TRIED AND TRUE ASSESSMENT OF SNAP BEAN AND PEA ROOT ROT POTENTIAL

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Peas - Aphanomyces Root Rot

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Key Points

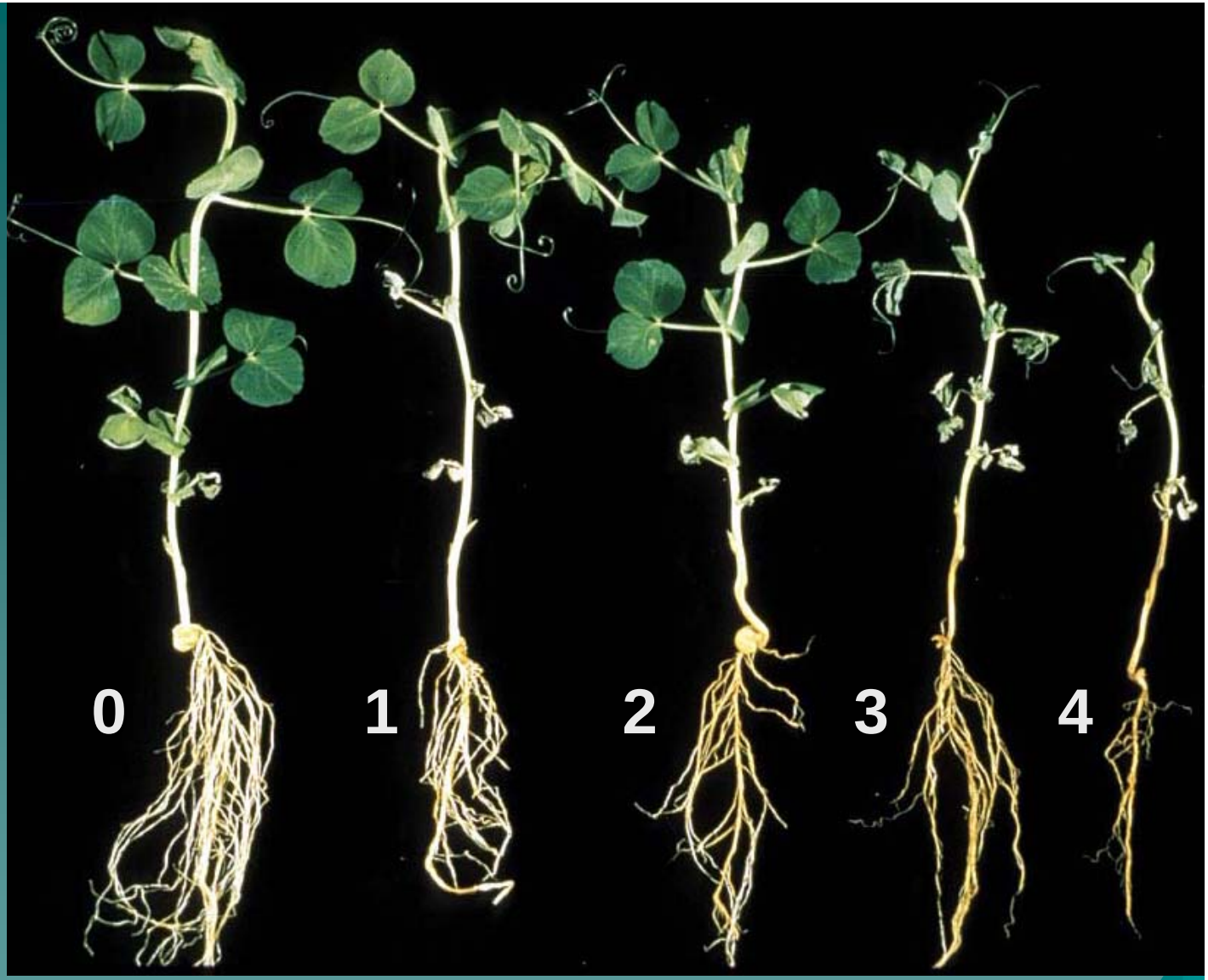
- **Pathogen: *Aphanomyces euteiches***
- **The most important pea disease in the midwest and northeast U.S.**
- **Kills branch roots, leads to stunted weakened plants, premature death**
- **Overwinters in debris as oospores which can survive 20 years or more**
- **Dispersed by water and movement of infected plant debris or infested soil by farm machinery**
- **Favored by warm temperatures, high soil moisture; can also occur at cool-moderate temperatures**

