

2020 Illinois Specialty Crops Conference

Rusts & Leaf Spots & White Mold, Oh My! Fungal Diseases in Cut Flower Production

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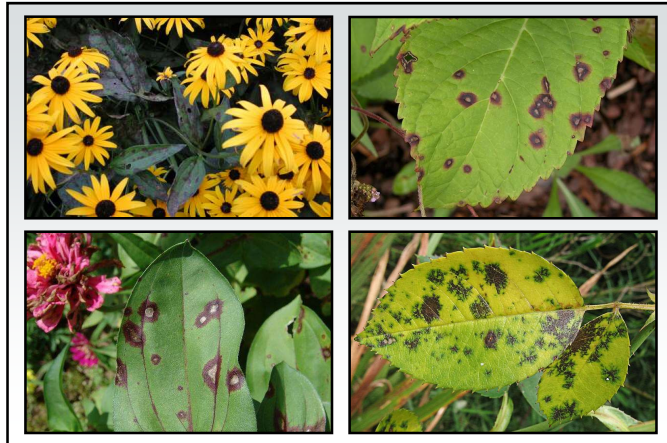


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Fungal Diseases in Cut Flower Production Fungal Leaf Spots/Blights

- **Causes**
 - *Septoria* spp.
 - *Alternaria* spp.
 - *Colletotrichum* spp.
 - *Marssonina* spp.
 - *Cercospora* spp.
 - Many other fungi
- **Hosts:** Any plant
- **Favorable environment:** Wet weather

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Fungal Diseases in Cut Flower Production Fungal Leaf Spots/Blights

- **Control**
 - Remove diseased plant material (burn where allowed, bury, hot compost)
 - Decontaminate infested items (commercial disinfectants, 70% alcohol, 10% bleach)

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Fungal Diseases in Cut Flower Production Fungal Leaf Spots/Blights

- **Control**
 - Rotate, rotate, rotate
 - Plant resistant cultivars/varieties
 - Limit leaf wetness
 - Plant less densely
 - Thin existing stands
 - DO NOT overhead water
 - Mulch, but DO NOT overmulch
 - DO NOT overwater

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Fungal Diseases in Cut Flower Production Fungal Leaf Spots/Blights

- **Control**
 - Use fungicides to prevent infections
 - Specific active ingredients depend on the fungus
 - Non-organic: chlorothalonil, mancozeb
 - Organic: *Bacillus subtilis*, neem oil, copper
 - Alternate active ingredients (FRAC codes)
 - Apply at 7-14 days intervals

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Fungal Diseases in Cut Flower Production

Botrytis Blight/Gray Mold

- Pathogen: *Botrytis cinerea*
- Hosts
 - Virtually any herbaceous plant
 - Flowering plants
 - Geranium
 - Peony
 - Dahlia
 - Rose
- Favorable environment: Wet weather

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Fungal Diseases in Cut Flower Production

Botrytis Blight/Gray Mold

- Control
 - Remove diseased plant material and debris (burn where allowed, bury, hot compost)
 - Limit leaf/flower wetness
 - Plant less densely
 - Thin existing stands
 - DO NOT overhead water
 - DO NOT overwater

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Fungal Diseases in Cut Flower Production

Botrytis Blight/Gray Mold

- Control
 - Use fungicides to prevent infections
 - Active ingredients are varied
 - Non-organic: chlorothalonil, fludioxonil, mancozeb, thiophanate-methyl
 - Organic: *Bacillus subtilis*, copper
 - Alternate active ingredients (FRAC Codes)
 - Apply during periods of high moisture
 - Apply at 7 to 14-day intervals

