

# COMMON *V*EGETABLE *D*ISORDERS

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# What is a vegetable?

Any plant part grown as food other than a sweet fruit or seed.



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# What are vegetable families?

- **Cole Crops:** cabbage, broccoli, cauliflower and Brussels sprouts
- **Root Crops:** carrots, beets and onions
- **Leafy Greens:** lettuce, spinach and Swiss chard
- **Cucurbits:** cucumber, summer squash, winter squash and melons
- **Solanaceous:** tomatoes, peppers, eggplant and potatoes
- **Legumes:** peas and beans



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# What is a plant disease?

A plant disease is any harmful alteration in the **structure** or **function** of a plant.



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# Common types of plant diseases:

- Fungi
- Bacteria
- Viruses
- Viroids
- Nematodes



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# Fungi

- More than 10,000 species cause plant disease
- Lack chlorophyll
- Decay plants or live off of living plants
- Reproduce by spores
- Disseminate by wind, water, soil, equipment, insects and root grafts



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# Common garden Fungi include:

- Powdery Mildew
- Early Blight (Alternaria)
- Gray Mold (Botrytis)
- Angular Leaf Spot
- Anthracnose
- Verticillium Wilt
- Pythium



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# Powdery mildew on squash



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# Early blight



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# Gray Mold on Peas



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# Anthracnose on pepper



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# Angular Leaf Spot on Cucumber



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# Pythium on Cucumber



# Bacteria

- 100 species cause plant disease
- Help decompose enormous quantities of organic matter
- Single-celled microorganisms
- Reproduce by splitting
- Cannot make their own food
- Spread by splashing water and insects



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# Bacterial Speck on Tomato



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# Bacterial Blight on Beans



R. Mulrooney



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# Viruses

- 500 species cause plant disease
- Extremely tiny
- Cannot survive without host
- Transmitted by insects



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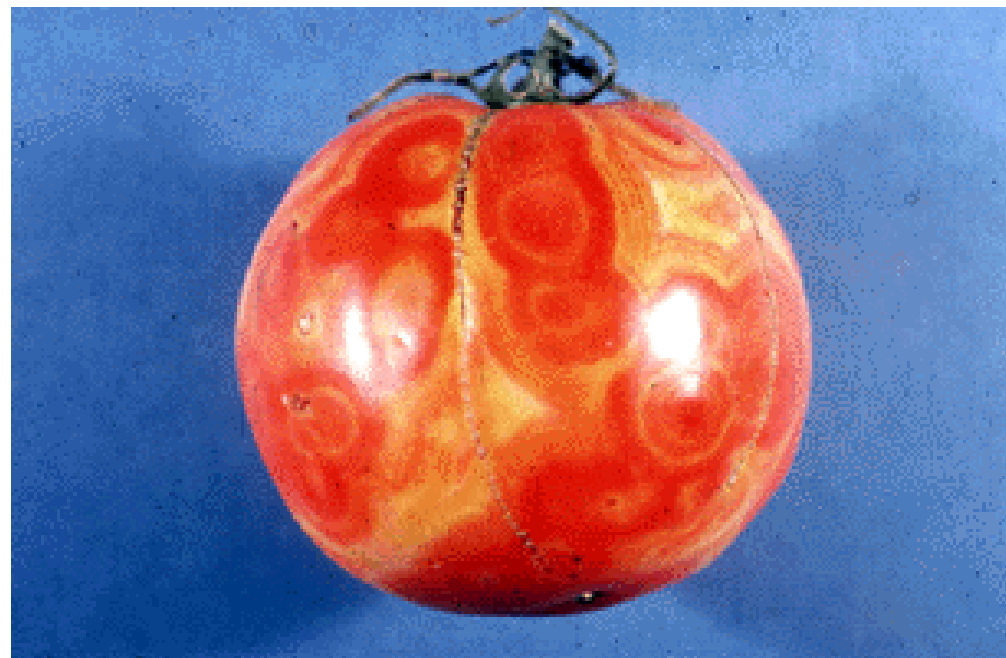


# Cucumber Mosaic Virus on Squash



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# Tomato Spotted Wilt Virus



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# Viroids

- Less complex than viruses
- Transmitted by vegetative propagation



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# Aster Yellows on Carrot



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# Stem, Crown and Root Rot

- Pythium
- Phytophthora
- Fusarium
- Rhizoctonia
- Verticillium



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# Pythium

- infects young tissue
- commonly attacks below the soil surface
- favored by wet, poorly drained conditions



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# Vegetables affected by Pythium

