

Botrytis bunch rot

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Which Rot?

Botrytis Rot

- Most common in coastal vineyards
- Caused by *Botrytis cinerea*

Summer/Sour Rot

- More common in hotter areas in CA
- Is a complex of several organisms
- Becomes sour when yeast and bacteria colonize the rot

Botrytis Germination and Infection

- Favored by the presence of free water or high relative humidity (above 93%) for extended periods.
- Conidia (asexual spores) are disseminated by rain and wind.

Temperature range for Infection:

- 0-30°F (32-86°C) - Can occur
- 59-77°F (15-25°C) - Optimal
- 64-68°F (18-20°C) - Ideal

Damage

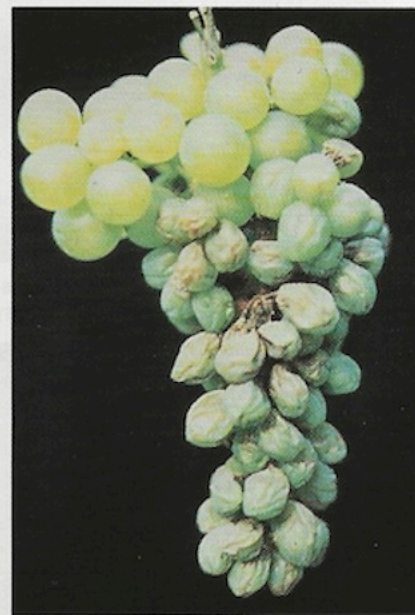
- Reduces quality and quantity of the crop.
- Substantial damage in table grapes in the field, storage and during transit.
- In wine production affects the quality by modifying the chemical composition of diseased berries.
- Wines produced from rotten grapes have off-flavors and are fragile to oxidation and bacterial contamination, making them unsuitable to aging.



16. *Botrytis cinerea* on a leaf of Müller-Thurgau. (Courtesy R. C. Pearson)



17. *Botrytis cinerea* on inflorescences. (Courtesy J. Bulit)



18. Withering of grapes due to rachis infection (stalk rot) by *Botrytis cinerea*. (Courtesy J. Bulit)



19. Botrytis bunch rot. (Courtesy B. Dubos)



20. Storage rot caused by *Botrytis cinerea*. (Courtesy R. C. Pearson)

“Noble Rot”

- Botrytis infection takes on a particular form that is beneficial and contributes to the production of exceptional sweet wines in certain cultivars and under certain climatic conditions in the fall.
- Tokays of Hungary, Sauternes of France and the German wines known as *Auslese*, *Beerenauslese*, and *Trockenbeerenauslese*.

Factors affecting Botrytis Severity

Environmental

- Weather between veraison and harvest.
- Practices that influence canopy density and berry compaction.
- Microclimate in the fruit zone.

Vine Factors

- Presence of the inoculum in the vineyard.
- Varietal susceptibility
- Canopy density
- Cluster architecture
- Bunch crowding
- Berry maturation

Relative susceptibility to bunch rot of major grape cultivars in the western United States

Very susceptible:

Carignane
Chardonnay
Chenin blanc
Melon
Petite Sirah
Ruby Seedless
White Riesling
Zinfandel

Susceptible:

Barbera
Calmeria
Flame Seedless
Grenache
Pinot noir
Sauvignon blanc
Redglobe
Ribier

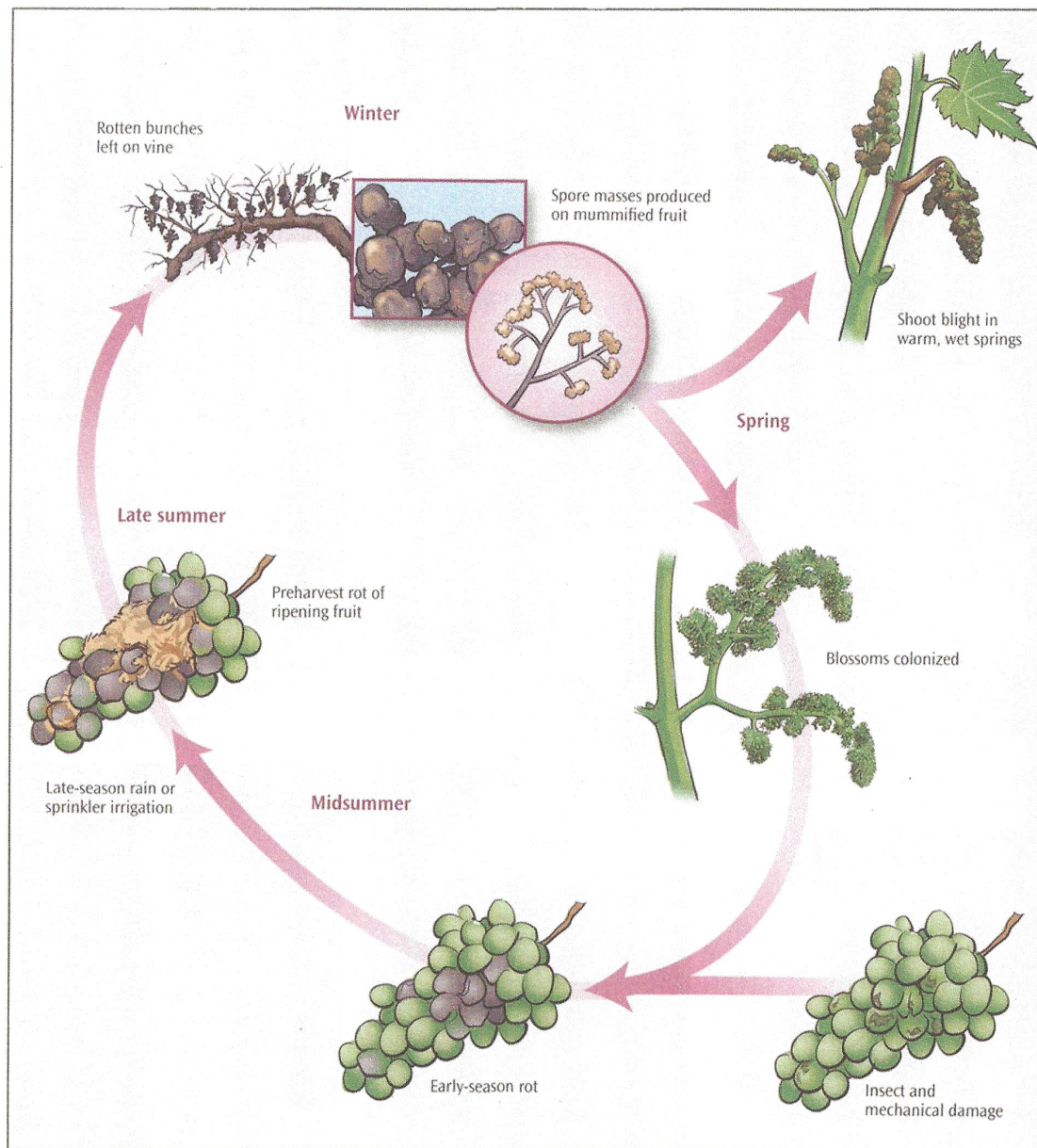
Moderately resistant:

