



COOPERATIVE EXTENSION

UK University of
Kentucky®
College of Agriculture,
Food and Environment



Why'd My Garden Die?



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Suspects

Noninfectious Diseases(Disorders)



Chemicals
(fertilizers & pesticides)



Mechanical Injury

Environment



Genetic Mutations

Infectious Diseases



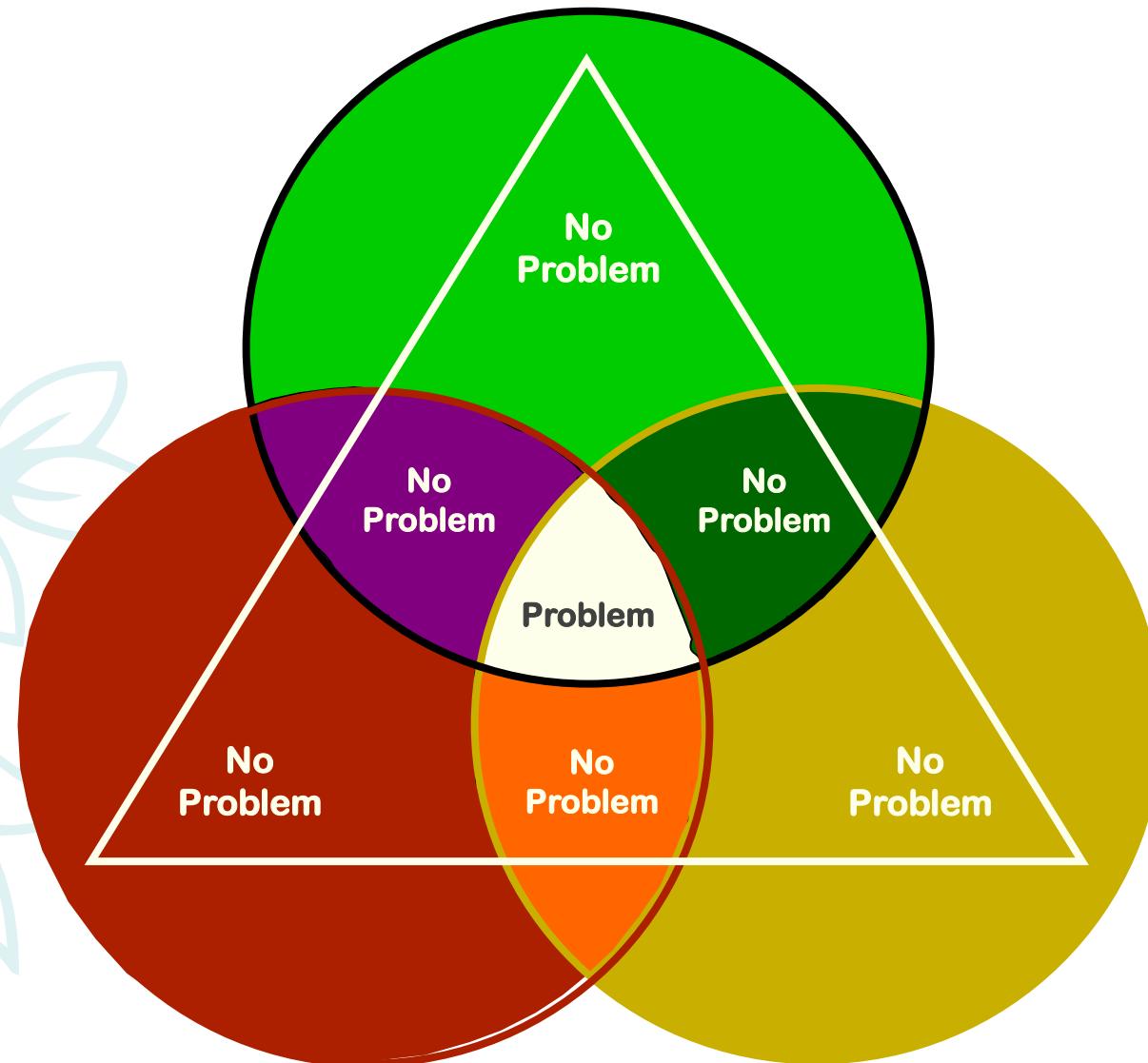
Pathogenic microorganisms



Susceptible Host

**Pathogen
or
Pest**

**Favorable
Environment**



Problem Management

Integrated pest management (IPM)

Pyramid of tactics



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

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
TOMATOES - INDETERMINATE & HEIRLOOMS

CURRENTLY NOT AVAILABLE ONLINE
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

