Management of Diseases in Storage

Miller Research

Jeff Miller

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From University of Florida Extension

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Thank You!

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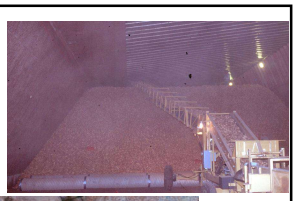
Post-Harvest Potato Diseases

- Pink rot
- Pythium leak
- Late blight
- Dry rot
- Soft rot
- Silver scurf
- Black dot
- Early blight



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What is the rot?

University of Idaho College of Agricultural and Life Sciences

CIS 1131

Diagnosis & Management of Potato Storage Diseases

by Nora Olsen, Jeff Miller, and Phil Nolte

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Diagnose the Problem

1. Select a partially rotted tuber, if possible.
2. Look for entry points
   - Cuts, abrasions, knobs
   - Stolon attachment, eyes, lenticels
3. Dissect the tuber
   - Cut in half or peel skin away
4. Submit to trained personnel

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After Diagnosis

- Determine the extent
  - Count the number of infected and healthy tubers in a given area
- Management options
  - Sorting out at harvest
  - Temperature and humidity settings
  - Ventilation
- Application of post-harvest products

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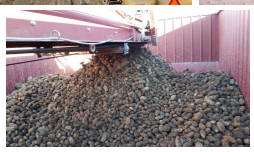
When and where does storage disease get started?



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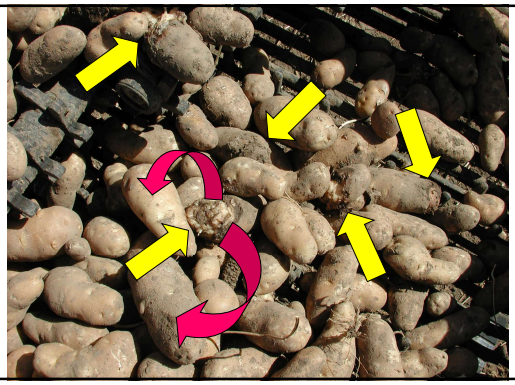

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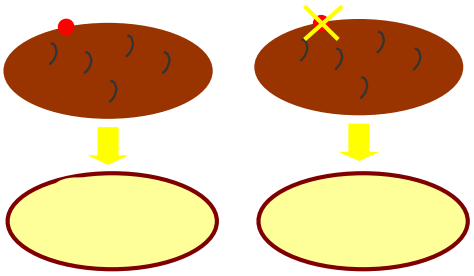
Disinfect vs. Disinfest



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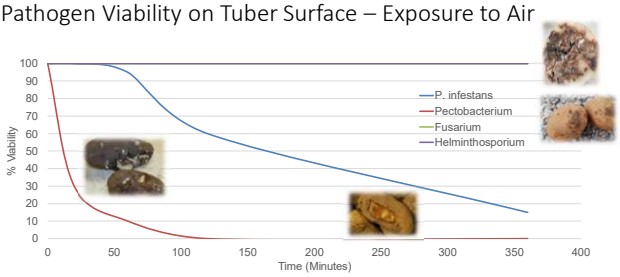
Pathogen Viability on Tuber Surface – Exposure to Air



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Post-Harvest Application


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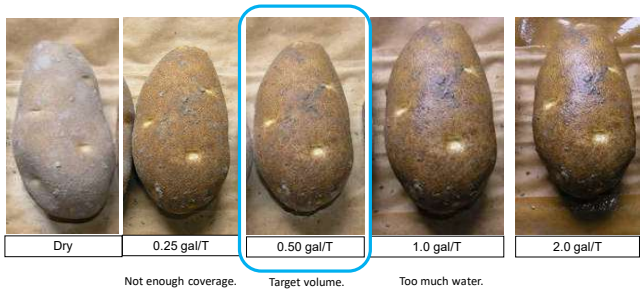
Post-Harvest Application Spray Volume



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Post-Harvest Products

	Phosphite Fungicides	Stadium	General Disinfectants
Pink Rot	✓		
Pythium Leak		✓	
Late Blight	✓		
Fusarium Dry Rot		✓	
Bacterial Soft Rot			✓
Silver Scurf	✓	✓	

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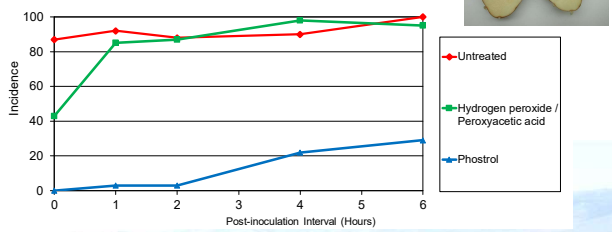
Effect of Post-inoculation Interval on Pink Rot