Peas - Aphanomyces Root Rot
Control Strategies

- Long rotations with non-legumes
- Select fields with well-drained soil
- Test soil for root rot potential
- Use adequate fertilization practices
- Some herbicides gives some control

Peas - Aphanomyces Root Rot

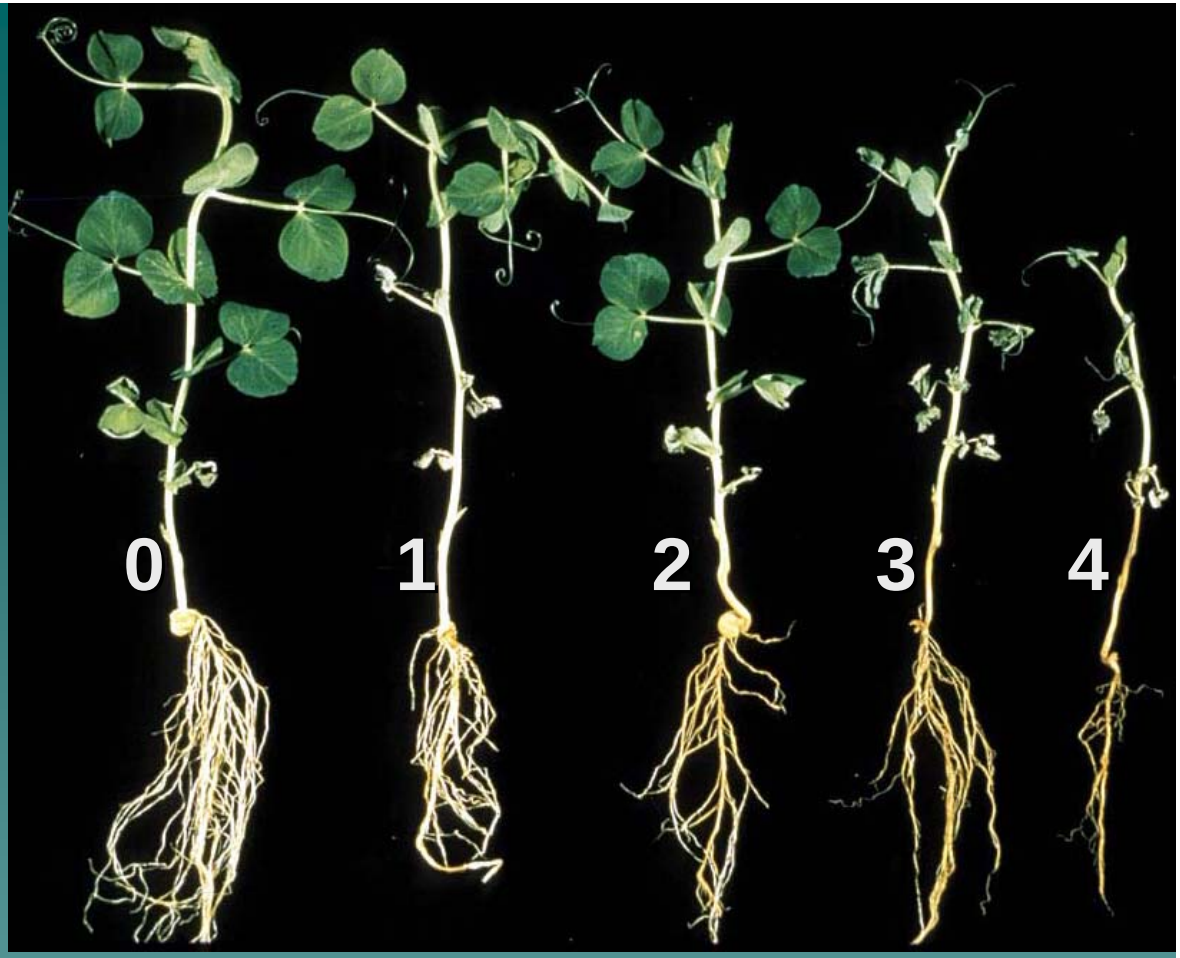
Common Pea Root Rot



Disease Classes

0 – no symptoms
1 – a few water soaked, light brown areas on roots
2 – water soaked, lt brown areas, confluent, more extensive, not entire root system
3 – water soaking, browning of all roots & epicotyl, tissue soft but not collapsed, shriveled
