

# **Powdery Mildew of Pepper**

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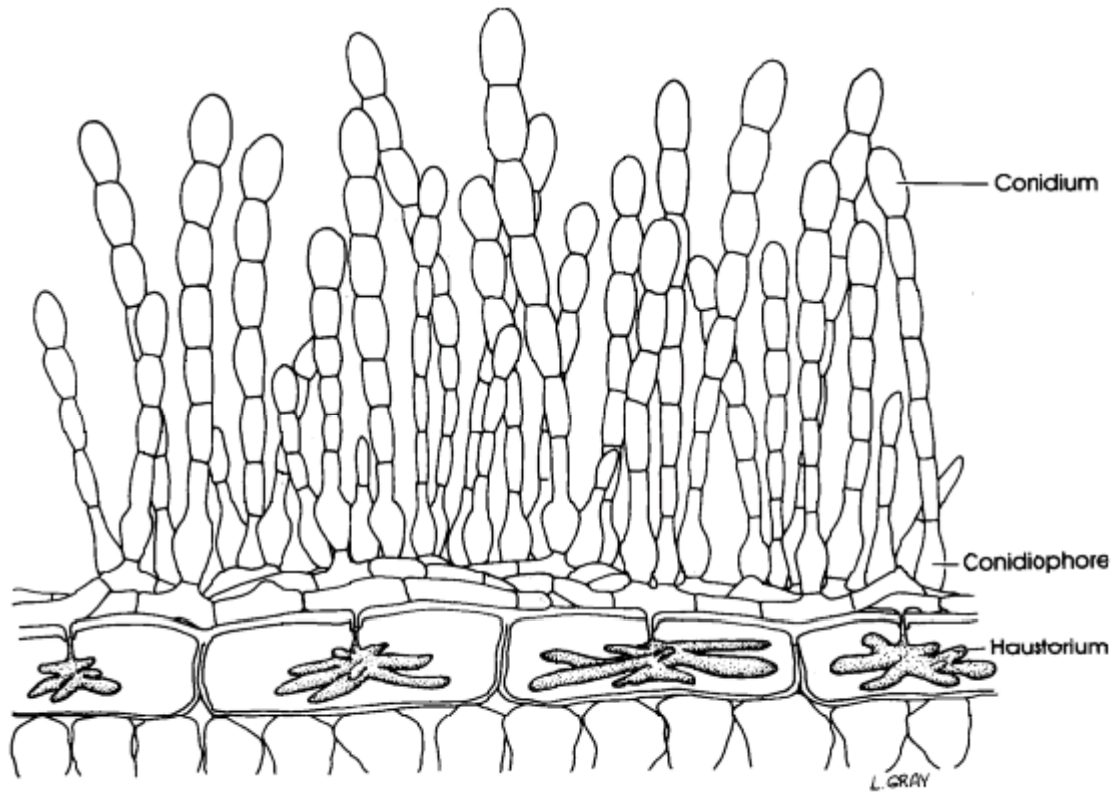
# Pathogens and Names

- ***Golovinomyces cichoracearum***
  - Formerly *Erysiphe cichoracearum*
  - = *Oidium* species (asexual / imperfect form)
  - Typical ecto-parasitic pm
- ***Leveillula taurica*** (sexual / perfect form)
  - = *Oidiopsis sicula* (asexual / imperfect form)
  - (= *Oidiopsis taurica*)
  - Endo-parasitic pm

