

# **Vegetable Diseases: Updates and Recent Developments**

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May 2018**


# Challenge of diagnostics in plant pathology

- **Dealing with microorganisms**
- **Cannot rely only on symptoms:**
  - **May not be “diagnostic”**
  - **Different diseases: same symptoms**
  - **Field/weather conditions: same symptoms**
- **Generally requires lab analysis**





**Fusarium wilt**



**Fusarium  
wilt**



**Rhizoctonia root rot**



**Fusarium wilt**





**Pseudomonas**



**Alternaria**



# Bacterial leaf spot





# Cucumber mosaic virus





## Impatiens necrotic spot virus





# Tomato spotted wilt virus





**Alfalfa mosaic virus**

# Bacterial diseases on Apiaceae in California: *Pseudomonas syringae*

- Celery: *P. syringae* pv. *apii*
- Cilantro: *P. syringae* pv. *coriandricola*
- Parsley: *P. syringae*
- Fennel: *P. syringae*













**Stemphylium**



**Pseudomonas**



**Septoria**

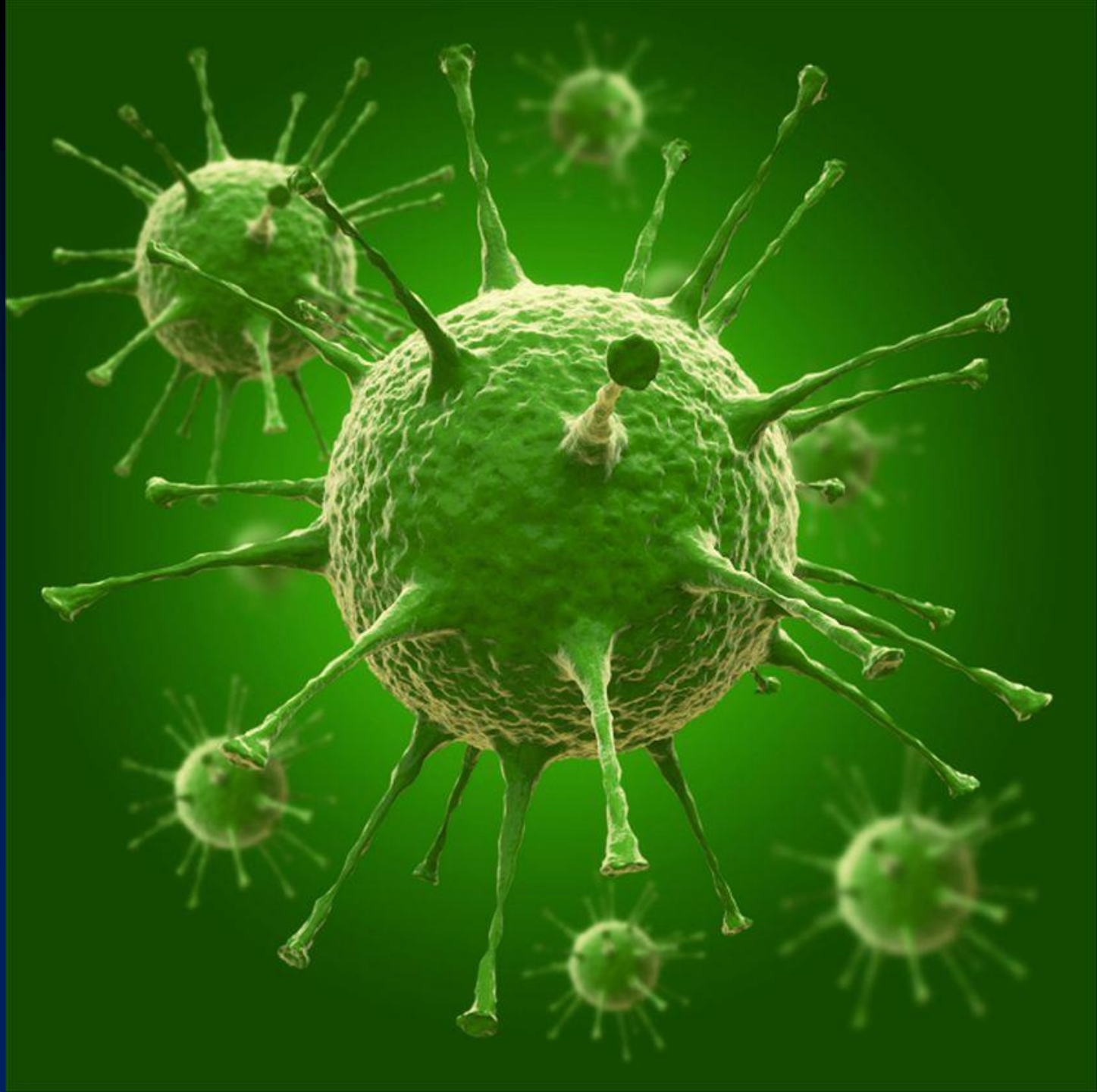


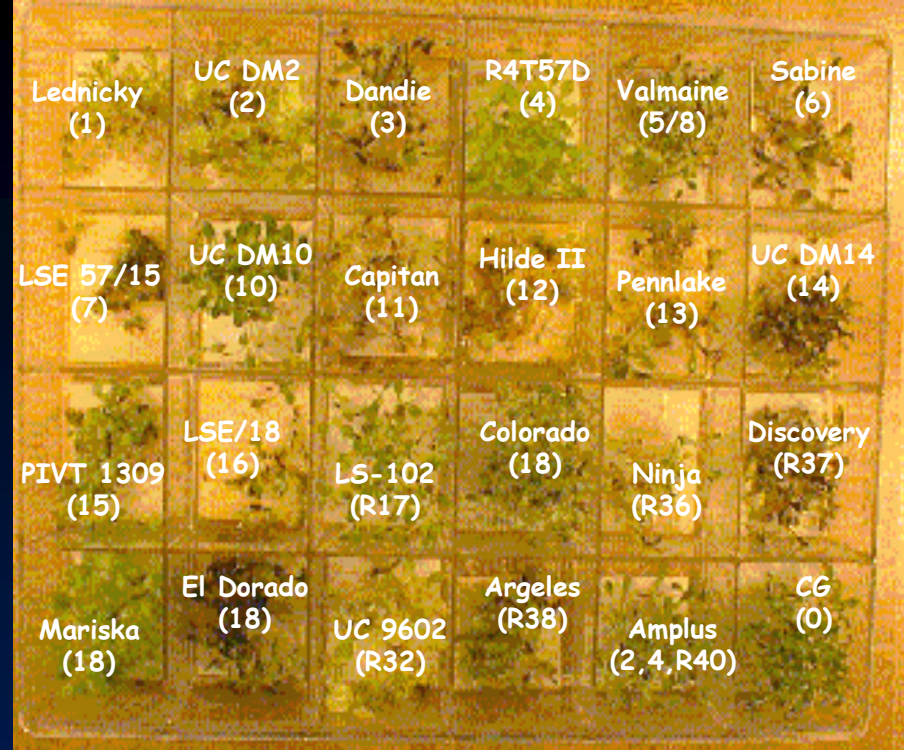
**Pseudomonas**



# Downy mildews of vegetables

- Arugula
- Beet
- Broccoli
- Brussels sprouts
- Cabbage
- Cauliflower
- Cucumber
- Lettuce
- Mustards
- Onion
- Pea
- Radish
- Rappini
- Spinach
- Squash
- Swiss chard

