Downy mildew: Considerations

- Overwintering inoculum comes from last year’s infected leaves
  - Proportional to disease levels last year
Downy mildew: Considerations

- Classic “compound interest” disease
  - This year’s disease “yield” depends on
    - Initial “deposit” (amount of overwintering inoculum)
    - “Interest” rate (weather, varietal susceptibility, spray program)
Downy mildew: Considerations

- Overwintering spores are in leaf litter, soil
  - No dormant treatments practical
Downy mildew: Considerations

- Practical effects of high overwintering inoculum levels:
  - Early control will be more critical than normal (all other things being equal)
Downy mildew: Considerations

- Primary infections first occur about 2 - 3 weeks before bloom, continue through summer
  - At least 52°F, 0.1” rain
Downy mildew: Considerations

- Primary infections first occur about 2 - 3 weeks before bloom
  - At least 52°F, 0.1” rain
  - 10-in shoot growth through fruit set is the critical time to prevent epidemic from starting
Downy mildew: Considerations

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- Humid nights (>95% RH), then rain that night or in the morning
Downy mildew: Considerations

- Once established, disease can spread very rapidly
  - 4 - 5 day generation time if weather is favorable
    - Humid nights (>95% RH), then rain that night or in the morning
  - Optimum temperature = 77°F
    - Disease remains active, but spreads more slowly, at 50 - 86°F
Downy mildew: Considerations

- Spores that spread disease are short-lived, killed quickly by intense sunlight
  - But survive cloudy days
Downy mildew: Considerations

- Disease becomes “dormant” during extend hot, dry weather
  - Important to look in vineyard to determine activity
Downy mildew: Considerations

**Bottom line:** Potential for “explosive” development during extended periods of cloudy, warm, wet weather

- But no activity when dry
- Spray accordingly
Downy mildew: Considerations

- Young clusters are highly susceptible to infection, quickly become resistant with age
Downy mildew: Considerations

- Young clusters are highly susceptible to infection, quickly become resistant with age.
  - Sprays from 2 - 3 weeks before bloom through 4 weeks after bloom provide thorough protection of clusters.
Downy mildew: Considerations

- New foliage can require protection at any time during the summer to prevent defoliation, depending upon the weather.
Downy mildew: Fungicides

- Captan, mancozeb, copper
  - Very effective
  - Widely used
  - Surface protection only
    - Can wash off if heavy rains
Downy mildew: Fungicides

- Metalaxyl/ mefanoxam (Ridomil)
  - “Best DM fungicide ever”
  - Resistance can develop rapidly
    - No resistance for grape DM reported in USA, probably due to limited use
Downy mildew: Fungicides

- Strobilurin fungicides
  - Abound, Pristine (strobie component) highly effective
  - Sovran moderately effective
  - Flint poor
Downy Mildew: Fungicides

- Strobilurin fungicides
  - Resistance risk appears high
    - Became widespread in Europe 2002
      - More pressure there, R happens more quickly
      - One more warning for us (limit use)
PHOSPHOROUS ACID (PHOSPHITES, PHOSPHONONATES)

- NOT fertilizers (phosphoric acid, phosphate)
- Control ONLY downy mildew
- ProPhyt, Phostrol labeled for DM control
- Other “nutrient” & “plant tonic” formulations for sale
  - “Gray market”
  - Often difficult to determine % phosphonate