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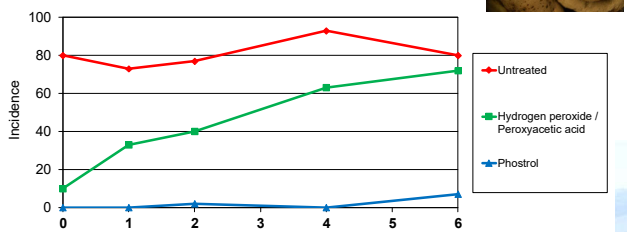
Effect of Post-inoculation Interval on Late Blight



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Dry Rot Incidence in Clearwater

Post-Harvest Fungicides

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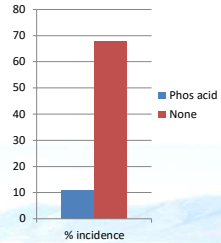
Silver Scurf and Post-Harvest Phosphorous Acid

- Evaluated 2 products (Phostrol/Resist 57)
- 3 volumes (0.25, 0.5, 1 gal/ton)
- 3 rates (10, 12.8, 15 oz)
- **Apply at 12.8 fl oz/ton**
- **Volume of 0.5+ gal/ton**
- **No difference in products used (Phostrol and Resist 57)**



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Sanitizing Storage Facilities

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Equipment and Storage Sanitation

- Goal is to minimize pathogen carry-over
- *Helminthosporium solani* survival
  - 9 months on foam insulation and floors
  - 3 months on plywood and metal sheets
- *Clavibacter michiganensis* subsp. *sepedonicus* survival
  - 5 years on hard surfaces
  - 7 years on wood

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CIS 1180

Cleaning and disinfectant can help prevent spread of the following potato diseases

In fields, spread by contaminated equipment
Most problem pests can be effectively eliminated by removing all soil and debris from field equipment before they leave one field and enter another. Harvesters retain the most soil, followed by plows, and then cultivators.

Pests that can spread include:
- Nematodes
- Weed seeds
- Soil-borne diseases

Seed cutter (machine) is a common source of contamination for:
- Bacterial ring rot–caused by *Clavibacter michiganese*
- Bacterial soft rot–caused by *Pectobacterium spp.*
- Fusarium dry rot–caused by *Fusarium sp.*
- Late blight–caused by *Phytophthora infestans*
- Mechanically transmitted viruses such as potato virus X (PVX)

Cleaning and Disinfecting Potato Equipment and Storage Facilities

By Nora Olsen and Phil Nolte

Potato equipment and storages are exposed to a number of pests including fungi, bacteria, insects, nematodes, and weed seeds. Many of these pests can be spread from tuber to tuber or field to field on equipment or in storage and cause problems in future crops if not eliminated or at least minimized.

Some disease problems, like bacterial ring rot (caused by *Clavibacter michiganese*), can be a very serious problem for seed potato producers, even when the disease occurs at very low levels. Nematodes are easily transferred from one field to another in soil adhering to equipment that is not properly cleaned between fields.

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Cleaning and Disinfecting

- Removal of dirt and debris
  - May need to replace 1-2” of dirt on floor
  - Wash entire facility with soap and hot water then rinse
    - Steam washers highly effective
    - Wash walls, ducts, pipes
- Apply disinfectant to all surfaces
  - Keep disinfectant wet for at least 10 minutes

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Disinfectants

- Na, Ca, and NH_4^+ hypochlorite
- Chlorine dioxide
- Copper quinolinate
- Quaternary ammonium
- Hydrogen peroxide/peroxyacetic acid

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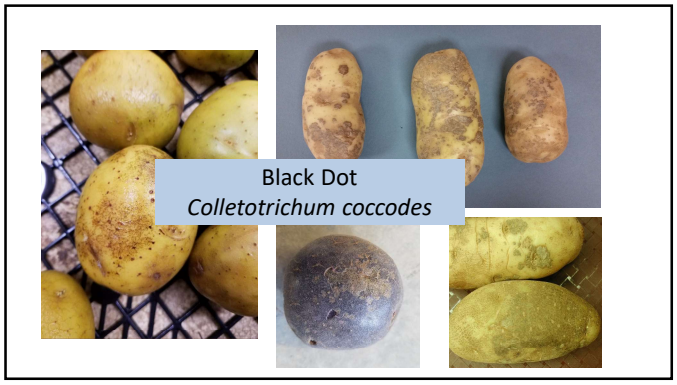