- Vegetable seedlings
- Beans
- Beets
- Carrots
- Cucumbers
- Eggplant
- Leafy greens
- Melons
- Peas
- Peppers
- Potatoes
- Pumpkin and Squash
- Tomato



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# Phytophthora

- discolored leaves
- wilting
- premature leaf drop
- stunting
- stem die back
- plant death



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# Vegetables affected by Phytophthora

- Eggplant
- Pumpkin
- Squash
- Tomato
- Potato
- Pepper



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# Fusarium

- Necrotic lesions at soil line
- Plants wilt and die
- Decay is soft and mushy



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# Vegetables affected by Fusarium

- Asparagus
- Beans
- Cucumber
- Cole Crops
- Melons
- Onions
- Peas
- Potatoes
- Tomato



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# Rhizoctonia

- moist brown lesions
- decay of crown areas and sometime roots
- white cottony fungal growth



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# Vegetables affected by Rhizoctonia

- Beans
- Beets
- Carrots
- Cole Crops
- Peas



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# Verticillium

- infected leaves turn yellow
- browning of older leaves
- darkening of tissues in the stems
- fungal resting spores persist in the soil more than 4 years



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# Vegetables affected by Verticillium

- Eggplant
- Peppers
- Potatoes
- Tomatoes



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# Stem, Crown and Root Rot: **Prevention**

- Use pasteurized rowing media
- Crop rotation
- Good sanitation
- Good drainage
- Don't overwater



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# Vegetable Leaf Diseases

- Most fungal or bacterial
- Identification important
- Treatment depends on time of infection
- May spread to stems and fruit



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# Angular Leaf Spot

- Small irregularly shaped spots
- Water soaked to gray spots
- Some hosts have a yellow halo
- Spots turn gray to tan and fall out
- Lesions limited by leaf veins
- Spreads to fruit



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# Angular Leaf Spot Hosts:

- Beans
- Cucumber
- Pumpkin
- Squash

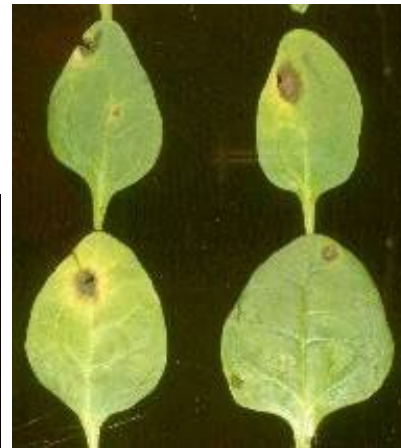
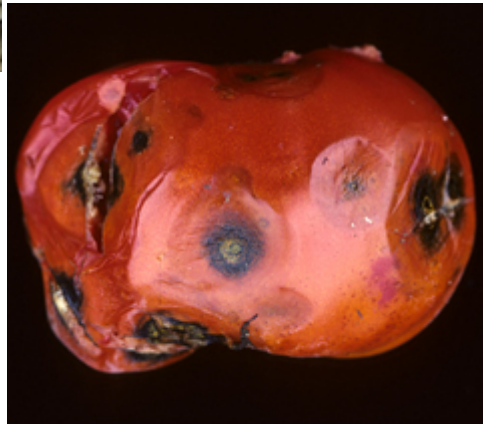


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# Anthracnose

- Small circular water soaked spots on leaves on lettuce and spinach
- Melons leaves, stems and fruit affected
- Fruit primarily affected in tomatoes and peppers



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# Anthracnose Hosts:

- Beans
- Cucumber
- Eggplant
- Melons
- Pumpkin
- Squash
- Tomato



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# Alternaria leaf blight



- Many different kinds of alternaria
- Cause foliar, pod, seed and broccoli head diseases in cole crops
- Begin as specks and enlarge
- Target like appearance
- Causes early blight, black mold and stem canker on tomatoes



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# Alternaria Hosts:

- Carrots
- Beans
- Broccoli
- Brussels Sprouts
- Cabbage
- Cauliflower
- Cucumber
- Eggplant
- Melons
- Onion (purple blotch)



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# Cercospora Leaf Spot



- Small flecks with gray to tan centers
- Yellow halo
- Petiole lesions elliptical and brown with a pale center
- Does not affect roots