4 – water soaking, browning of all roots & epicotyl, tissue soft , epicotyl shriveled or rotted

Common Pea Root Rot



Disease Index Calculation

$$\text{Disease index} = \frac{\text{Sum of} \left(\text{Disease class} \times \text{Number of plants in that class} \right)}{\text{Total number of plants} \times 4} \times 100$$

Common Pea Root Rot

Interpreting The Disease Index

Disease index	Recommendation
0 - 50	Field can be safely planted to peas
51 - 69	Questionable safety
70 - 100	Definitely dangerous, should not be planted to peas

Bean - Common Root Rot

Bean - Common Root Rot

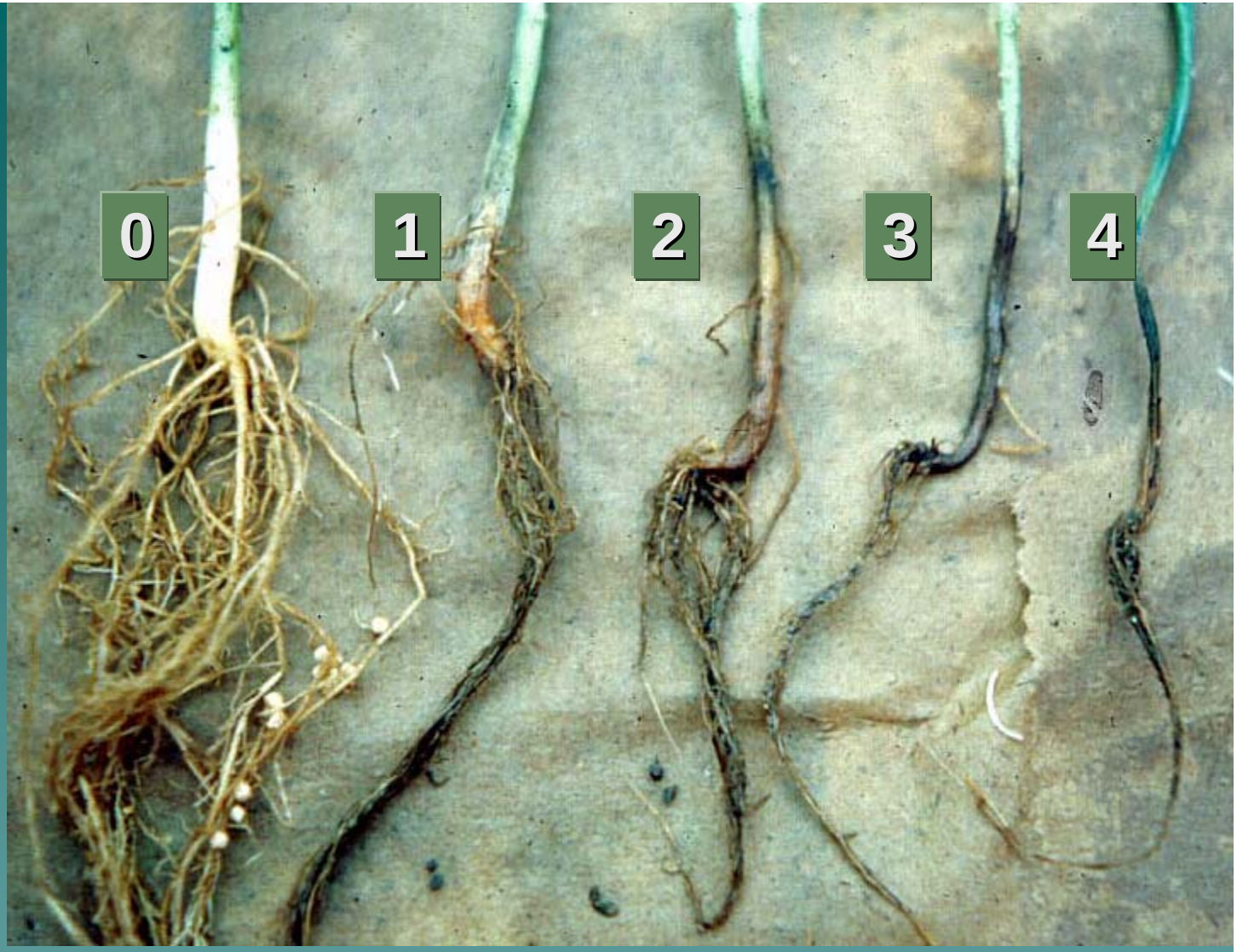
Snap Bean Diseases - Bean Root Rot
Key Points

