



COOPERATIVE EXTENSION



Why'd My Garden Die?



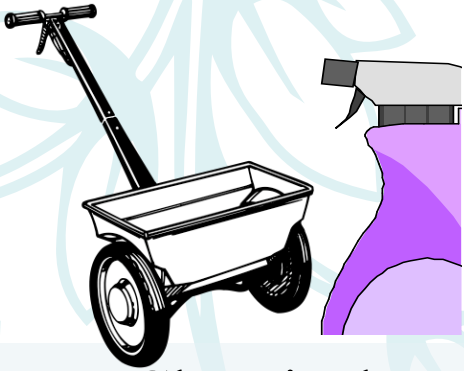
Adam J Leonberger

Franklin Co. Extension Agent for Horticulture

Suspects

Noninfectious Diseases(Disorders)

Infectious Diseases



Chemicals
(fertilizers & pesticides)

Environment



Mechanical Injury



Genetic Mutations

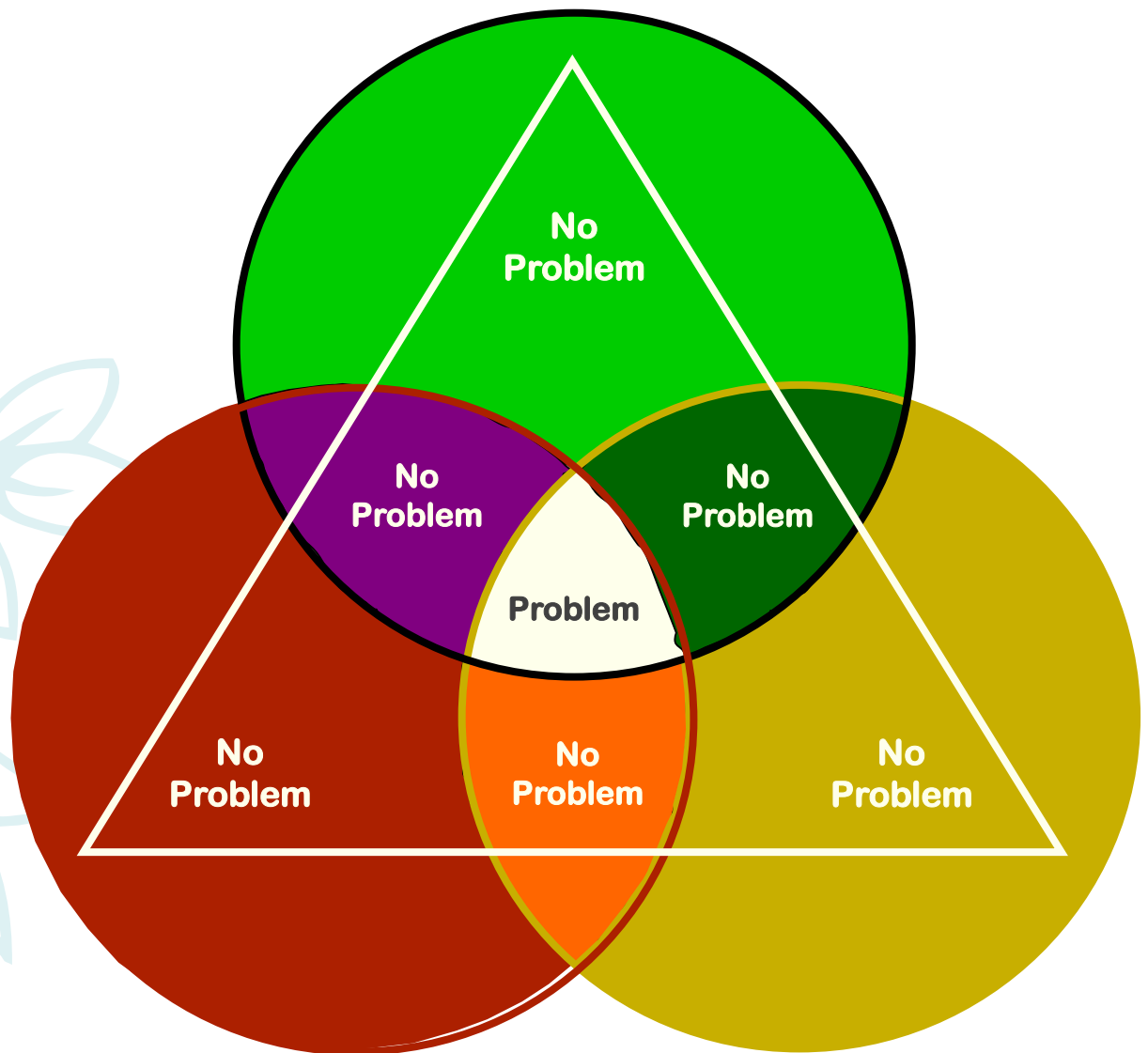


Pathogenic microorganisms

Susceptible Host

**Pathogen
or
Pest**

**Favorable
Environment**

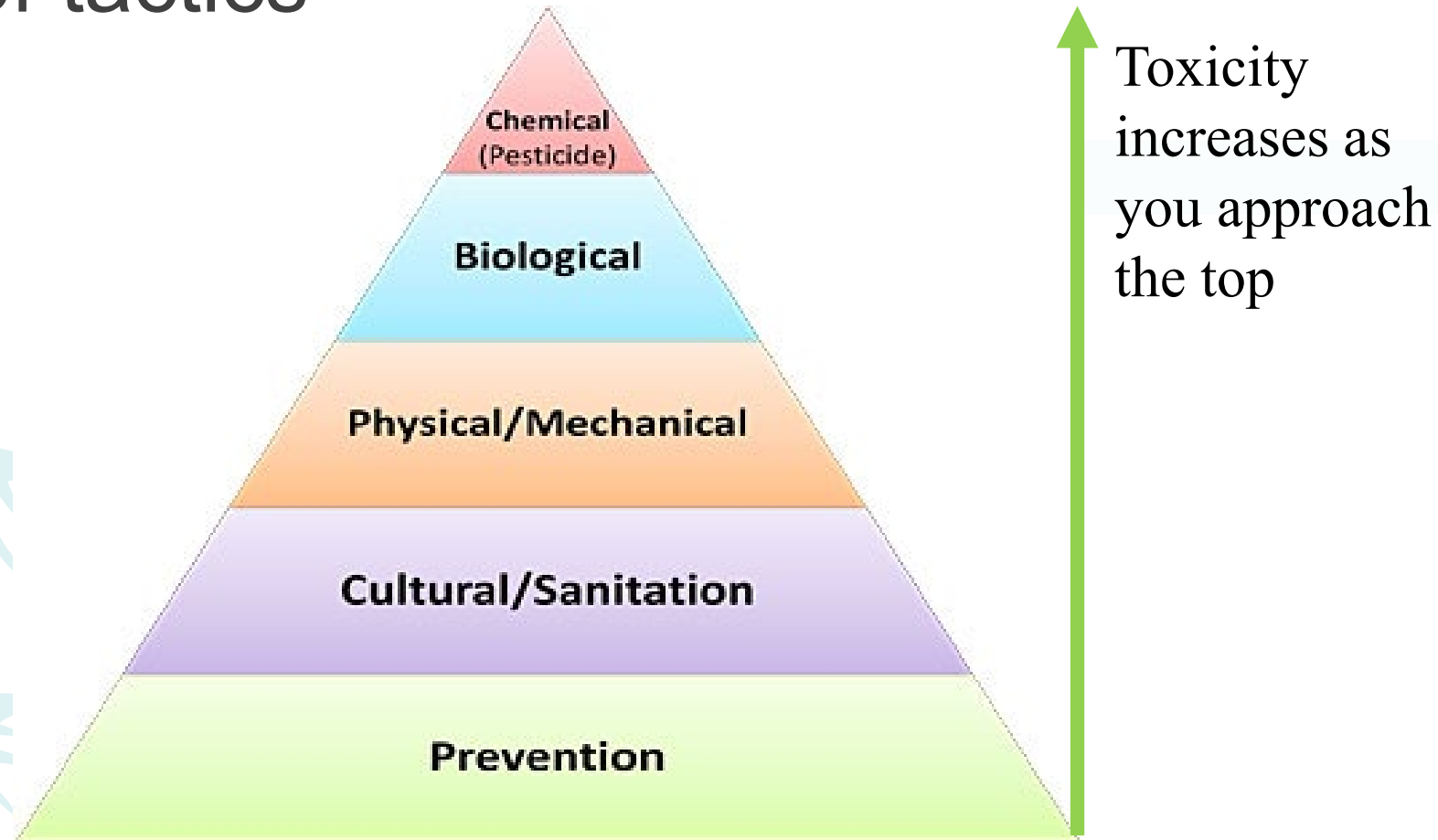




Problem Management

Integrated pest management (IPM)