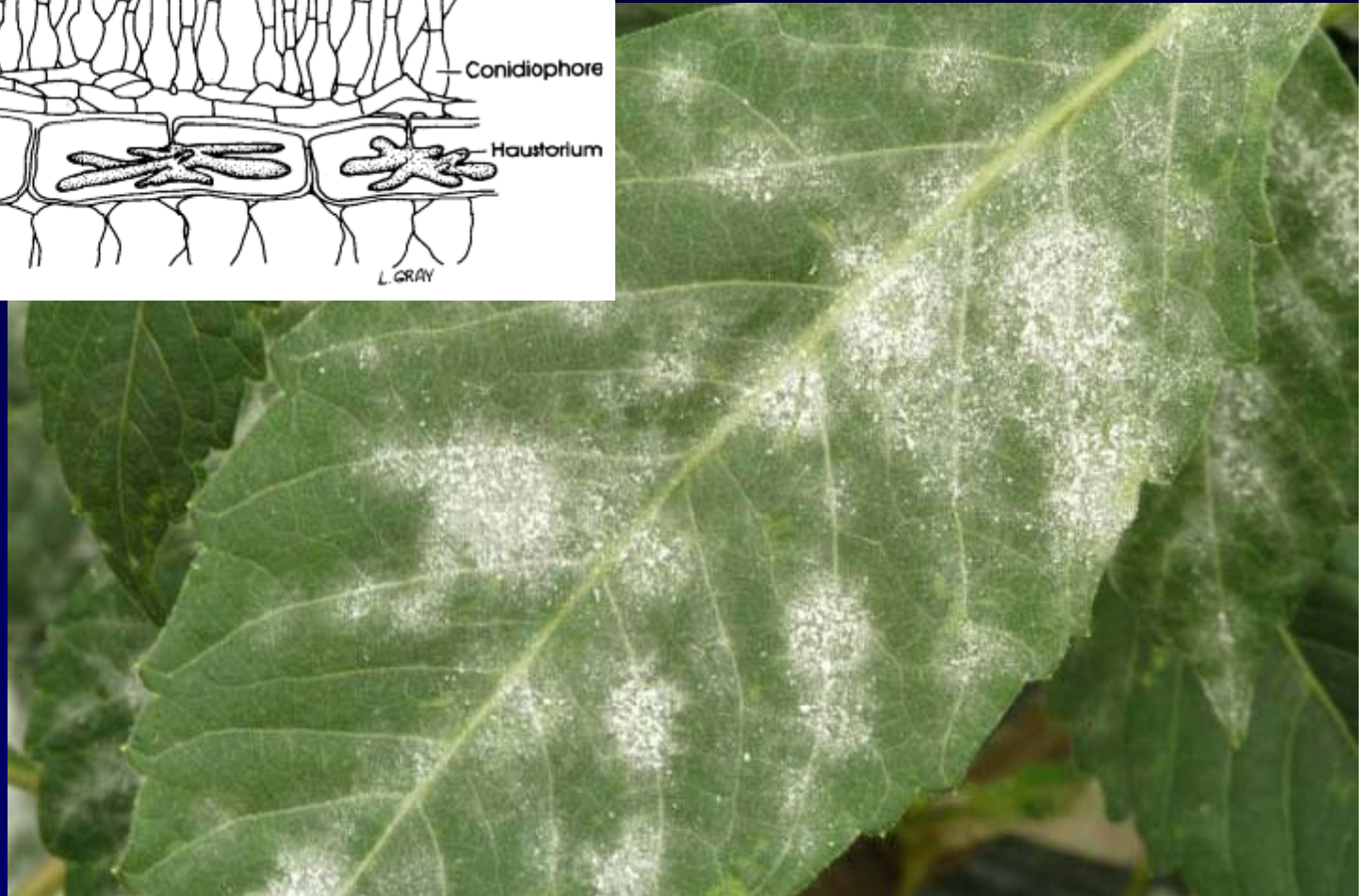


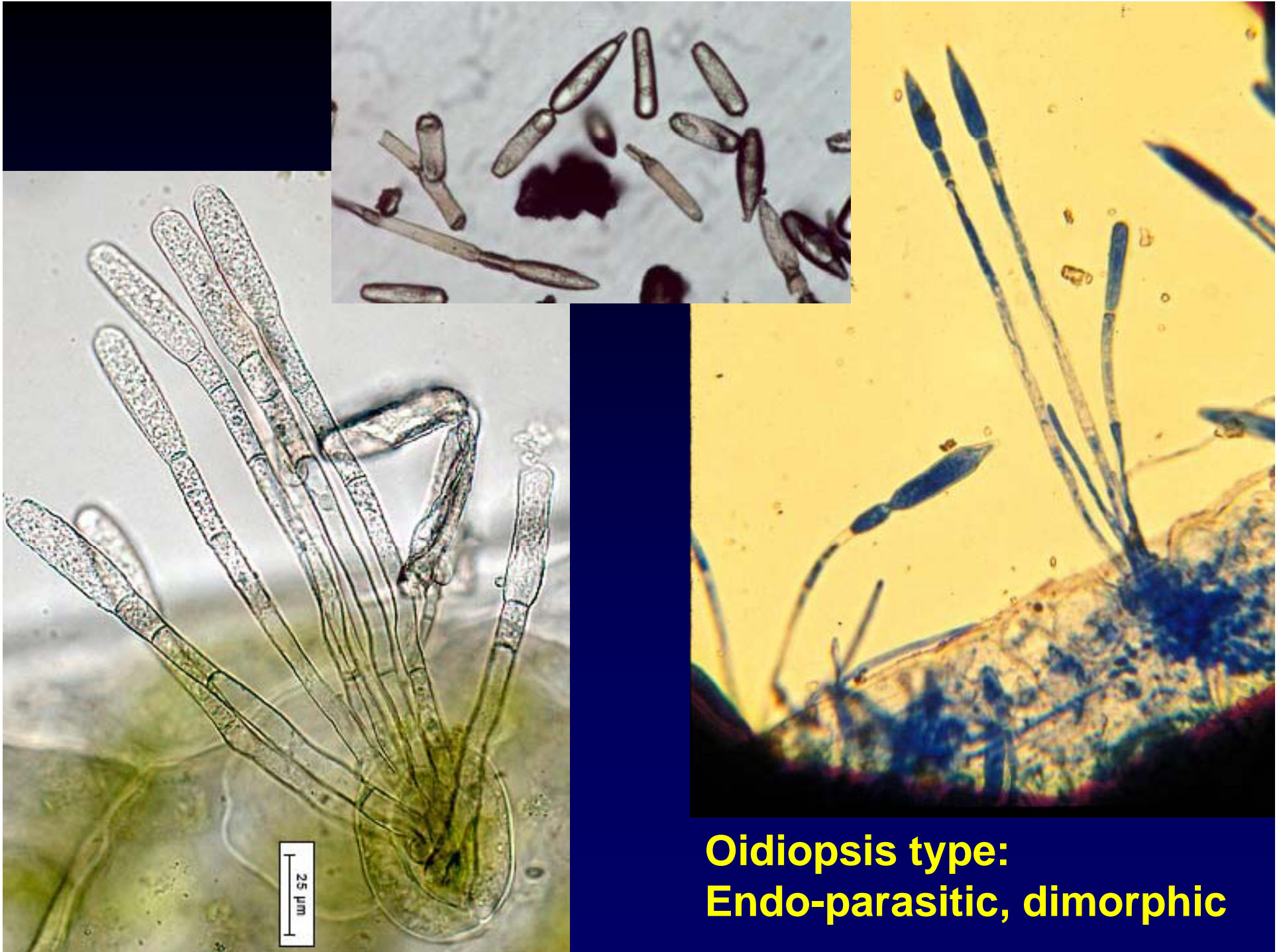




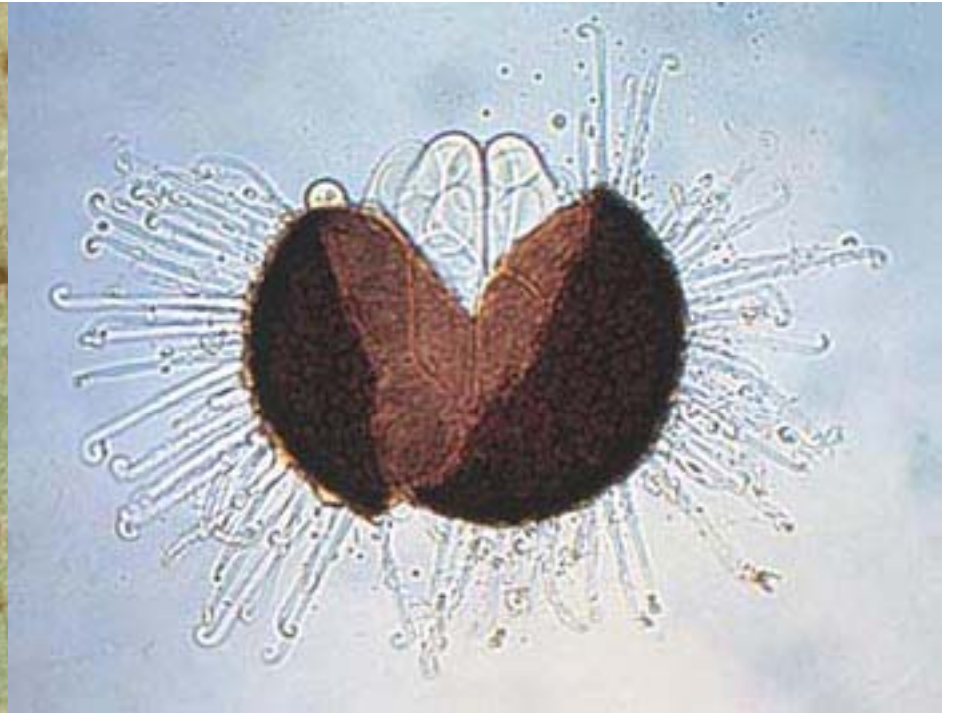


## Oidium type: Ecto-parasitic





**Oidiopsis type:  
Endo-parasitic, dimorphic**

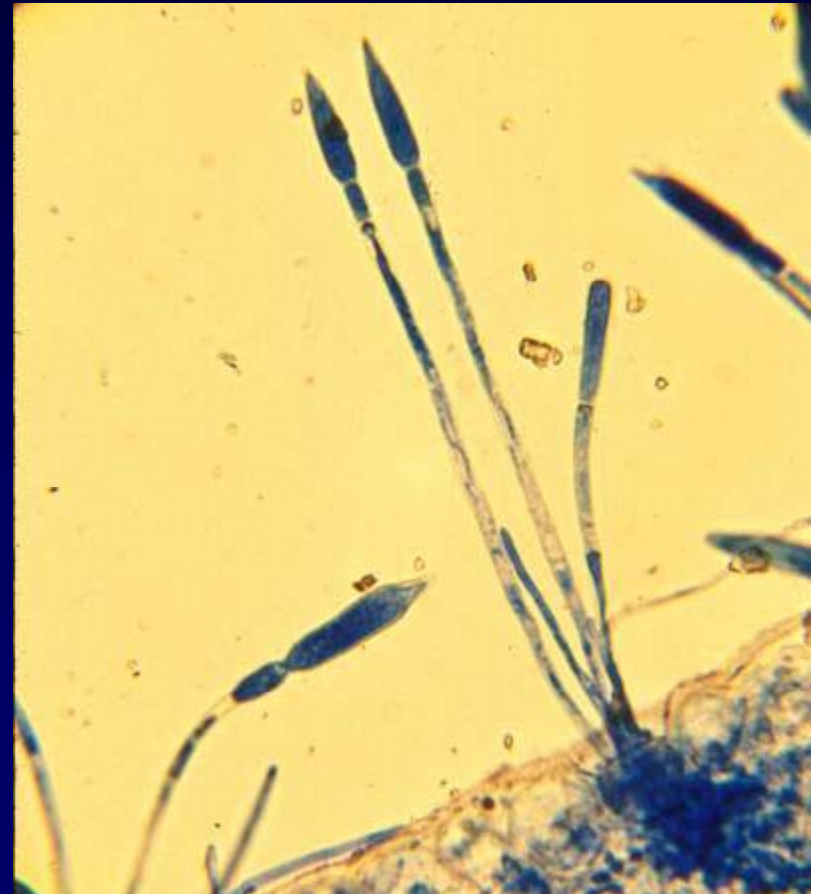


**Leveillula:  
Sexual phase w/  
Chasmothecium  
(cleistothecium)**

# *Leveillula* (= *Oidiopsis*)

## Host Range

- 69 plant families
- 378 plant genera
- 1050+ plant species



# Plant Families

- **Amaranthaceae**
- **Apiaceae**
- **Asteraceae**
- **Caryophyllaceae**
- **Chenopodiaceae**
- **Convolvulaceae**
- **Cruciferae**
- **Cucurbitaceae**
- **Euphorbiaceae**
- **Fabaceae**
- **Lamiaceae**
- **Liliaceae**
- **Malvaceae**
- **Papaveraceae**
- **Polygonaceae**
- **Ranunculaceae**
- **Scrophulariaceae**
- **Solanaceae**

