

Scouting for PM and DM in the Greenhouse

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Powdery Mildews

Powdery Mildew-Prone Greenhouse Crops

Begonia

Calibrachoa, Petunia

Gerbera, Dahlia

Hydrangea

Rose, Rosemary

Torenia, Verbena

African violet — plus Cucumber and Tomato and Hemp



Torenia

Powdery Mildew





You'll see Powdery Mildew on many kinds of plants

R. Gibney image

Whitefly's eye view:



Powdery Mildew conidiophores and
chains of conidia (spores)



Powdery mildew of pansy
Golovinomyces orontii
or
Golovinomyces cichoracearum



PM on Veins - Dahlia



Hydrangea PM



Powdery Mildew on Hydrangea



Coating of PM

PM forming Colonies

Phlox



(the black specks are chasmothecia, structures formed only outdoors)



Verbena -
Powdery Mildew



Powdery mildew on Rosemary



Gerbera PM

PM on flower petals!



Powdery Mildew on Poinsettia



Powdery Mildew on Poinsettia



Yellow spots above
Poinsettia PM is hard to find
in the summer

PM is mostly on the top of leaves . . .
But it can hide on the undersurfaces

White colonies below





What you want to prevent by finding PM early on a poinsettia crop:



But sometimes
PM can fool you!



Powdery Mildew on Hydrangea



Powdery Mildew Colonies On Pansy

Note 'bruised' look
Look closely for hyphae
growing across the leaf

It can fool you!





Kalanchoe with Powdery Mildew – scabby spots, often

Powdery Mildew on Petunia

Oidium longipes



PM on Petunia - chlorosis



PM on calibrachoa



Could transfer to squash and verbena, but not to impatiens

PM on calibrachoa – inspect lower leaf
yellowing closely!



Nicaragua, Germany & US



Easily
recognizable
powdery
mildew on
begonia leaf



Powdery Mildew on Rex Begonia

Downy Mildews

Downy Mildew-Prone Crops

Impatiens

Coleus

Basil

Rose

Snapdragon - plus a number of herbaceous
perennials

Cucumber, Tomato



POWDERY vs. DOWNY

<ul style="list-style-type: none">◦ True fungus◦ Wind, splash◦ Humidity favors◦ Spores - top of leaf (early on see underneath)• Round, white colonies• Leaves stay on plant• Not systemic◦ Epidemics◦ Resistance	<ul style="list-style-type: none">◦ Water mold (oomycete)◦ Wind, splash◦ Wetness favors◦ Spores - under leaf (downy sporulation)• Angular spots• Defoliation• Systemic often◦ Epidemics◦ Resistance
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Plasmopara destructor
A downy mildew of
impatiens



Nancy Taylor image

Downy mildew sporulation under the compound microscope



M. Daughtrey, Cornell Univ.

Coleus DM

Snapdragon Downy Mildew



Yellowing of the new growth may signal systemic DM

Snapdragon Downy Mildew



Gray to violet sporulation on leaf undersides

Looks like Botrytis but the tissue isn't dead beneath sporulation

Snapdragon Downy Mildew



Young seedlings with DM are stunted and distorted

Rose Downy Mildew



Spores are sparse

Looks like spray injury; plants defoliate

Vein-bounded patches of discoloration

are common to many DMs



Rose Downy Mildew –
Discolored patches in leaves



Leaf drop from downy mildew - a spring/fall disease for rose



Mini-rose

Defoliation from downy mildew



Peronospora sparsa

Coleus DM may cause leaf spots



Little flecks or larger
Angular, vein-bounded
spots



Downy mildew sporulation on undersurface of leaves – white to gray



coleus



Brian Eshenaur image

Downy mildew on impatiens – plants yellow, defoliate





Effect of DM on
an infected
impatiens

Basil Downy Mildew

First seen in October 2007



Yellow patches



Sporulation on undersurface

Check leaf
undersurface if
plant looks pale



Sporulation of basil downy mildew



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