Pyramid of tactics

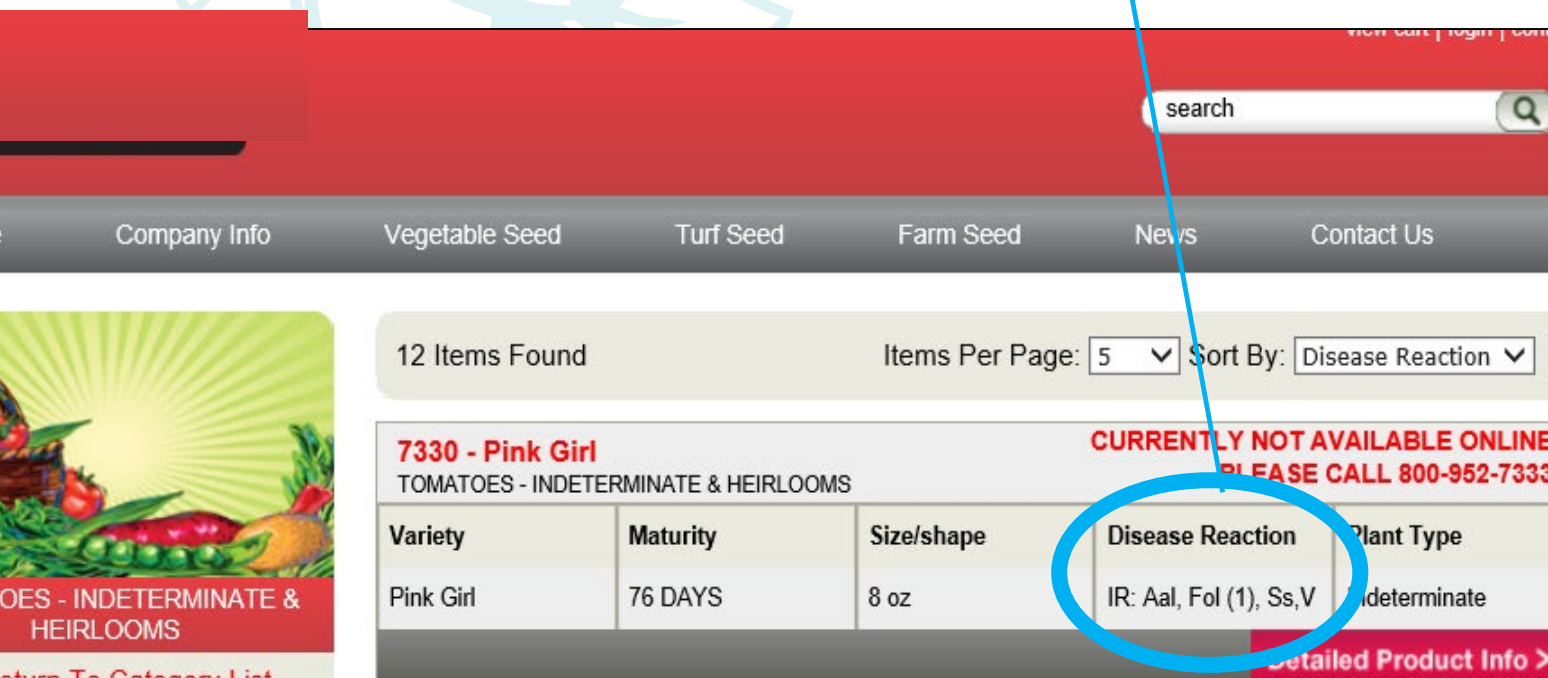


For most effective disease management,
start at the bottom and work your way up!

Preventative

Intermediate resistance to Alternaria stem canker, Fusarium and Verticillium wilt, gray leaf spot

- Crop rotation –rotate away from the plant family for 2-3 years
 - Keep a yearly garden journal!
- Variety selection: choose horticulturally desirable plants with resistance or tolerance to multiple common diseases



search

Company Info Vegetable Seed Turf Seed Farm Seed News Contact Us

12 Items Found Items Per Page: 5 Sort By: Disease Reaction

7330 - Pink Girl **CURRENTLY NOT AVAILABLE ONLINE**
TOMATOES - INDETERMINATE & HEIRLOOMS **PLEASE CALL 800-952-7333**