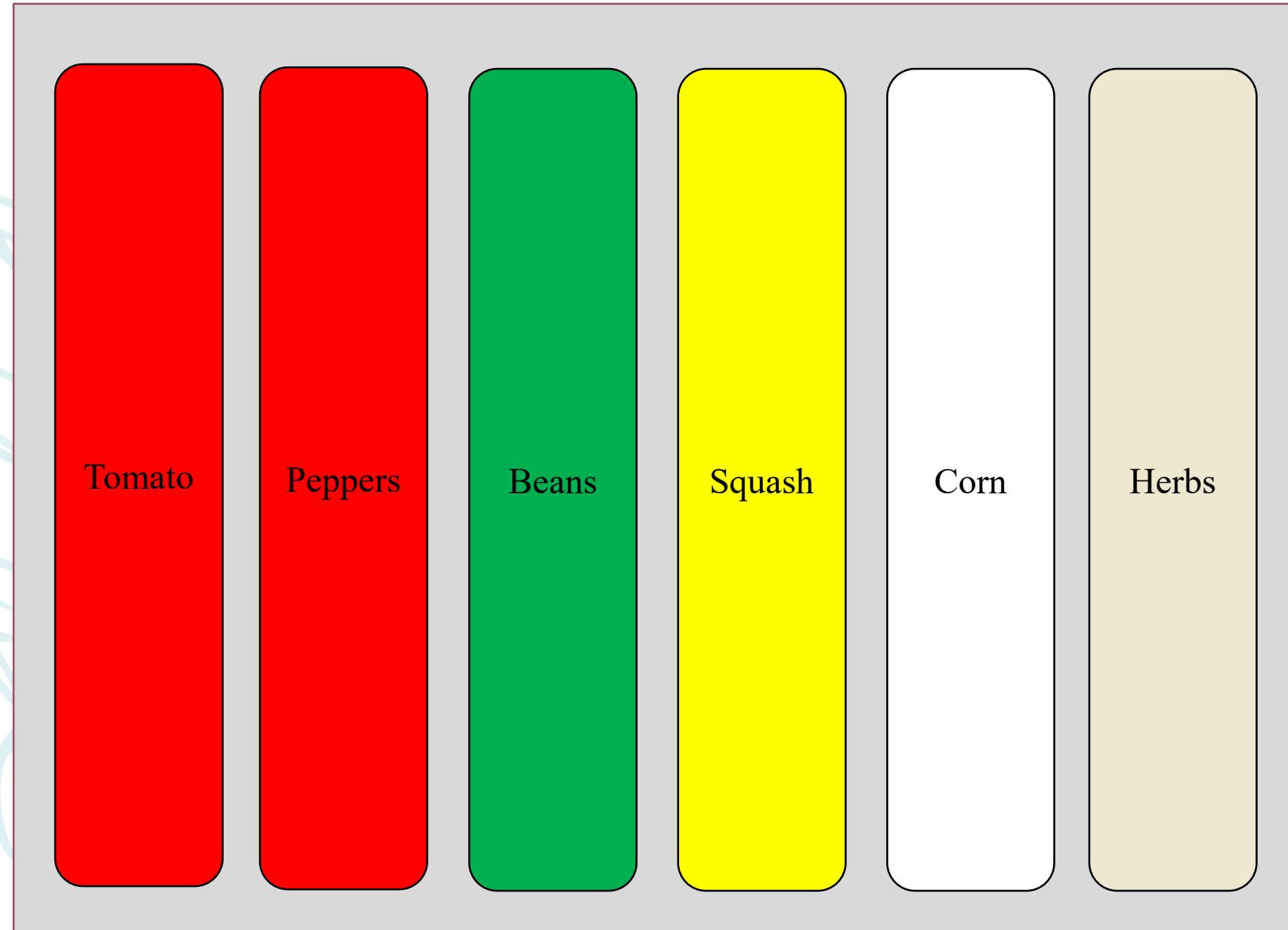


Cultural Methods: Rotation and Mulching

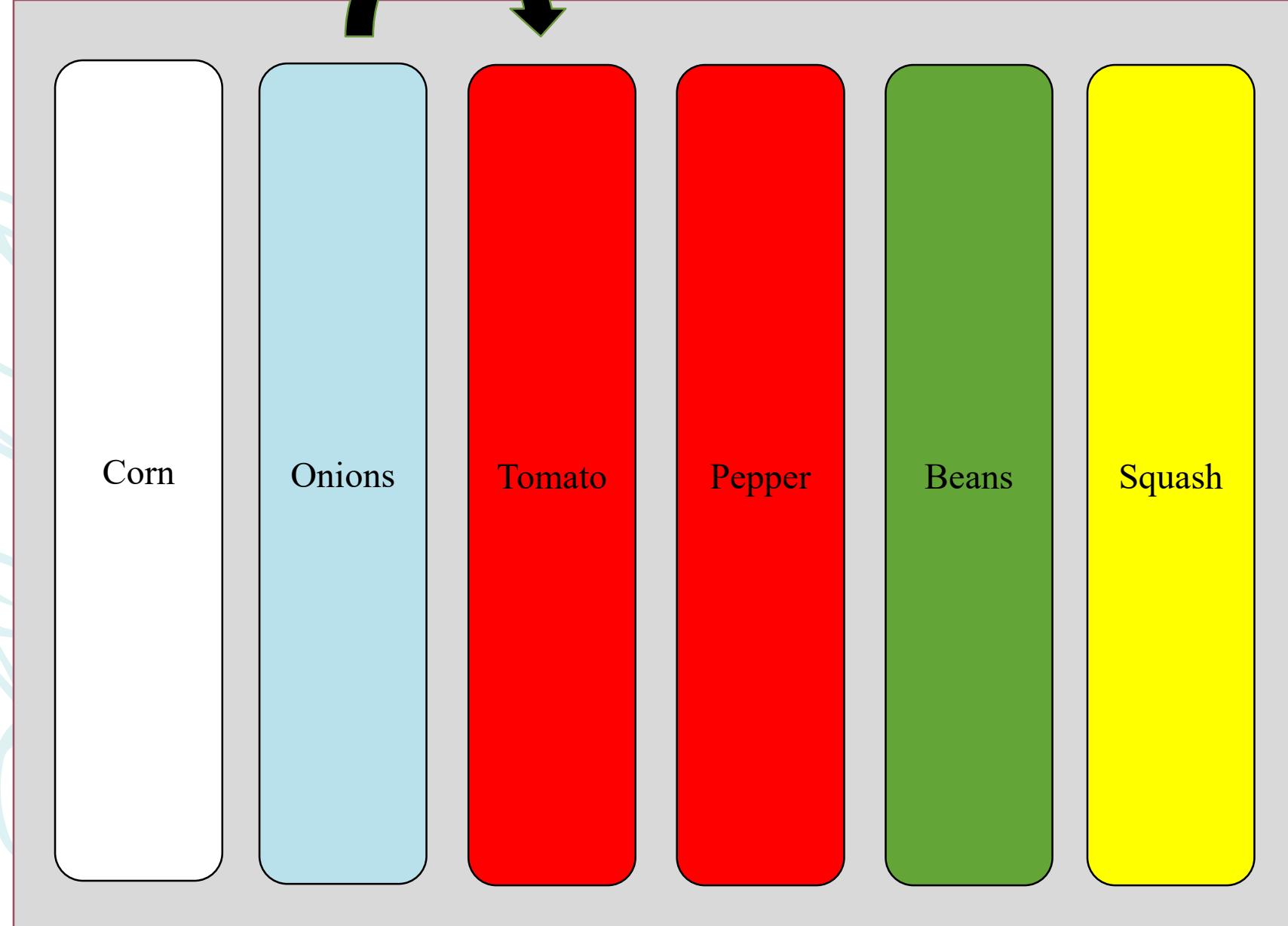


- Many plant pathogens overwinter in the soil
 - Move the plants away from the diseases.
 - Apply mulch around the plant
 - Creates barrier from soil & pathogens from splashing on plants

