

Think Spring Garden Seminar 2016

Wrestling with Vegetable Diseases

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Think Spring Garden Seminar 2016 Tomato 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**



Think Spring Garden Seminar 2016 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

Think Spring Garden Seminar 2016 Tomato Leaf Blights

- **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

Think Spring Garden Seminar 2016 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

Think Spring Garden Seminar 2016 Tomato Leaf Blights

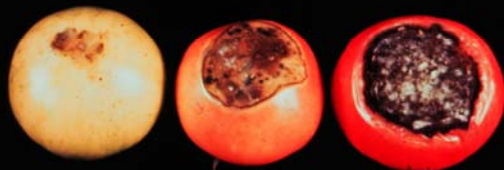
- **Control (late blight)**
 - Grow resistant tomato varieties
 - **Excellent:** 'Black Plum', 'Defiant', 'Iron Lady', 'Matt's Wild Cherry', 'Mountain Magic', 'Mountain Merit', 'Plum Regal', 'Yellow Currant', 'Yellow Pear'
 - **Good:** 'Aunt Ginny's Purple', 'Big Rainbow', 'Red Currant', 'Tigerella'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

Think Spring Garden Seminar 2016 Tomato Leaf Blights

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

Think Spring Garden Seminar 2016 Blossom End Rot

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



Think Spring Garden Seminar 2016 Blossom End Rot

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

Think Spring Garden Seminar 2016 Powdery Mildew

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



Think Spring Garden Seminar 2016 Powdery Mildew

- **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

Think Spring Garden Seminar 2016 Aster Yellows

- **Cause: Aster yellows phytoplasma**
- **Hosts**
 - Carrot
 - Potato
 - Other vegetables
- **Favorable environment**
 - None in terms of weather
 - High aster leafhopper populations



Think Spring Garden Seminar 2016 Aster Yellows

- **Control**
 - Remove infected plants
 - Control leafhoppers (?)

Think Spring Garden Seminar 2016 Herbicide Injury

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



Think Spring Garden Seminar 2016 Herbicide Injury

- **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

Think Spring Garden Seminar 2016 Common Smut

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

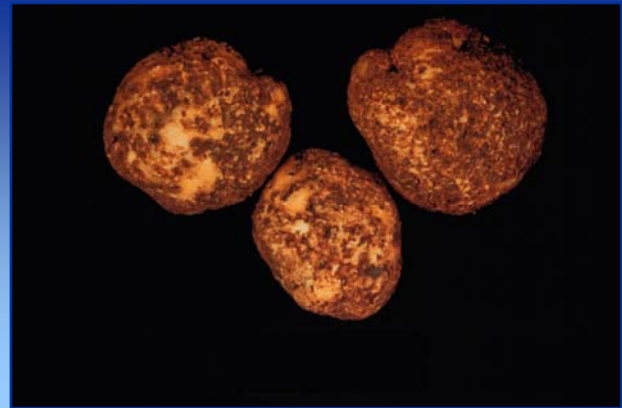


Think Spring Garden Seminar 2016 Common Smut

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

Think Spring Garden Seminar 2016 Scab

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

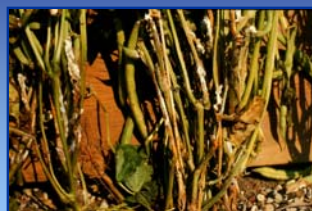
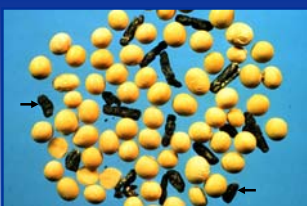


Think Spring Garden Seminar 2016 Scab

- 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

Think Spring Garden Seminar 2016 White Mold

- Cause: Sclerotinia sclerotiorum
- Host
 - Snap beans
 - Other vegetables
 - Sunflower
- Favorable environment: Cool, wet weather



Think Spring Garden Seminar 2016 White Mold

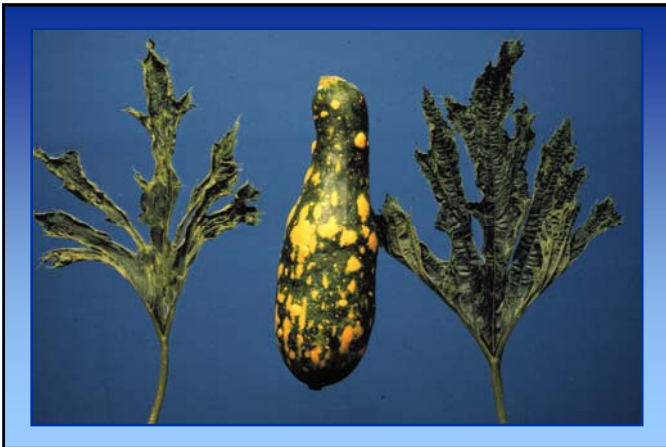
- Control
 - Buy high quality seed
 - Routinely rotate crops to avoid build-up of the pathogens
 - Avoid planting susceptible vegetables in infested areas (5-7 yrs)
 - Plant non-hosts in infested areas
 - Control broad-leaf weeds
 - Plant beans with wider row spacings

Think Spring Garden Seminar 2016 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

Think Spring Garden Seminar 2016 Cucumber Mosaic

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



Think Spring Garden Seminar 2016 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 (?)

Think Spring Garden Seminar 2016 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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