# Selected Hosts

- **Apiaceae**
  - Carrot, celery, cilantro, dill, fennel, parsley
- **Asteraceae**
  - Artichoke, sunflower, gazania
- **Cucurbitaceae**
  - Cucumber, melon, pumpkin, watermelon, winter squash

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# Selected Hosts

- **Fabaceae**
  - Bean, chickpea, fava bean, pea
- **Lamiaceae**
  - Mint, rosemary
- **Liliaceae**
  - Garlic, leek, onion
- **Solanaceae**
  - Eggplant, pepper, potato, tomato

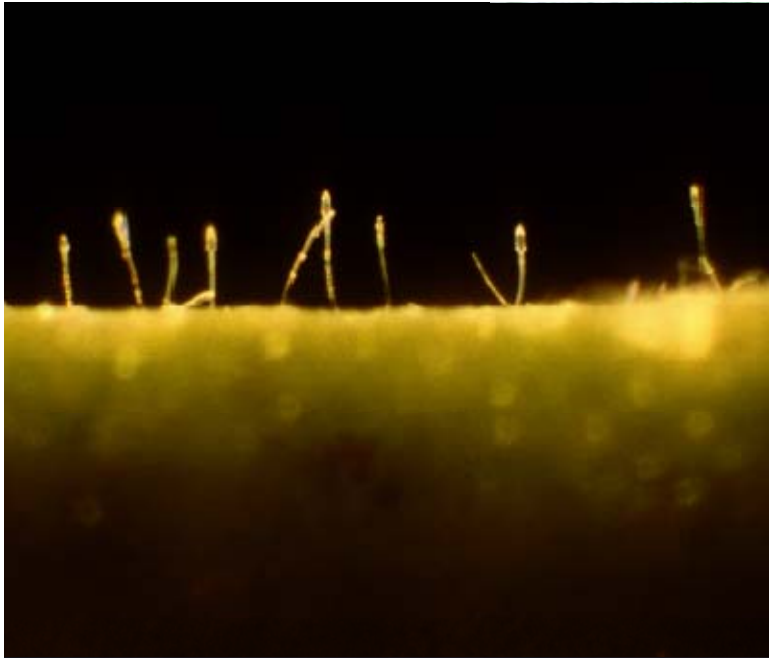
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# Ornamental and Weed Hosts

- **Hundreds of ornamental plant hosts.**
- **Many weed hosts:**
  - **Annual sowthistle, wild artichoke, cocklebur, common groundsel, filaree, shepherdspurse, groundcherry**





# Host Specificity? Strains?

- **Some researchers:**
  - “Isolates infect only certain plants.”
- **Other researchers:**
  - “Isolates infect many plants.”
- **Current consensus:**
  - No host specificity
  - Environmental conditions influence results
  - *L. taurica* = species complex

# Biology

- **Optimum spore germination:**
  - 75-85% relative humidity
  - 54 F (20 C)
- **Optimum growth at 49-59 F (15-25 C)**
- **Growth inhibited above 98 F (37 C)**
- **High night-time temp. reduce pm dis.**
- **Pathogen prefers older pepper leaves**

# Management

- **Resistant cultivars:**
  - Some *Capsium annuum* R lines exist
  - Not suitable for CA production?
- **Disease more severe w/ high humidity.**
- **Overhead sprinkler irrigation reduces severity, but increases other problems.**
- **Monitor adjacent host crops (tomato).**
- **Apply fungicides.**

# Fungicides: Conventional

- **Sulfur: effective, many regular apps.**
- **Rally: a standard**
- **Cabrio, Flint, Quadris, Quintec: for rotations**

# Fungicides: Organic

- **Kaligreen (K bicarbonate)**
- **Potassium phosphate**
- **Oils**
- **Plant extracts, neem seed extract**
- **Biological control agents (BCA): AQ 10, others**

# Other Pepper Diseases

- Bacterial spot (*Xanthomonas campestris* pv. *vesicatoria*)
- White mold (*Sclerotinia sclerotiorum*)
- Southern blight (*Sclerotium rolfsii*)
- Phytophthora root/crn rot (*P. capsici*)
- Verticillium wilt (*V. dahliae*)
- Viruses: 10 or more pathogens
  - BCTV, CMV, TSWV, INSV (new?)