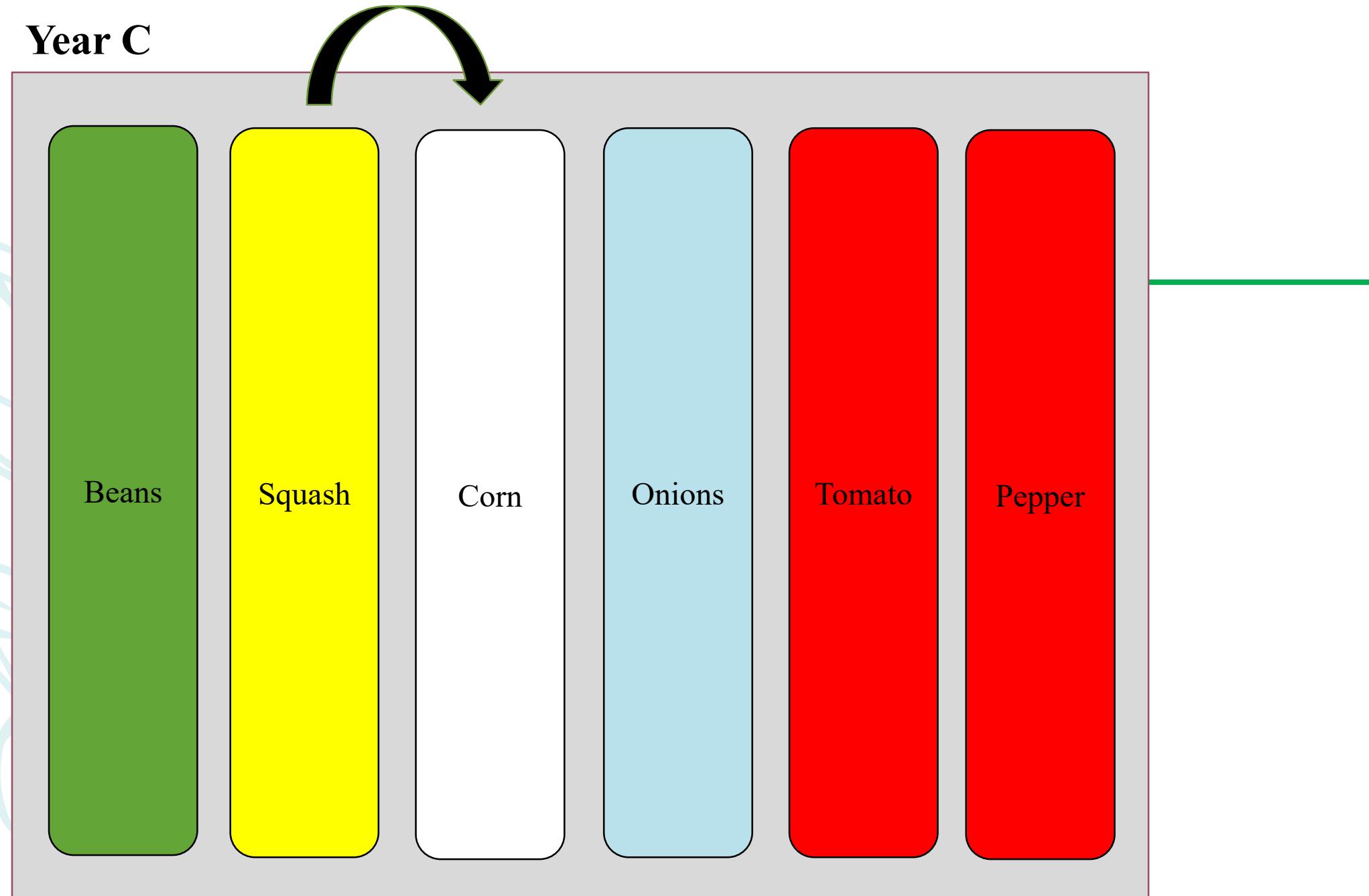
Year A



Year B



Year C



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



Corn earworm



Cultural Methods:

Timing

- 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



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

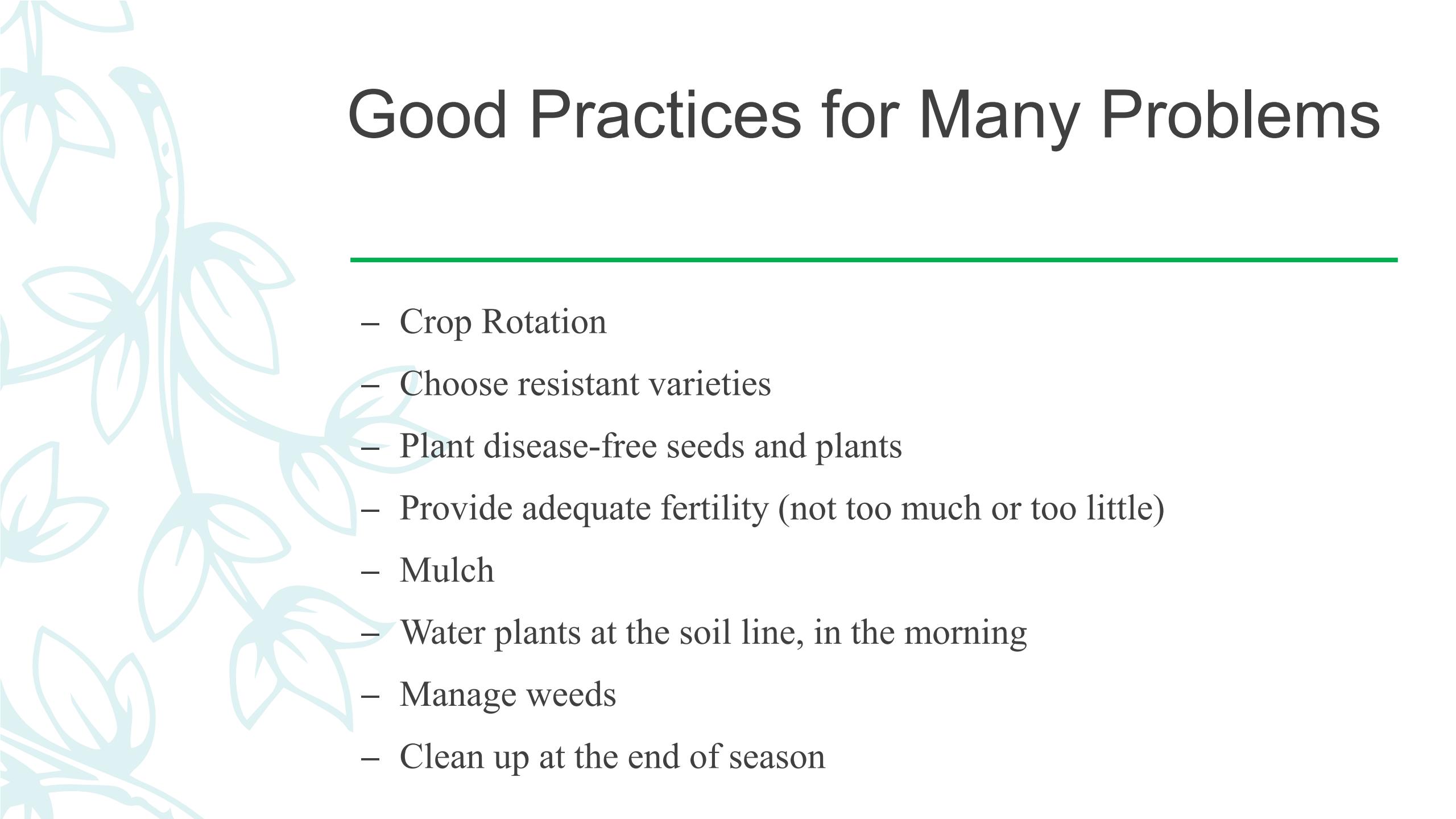


- Chemical selection depends on proper diagnosis of disease
- Chemicals can be used in both conventional and organic gardens