Variety	Maturity	Size/shape	Disease Reaction	Plant Type
Pink Girl	76 DAYS	8 oz	IR: Aal, Fol (1), Ss, V	Indeterminate

[Detailed Product Info >](#)

Sanitation

- Cleanliness is important:
 - Certified pathogen-free, or heat-treated seed
 - Clean pots, flats, stakes, shovels, boots with water, then 10% bleach
 - Remove debris in-season, deep-till anything remaining at end of season

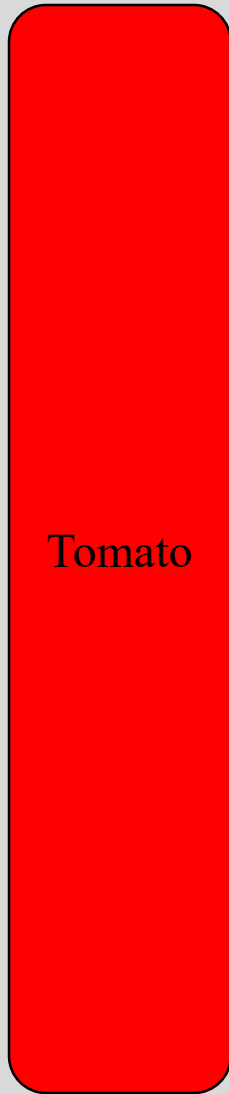


Cultural Methods: Rotation and Mulching

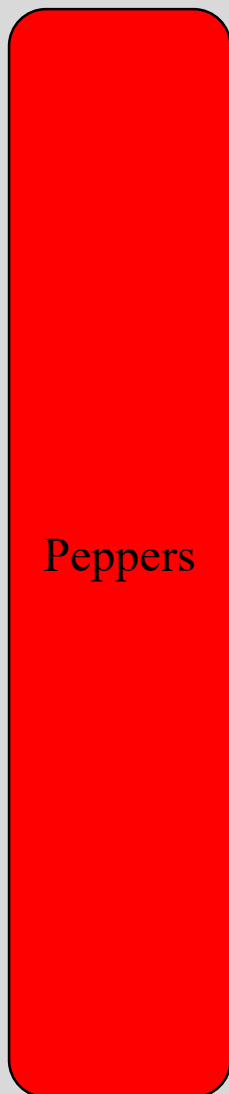


- Many plant pathogens overwinter in the soil
 - Move the plants away from the diseases.
- Apply mulch around the plant
 - Creates barrier from soil & pathogens from splashing on plants

