



Plant

DIAGNOSTIC CENTER

Solving your plant health problems

Plant Diagnostics 102

Plant pathogens and their symptoms

Insect pests and their injuries

Abiotic disorders

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Keys to Successful Disease Mgmt

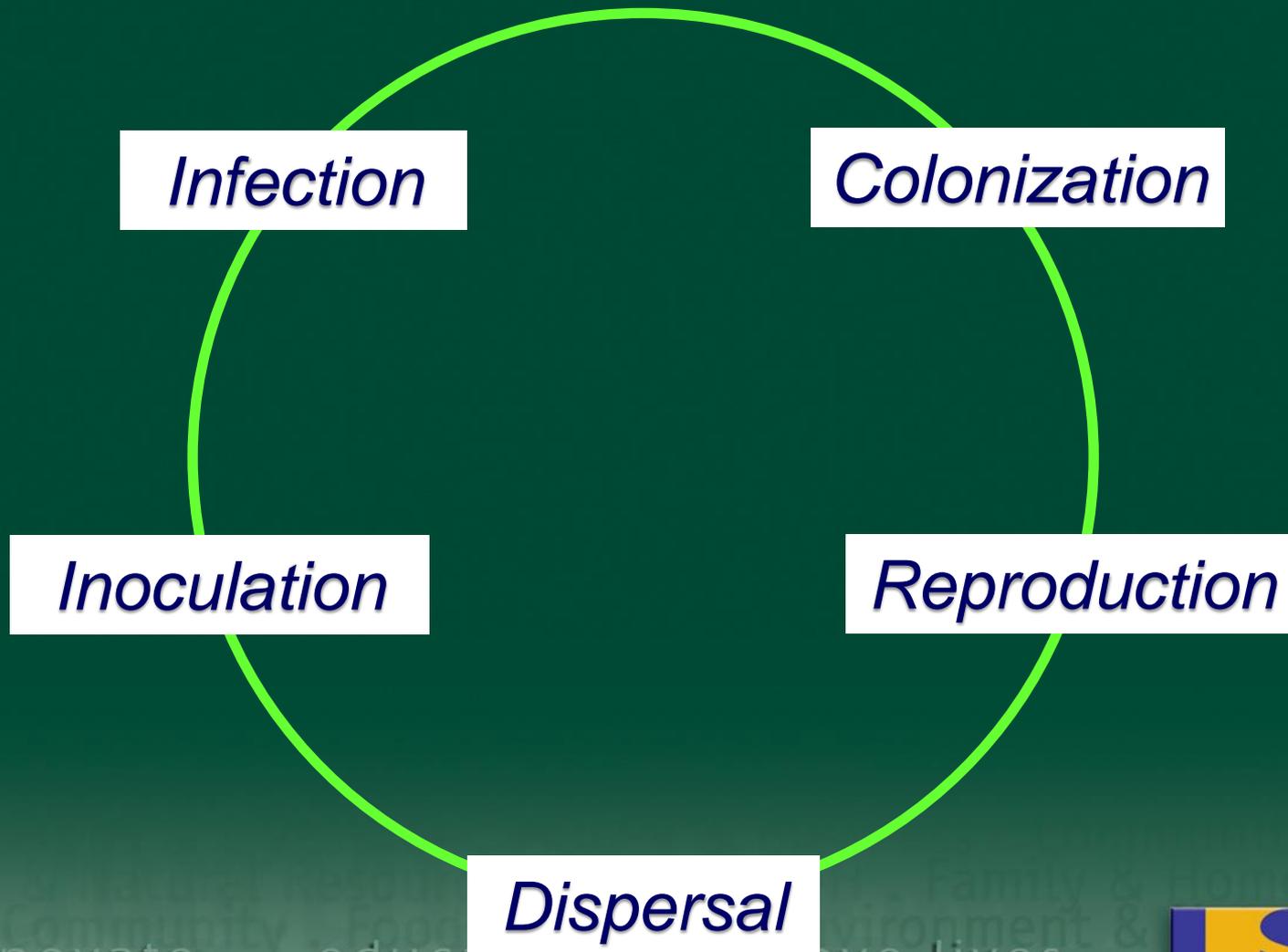
- Accurate diagnosis & identification
- Rapid & early detection
- Understanding disease cycle
- Understanding disease triangle
- Integrated disease management