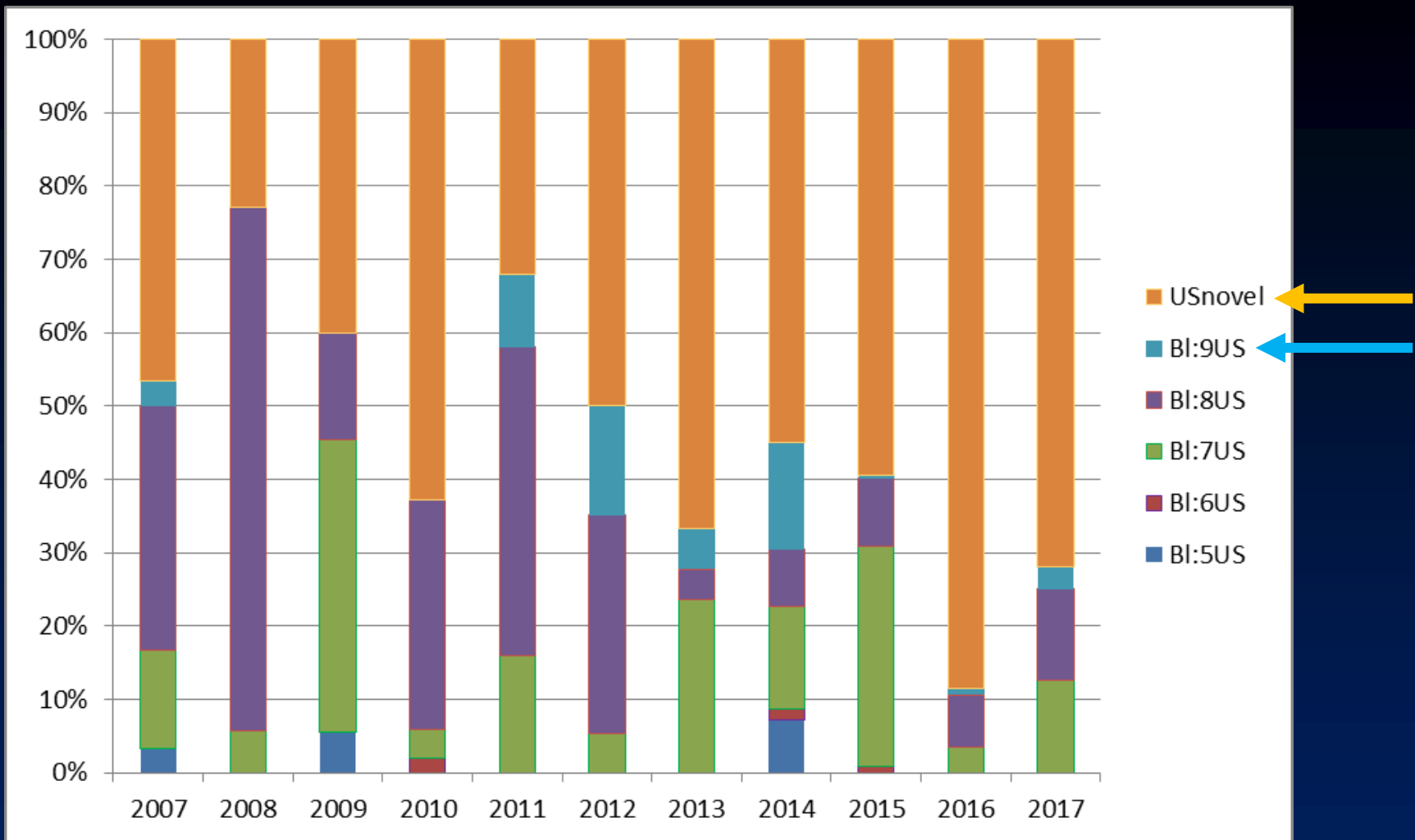




**Susceptible  
reaction**

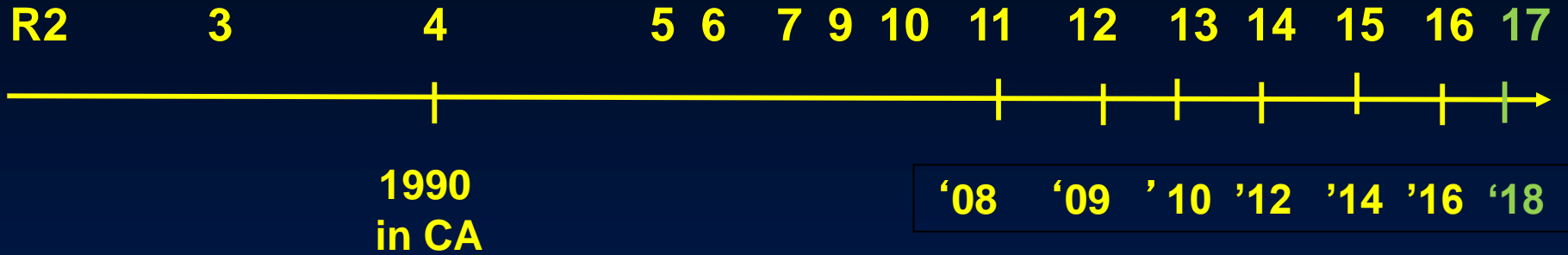
**Lettuce differential  
cultivars for determining  
downy mildew pathotypes**