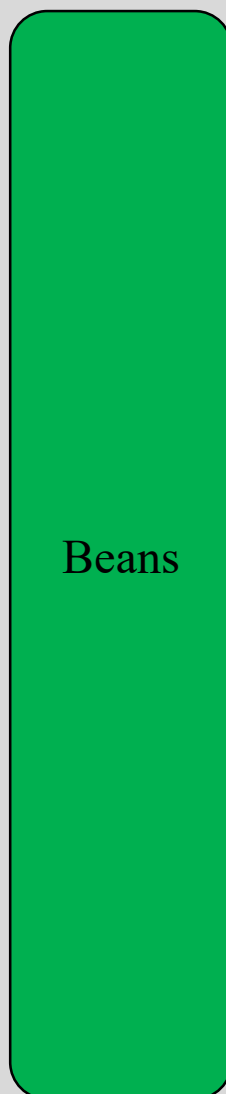
Year A



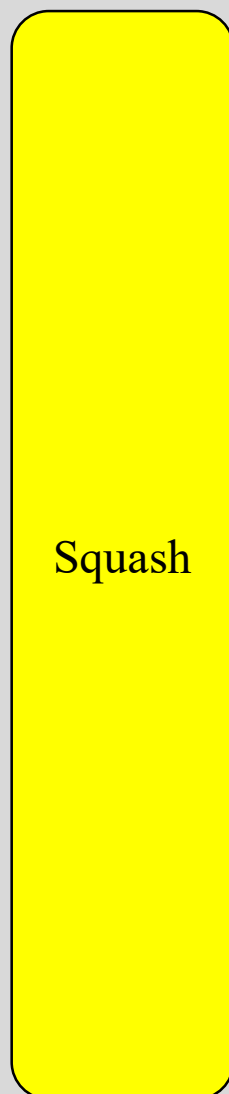
Tomato



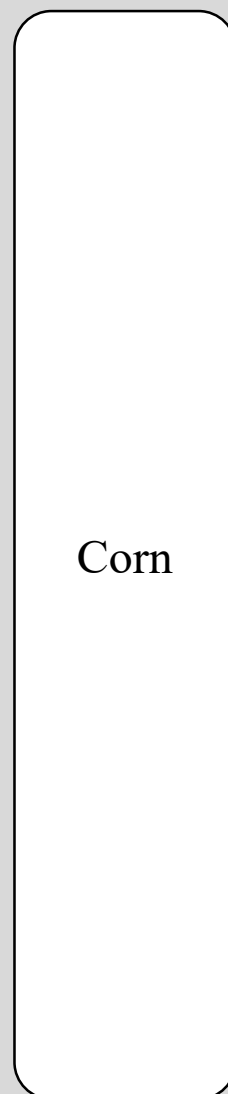
Peppers



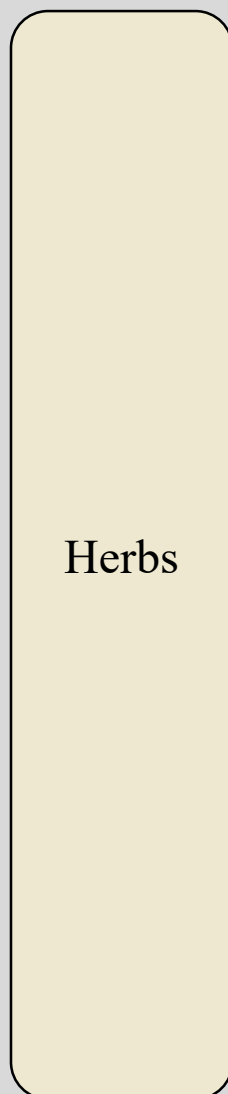
Beans



Squash



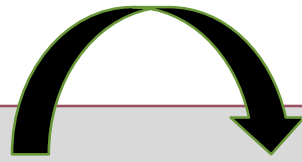
Corn



Herbs



Year B



Corn

Onions

Tomato

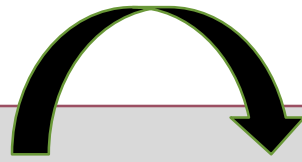
Pepper

Beans

Squash



Year C



Beans

Squash

Corn

Onions

Tomato

Pepper



Cultural Control:

