Wrestling with Vegetable Diseases

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• Causes
  – *Septoria lycopersici* (Septoria leaf spot)
  – *Alternaria solani* (early blight)
  – *Phytophthora infestans* (late blight)

• Hosts
  – Tomato
  – Potato (early blight, late blight)

• Favorable environment: Cool, wet weather

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

• Control (early blight, Septoria leaf spot)
  – DO NOT overhead water
  – Remove infected leaf tissue (?)
  – Use fungicides to prevent infections
    • Chlorothalonil, copper, neem oil
    • Alternate active ingredients (FRAC codes)
    • Apply at 7-14 days intervals
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**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**

**Tomato Leaf Blights**

- **Control (late blight)**
  - Grow resistant tomato varieties
    - **Excellent:** 'Black Plum', 'Defiant', 'Iron Lady',
      'Matt’s Wild Cherry', 'Mountain Magic', 'Mountain Merit',
      'Plum Regal', 'Yellow Currant', 'Yellow Pear'
    - **Good:** ‘Aunt Ginny’s Purple’, ‘Big Rainbow’,
      ‘Red Currant’, ‘Tigerella’
    - **Moderate:** ‘Aunt Ruby’s German Green’, ‘Black Krim’,
      ‘Sun Sugar’, ‘Wapsipinicon’, ‘Wisconsin 55’

**Tomato Leaf Blights**

- **Control (late blight)**
  - Use fungicides to prevent infections
    - Chlorothalonil, copper
    - Apply at 7-14 day intervals

**Tomato Leaf Blights**

- **Cause:** Calcium deficiency

**Tomato Leaf Blights**

- **Hosts**
  - Tomato
  - Pepper
  - Eggplant
  - Cucurbits (cucumber, squash, pumpkin)
- **Favorable environment:** Drought

**Blossom End Rot**

- **Management**
  - Test soil to determine calcium level
  - Add calcium as needed
    - Bone meal
    - Egg shells
  - Water plants adequately
**Powdery Mildew**

- **Causes**
  - *Sphaerotheca fuliginea*
  - *Erysiphe cichoracearum*
  - *Oidium* spp.
- **Hosts**
  - Cucurbits (cucumber, squash, pumpkin)
  - Other vegetables
- **Favorable environment:** 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
    - Apply at 7-14 day intervals

**Aster Yellows**

- **Cause:** Aster yellows phytoplasma
- **Hosts**
  - Carrot
  - Potato
  - Other vegetables
- **Favorable environment**
  - None in terms of weather
  - High aster leafhopper populations
- **Control**
  - Remove infected plants
  - Control leafhoppers (?)
**Herbicide Injury**

- **Causes**
  - Growth regulator herbicides
    - 2,4-D
    - Dicamba
  - Other classes of herbicides
- **Affected plants**
  - All vegetables, particularly tomato
- **Favorable Environment:** High wind

**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

**Common Smut**

- **Cause:** Ustilago maydis
- **Host:** Corn
- **Favorable environment:** Hail

**Control**

- Plant resistant varieties
- Reduce physical damage to corn plants
- Give up on your corn and eat the smut
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**Scab**

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

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**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

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**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

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**Scab**

- **Host**
  - Snap beans
  - Other vegetables
  - Sunflower

- **Favorable environment:** Cool, wet weather
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**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

**Cucumber Mosaic**

- **Cause:** Cucumber mosaic virus
- **Hosts**
  - Cucurbits
  - Pepper
  - Tomato
- **Favorable environment**
  - None in terms of weather
  - High aphid populations

**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  
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