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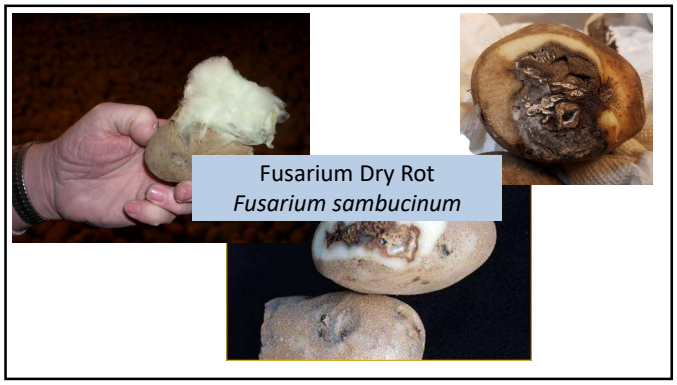

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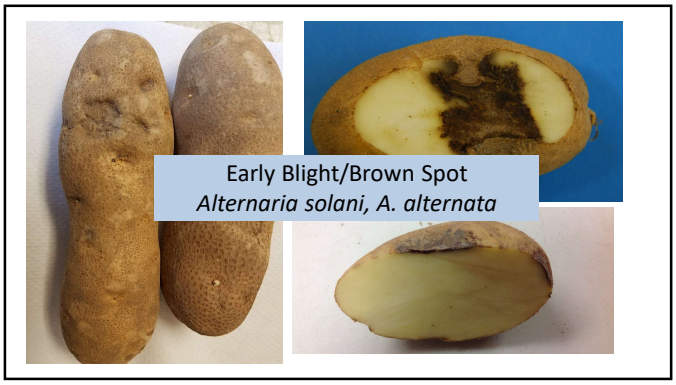

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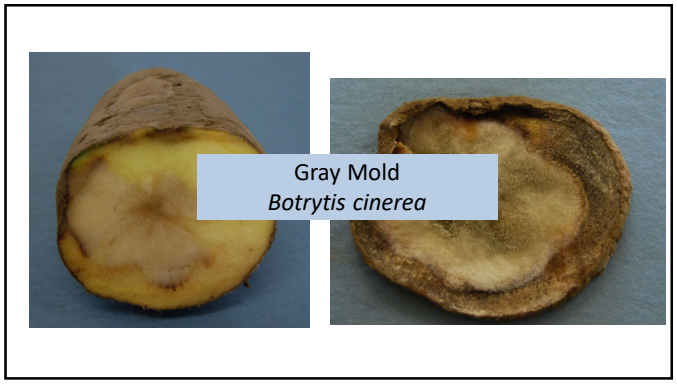

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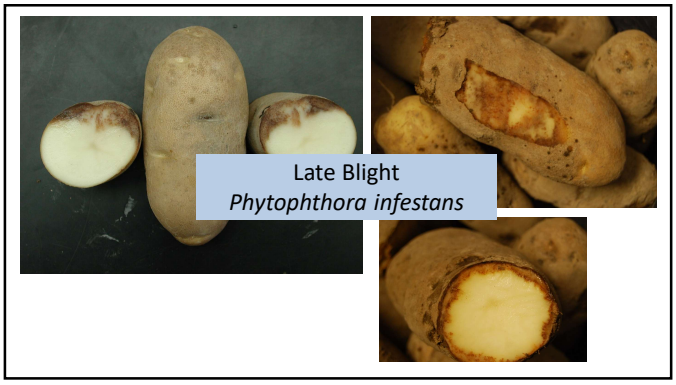

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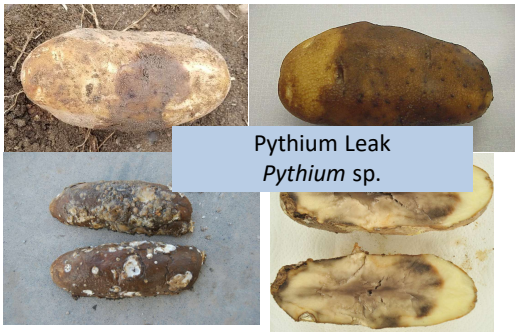