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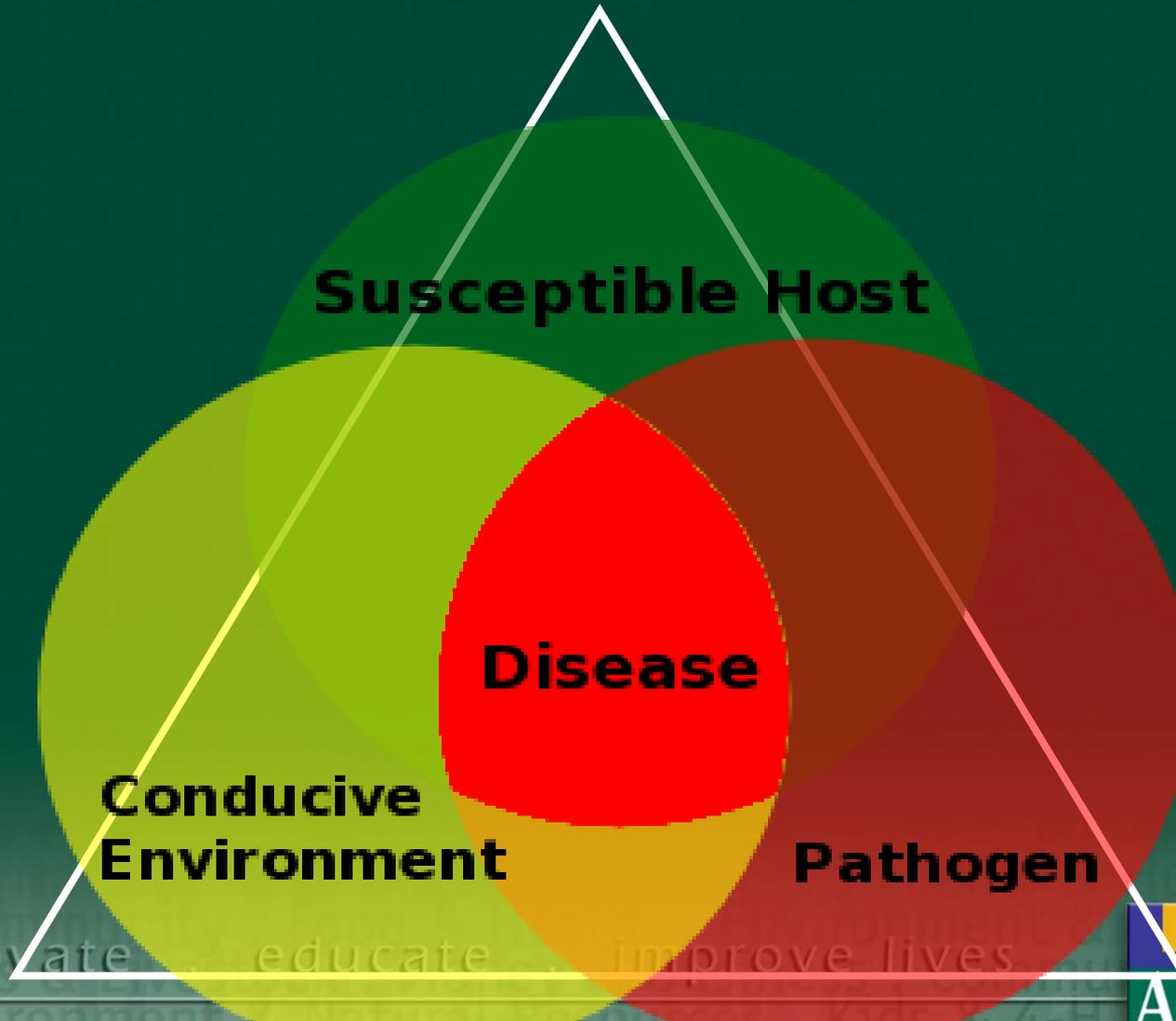
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Disease Cycle



Disease Triangle



Plant Disease Importance

- Physiological functions are disrupted
- Cells weakened or destroyed
- Unable to perform normal functions
- Result in reduced growth and/or death

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Physiological Function Interference

- Root rots interfere with water and nutrient absorptions
- Foliage infections interfere with photosynthesis
- Flower infections interfere with reproduction
- Fruit rots interfere with reproduction and food reserve storage

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Oomycete Diseases

- Fungal like organisms
- Pythium, Phytophthora & Downy mildews
- Soil-borne and foliar pathogens
- Foliar and root rot symptoms
- Poor drainage and soil compaction
- Water molds
- Mobile zoospores
- Some have wide host range and some are very host specific