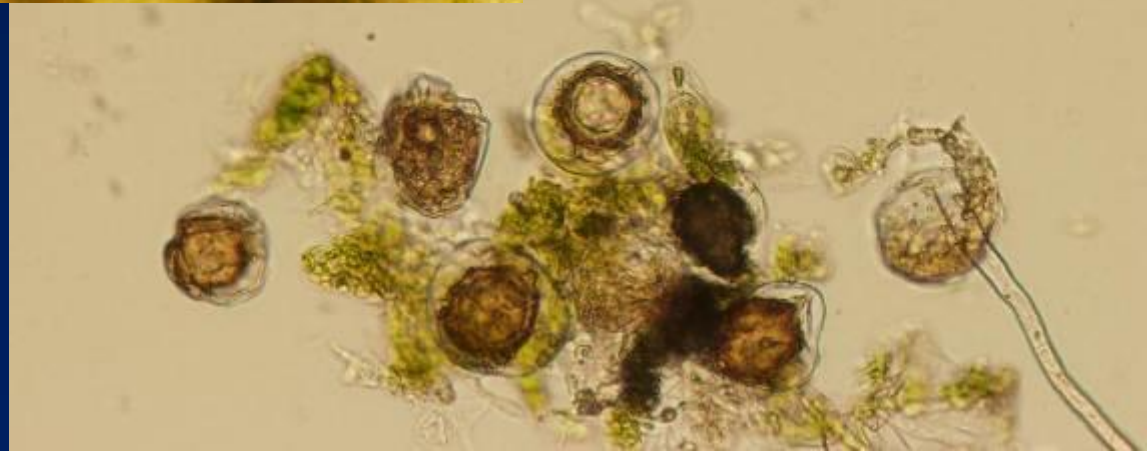
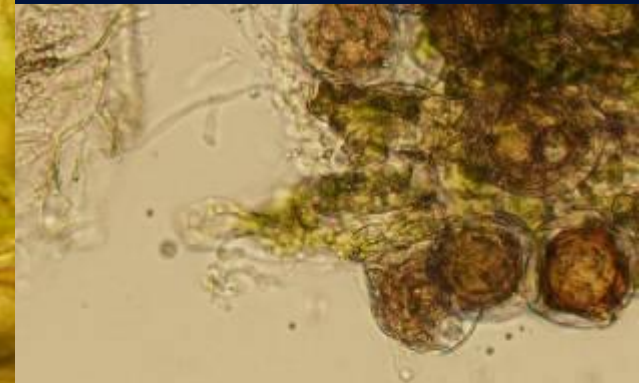
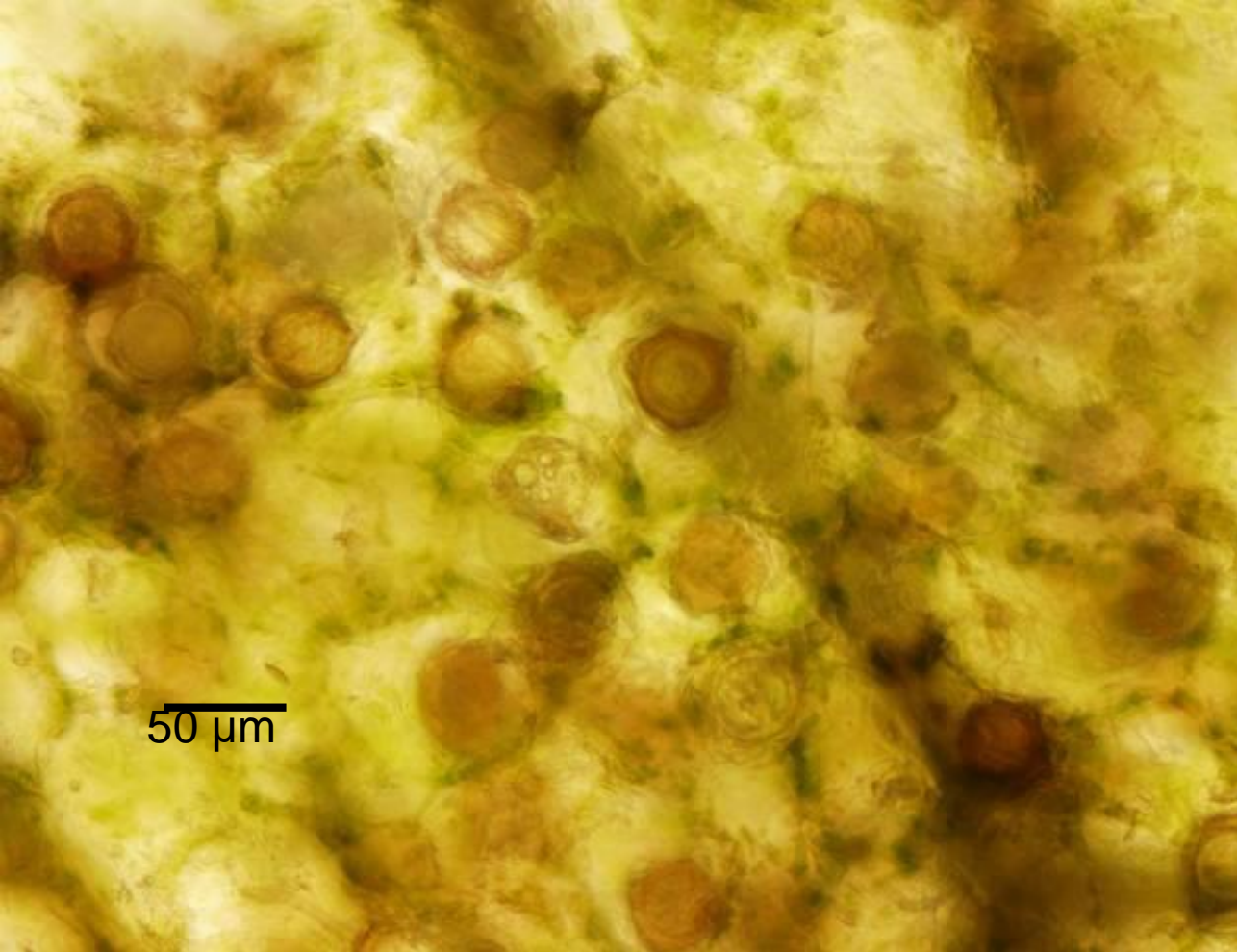