- **Pathogen: Complex of fungi**
  - **May involve: *Fusarium, Aphanomyces, Pythium* species**
  - **soil inhabiting pathogens which can attack bean roots at any time during the growing season**
- **Symptoms :**
  - **stunting and wilting of plant**
  - **discoloration and death of roots and lower portion of stem**
  - **lower portion of stem may become mushy**
- **Generlly most severe in moist soil but temperature requirements differ for the different pathogens**
- **Pathogen resting structures allow long-term survival**
- **Root exudates from host stimulate fungal growth and infection**

Snap Bean Diseases - Bean Root Rot Control Strategies

- Have soil tested for root rot potential before deciding which fields will be planted to beans
- Minimize soil compaction
- Plant in well-drained, light soil. In the home garden, raised beds may help with control
- Chemical seed treatment is effective for Pythium root rot, but not for rot caused by *Fusarium* or *Aphanomyces*

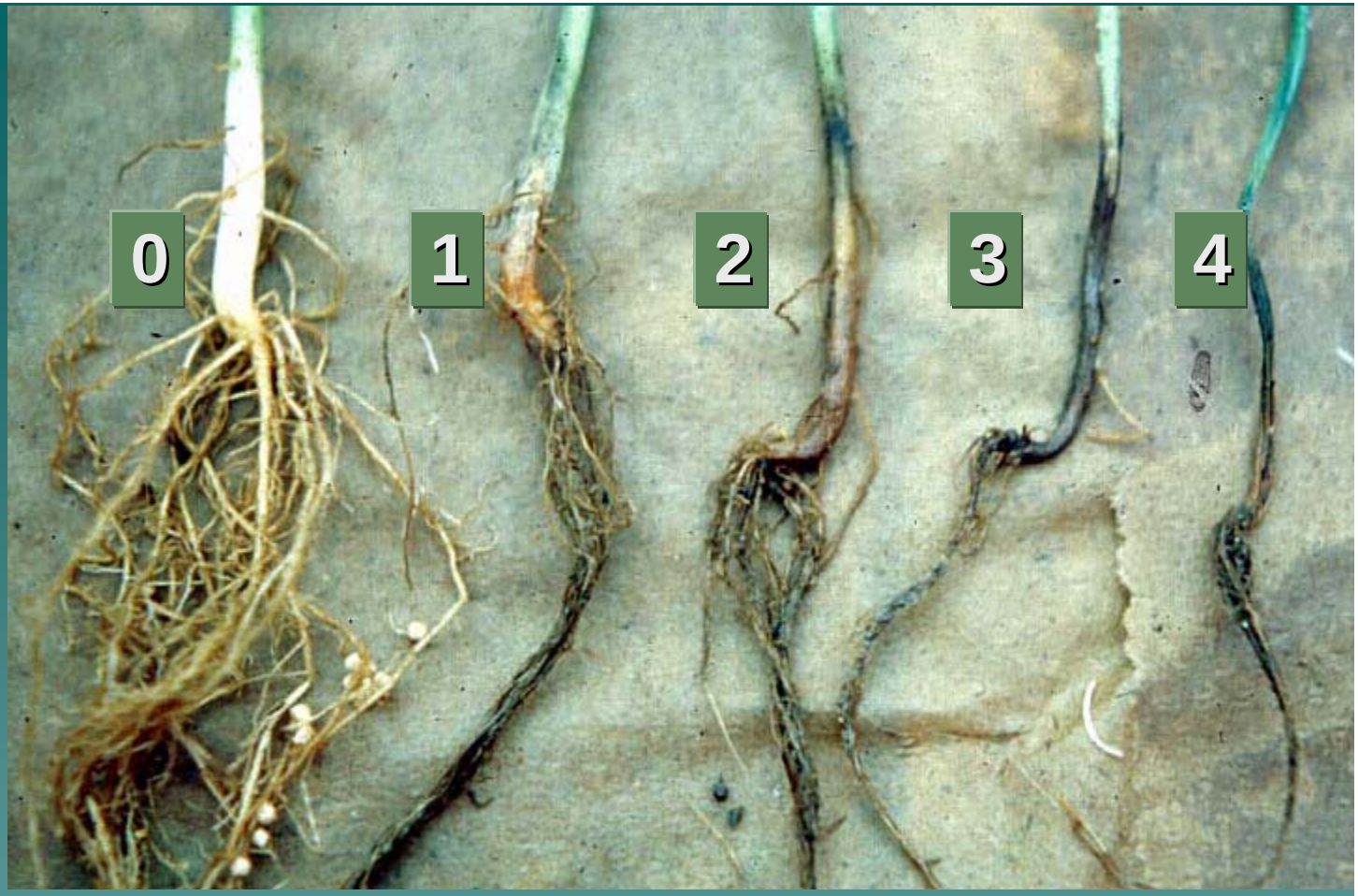
Bean Root Rot



Disease Classes

0 – hypocotyl, roots white & firm; SLIGHT discoloration common but root, hypocotyl firm
1 – slightly brown, discolored hypocotyl, roots, hyp. firm under pressure
2 – darkly discolored hypocotyl, roots; hyp. and tap root collapse under firm pressure
3 – very darkly disc. hyp., roots; hyp. completely collapsed or collapses easily w/ pressure
4 – dead or dying plant

