

Heard it through the Grapevine, Trunk Disease; it's enough to make you lose your mind.

**Saturday, March 23rd, 2019
Montana Grape & Winery Assn.**



**Edelweiss
6-18-18**



***Vitis riparia*
10-30-18**

Eutypa dieback



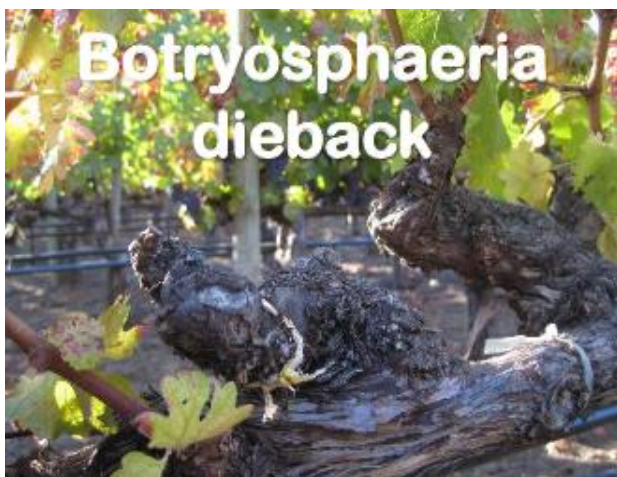
Esca



Phomopsis dieback



**Botryosphaeria
dieback**



*Young Esca or
Petri Disease*



Black Foot



**The Big 6 Major Worldwide Fungal GTD's
Cytospora Canker & Pestalotiopsis are also
becoming a concern.**

The Albert J. Winkler Vine 1979 to 2001



The vine, all of the reddish leaves are part of one single plant. The blue tractor in the background is known as "Fordzilla".



**UC Davis
Research Farm
Winkler Vine
7-15-09**



Eutypa?
Summerset Winery
5-16-03
St. Vincent Vine





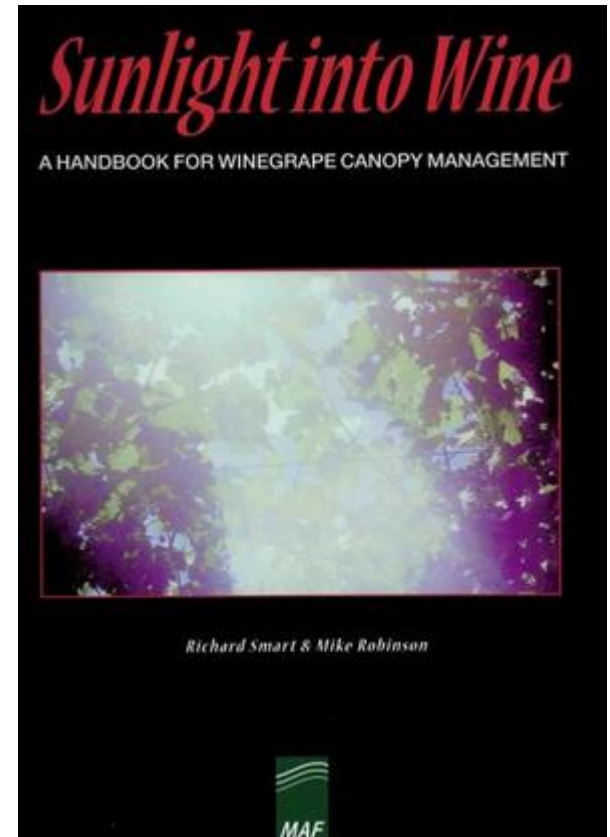
Eutypa or Roundup?



Probably Eutypa?