**Lettuce downy mildew: Frequency of CA pathotypes of *Bremia lactucae* (C. Tsuchida)**

# Spinach downy mildew (*Peronospora effusa*):

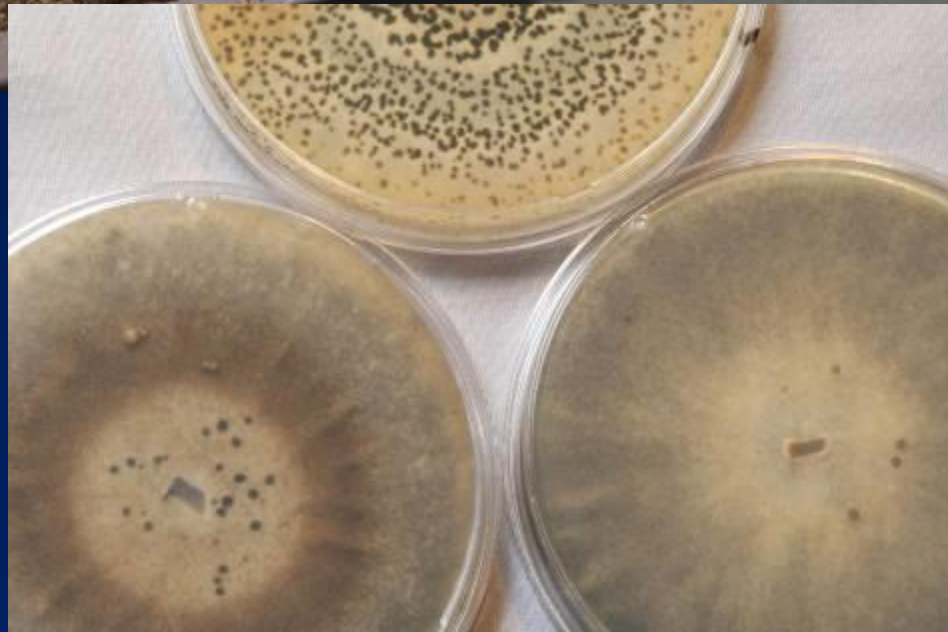
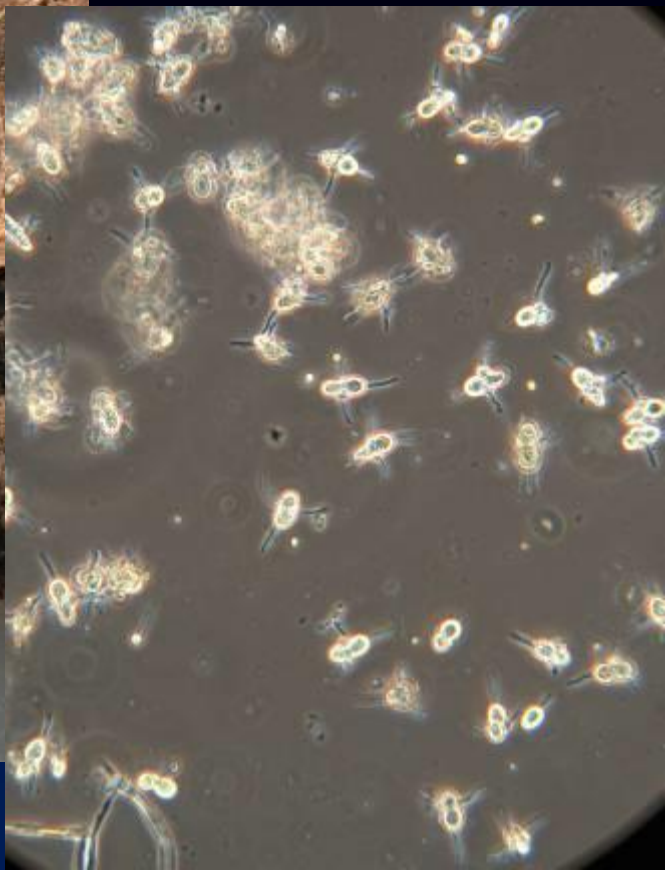