Irrigation



- Keep foliage dry
- Avoid overhead watering
- Soaker hoses and drip tape are better
- Use a hose timer and water early morning (5-7 AM)

Striped cucumber beetle



Cultural Methods: Timing

Corn earworm



- Consider planting or transplanting times to avoid insect pressure
 - Sweet corn: Early planting to avoid late season corn earworm
 - Vining Crops: Delayed planting to avoid cucumber beetles



Seedcorn maggot



Cultural / mechanical controls: create an unfavorable environment for disease

- Maximize air movement around plants
 - Proper spacing
 - Trellising
 - Pruning
- Manage weeds and volunteers
- Optimize fertility
- Ensure adequate soil drainage



Chemical management



- Chemical selection depends on proper diagnosis of disease
- Chemicals can be used in both conventional and organic gardens

Chemical management in the garden

- Always read and follow all label instructions
- Wear appropriate personal protective equipment
- Resources for chemical recommendation:
 - Extension Agents and Publications
 - Plant Disease Diagnostic Laboratory Reports





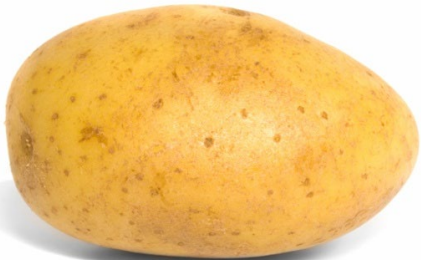
Good Practices for Many Problems

- Crop Rotation
- Choose resistant varieties
- Plant disease-free seeds and plants
- Provide adequate fertility (not too much or too little)
- Mulch
- Water plants at the soil line, in the morning
- Manage weeds
- Clean up at the end of season

Solanaceous Crops



- Tomatoes
- Pepper
- Eggplant
- Potatoes



Tomato Fungal Diseases – Leaves and Fruit

Septoria leaf spot



Early blight



Late blight



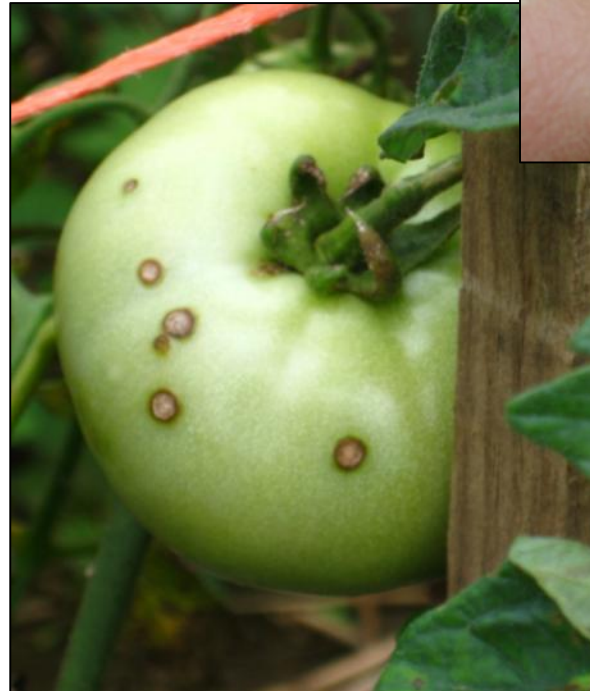
Tomato Bacterial Diseases

Bacterial speck,
canker, and spot
on tomato



Bacterial spot: enlarging tan lesions

Slide courtesy of B. Gugino



Pepper Diseases

Bacterial spot



Anthracnose



Phytophthora blight



Viruses





Tomato & Pepper Fungal Diseases

– Leaves and Fruit

- Prune suckers up to the first flower
- Wider plant spacing (3+ ft)
- Mulch
- Use clean/ sanitized cages and stakes to get plants off ground
- Water plants at the soil line, in the morning
- Remove infected leaves and remove from garden
- Spray chlorothalonil (Daconil), mancozeb, sulfur, or copper every 7-10 days
 - For bacterial diseases, only spray copper