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

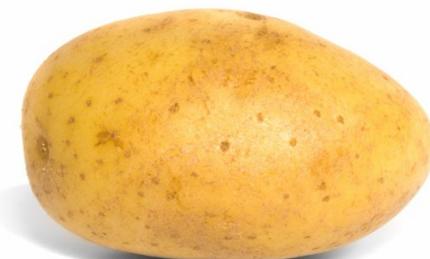




Good Practices for Many Problems

- 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



Seebold

Early blight



Pfeufer

Late blight



UK Veg IPM Team
Photo: Gerald Holmes, California Polytechnic State University at San Luis Obispo,
Bugwood.org

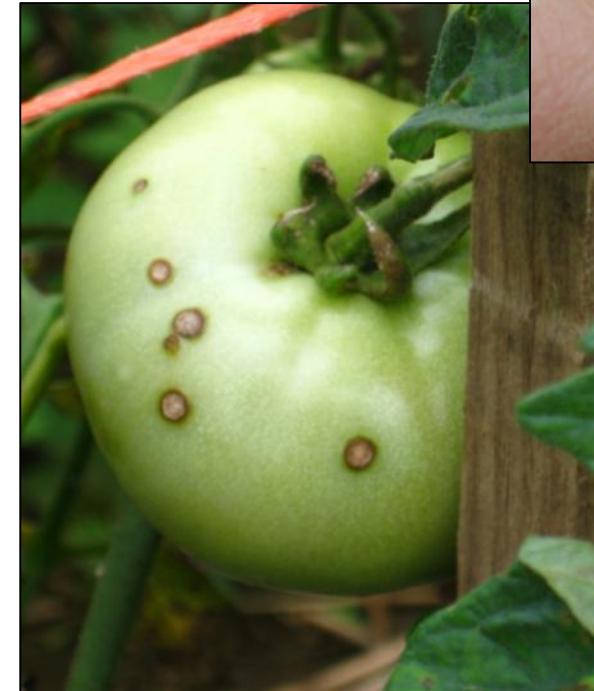


Photo: Elizabeth Bush, Virginia Polytechnic Institute and State University, Bugwood.org

