

How Soil Impacts Disease: Common Issues from the Plant Pest Diagnostic Clinic

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WSU Plant Pest Diagnostic Report
Soil Health Workshop - November 16th



The Goal

- The soil issues
- Interaction with disease
- Utilizing Plant Pest Diagnostic Clinic



Compaction

- Poor root growth
 - Roots growing too close to surface
- Reduced growth and vigor
- Increased water-holding
 - Anaerobic conditions
- Susceptible to wind throws





Compaction





Heavy Clay

- Poor/slow draining
- Anaerobic conditions
- Stays cool longer
- Compacts easily
- Changes what ions hangs out in soil
 - Positive charged: Magnesium, Calcium, and Potassium





Clay Soil Damage





Clay Soil Damage





Drought Prone Soil

- Sandy
 - Poor water holding
 - Favored by nematodes
- High Points
 - Erosion





Drought





Drought





Fusarium Problems





Anaerobic Root Rot

- Rots away cortex of roots
 - Reduced root hairs
- Allows entry points for weaker pathogens
- Roots may physically rot off
- Similar symptoms of pathogen caused root rots





Anaerobic Root Rot vs Pathogen Root Rot





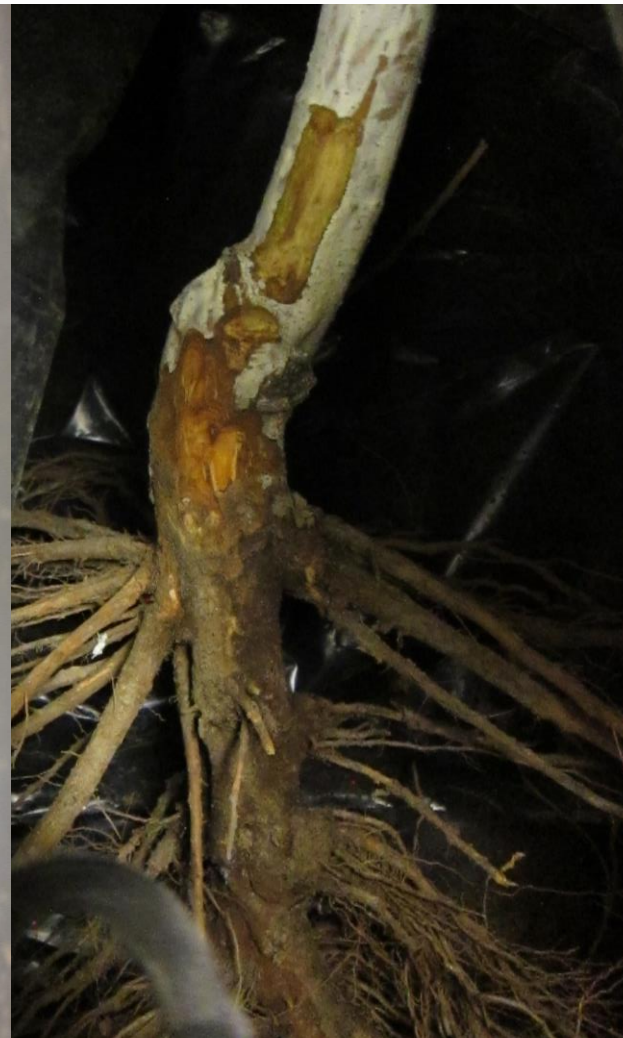
pH

- High acidity
 - Favors some pathogens
 - Rhizoctonia/Pythium
 - Fusarium
 - Cephalosporium stripe
 - Eyespot
 - Reduces growth, nutrient absorption
 - Holds onto chemicals
- Alkaline
 - Take-all more severe
 - Verticillium wilt more severe