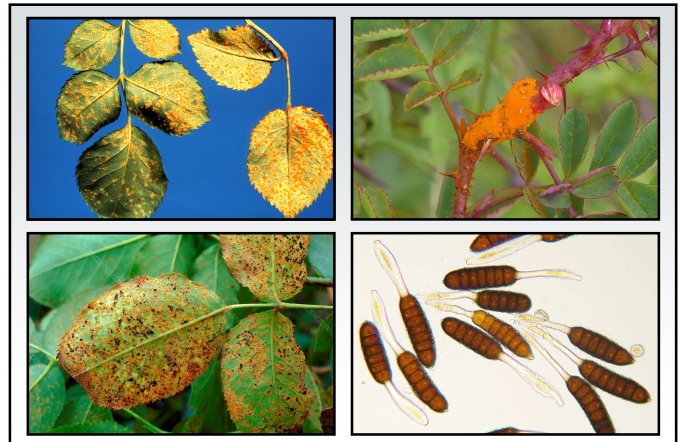
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Fungal Diseases in Cut Flower Production

Rusts

- Pathogens
 - *Phragmidium* spp.
 - *Puccinia* spp.
 - *Gymnosporangium* spp.
 - Other rust genera
- Hosts: Virtually any plant
- Favorable environment: Wet weather

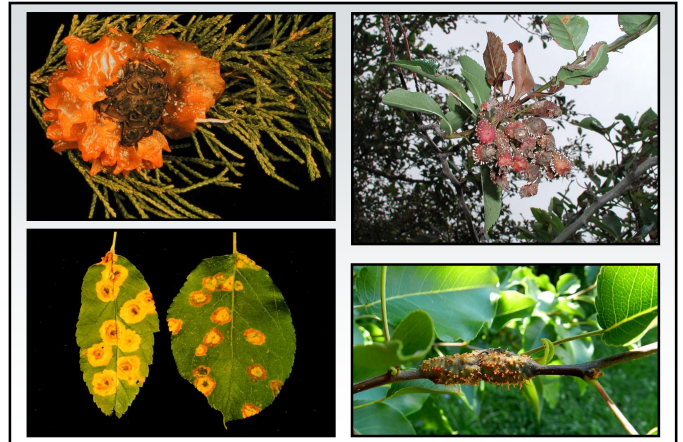
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Fungal Diseases in Cut Flower Production Rusts

- **Control**
 - Buy rust-free plants
 - Remove alternate hosts
 - Grow rust resistant cultivar/varieties
 - Limit leaf wetness
 - Plant less densely
 - Thin existing stands
 - DO NOT overhead water

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Fungal Diseases in Cut Flower Production Rusts

- **Control**
 - Mulch, but DO NOT overmulch
 - DO NOT overwater
 - Remove diseased plant material
(burn where allowed, bury, hot compost)

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Fungal Diseases in Cut Flower Production Rusts

- **Control**
 - Use fungicides to prevent infections
 - Specific active ingredients depend on the rust
 - Alternate active ingredients (FRAC Codes)
 - Apply during periods of high moisture
(particularly early in the growing season)
 - Apply at 7 to 14-day intervals

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Fungal Diseases in Cut Flower Production Powdery Mildews

- **Causes**
 - *Erysiphe* spp.
 - *Uncinula* spp.
 - *Phyllactinia* spp.
 - *Blumeria* spp.
 - *Oidium* spp.
 - *Microsphaera* spp.
 - *Sphaerotheca* spp.
 - *Podosphaera* spp.
 - *Brasiliomyces* spp.
 - *Ovulariopsis* spp.
- **Hosts:** Virtually any plant
- **Favorable environment:** High humidity

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Fungal Diseases in Cut Flower Production Powdery Mildews

- **Control**
 - Remove diseased plant material (burn where allowed, bury, hot compost)
 - Reduce humidity
 - Plant less densely
 - Thin existing stands
 - Use resistant cultivars/varieties

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Fungal Diseases in Cut Flower Production Powdery Mildews

- **Control**
 - Use fungicides to prevent infections
 - Active ingredients are numerous and varied
 - Non-organic: dithiocarbamates, myclobutanil, propiconazole, tebuconazole, thiophanate-methyl
 - Organic: sulfur, neem oil, other plant-based oils, baking soda + light weight horticultural oil
 - Alternate active ingredients (FRAC Codes)
 - Apply when humidity >60-70%
 - Apply at 7 to 14-day intervals

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Fungal Diseases in Cut Flower Production White Mold

