillars.

Caterpillars remove plant parts during feeding, creating irregular or rounded holes in leaves and flower buds. Frass (fecal deposits) are typically present near damaged tissues. Herbaceous perennials are susceptible to a variety of caterpillar types.

Management: Remove weeds and plant debris from adjacent areas. Applying an insecticide derived from the soil bacterium *Bacillus thuringiensis* var. *kurstaki* is effective on young larvae feeding on plant leaves. Contact insecticides are also effective. Scout regularly using yellow sticky cards, which attract the adults.

Fungal leaf spots
Anthracnose

Pathogen: *Colletotrichum* spp.

Hosts include: *Althaea*, *Bergenia*, *Heuchera*, *Hosta*, *Limonium*, *Sedum* and *Lupinus*.

Symptoms: Symptoms vary, depending on the host. *Althaea* seedlings and young plants are especially susceptible to infection: leaf spotting and stem lesions can be severe. Lupine seedlings are especially vulnerable: infected plants wilt and have necrotic lesions on stems. Leaf spots, shepherd's crooks and crown rot develop



Severe leaf spotting on a young hollyhock leaf.

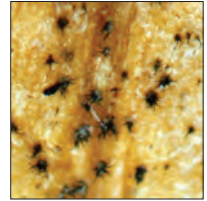
on more mature lupine plants (see photo). Anthracnose causes severe stem girdling and crown rot on sedum. Susceptibility varies with cultivar. Infection on



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Anthracnose – continued

hosta causes leaf spots with bleached out centers and reproductive structures (black dots) are often visible in these lesions.



Spread: Disease can be seed-borne in some perennial crops. The pathogen persists on infested material. Spores are splash-dispersed by rain and irrigation.

Setae, produced in clumps on the surface of dead plant material, are a diagnostic structure.

Management: Space plants to promote air circulation around them. Remove diseased plant material – *Colletotrichum* spp. will sporulate readily on dead plant material in the production area.



Fungicide applications may be needed. Lupine seedlings can be infected by seed-borne inoculum. Disease management must rely heavily on the use of disease-free seed and fungicide applications to seedlings.

Foliar dieback symptoms on a larger, more mature lupine plant.

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Mildews
Powdery mildew

Pathogen: Multiple including *Erysiphe* spp., and *Microsphaera* spp.

Hosts: *Achillea*, *Aquilegia*, *Aster*, *Coreopsis*, *Clematis*, *Delphinium*, *Helianthus*, *Lupinus*, *Monarda*, *Phlox*, *Pulmonaria*, *Rudbeckia*, *Salvia*, *Scabiosa*, *Solidago*, *Sedum*, *Veronica* and *Viola*.



Heavily infected *Salvia* foliage.

Symptoms: White, talcumlike colonies on the leaf surface. Chlorotic spots may be present on the leaf surface opposite the colony. Under favorable conditions, colonies enlarge and coalesce, blighting larger sections of foliage. Severe infections on some hosts cause defoliation. Infection on sedum causes slightly raised scabby lesions; powdery colonies may not be readily visible.

Spread: Powdery mildew spores are air-disseminated and subsequently infect leaves and stems of plants under humid conditions.



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Powdery mildew – continued

Management: Scout plantings for signs of disease. Timely fungicide applications made early in the disease epidemic are more effective at control. Reduce the relative humidity, if possible – high levels are conducive to powdery mildew development. Increase plant spacing to promote air movement around plants. Fungicide applications may be necessary. Use both systemic and protectant products. Powdery mildew fungi can develop resistance to systemic fungicides. To delay the development of fungicide resistance, these products should not be used exclusively.



Necrotic lesions caused by powdery mildew on *Sedum*. Symptoms are similar on other succulents.

Note: Although many plants are affected by powdery mildew, each powdery mildew fungus has a specific host range, usually affecting closely related plants. For example, *Phlox* infected with powdery mildew will not serve as a source of inoculum infecting *Aquilegia*.

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