“Common” Biotic Diseases

- Fungi
  - Powdery mildew
  - Leaf spot
  - Rust
  - Canker diseases
  - Vascular Wilt
- Virus
  - Curly Top
  - Tomato Mosaic
- Bacteria
  - Crown Gall
  - Slime flux (wetwood)
  - Fire Blight
- Parasites
  - Mistletoe

Powdery Mildew

Powdery Mildew

- One of the most common plant diseases
- Large host range of plants
- Only above ground parts of plant affected
- Has a whitish/gray powdery growth on the surface of leaves

- Management
  - Tolerant cultivars
  - Good sanitation
  - Protective fungicides (timing crucial)
  - Systemic fungicides

Leaf Spots

- Fungal disease
- Favored by humid conditions and cool weather
- Aesthetic issue (not a health issue)
- Leaf deformed or early leaf drop
- Good sanitation = best management

Rust

- Fungi with orange/red/brown spore pustules on surface of plant
- Unique life cycle
- Remove alternate host (?)
- Tolerant varieties
- Good sanitation

Stem Canker

- Fungi
- Girdles plant – kills stem above infection
- Sunken & discolored patches on stem
- Broad host ranges
- Enter – wounds and cracks
- Maintain plant health

Gummosis

- Water/sugar pressure
- Wound/damage/cracks
- Insects
- Ooze clear – Abiotic
- Ooze milky or dark – disease or insect
- Stone Fruit – cytospora
- Pines – pitch
- Drought stress

Vascular Wilts

- Fusarium, Rhizoctonia, Verticillium, Phytophtora

- HARD TO MANAGE
- Blocks Xylem (water) – quick wilting
- Occurs naturally in soils around the world
- Proper water and fertilizer management
- Use disease free transplants
- Avoid root /crown injury
- Replant with a non-host plant

Xylella fastidiosa

- Bacterial leaf scorch
- Chitalpa #1
- Oleanders, pecans
- Plugs up vascular system, leaves yellow, branch die back
- Spread by insects – sharp shooters
- No Control

Slime Flux (Wetwood)

- Bacteria disease (aka Bacterial Wetwood)
- Several species of Bacteria
- Enter through wounds or natural cracks
- Fast growing trees (willow, elm, cottonwood)
- Toxic to trees cambium
- No Cure
- Keep plants evenly watered
- Food for insects

Fire Blight

- Bacterial Disease
- Attacks Rose Family
- Shepherds Crook, soaked blossoms, blackened stem/leaf
- Overwinter on stems, cankers, debris, buds
- Spread by splashing rain, pruning tools, insects, bees
- Resistant cultivars, prune out, + good sanitation

Crown Gall

- Agrobacterium tumorfaciens
- Soil-borne bacteria with broad host range
- Enters through wounds
- Creates tumor/galls
- Avoid injury
- Disease free material

Vegetable Viruses in New Mexico

Pathogen	Virus Group	Primary Transmission
Alfalfa Mosaic Virus	alfamovirus	aphid
Cucumber Mosaic Virus	cucumovirus	aphid
Pepper Mottle Virus	potyvirus	aphid
Pepper Mild Mottle Virus	tobamovirus	seed, mechanical
Tobacco Mosaic Virus	tobamovirus	seed, mechanical
Tomato Spotted Wilt Virus	tospovirus	thrips
Beet Curly Top Virus	geminivirus	leafhopper

Viruses

- Once infected – no cure
- Remove plants

- Spreads – Insects, people, and tools

Parasites

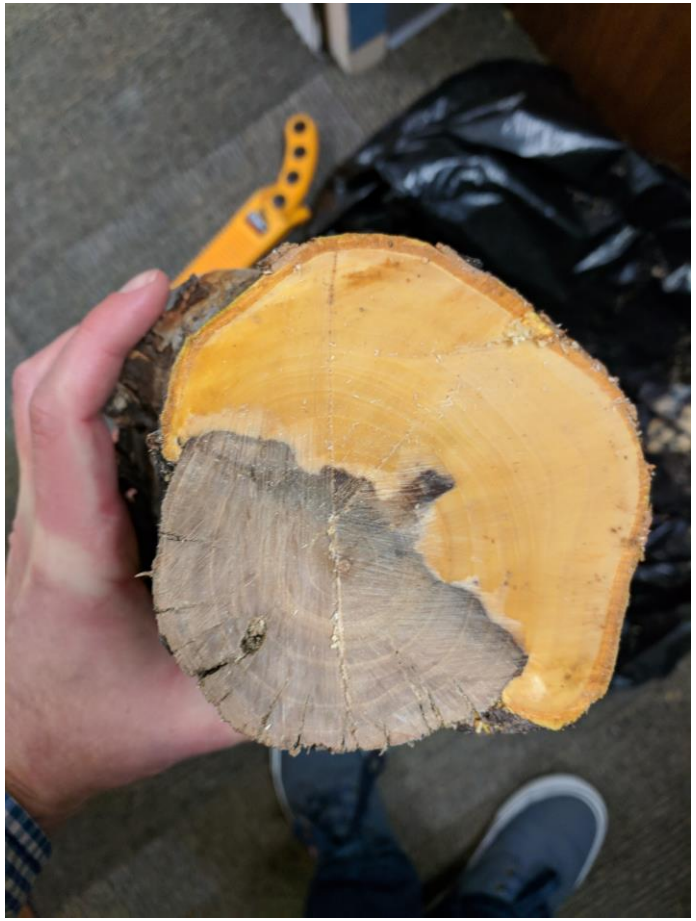
- Mistletoe and Dwarf Mistletoe
- Broad host range
- Seed germinates into living plants
- utilizes host plant for water and nutrient
- Reduces vigor of tree
- Remove from tree

Can you tell?