Tomato Bacterial Diseases



Bacterial speck, canker, and spot on tomato



Pepper Diseases

Bacterial spot



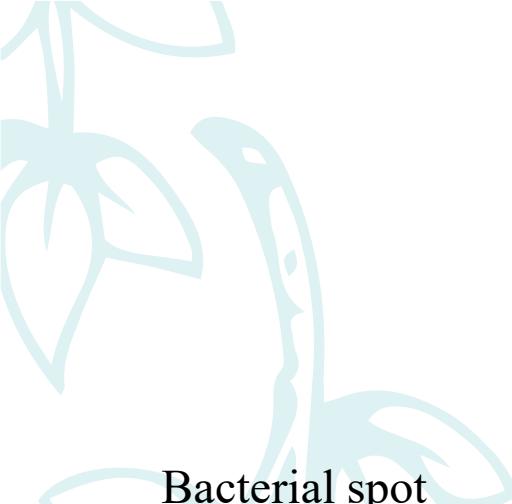
Anthracnose

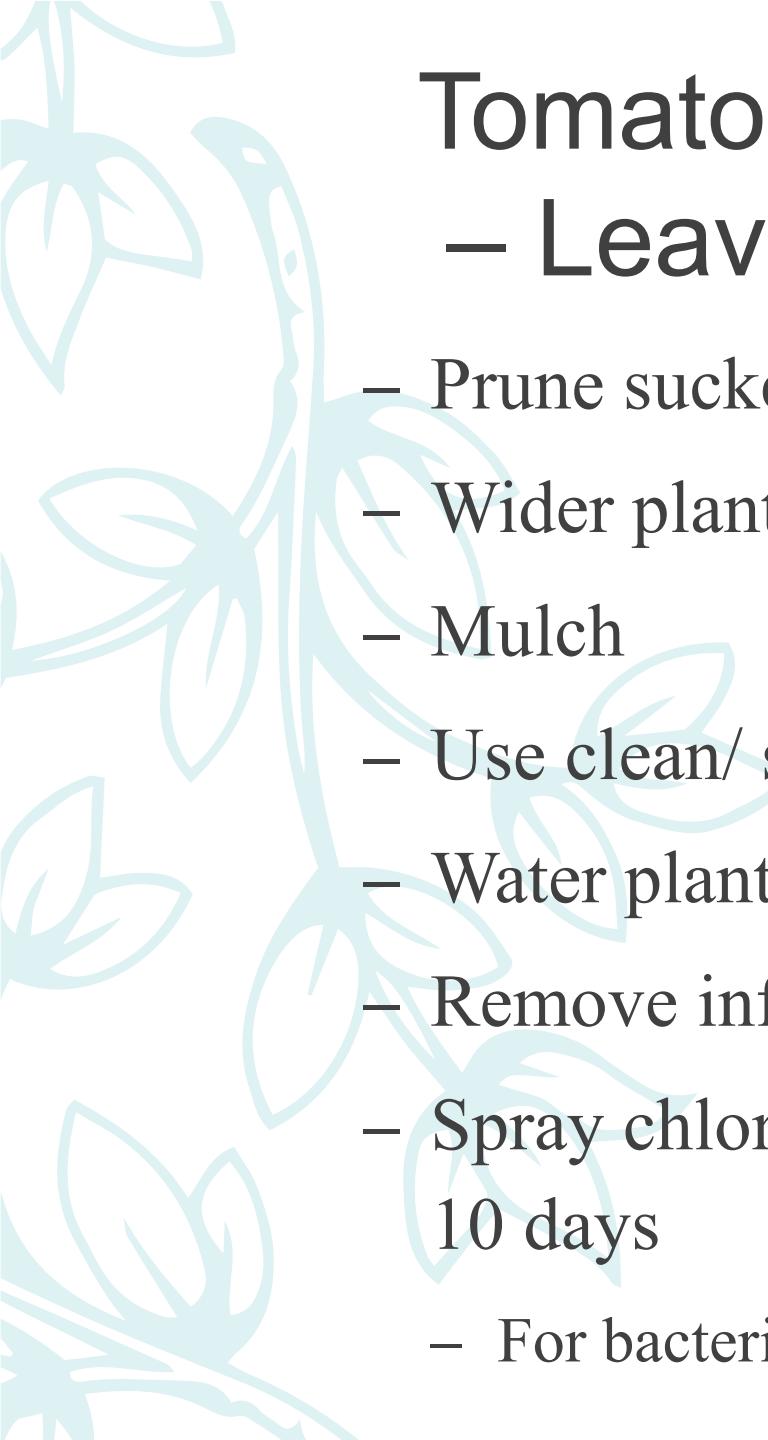


Phytophthora blight



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



Coolong

Anthracnose



Seebold



Seebold

Cucurbit Fungal Diseases

Fusarium fruit rot



Alternaria leaf blight



Gummy stem blight



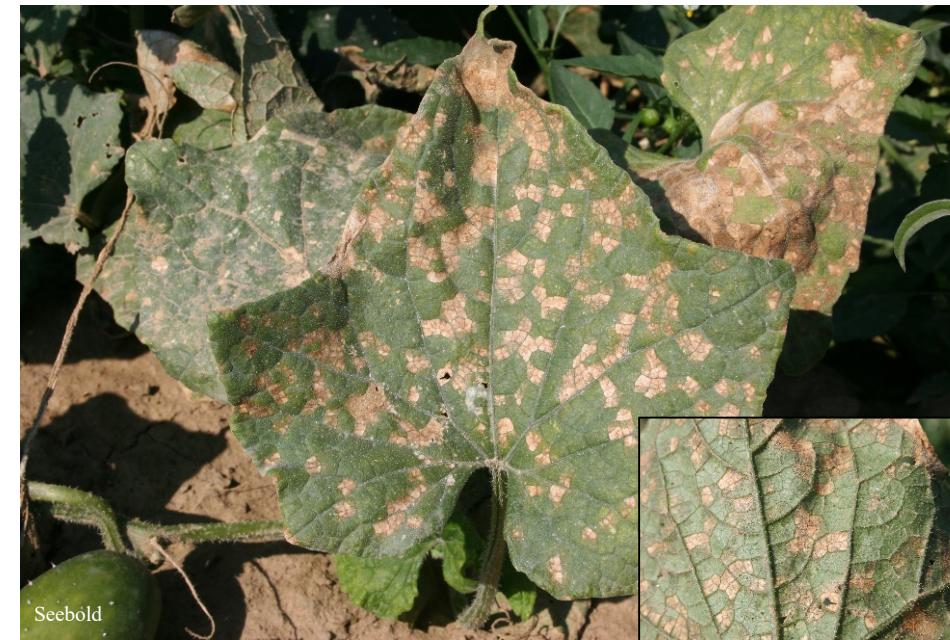
Cucurbit Water Mold Diseases

