Diseases of Vegetables

Tomato Leaf Blights

- **Causes**
  - *Septoria lycopersici* (Septoria leaf spot)
  - *Alternaria solani* (early blight)
  - *Phytophthora infestans* (late blight)
- **Hosts**
  - Tomato
  - Potato (early blight, late blight)
- **Environmental trigger**
  - Long periods of leaf wetness

- **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

- **Copper, neem oil**
- **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**

- **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**

- **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
    - Excellent
    - Good

- **Moderate**
  - **Use fungicides to prevent infections**
    - Copper
    - Applications every 7-14 days

**Diseases of Vegetables**

**Tomato Leaf Blights**

- **Control (late blight)**
  - Grow resistant tomato varieties
    - Moderate
    - **Use fungicides to prevent infections**
      - Copper
      - Applications every 7-14 days

**Diseases of Vegetables**

**Blossom End Rot**

- **Cause:** Calcium deficiency
- **Hosts**
  - 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
  - Water plants adequately
Diseases of Vegetables

**Powdery Mildew**

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

- **Control**
  - Plant resistant varieties
  - DO NOT crowd plants
  - Thin vines
  - Apply fungicides for control
    - Elemental sulfur
    - 1.5 Tbsp baking soda + 3 Tbsp light-weight horticultural oil in 1 gal water
    - Applications every 7-14 days

**Aster Yellows**

- **Cause:** Aster yellows phytoplasma
- **Hosts**
  - Carrot
  - Potato
  - Other vegetables
- **Environmental trigger**
  - High aster leafhopper populations

- **Control**
  - Control leafhoppers (?)
  - Remove infected plants
Diseases of Vegetables

Herbicide Injury

• Causes
  – Growth regulator herbicides
    - 2,4-D
    - Dicamba
  – Other herbicides

• Affected plants
  – All vegetables
  – Particularly tomato

Diseases of Vegetables

Common Smut

• Cause: Ustilago maydis
• Host: Corn
• Environmental trigger
  – Hail (for leaf and stalk infections)

Diseases of Vegetables

Common Smut

• Control
  – Plant resistant varieties
  – Reduce physical damage to corn plants
  – Give up on your corn and eat the smut

• Control
  – 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**

**Scab**

- **Cause:** *Streptomyces scabies*
- **Host**
  - Potato
  - Other root crops (carrot, radish, turnip)
- **Environmental trigger:** High soil pH

---

**Scab**

- **Control**
  - Plant scab-free potato stock
  - Routinely rotate crops to avoid build-up of the pathogen
    - Avoid planting potatoes in infested areas
    - Plant non-hosts in infested areas
  - Move potatoes to another location
  - Plant scab resistant varieties
  - Lower soil pH

---

**White Mold**

- **Cause:** *Sclerotinia sclerotiorum*
- **Host**
  - Snap beans
  - Other vegetables
  - Sunflower
- **Environmental trigger**
  - Cool, wet weather

---

**White Mold**

- **Control**
  - Buy high quality seed
  - Routinely rotate crops to avoid build-up of the pathogens
    - Avoid planting susceptible vegetables in infested areas (5-7 yrs)
    - Plant non-hosts in infested areas
  - Control broad-leaf weeds
  - Plant beans with wider row spacings
Diseases of Vegetables

White Mold

- **Control**
  - DO NOT over-water
  - DO NOT over-mulch
  - DO NOT over-fertilize
  - Remove symptomatic plants immediately
  - Use biological control products
    - *Coniothyrium minitans*
    - Parasitizes sclerotia

Diseases of Vegetables

Cucumber Mosaic

- **Cause:** Cucumber mosaic virus
- **Hosts**
  - Cucurbits
  - Pepper
  - Tomato
- **Environmental trigger**
  - High aphid populations

Diseases of Vegetables

Cucumber Mosaic

- **Control**
  - Plant resistant/tolerant varieties
    - Plant based resistance
    - Plant based tolerance
    - Genetically modified plants
  - Attempt to control aphid vectors (?)
  - Attempt to eliminate alternate hosts (?)

Diseases of Vegetables

Damping-Off/Seedling Blights

- **Causes**
  - *Pythium* spp.
  - *Rhizoctonia solani*
  - *Fusarium* spp.
  - Other fungi and water molds
- **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
  – Moderate soil moisture
    • Use a soil with adequate drainage
    • DO NOT over-water

Diseases of Vegetables
Damping-Off/Seedling Blights

• Control
  – Germinate seeds at higher temperatures
  – Use biological control products to protect seedlings
    • Trichoderma spp., Gliocladium spp., Streptomyces spp., Pseudomonas spp., Bacillus spp.
    • Applied as a seed treatment or soil treatment

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
http://pddc.wisc.edu
Follow the clinic on Twitter @UWPDDC