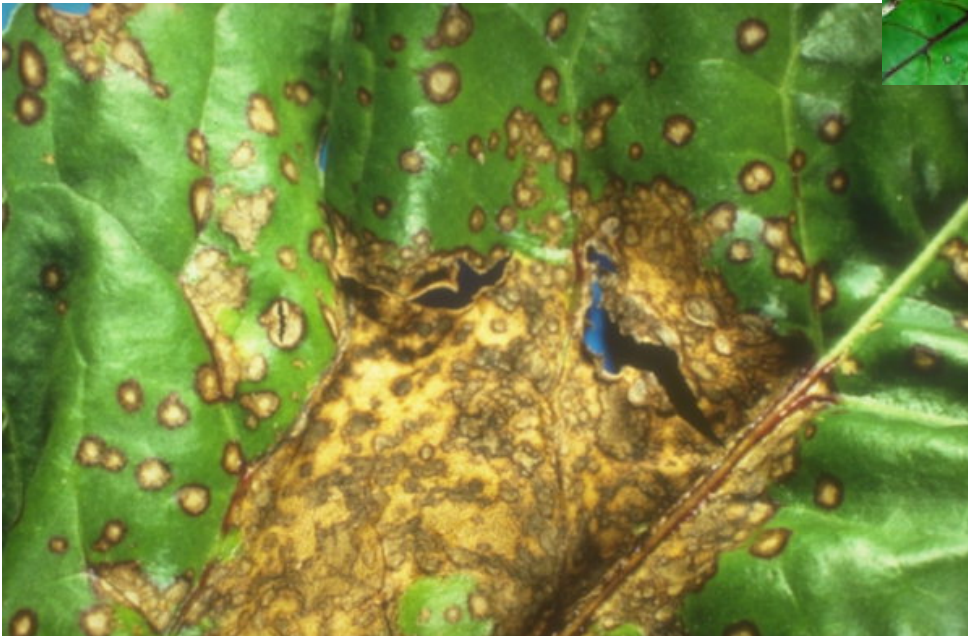


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# Cercospora Hosts:

- Beets
- Carrots



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# Downey Mildew

- Doesn't overwinter in Wisconsin
- Starts as small pale green to angular to rectangular spots limited by leaf veins
- Early symptoms mosaic or mottled
- Light gray to purple sporulation on underside of leaf when conditions are favorable.



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# Downey Mildew

## Hosts:

- Broccoli
- Brussels sprouts
- Cabbage
- Cauliflower
- Cucumber
- Leafy greens
- Melons
- Pumpkin
- Squash



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# Powdery Mildew



- White powdery growth on leaf surfaces
- Underlying tissue turns chlorotic or necrotic
- Rarely affects fruit
- Can reduce yield
- Can sunburn fruit



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# Powdery Mildew Hosts:

- Cucumber
- Melons
- Peas
- Pumpkin
- Squash



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# Bacterial Wilt

- Rapid wilt and collapse of vines
- Transmitted by cucumber beetle
- Wilting leaves take on a dark green color
- Late leaves chlorotic and then necrotic
- Use the ooze test

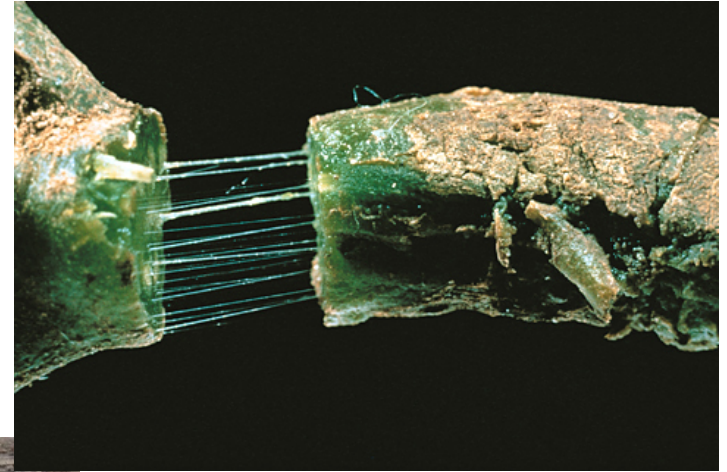


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# Bacterial Wilt Hosts:

- Cucumber
- Melons
- Pumpkin
- Squash



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# Mosaic Virus

- Many viruses
- Contorted/spindle leaves
- Leaf discoloration
- Misshapen fruit
- Changes in leaf texture



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# Mosaic Virus Hosts:

- Beans
- Cucumber
- Lettuce
- Melon
- Peas
- Pumpkin
- Squash



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# Avoiding leaf and fruit diseases

- Appropriate spacing
- Good plant nutrition
- Plant rotation
- Resistant varieties
- Rouging
- Sanitation
- Appropriate light
- Water early or at the base of plants



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# Other disorders

- Nutrient deficiency
- Cold injury
- Drought stress
- Hail damage
- Herbicide injury
- Flooding
- Pollination



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# Questions?



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