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Phytophthora Root Rot



Reddish Brown Lesions on the Roots



Root Sloughing



Yellow Squash Root and Crown Rot



Buckeye Rot



Late Blight



Phytophthora Crown Rot



Cucumber Downy Mildew

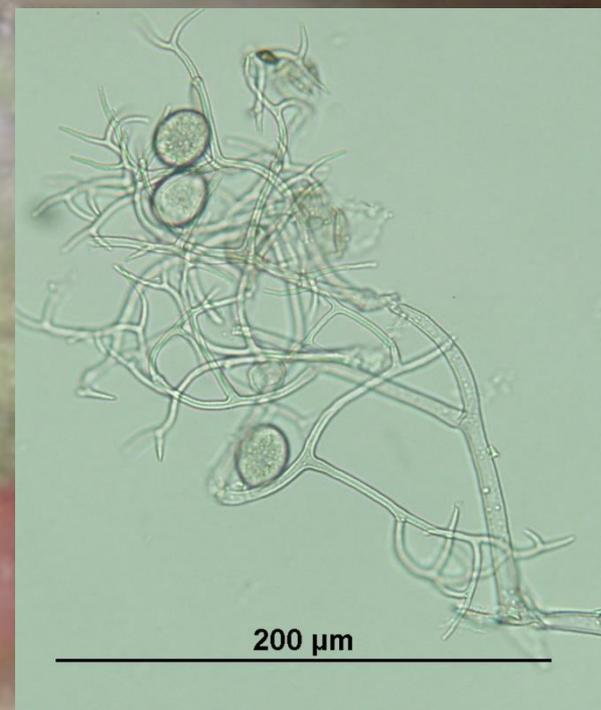


Photo Credit: Don Ferrin, LSU AgCenter

Watermelon Downy Mildew



Downy Mildew



Pythium Damping Off



5361373

Pythium Cottony Leak



Fungal Diseases

- True fungi
- Several groups
- Produce mycelium and spore
- Soil-borne and foliar pathogens
- Leaf spots, blights, root and crown rots, cankers, mildew, wilts, etc.
- Enter the host through specialized structures
- Requires high humidity and high temperature
- Largest number of plant pathogens