Damping-off



Cynthia Ocambo, Oregon State University

Downy Mildew



Seebold

Cucurbit Water Mold Diseases

Phytophthora blight



Choanephora Rot



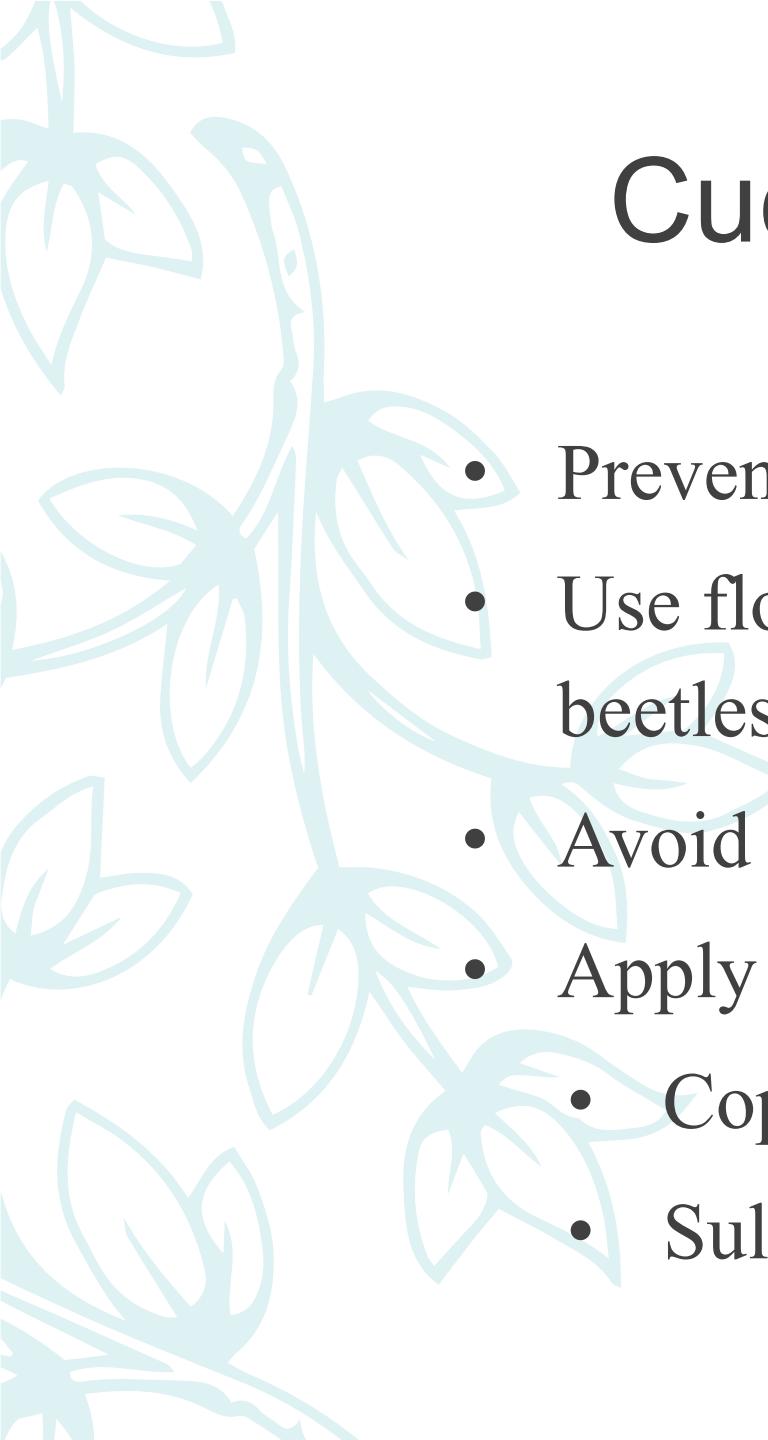
Cucurbit Bacterial Diseases

Bacterial wilt



Angular leaf spot





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



Schwartz, CO State, bugwood.org

Anthracnose



Schwartz, CO State, bugwood.org

Rhizoctonia root and stem rot



Hartman

Bean rust



