

Get Ready. . .Get Set. . .Garden 2014

## Diseases of Vegetables

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## Diseases of Vegetables Damping-Off/Seedling Blights

- **Pathogens**
  - Pythium spp.
  - Rhizoctonia solani
  - Fusarium spp.
- **Hosts:** Any vegetable seedling
- **Environmental trigger:** Cool, wet soils



## Diseases of Vegetables Damping-Off/Seedling Blights

- **Control**
  - Use a pasteurized soil mixture
  - Use decontaminated pots, working surfaces and tools
    - 10% bleach
    - 70% alcohol
    - Commercial disinfectants

## Diseases of Vegetables Damping-Off/Seedling Blights

- **Control**
  - Moderate soil moisture
    - Use a soil with adequate drainage
    - DO NOT over-water
  - Germinate seeds at higher temperatures

## Diseases of Vegetables Damping-Off/Seedling Blights

- **Control**
  - Use biological control products to protect seedlings
    - Streptomyces lydicus
    - Applied as a seed treatment or soil treatment
  - Use fungicides to protect seedlings
    - Captan
    - Applied as a seed treatment on purchased seed

## Diseases of Vegetables Powdery Mildew

- **Causes**
  - *Sphaerotheca fuliginea*
  - *Erysiphe cichoreacearum*
  - *Oidium* spp.
- **Hosts:** Cucurbits (cucumber, squash, pumpkin)
- **Environmental trigger:** High humidity



## Diseases of Vegetables Powdery Mildew

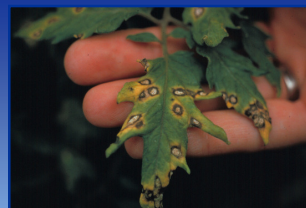
- **Control**
  - Plant resistant varieties
  - DO NOT crowd plants
  - Thin vines
  - Grow plants on a trellis

## Diseases of Vegetables Powdery Mildew

- **Control**
  - Apply fungicides for control
    - Myclobutanil, propiconazole, tebuconazole
    - Sulfur, neem oil, other plant-based oils
    - 1.5 Tbsp baking soda + 3 Tbsp light-weight horticultural oil in 1 gal water
    - Apply when humidity is >60-70%
    - Apply every 7-14 days

## Diseases of Vegetables Tomato Leaf Blights

- **Causes**
  - *Alternaria solani* (early blight)
  - *Septoria lycopersici* (Septoria leaf spot)
  - *Phytophthora infestans* (late blight)
- **Hosts**
  - Tomato
  - Potato (early blight, late blight)
- **Environmental trigger:** Wet weather





## Diseases of Vegetables Tomato Leaf Blights

- **Control (early blight, Septoria leaf spot)**
  - Remove and destroy infested debris
  - Move tomatoes to new location (?)
  - Plant resistant varieties (?)
  - Space plants far apart
  - Mulch around the base of plants
  - DO NOT over-mulch

## Diseases of Vegetables Tomato Leaf Blights

- **Control (early blight, Septoria leaf spot)**
  - DO NOT overhead water
  - Thin plants/remove healthy leaves
  - Remove diseased leaves
  - Use fungicides to prevent infections
    - Copper, chlorothalonil
    - Applications every 7-14 days

## Diseases of Vegetables Tomato Leaf Blights

- **Control (late blight)**
  - Remove and destroy
    - Infected plants, fruits, tubers
    - Volunteer tomato and potato plants
    - Weed hosts
  - DO NOT use last year's potatoes as seed potatoes
  - DO use certified seed potatoes

## Diseases of Vegetables Tomato Leaf Blights

- **Control (late blight)**
  - Grow resistant tomato varieties
    - 'Better Boy', 'Golden Sweet', 'Green Zebra', 'Juliet', 'Legend', 'Magic Mountain', 'Matt's Wild Cherry', 'Pruden's Purple', 'Regal Plum', 'Roma', 'Slava', 'Stupice', 'Sun Sugar', 'Wapsipinicon', 'Wisconsin 55'

## Diseases of Vegetables Tomato Leaf Blights

- **Control (late blight)**
  - Use fungicides to prevent infections
    - Copper, chlorothalonil
    - Applications every 7-14 days

### *Diseases of Vegetables* **Aster Yellows**

- *Cause: Aster yellows phytoplasma*
- *Hosts*
  - Carrot
  - Potato
- *Environmental trigger: None*
- *Transmission: Aster leafhopper*

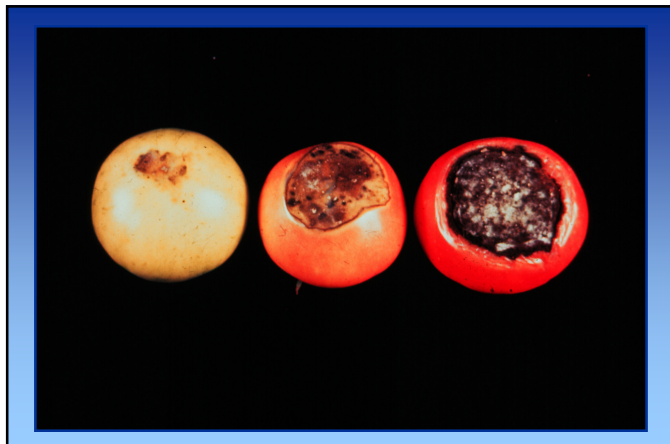


### *Diseases of Vegetables* **Aster Yellows**

- *Control*
  - Remove infected plants
  - Use insecticides to control leafhoppers (?)

