**Outagamie County Master Gardener Assoc.**  
**2017 Garden Conference**

**Battling Vegetable Diseases**

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**Battling Vegetable Diseases**

**Fungal Leaf Blights**

**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

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

- DO NOT overhead water
- Remove infected leaf tissue (?)
- Use fungicides to prevent infections  
  - Chlorothalonil, mancozeb
  - Copper
  - Alternate active ingredients (FRAC codes)
- Apply at 7-14 days intervals
Battling Vegetable Diseases
Fungal 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

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

Battling Vegetable Diseases
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

Battling Vegetable Diseases
Fungal Leaf Blights

• Control (late blight)
  – Grow resistant tomato varieties
    • “Late Blight Management in Tomato with Resistant Varieties”

• Use fungicides to prevent infections
  • Chlorothalonil, mancozeb
  • Copper
  • Alternate active ingredients (FRAC codes)
  • Start applications based on Blitecast
    (http://www.plantpath.wisc.edu/wivegdis/)
  • Apply at 7-14 day intervals
Battling Vegetable Diseases

**Powdery Mildew**

- **Causes**
  - Miscellaneous powdery mildew fungi
    - *Oidium* spp.
- **Hosts**
  - Cucurbits (cucumber, squash, pumpkin)
  - Other vegetables (pea, tomato)
- **Environmental trigger:** High humidity

Battling Vegetable Diseases

**Powdery Mildew**

- **Control**
  - Plant resistant varieties (where available)
  - DO NOT crowd plants
  - Thin plants
  - Grow vining plants on a trellis

Battling Vegetable Diseases

**Powdery Mildew**

- **Control**
  - Use fungicides to prevent infections
    - Dithiocarbamates, myclobutanil, propiconazole, tebuconazole, thiophanate-methyl
    - Sulfur, neem oil, other plant-based oils
    - 1.5 Tbsp baking soda + 3 Tbsp light-weight horticultural oil in 1 gal water
    - Alternate active ingredients (FRAC codes)
    - Apply when humidity is >60-70%
    - Apply every 7-14 days

Battling Vegetable Diseases

**Herbicide Injury**

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

**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

**Black Rot**

- **Cause:** *Xanthomonas campestris pv. campestris*
- **Hosts:** Crucifers
  - Brussels sprouts, cabbage, collards
  - Broccoli, cauliflower, kale, kohlrabi, rutabaga, turnips
- **Environmental trigger:** Wet weather

**Control**

- Routinely rotate crops
- DO NOT grow host plants in an infested areas
- Plant non-hosts in infested areas
- Fertilize properly (particularly nitrogen)
- DO NOT overhead water
- DO NOT handle plants when wet
- Remove and dispose of contaminated plants (burn, bury, hot compost)

**Black Rot**

- **Control**
  - Buy high quality (certified pathogen-free) seed or transplants
  - Heat treat seeds
    - 35 min, 122°F (Brussels sprouts, cabbage, collards)
    - 20 min, 122°F (broccoli, cauliflower, kale, kohlrabi, rutabaga, turnips)
  - Routinely rotate crops
  - DO NOT grow host plants in an infested areas
  - Plant non-hosts in infested areas
  - Fertilize properly (particularly nitrogen)
  - DO NOT overhead water
  - DO NOT handle plants when wet
  - Remove and dispose of contaminated plants (burn, bury, hot compost)

- Decontaminate infested items
  - 10% bleach
  - 70% alcohol
  - Commercial disinfectants
- Use bactericides to prevent infections
  - Copper
  - Apply at 7-14 days intervals
  - Tolerant bacterial strains are a problem
Battling Vegetable Diseases

Aster Yellows

• Cause: Aster yellows phytoplasma
• Hosts
  – Carrot
  – Potato
  – Other vegetables
• Environmental trigger: None
• Transmission: Aster leafhopper

Battling Vegetable Diseases

Aster Yellows

• Control
  – Remove infected plants
  – Use insecticides to control leafhoppers

Battling Vegetable Diseases

Common Smut

• Cause: Ustilago maydis
• Host: Sweet corn
• Environmental trigger
  – None (ear infections)
  – Hail (leaf and stalk infections)

Battling Vegetable Diseases

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 (huililacoche)
Battling Vegetable Diseases
Common Scab

• Cause: *Streptomyces scabies*
• Hosts
  – Potato
  – Carrot
  – Other root crops
• Environmental trigger: High soil pH

Battling Vegetable Diseases
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
  – Move potatoes to another location
  – Plant scab resistant varieties
  – Lower soil pH
  – DO NOT use chemical or biological controls

Battling Vegetable Diseases
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
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