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Early Blight of Tomato



Watermelon Anthracnose



UGA5076091

Cucumber Anthracnose



Fusarium Wilt of Tomato



Verticillium Wilt of Tomato



Fusarium Wilt of Palm



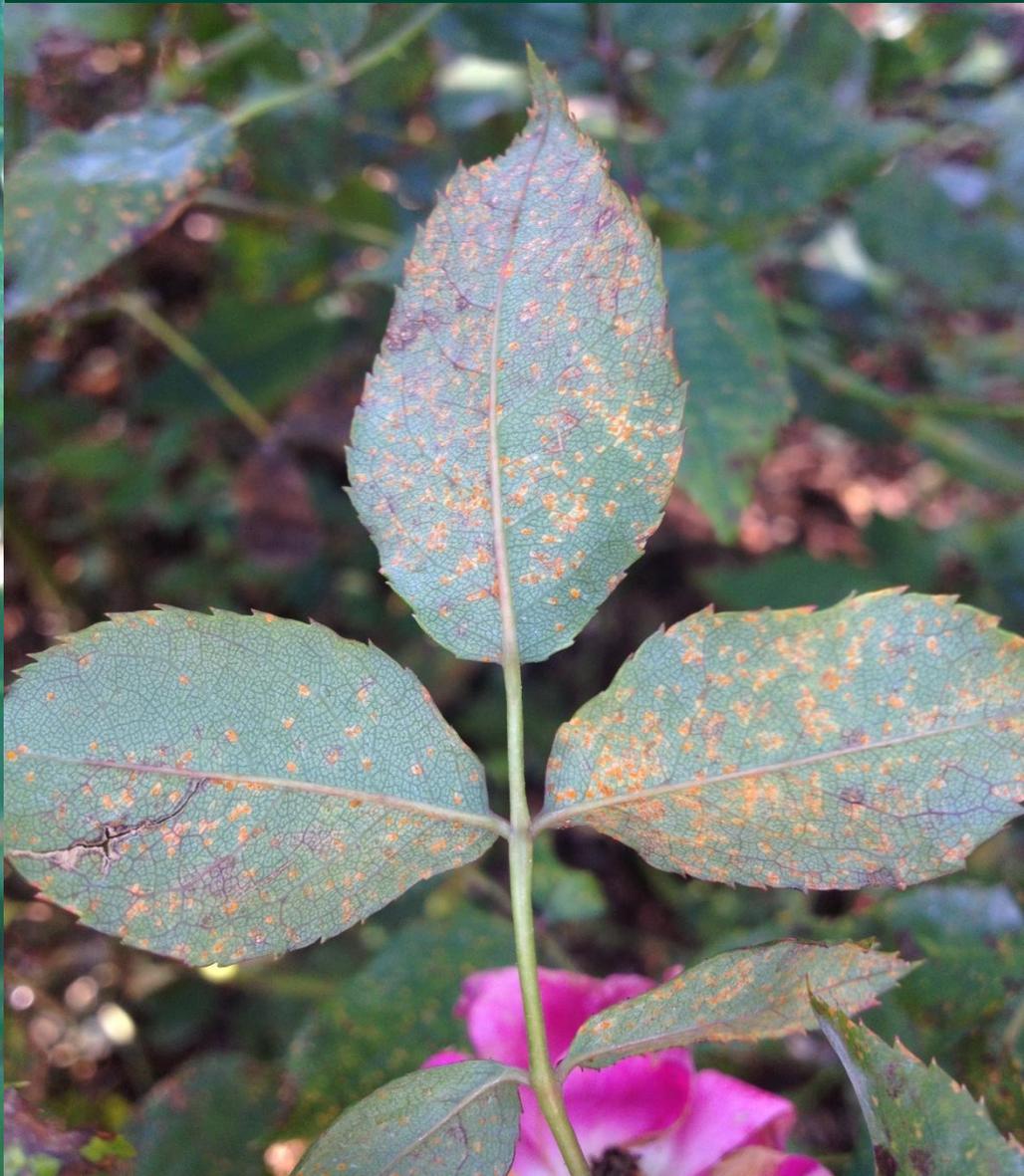
Southern Blight



Gummy Stem Blight



Rust Disease



Powdery Mildew of Cucumber



Powdery Mildew of Mirliton



Fruit Anthracnose



Armillaria Root Rot



Heart Rot Fungi



Bacteria and Phytoplasma Diseases

- Microscopic and unicellular organisms
- Requires natural openings or wounds
- Soil-borne and foliar pathogens
- Leaf spots, leaf scorch, fruit rots, blights, wilt, cankers, etc.
- Free water on surface
- Some requires insect vectors
- Requires high humidity and high temperature
- Some bacterium hard to isolate from tissue

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Bacterial Leaf Spot



5362922

Bacterial Leaf Speck



1573570

Bacterial Wilt



Bacterial Wilt



Bacterial Fruit Blotch



Photo Credit: R. Walcott (www.apsnet.org)

Bacterial Fruit Blotch



Photo Credit: R. Walcott (www.apsnet.org)

Bacterial Leaf Scorch



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Bacterial Canker



Phytoplasma Diseases



Phytoplasma Diseases



Phytoplasma Diseases



Arthropods

Insects Pests and Mites

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Major Groups

- Sucking insects: Aphids, whiteflies, etc...
- Chewing insects: Beetles, caterpillars, etc..
- Wood borers: beetles, etc...
- Gall makers: wasps, phylloxera, etc...
- Mites: spidermites, eriophyid mites, etc...
- Beneficial insects and pollinators
- Insect vectors