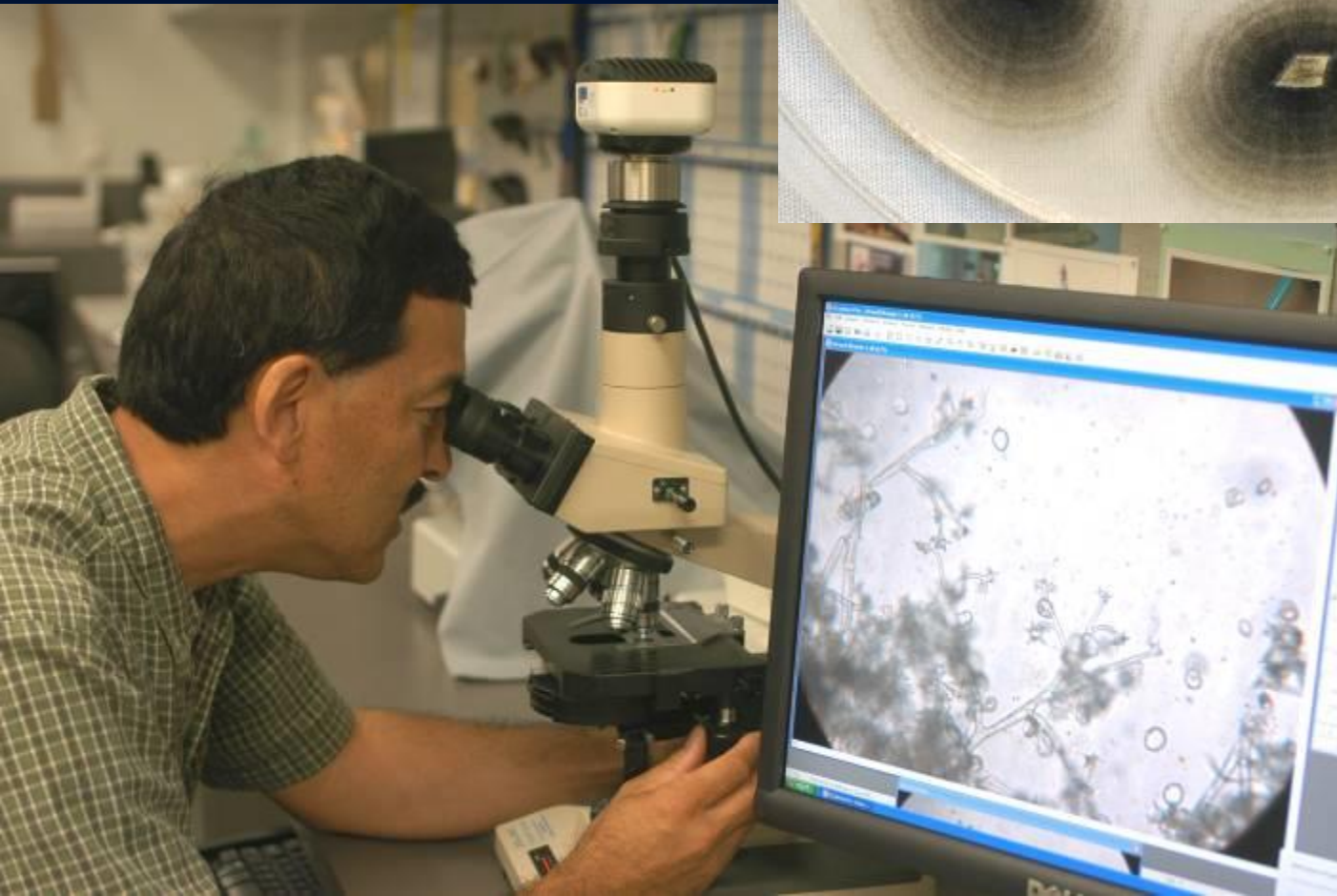
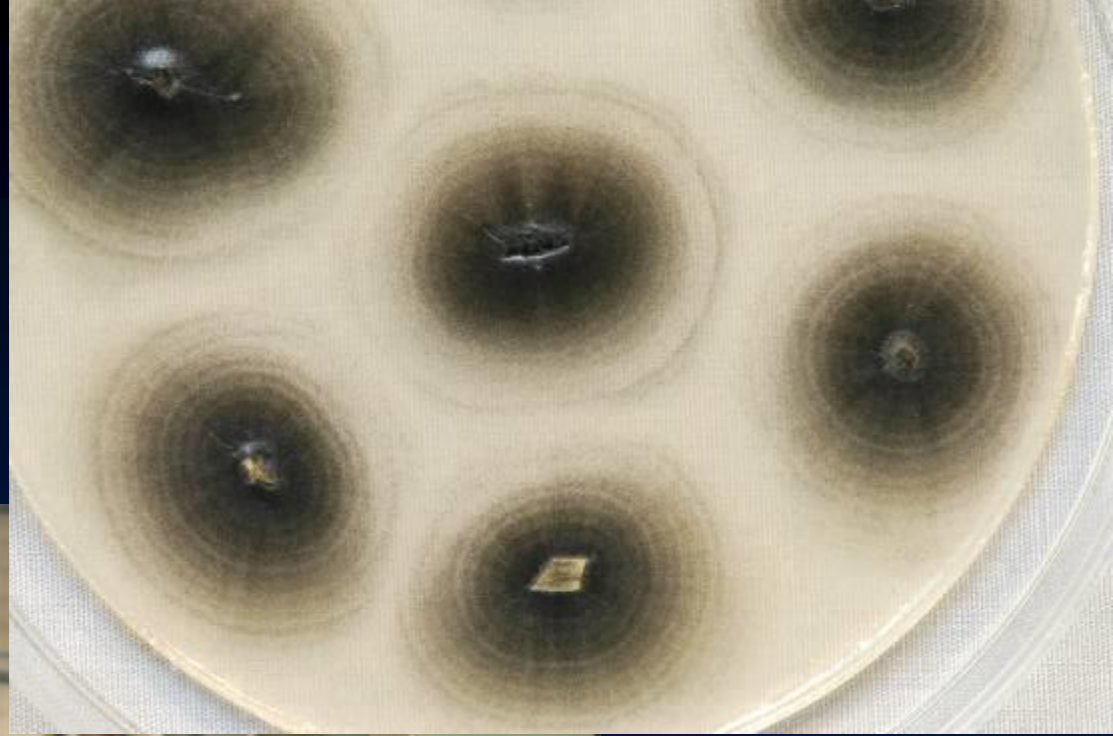
# Spinach DM: oospores on seed