Autumn Royal
Colombard
Crimson Seedless
Emperor
Semillon
Sylvaner
Thompson Seedless

Highly resistant:

Cabernet Sauvignon
Merlot
Muscat of Alexandria
Rubired
Ruby Cabernet

Botrytis Bunch Rot Cycle



Symptoms

- Early Spring buds, young shoots may be infected (turn brown).
- Before bloom irregular reddish, brown necrotic patches appear on few leaves.
- Before capfall (bloom) fungus may invade inflorescences which rot and fall off.



Photo: G. Torres



Photo: G. Torres



Photo: G. Torres

Infected shoots with *Botrytis cinerea*

Symptoms

- Fungus develops on aborted berries trapped in the clusters.
- From these sites fungus attacks the pedicel or the rachis.





Photo: G. Torres

Canopy Management of Bunch rot

- Timely shoot thinning, leaf removal and hedging.
- Optimum timing for leaf removal is after fruit set is complete.
 - Optimizes the wax development
 - Reduces sunburn risk
 - Improves spray coverage

Management of Bunch rot, *Botrytis cinerea*

- Canopy Management
- Sanitation- Removal of fungal mycelium
- Nutrient management
- Irrigation management
- Management of insects, powdery mildew and bird damage
- Timely fungicide spray program (alternate materials with different mode of action to prevent resistance).

Botrytis Fungicides for Grape

Phthalamides

Captan
(M4)

Anilinopyrimidines

Vangard
Scala
(9)

Hydroxylanilides

Elevate
(17)

Carbamates

Dithane
(M3)

Dicarboximides

Rovral
(2)

Combination

Switch (9,12)
Inspire Super (3, 9)
Luna Experience (3, 7)
Luna Tranquility (7,9)
Pristine (7, 11)

Benzimidazoles

Topsin
(1)

SDHI

Boscalid
Fluopyram
(7)

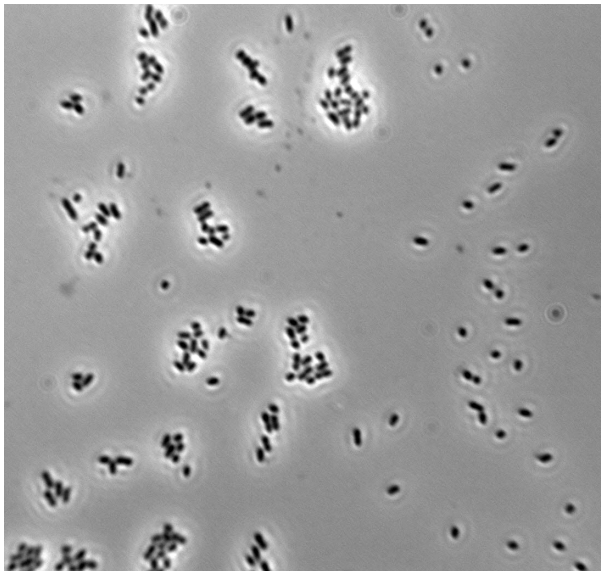
Biological

Serenade
Sonata
(44)

Summer/Sour Rot



Infected berries attract insects



Yeast and bacteria
transform alcohol in
vinegar

Summer/ Sour Rot

- More common in hotter areas of California
- Becomes sour when yeast and bacteria colonize the rot.
- Is a complex of several organisms:
 - *Aspergillus*
 - *Alternaria*
 - *Cladosporium*
 - *Penicilium*

To Reduce Damage of Summer Bunch Rot

- Follow proper irrigation, fertilizer, fruit thinning, and canopy management.
- Maintain vine balance between vegetative growth and cluster number.
- Control powdery mildew and damaging populations of leafroller and other berry feeders.
- Presence of *Drosophila* flies and vinegar smell may indicate bunch rot infections.

Resources

Visit:

- UC IPM Botrytis

<http://ipm.ucanr.edu/PMG/r302100111.html>

- UC IPM Sour rot

- <http://ipm.ucanr.edu/PMG/r302100211.html>