Virus on the left
Nutrient deficiency on the right

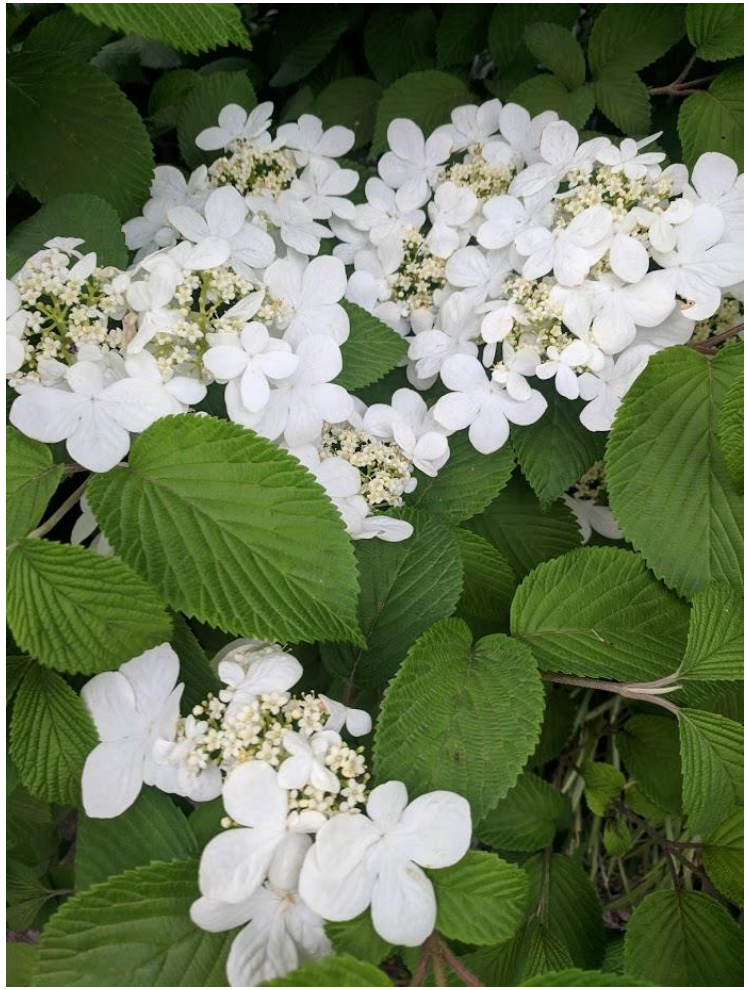
The current puzzle;
Disease or chemical?

What’s wrong…



Maintain Health of Plants

- Water
- fertilize correctly
- Soil health
- inspect
- keep plant stress low
- clean up garden removing harboring diseases insects
- Disinfect garden tools



Submitting Samples + Diagnosis

- Proper identification of plant/species
- No dead stuff / Freshly cut
- Large enough sample to include healthy and diseased tissue
- Intact insects (soft-bodied keep with leaves)
- Garden notes (when did you notice symptoms, occurrence, weather, site, care, etc…)
- PICTURES! (in context + close-up)
- Submit to extension office and Plant Diagnostic Clinic

How to Collect and Send Plant Specimens for DISEASE DIAGNOSIS

Collecting

1. **Select plant material that shows the symptoms.** If possible, it is best to send several samples showing various stages of the problem. Early stages of symptom development are especially important.

2. **Send samples of all plant parts whenever possible, including roots.** Dig plants (do not pull them) out of the soil. Retain a small amount of soil around the roots. Do not wash roots. Keep the roots and soil separate from the aboveground parts of the plant by placing them in a paper bag and sealing them off with a rubber band.

3. **When the entire plant cannot be sent, send several affected portions of the plant.** Remember to include the margin of disease on stem and branch samples.

Packing

1. **Keep plants cool and moist prior to shipping.** Use an ice chest when collecting samples and then place them in the refrigerator until they can be sent.

2. **Pack in a sturdy container to prevent crushing during transit.** Use newspaper to pack specimens firmly in the container. Be sure to include a completed submission form with your contact information, including email address or phone number.

3. **Mail specimens as soon as possible after collection (overnight delivery is recommended).** Mail early in the week to avoid delivery delays over weekends, and be aware of holidays that also might delay delivery.

THANK YOU!

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