UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

Grapevine leafroll disease
"Leafroll"

Grapevine red blotch disease
"Red blotch"

Pathogen

Grapevine leafroll-associated viruses
(GLRaV)

- Complex of RNA viruses
- High genetic variability & adaptability
- GLRaV-3 is most common worldwide
- Broadly distributed worldwide
- Phloem-limited

Grapevine red blotch virus
(GRBV)

- DNA virus
- Diverged from *wild vitis latent virus* ~9000 y.a.
- Likely N. American origin
- 2˚ spread common in California and southern Oregon
- Phloem limited

Vector(s)

Mealybugs and Soft scale
Pseudococcidae

- Grape mealybug
- Vine mealybug
- Obscure mealybug
- Longtailed mealybug
- Gill's mealybug
- European fruit lecanium scale





Threecornered alfalfa hopper (TCAH)
Membracidae





C. Kron





Vector behavior

- Phloem feeding insects
- Grapevine is feeding & reproductive host
- Limited alternate host range
- Principally short distance dispersal
- Only male has wings

- Phloem feeding insect
- Legumes (clover & vetch) are principal reproductive hosts
- Wide (feeding) host range
- Longer distance dispersal (>4000 ft)
- Specialized muscles in hind femora for jumping

Grapevine leafroll disease
"Leafroll"

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Disease management

- Start clean: virus-tested plant material
- Quantify symptomatic vines: vine-by-vine mapping
- Remove infected vines individually (rogue) or in groups (spatial rogueing)
- Monitor grape & vine mealybug with pheromone-baited traps
- Practice IPM for vine mealybug
- Coordinate management with neighbors and in regional groups

- Start clean: Virus-tested plant material
- Identify patterns of infected vines (aggregated areas & random infections)
- Aggressively remove aggregated areas (spatial rogueing)
- Individually remove randomly distributed vines (rogue)
- Coordinate vine removal & replanting among neighboring blocks
- Consider TCAH breeding habitat (clover, vetch) at landscape level
- Barrier applications of kaolin clay reduce vector feeding on grapevines

Typical visual symptoms (black-fruited cultivars)