### *Diseases of Vegetables* **Blossom End Rot**

- *Cause: Calcium deficiency*
- *Affected plants*
  - Tomato
  - Pepper
  - Eggplant
  - Cucurbits (cucumber, squash, pumpkin)
- *Environmental trigger: Drought*



### *Diseases of Vegetables* **Blossom End Rot**

- *Management*
  - Test soil to determine calcium level
  - Add calcium as needed
    - Bone meal
    - Egg shells
    - NOT lime (usually)
  - Water plants adequately and uniformly



## Diseases of Vegetables Herbicide Injury

- **Causes**
  - Growth regulator herbicides
    - 2,4-D
    - Dicamba
  - Other herbicides
- **Affected plants**
  - All vegetables
  - Tomatoes

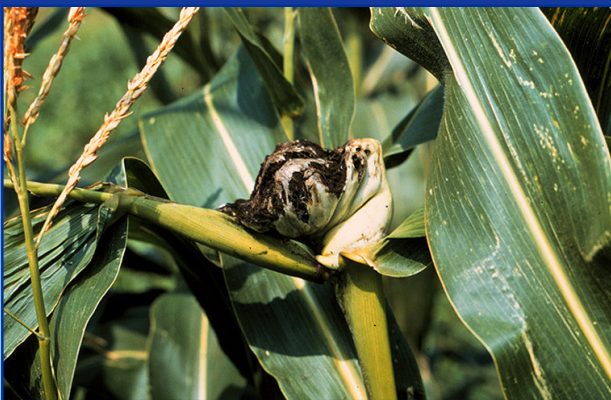


## Diseases of Vegetables Herbicide Injury

- **Management**
  - DO NOT use herbicides
  - If you or your neighbors do use herbicides, make sure that you or they
    - Follow application directions exactly
    - Apply herbicides at low wind speeds (< 5 mph)
    - DO NOT apply herbicides too close to sensitive plants
    - Apply herbicides at low pressure
    - Use amine rather than ester forms of herbicides

## Diseases of Vegetables Common Smut

- **Cause:** Ustilago maydis
- **Host:** Corn
- **Environmental trigger:** Hail

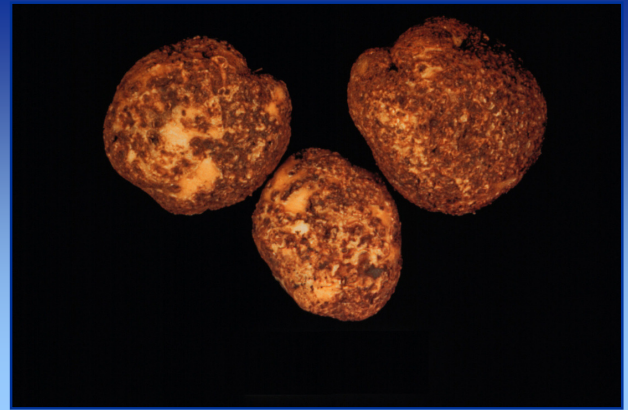


## Diseases of Vegetables Common Smut

- **Control**
  - Plant resistant varieties
  - Reduce physical damage to corn plants
  - DO NOT use chemical or biological controls
  - Give up on your corn and eat the smut

### Diseases of Vegetables Common Scab

- Cause: Streptomyces scabies
- Hosts
  - Potato
  - Carrot
  - Other root crops
- Environmental trigger: High soil pH



### Diseases of Vegetables Common Scab

- Control
  - Plant scab-free potato stock
  - Routinely rotate crops
    - DO NOT grow host plants in an infested areas
    - Plant non-hosts in infested areas
  - Plant scab resistant varieties
  - Lower soil pH
  - DO NOT use chemical or biological controls

### Diseases of Vegetables Cucumber Mosaic

- Cause: Cucumber mosaic virus
- Hosts
  - Cucurbits
  - Pepper
  - Tomato
- Environmental trigger: None
- Transmission: Aphids

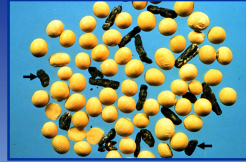


### Diseases of Vegetables Cucumber Mosaic

- Control
  - Plant resistant/tolerant varieties
    - Plant based resistance
    - Plant based tolerance
    - Genetically modified plants
  - Eliminate weed hosts
  - Attempt to control aphid vectors (?)
  - DO NOT use chemical or biological controls

## Diseases of Vegetables White Mold

- Cause: Sclerotinia sclerotiorum
- Hosts
  - Snap beans
  - Carrots
  - Many other vegetables
- Environmental trigger: Cool, humid weather



## Diseases of Vegetables White Mold

- Control
  - Buy high quality vegetable seed
  - Prevent introduction through other seed
  - Routinely rotate crops
    - Avoid planting susceptible vegetables in infested areas (5-7 yrs)
    - Plant non-hosts in infested areas
  - Plant beans with wider row spacings

## Diseases of Vegetables White Mold

- Control
  - DO NOT over-water
  - DO NOT over-mulch
  - DO NOT over-fertilize
  - Control broad-leaf weeds
  - Use biological control products
    - Coniothyrium minitans
    - Parasitizes sclerotia

## Diseases of Vegetables 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@plantpath.wisc.edu](mailto:pddc@plantpath.wisc.edu)  
<http://pddc.wisc.edu>  
Follow the clinic on Twitter @UWPDDC