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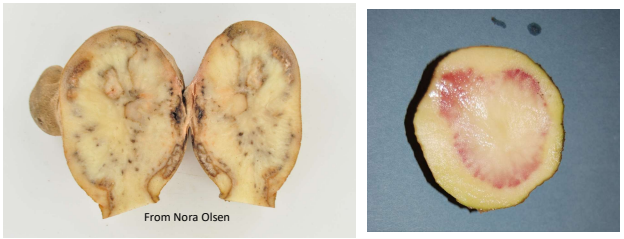

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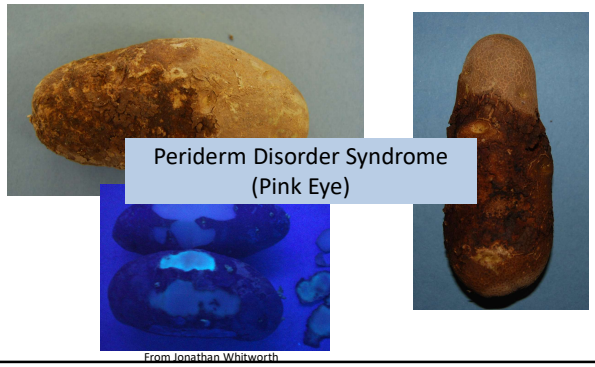

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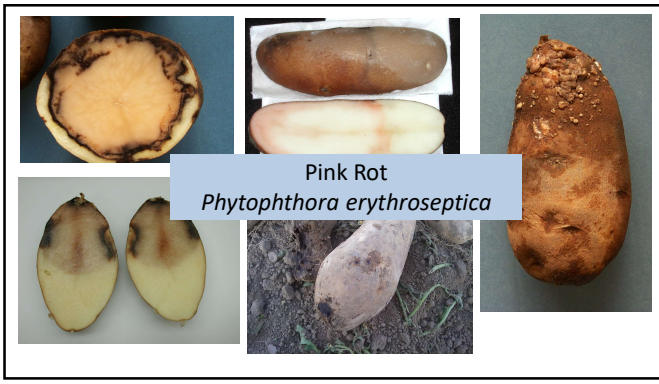

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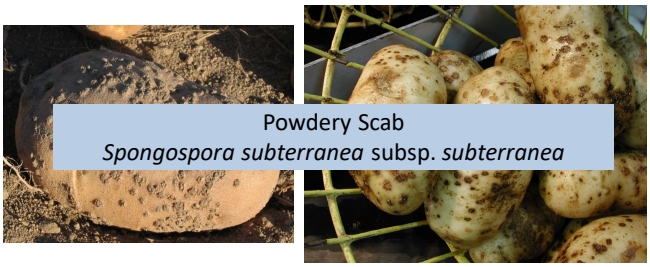

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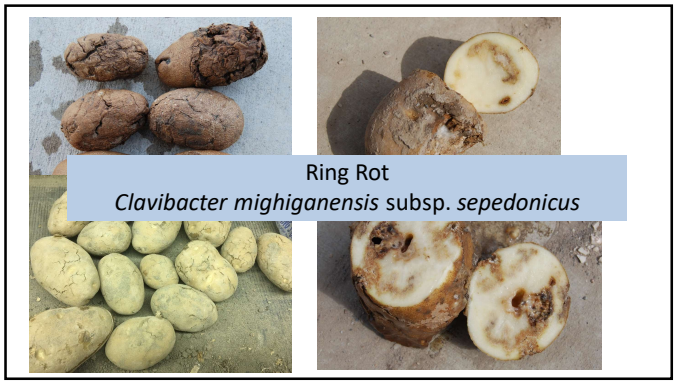

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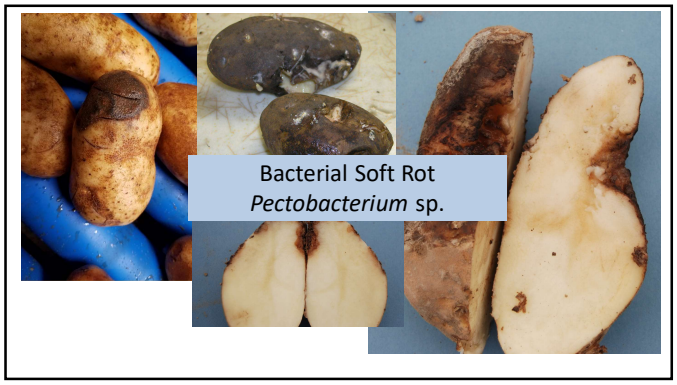