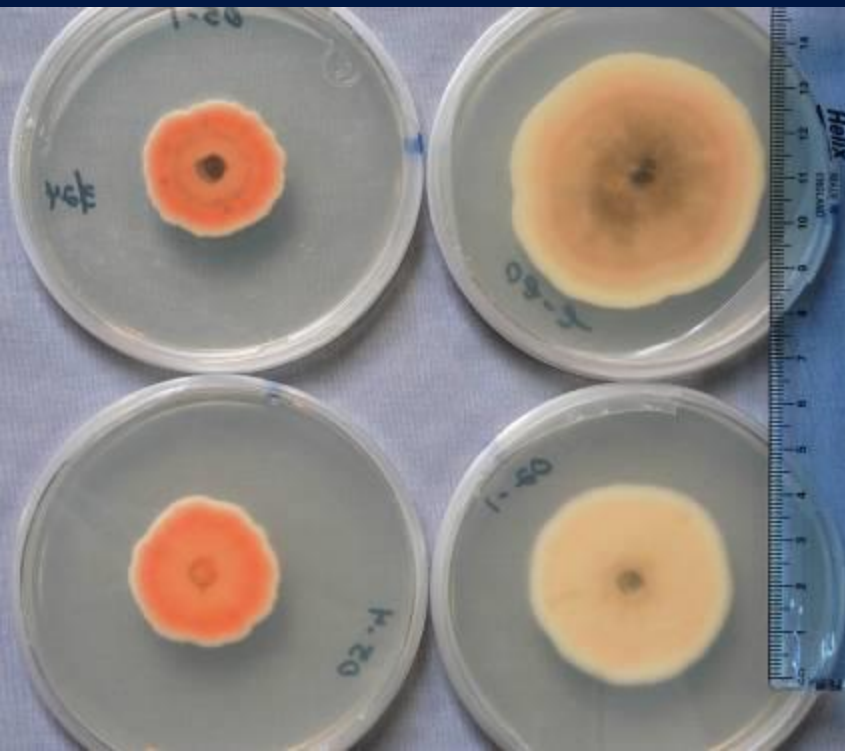
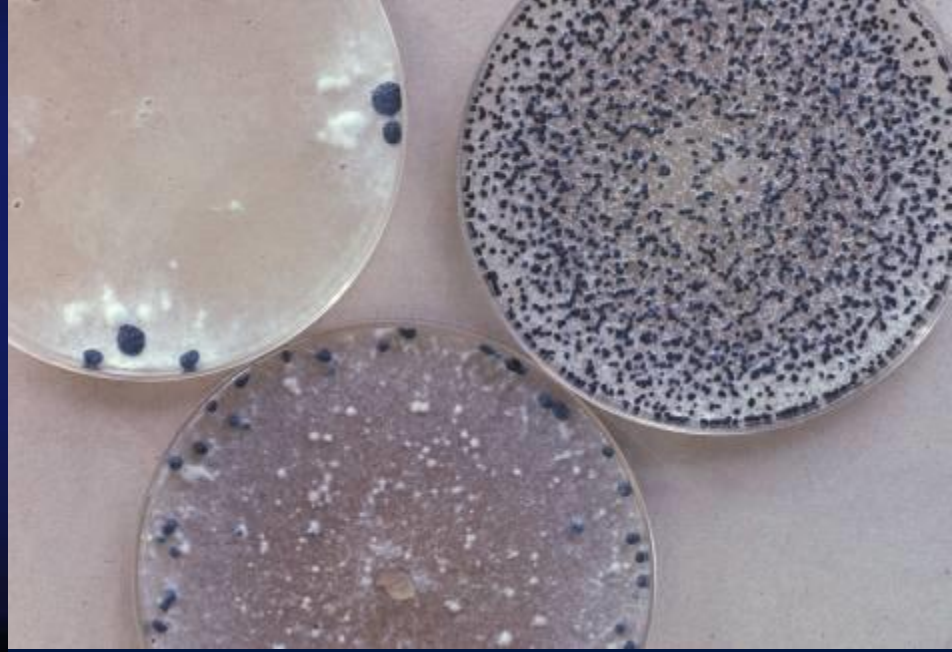
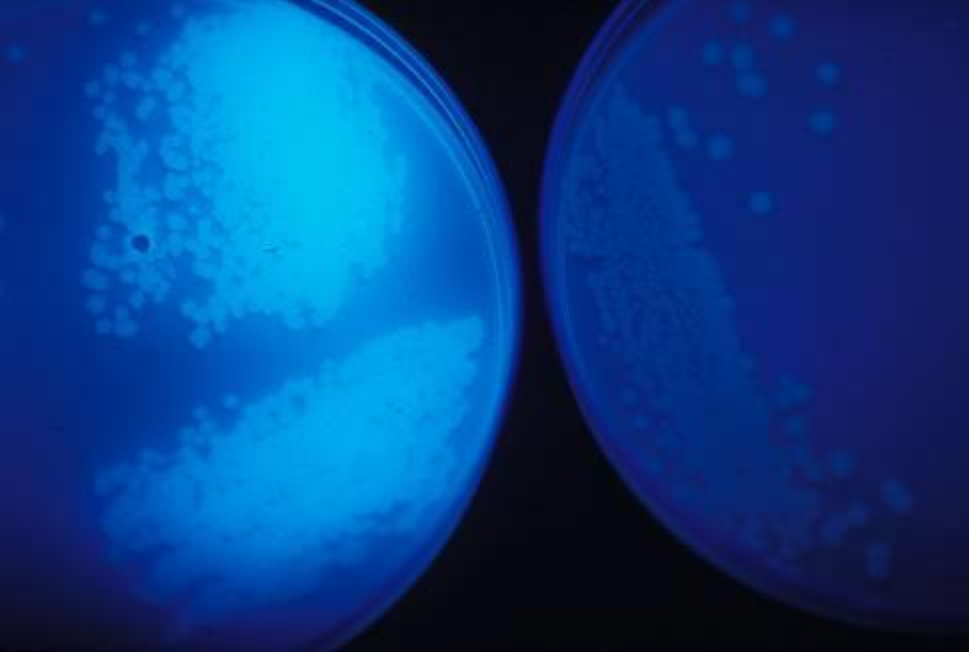


