

Disease Control in Herbaceous Perennials

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Botrytis blight

Botrytis cinerea is found on all plants, *B. elliptica* on lilies, *B. paeoniae* on peony.

Avoid excessive leaf wetness, low Ca or excess N; remove dead plants or plant parts.

Protect plants with Decree, Chipco 26019, Daconil/Spectro, or Medallion; Endorse/Affirm; Coppers, mancozeb, StrikePlus/Trigo, strobilurin materials (**Compass, Cygnus, Disarm, Heritage, Insignia, Orvego, Pageant, Orkestra, Mural**); Palladium; and Cease, MycoStop, PlantShield HC, TriathlonBA

Fungal leaf spots and anthracnoses

Septoria leaf spots on phlox, rudbeckia, aegopodium, mum; Ascochyta leaf spot on clematis = “clematis wilt”; Heterosporium leaf spot on iris; Pyricularia leaf spot on hakonechloa; Colletotrichum anthracnose diseases on bergenia and lupine. Scout for first symptoms of these diseases and begin treatment promptly. Control by watering early, reducing leaf wetness duration, spacing plants, removing badly spotted plants, cultivar choices. Control with contact fungicides: Protect DF, Daconil, Palladium, Orkestra or systemics: 3336; strobilurins (see **Botrytis** for list), Palladium or Eagle/Strike/StrikePlus=Trigo/Terraguard or BannerMAXX—best to use both contact and systemic products in a rotation. Leaf spots are also caused by ozone, herbicides, bacteria, downy mildews, plant bugs and foliar nematodes: get a lab diagnosis!

Bacterial spots and stem rots

Stem rots are caused by *Pectobacterium* or *Dickeya* spp. (previously *Erwinia*); leaf spots are due to *Xanthomonas* or *Pseudomonas* species. Reduce leaf wetness duration, don't over-water or plant deeply; control fungus gnats. Use coppers (e.g. Camelot, Kocide, Phyton 35) or Cease or TriathlonBA.

Rusts

Seen on solidago, campanula, viola, panicum, mum, daylily, veronica, heuchera, athyrium, hypericum, etc. Keep leaf surfaces as dry as possible. Find less susceptible cultivars. Use contact (copper, mancozeb) fungicides in rotation with systemics: strobilurins (see above); and/or BannerMAXX/Eagle/Strike/Trigo/Terraguard. **Smuts:** Round pale spots that turn brown on dahlia & gaillardia. Use rust controls.

Downy mildews (DM)

Seen on iberis, veronica, geum, agastache, lamium, geranium, coreopsis, rudbeckia (Goldsturm esp.). High humidity favors: keep plants spaced. Contact fungicides: coppers and mancozeb. Systemic fungicides: StatureSC/Micora, FenStop; Adorn, strobilurins (see list above); Aliette/Alude and other phos acids, SubdueMAXX and Segovis. Note that agastache is susceptible to coleus DM.

Foliar nematodes

Foliar nematode (*Aphelenchoides*) seen especially on Japanese anemone, bergenia, echinacea, heuchera, hosta, lamium, peony, ferns. Stem and bulb nematode (*Ditylenchus*) common on creeping phlox. Avoid excess shading or overhead watering. Inspect incoming plants. Pylon treatment may help.

Powdery mildews (PM)

Powdery mildew prone plants include phlox, monarda, asters, sedum (watch for scabby symptoms that are not easily recognizable as PM), verbena, delphinium, columbine and peony. Phlox cvs. less susceptible to PM include David, Orange Perfection, Prime Minister, Starfire, Blue Boy, Miss Elie, Miss Universe, Laura, Nicky. Monardas Blue Stocking and Marshall's Delight have been disappointingly disease-prone in my experience, but Violet Queen, Jacob Cline, Fishes and Snow White have done better. For fungicides, both systemics and contacts are available: Systemics BannerMAXX/Terraguard/Strike/Eagle may be rotated with strobilurins (see above) and with contacts: MilStop; Pipron; Coppers; hort oil; neem oil or biologicals: Actinovate; Cease; Plant Shield; TriathlonBA.

Viruses. Viruses on perennials include *Tomato spotted wilt virus* (TSWV) & *Impatiens necrotic spot virus* (INSV), both thrips-borne; *Tobacco rattle virus* (TRV), shown on anemone, hosta and epimedium common

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(nematode-borne); *Dahlia mosaic virus*; *Hosta virus X* (HVX), in Gold Edger, Gold Standard, Golden Tiara and Sum and Substance, is spread by handling. ImmunoStrip test for HVX (www.agdia.com).

Phytoplasmas. Phytoplasmas cause virus-like symptoms in their hosts. These often include yellowing foliage and weird flower abnormalities such as virescence (greening of normally colored petals). Control weeds in the aster family that may be reservoirs of the phytoplasma, as well as aster leafhopper. Coreopsis, gaillardia etc.

Pythium and Phytophthora

Avoid overwatering, poor drainage, deep planting, overfertilization—especially with lavender. Treat preventively with PlantShield, Cease, Mycostop, TriathlonBA or Actinovate biofungicides and/or with Truban/Terrazole/Banrot or Segway for *Pythium*, alternated with SubdueMAXX/Hurricane. For *Phytophthora*, use these materials but also rotate in StatureSC/Micora, Segovis, strobilurins, FenStop, Adorn and phos acid materials (Aliette/Alude/K-Phite/Fosphite/Jetphiter, etc).

Rhizoctonia

Don't mulch up to stem; keep field soil out of soilless mixes. Use PlantShield HC, Cease, Actinovate, TriathlonBA, Asperello preventively. Use Terraclor, Medallion, strobilurins (see **Botrytis** above for list), Hurricane, 3336/6672/Banrot, Chipco 26019/Chipco 26GT or Palladium.

Thielaviopsis

Be alert to stunting and chlorosis: have roots checked for black root rot. Keep pH below 6.0 and use 3336/6672/Banrot/2636, rotatae w/ Medallion, Terraguard, Affirm. Don't reuse pots without disinfecting.

Southern blight (*Sclerotium rolfsii*)

Look for mustard-seed sclerotia. Use labeled strobilurins (see above), Medallion, Hurricane, Contrast, Terraclor or Palladium. Beware of spreading during handling or propagation.

Fusarium wilt

Grow chrysanthemum cultivars not as prone to Fusarium wilt and relocate plants the year after an outbreak to avoid overwintered inoculum. Suppressive fungicides include 3336/6672, Medallion, Terraguard, Heritage. Biocontrols may help. Keep pH above 6.2 and use nitrate forms of nitrogen in fertilizer.

Dodder

Dodder is a parasitic plant that will persist easily: remove it before it flowers and sets seed.

The book *Diseases of Herbaceous Perennials* is available from APS, the Plant Pathologists' professional society
<http://www.apsnet.org/apsstore/shopapspress/Pages/43740.aspx>
(286 pages of text + 800 illustrations, \$99)
Or call: 1-800-328-7560

For more on disease resistant phlox and monarda:

https://www.chicagobotanic.org/downloads/planteval_notes/no35_phloxpaniculata.pdf (or goo.gl/FCfEhW)
https://www.chicagobotanic.org/downloads/planteval_notes/no12_monarda.pdf (or goo.gl/2WMMD6)

For complete pest management information (NY State): *Cornell Guide for the Integrated Management of Greenhouse Crops and Herbaceous Ornamentals*. 2017-18 available soon. Diseases/insects/weeds. Order from The Cornell Store <https://store.cornell.edu/c-875-pmep-guidelines.aspx>

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