- **Cause:** *Sclerotinia sclerotiorum*
- **Hosts**
 - Many herbaceous ornamentals (e.g., sunflower)
 - Many vegetables (e.g., carrot, snap bean)
 - Field crops (e.g., soybean)
- **Favorable environment:** Cool, wet weather

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Fungal Diseases in Cut Flower Production White Mold

- **Control**
 - Buy high quality seed
 - Prevent introduction through other plant materials
 - Rotate, rotate, rotate
 - Avoid planting susceptible plants in infested areas (5-7 yrs)
 - Plant non-hosts in infested areas
 - Plant with wider row spacings

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Fungal Diseases in Cut Flower Production

White Mold

- Control
 - DO NOT overwater
 - DO NOT overmulch
 - DO NOT overfertilize
 - Control broad-leaf weeds
 - Remove diseased plant material (burn where allowed, landfill)

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Fungal Diseases in Cut Flower Production

White Mold

- Control
 - Decontaminate contaminated materials (commercial disinfectants, 70% alcohol, 10% bleach)
 - Use fungicides to prevent infections
 - Non-organic: PCNB, fludioxonil, thiophanate-methyl
 - Organic: *Coniothyrium minitans*

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Fungal Diseases in Cut Flower Production

Southern Blight

- Pathogen: *Sclerotium rolfsii*
- Hosts
 - Most herbaceous annuals and perennials
 - Some woody ornamentals
- Favorable environment: Warm, wet weather

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Fungal Diseases in Cut Flower Production

Southern Blight

- Control
 - DO NOT buy infected/infested plants
 - Avoid cocoa mulch (?)
 - Remove infected plants/debris, mulch/soil (burn where allowed, double bag/landfill)
 - Decontaminate contaminated materials (commercial disinfectants, 70% alcohol, 10% bleach)

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Fungal Diseases in Cut Flower Production

Southern Blight

- Control
 - Amend soil with organic matter (?)
 - Use fungicides for control
 - Azoxystrobin, flutolanil, flutolanil + thiophanate-methyl, PCNB, tebuconazole, triadimefon
 - Alternate active ingredients (FRAC codes)
 - Apply at 14 to 28-day intervals
 - Pray for a really, really, REALLY cold winter

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Fungal Diseases in Cut Flower Production Root/Crown Rots

- Pathogens
 - *Pythium* spp.
 - *Rhizoctonia solani*
 - *Cylindrocarpon* spp.
 - Other fungi
 - *Phytophthora* spp.
 - *Fusarium* spp.
 - *Thielaviopsis* spp.
- Hosts: Any plant
- Favorable environment: Cool, wet weather

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Fungal Diseases in Cut Flower Production Root/Crown Rots

- Control
 - Moderate soil moisture
 - Grow plants in well-drained sites
 - Use a potting mix with adequate drainage
 - Improve drainage in poorly drained soils
 - Add organic matter to improve drainage
 - Use raised beds
 - DO NOT overwater
 - DO NOT overmulch

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Fungal Diseases in Cut Flower Production Root/Crown Rots

- Control
 - Use a soil-less potting mix or a pasteurized potting mix for containerized plants
 - DO NOT move contaminated soil or plants
 - Decontaminate contaminated materials (commercial disinfectants, 70% alcohol, 10% bleach)

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Fungal Diseases in Cut Flower Production Root/Crown Rots

- Control
 - Use fungicides to prevent infections
 - Non-organic:
 - Etridiazole, metalaxyl, mefenoxam, fosetyl-Al
 - PCNB, thiophanate-methyl, fludioxonil
 - Organic: *Trichoderma*, *Gliocladium*
 - Alternate active ingredients (FRAC codes)
 - Be careful combining non-organic/organic products
 - Use granular formulations if possible
 - Use during periods of wet weather

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Fungal Diseases in Cut Flower Production Where to Go for Help

Plant Disease Diagnostics Clinic
Department of Plant Pathology
University of Wisconsin-Madison
1630 Linden Drive
Madison, WI 53706-1598
(608) 262-2863
pddc@wisc.edu
<https://pddc.wisc.edu>
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