Cucurbit Crops



- Cucumber
- Squash
- Zucchini
- Pumpkin
- Watermelon

Cucurbit Fungal Diseases

Powdery mildew



Anthracnose



Cucurbit Fungal Diseases

Fusarium fruit rot



Alternaria leaf blight



Gummy stem blight

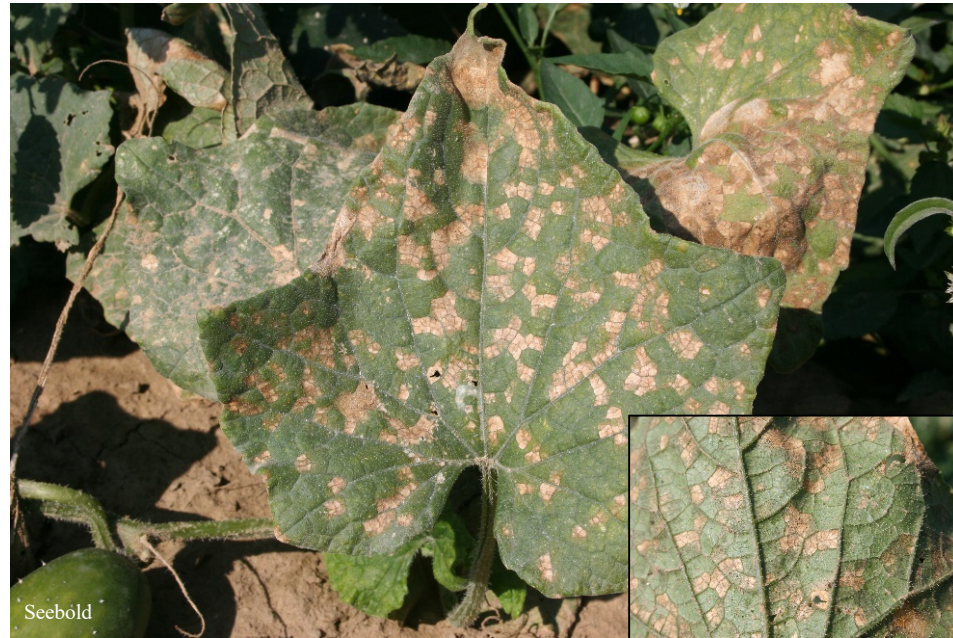


Cucurbit Water Mold Diseases

Damping-off



Downy Mildew



Cucurbit Water Mold Diseases

Phytophthora blight



Choanephora Rot

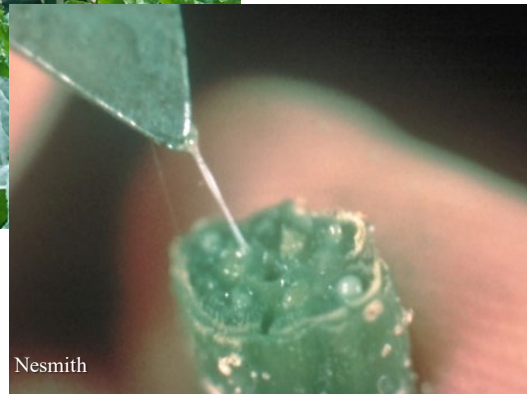


Cucurbit Bacterial Diseases

Bacterial wilt



Hartman



Nesmith

Angular leaf spot



Clemson University, USDA Cooperative Extension Slide Series, Bugwood.org

Cucurbit Disease Management

- Prevent fruit from contacting soil by placing them on mulch
- Use floating row covers to protect plants from cucumber beetles/ bacterial wilt
- Avoid wetting leaves by watering plants at the soil line
- Apply fungicides to manage fungal leaf spots
 - Copper is not effective on bacterial wilt or fruit blotch
 - Sulfur should **not** be used on cucurbits at all