Bean Root Rot



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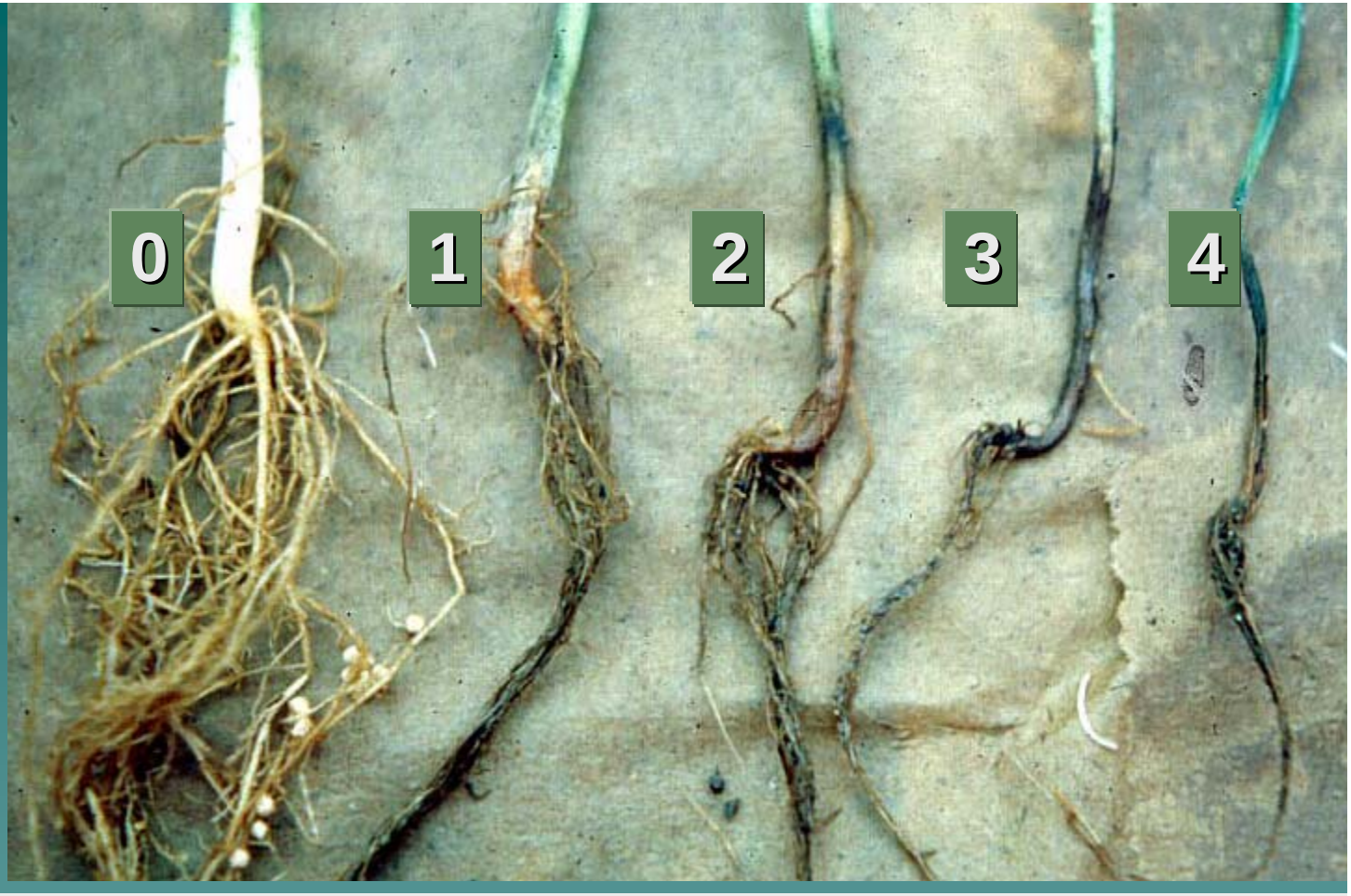
Bean Root Rot



Interpreting The Disease Index

Disease index	Recommendation
0 - 40	Slight risk; all currently grown snap bean cvs can safely be planted
41 - 50	Moderate risk; questionable safety
> 50	Severe risk; susceptible snap beans should not be planted

10 Reasons To Run A Root Rot Assay

10. Fieldmen need to get in shape for deer season
9. Sampling the fields in October beats sampling in February
8. Planning for success now beats explaining losses later
7. The fields I work with have a long history of processing crops
6. Higher yields per acre means I have to plant fewer acres
5. I need the advantage of picking the “right” fields
4. The varieties I grow are susceptible to root rot
3. The cost to process the samples is low - $50 per field
2. I want my growers to succeed with the best possible yield
1. We simply can’t run the risk of surprise losses


Questions?