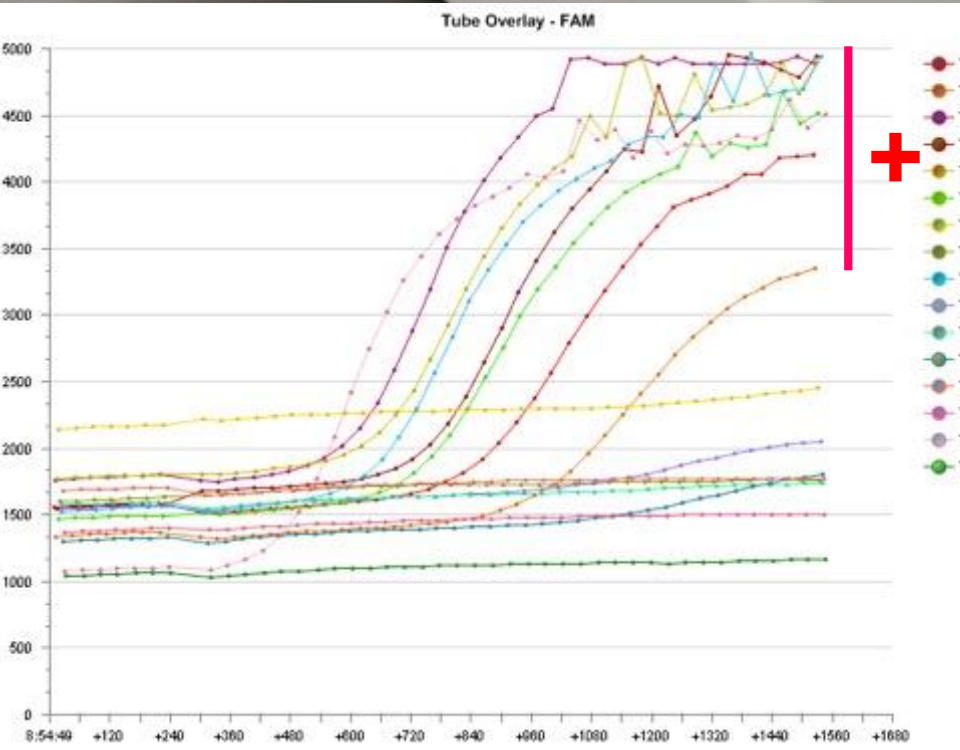
Photos: S. Klosterman















## **Industry and UC Labor issues:**

**High costs, availability**

## **Solutions:**

**Mechanization, automation**



# New plant pathology Farm Advisor