Phytophthora root rot of fruit trees





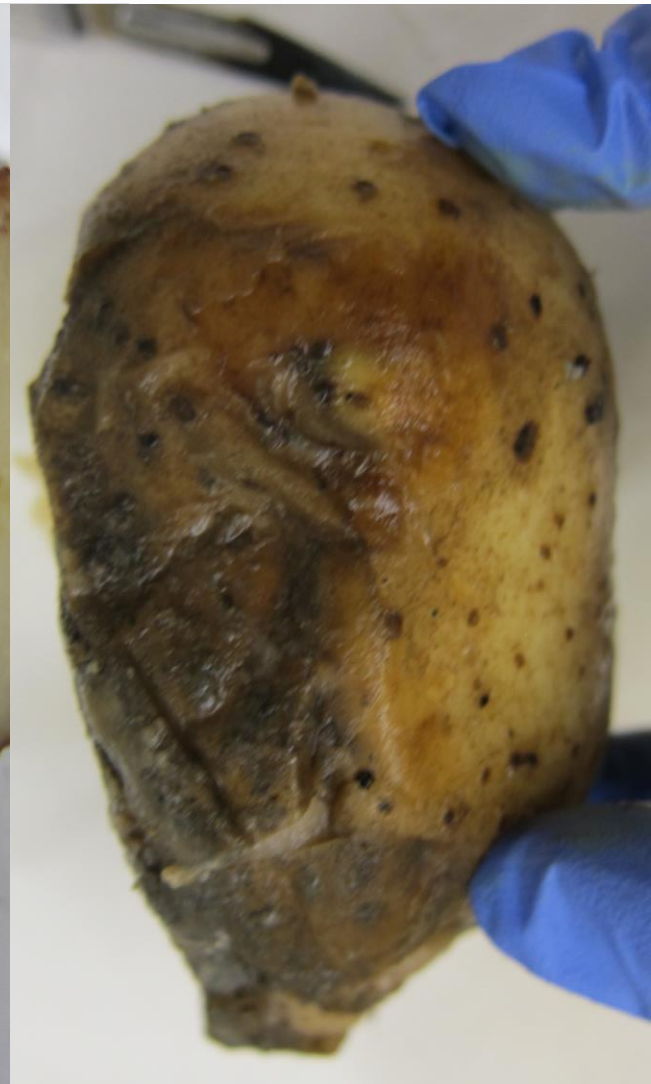


Rhizoctonia





Pythium



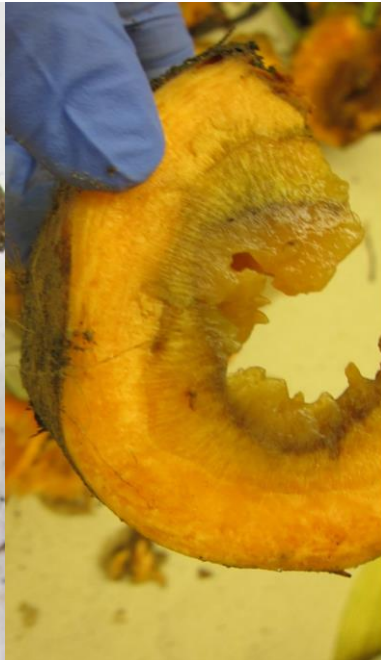


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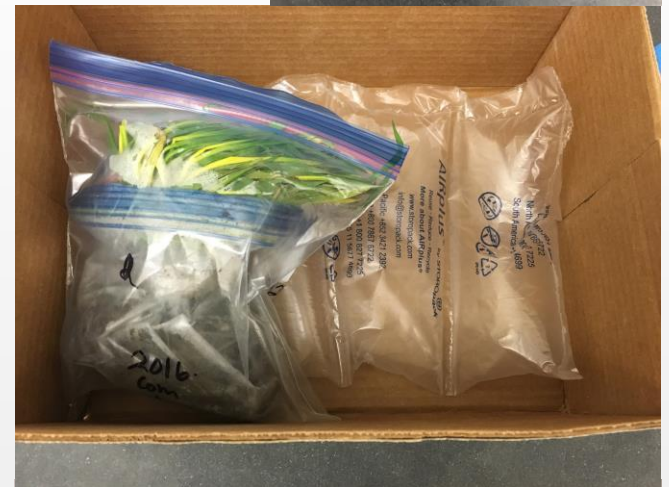
Bacteria and soil





Submitting Samples

- Whole plants whenever possible
- Range of symptoms
- Healthy plant too
- As many photos as needed
- Carefully packaged
- Kept cool until delivery (to mail or in person)
- Delay=decay
- Completely fill out submission form
 - Download online:
http://plantpath.wsu.edu/wp-content/uploads/2016/01/Commercial-Disease_Pullman_Dec2015.pdf





Unsure what to do or what you need?

- Call the clinic
 - Clinic can guide what type of sample
 - Suggest photos
 - Connect you with the resource you need
- Communicate what your aim is
 - How will you use the information?
- Fee=\$25/\$40
- Diagnostic Report with management recommendations





WHAT YOU SEE



WHAT I SEE





Diagnostic Clinics

WSU-Pullman Plant Pest Clinic
rachel.bomberger@wsu.edu
plant.clinic@wsu.edu
(509)335-3292
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WSU-Puyallup Plant Insect
Diagnostic Laboratory
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Plant Clinic
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Plant Disease Diagnostic Clinic
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Thank you!

- Questions?
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