New Tools for an Old Foe:
I. Powdery Mildew Life Cycle

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Grape Powdery Mildew
Powdery Mildew
Erysiphe necator

Nicholas, et al. 1994
Grape Powdery Mildew Disease Cycle
Rapid Reproduction

0 h

2 h

6 h

8 h

16 h

24 h

36 h

48 h
Powdery Mildew
Cleistothecia

- **Favorable Conditions**
  - Rain and Wind Dispersed
  - Adhere to Bark
  - Low Survival During Dormancy
  - Release Between 45-88°F with free water
  - Optimal Infection at 68°F

![Timeline of Vineyard Activities](image)
- Bud Break
- Bloom
- Veraison
- Harvest

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Grove 2007
Powdery Mildew

- **Favorable Conditions**
  - between 50°F and 90°F
  - Optimum 77°F
  - No rain
  - High vigor/fertility
  - Shading

- **Unfavorable Conditions**
  - < 50°F and > 92°F
  - Free water

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Uncontrolled Disease Epidemics

- 2006
- 2007
- 2008
- 2009
- 2010

- Predicted ascospore release
- Inoculum detection
- Bud break