Aphids



Aphids



Whiteflies



Whitefly Eggs, Nymph and Adult



Honeydew



Black Sooty Mold Grown on Honeydew



Scale Insects Injury



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Sucking Insects

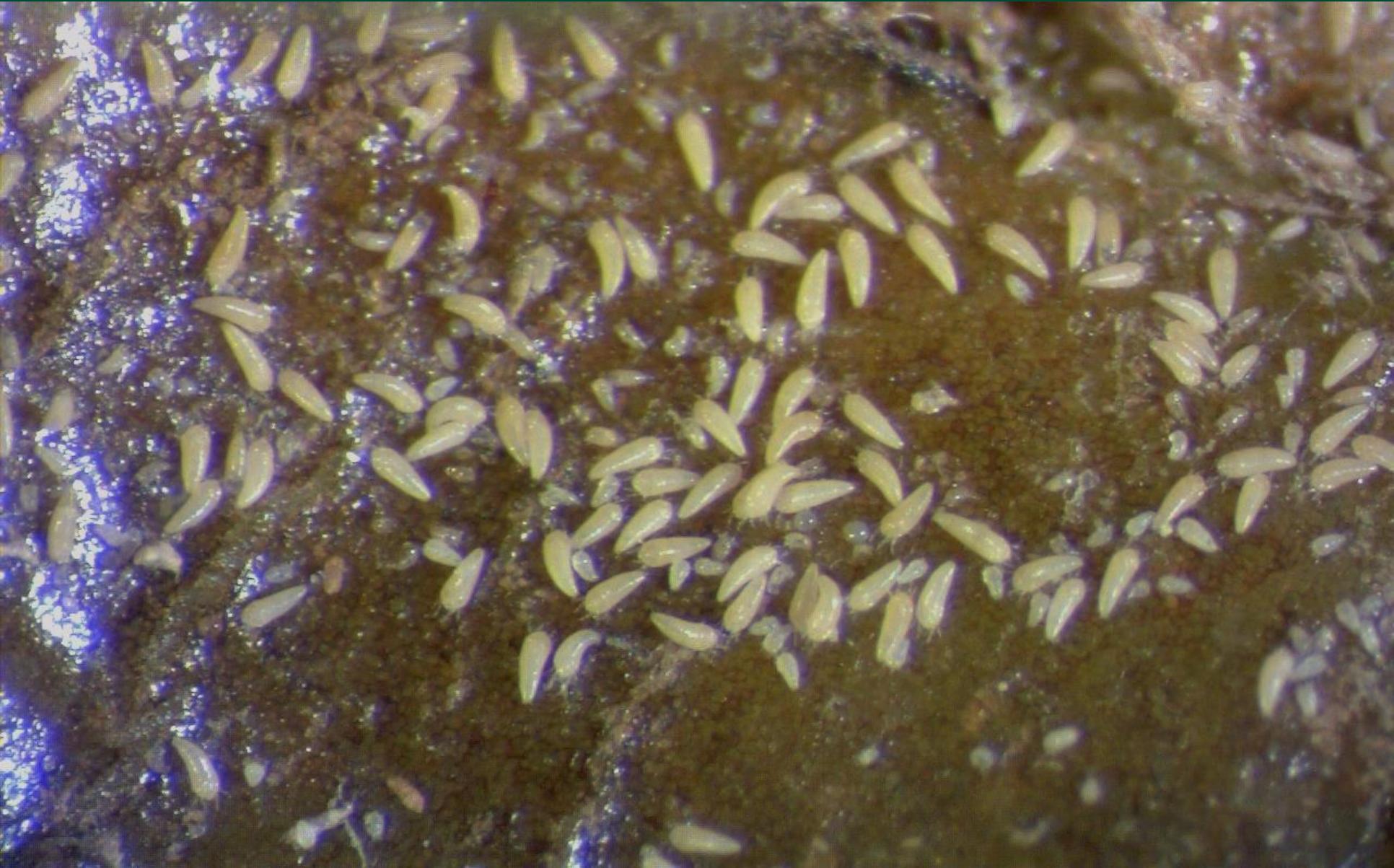


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Sucking Insects



Eriophyid Mites



Eriophyid Mite Injury on Tomato



Two Spotted Spider Mites



UGA5351005

Spider Mite Damage on Beans



5369738

Chilli Thrips Injury on Rose



Beneficial Insect (Green Lace Wing)



Beneficial Insect (Lady Beetle)



Abiotic Disorders

- Non-infectious agents cannot be transmitted from one plant or plant part to another
- Environmental extremes
- Chemical misuse
- Nutrient deficiencies or toxicities
- Do not spread in time and space
- Uniform symptoms
- May appear after application of chemical, weather event or in response to deficiency

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Herbicide Injury on Soybeans (Labeled Product)



Herbicide Injury on Tobacco (Labeled Product)



Herbicide Injury on Tabasco (Direct Exposure)



Herbicide Injury on Ornamentals (Accidental)



Herbicide Injury on Tomato (Root Uptake)



Herbicide Injury on Tomato (Drift)



Herbicide Injury on Cucumber (Drift)



Chemical Phytotoxicity on Rose (Over Dose)



External Blossom End Rot (Calcium Deficiency)



Internal Blossom End Rot (Calcium Deficiency)



Low Soil pH (Iron Deficiency)



Frost Injury on Tomato



Frost Injury on Watermelon



Sunscald of Bellpepper





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