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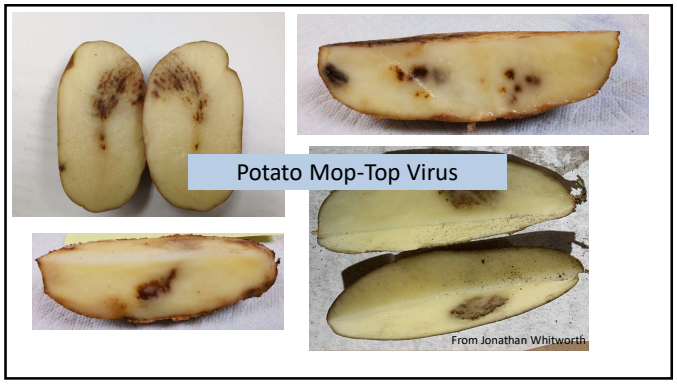

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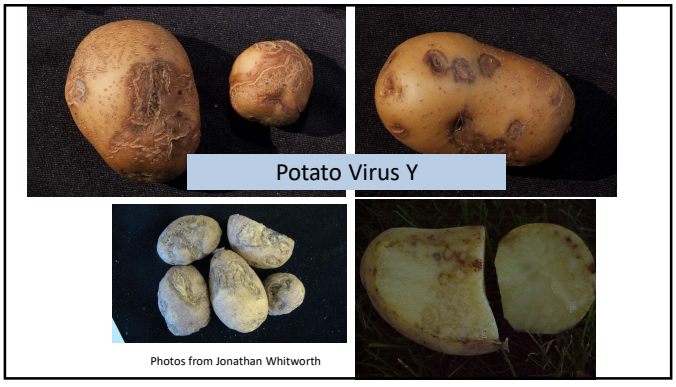

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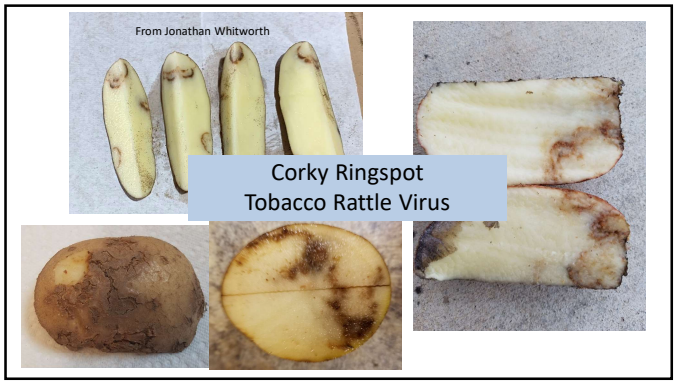
From Jonathan Whitworth
Corky Ringspot
Tobacco Rattle Virus

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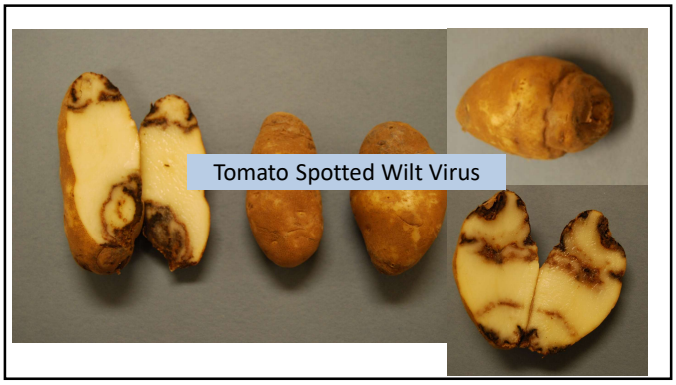
Tomato Spotted Wilt Virus

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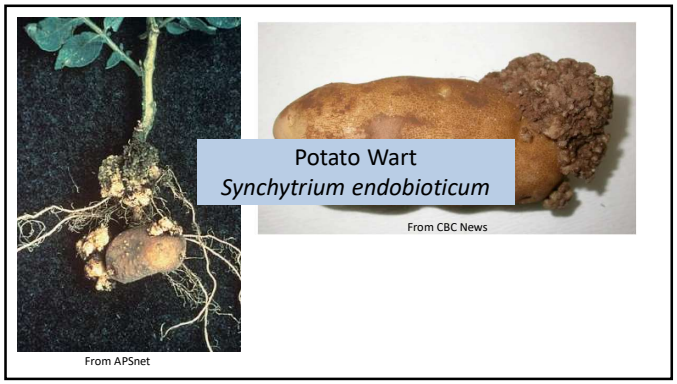
Potato Wart
Synchytrium endobioticum
From CBC News
From APSnet

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