Schwartz, CO State, bugwood.org

Cercospora leaf spot



Schwartz, CO State, bugwood.org

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



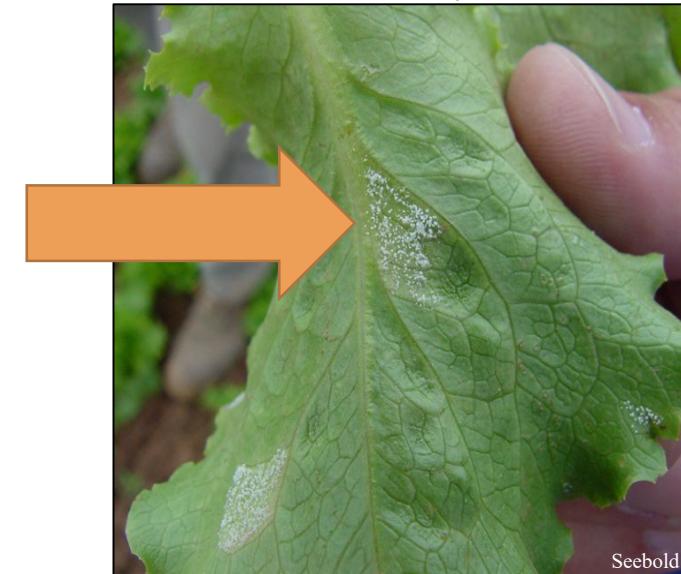
Damping off

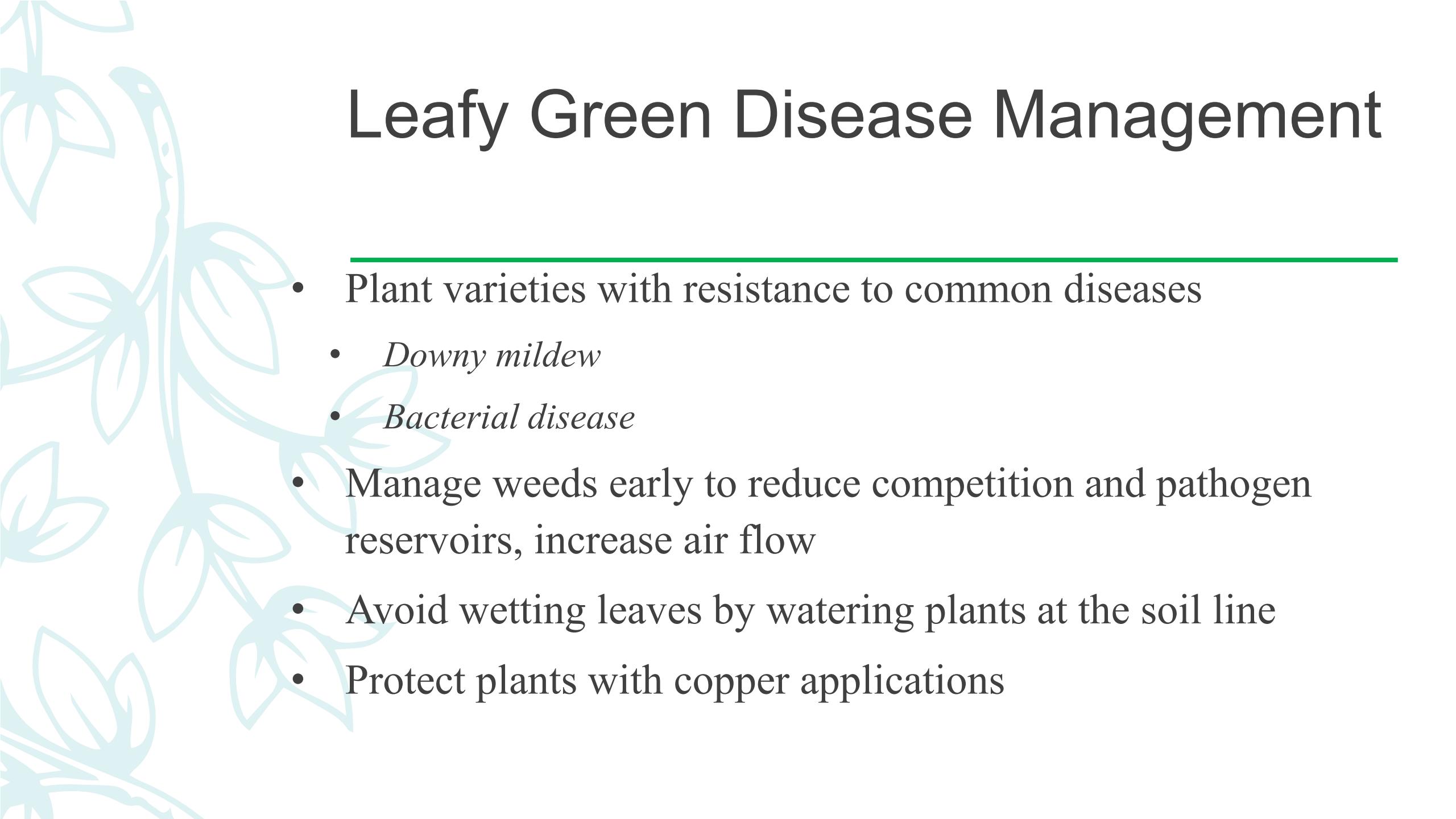


Botrytis crown rot



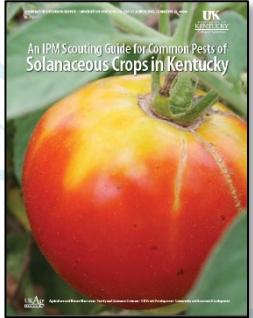
Lettuce downy mildew



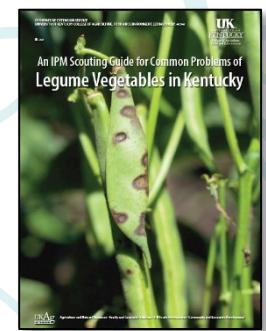
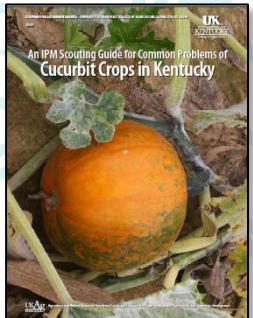


Leafy Green Disease Management

- 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