Legume Crops



Legume Fungal Diseases

Angular leaf spot



Anthraxnose



Rhizoctonia root and stem rot



Bean rust



Cercospora leaf spot



Legume Bacterial Diseases

Bacterial blight



Halo blight



Bacterial brown spot



Legume Disease Management

- Space plants to maintain air flow
- Limit N and mulch
- Avoid working plants when they are wet
- Trellis beans when plants are young and dry to the touch to increase air flow and decrease soil contact
- Harvest often and carefully to reduce injury
- Water plants moderately at the soil line, in the morning
- Apply the right chemical for the right disease

Active ingredient	Disease(s)
Copper	Bacterial diseases, fungal leaf spots
Chlorothalonil	Fungal leaf spots
Sulfur	Rusts, powdery mildews
Mancozeb	Fungal leaf spots (labeled crops only)
Horticultural oils	Powdery mildew, rusts (labeled crops only)

Leafy Green Crops

- Lettuce
- Spinach
- Kale
- Collard
- Cabbage



Leafy Green Fungal and Water Mold Diseases

Botrytis leaf blight



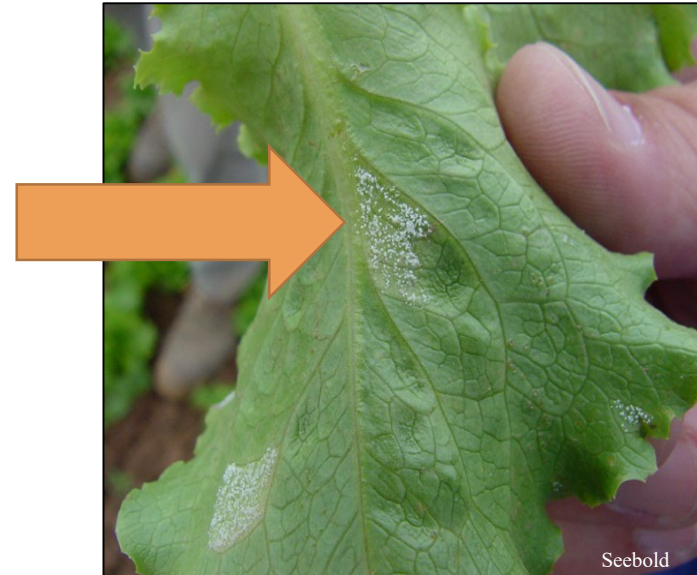
Damping off



Botrytis crown rot

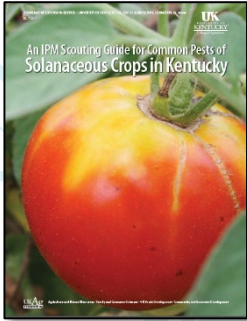


Lettuce downy mildew

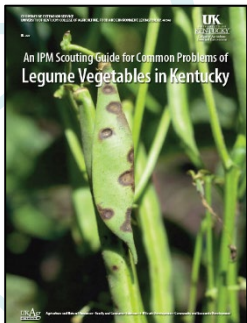
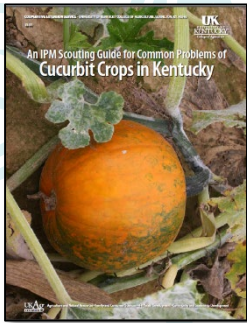


Leafy Green Disease Management

- Plant varieties with resistance to common diseases
 - *Downy mildew*
 - *Bacterial disease*
- Manage weeds early to reduce competition and pathogen reservoirs, increase air flow
- Avoid wetting leaves by watering plants at the soil line
- Protect plants with copper applications



Summary



- Remove last year's plant debris (or deep-till into soil)
- Resistant varieties
- Clean seed/transplants
- Create an unfavorable environment for disease
- Apply Mulch
- Work when the plants are dry
- Manage weeds... volunteer plants are weeds!
- Scout plots regularly for problems
- Remove infected material
- Hand pick large insects
- Apply the right chemical for the right disease