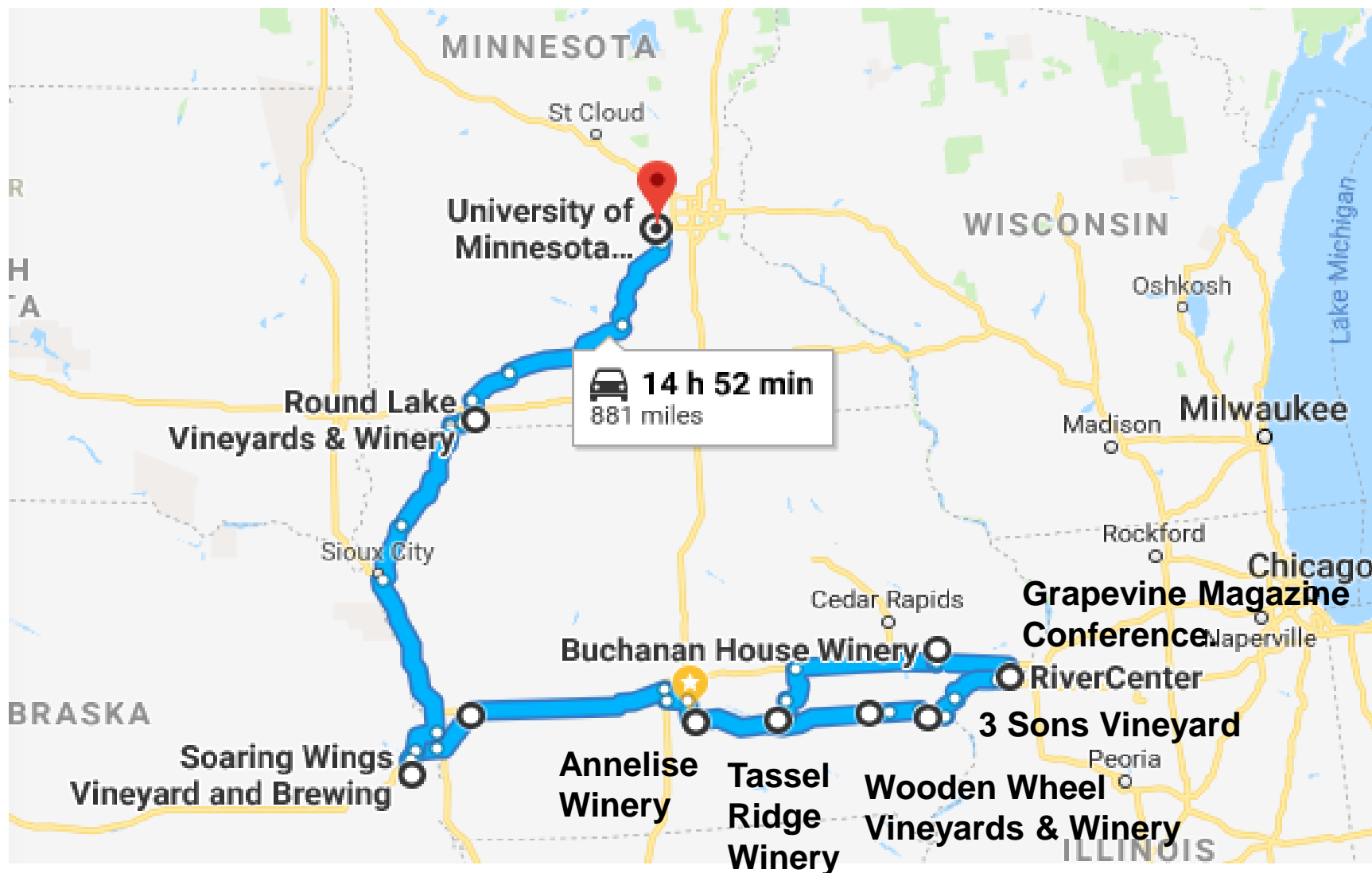


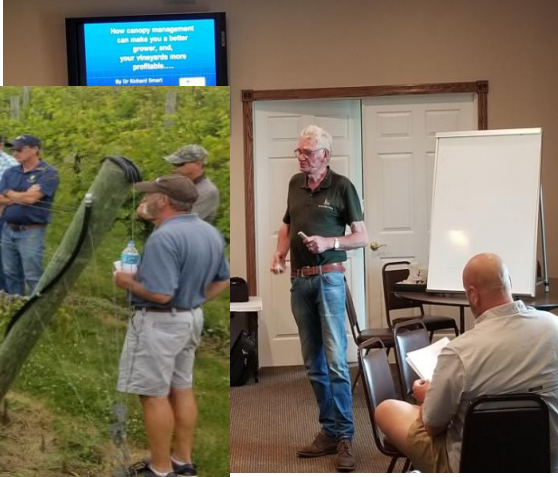
2 PhD's in viticulture
54 years of viticulture experience
Consulted in over 40 countries
400+ articles, publications,
technical papers



Lead Author of
Sunlight into Wine
1992

The Richard Smart Midwest Tour, June 18-25, 2018





Edelweiss



LaCrosse



LaCrescent



Wild Grape



**Marechal
Foch**



Concord



Recently Confirmed Grapevine Trunk Disease Organisms Found in Iowa

1. *Botryosphaeria dothidea* (Bot)
2. *Agrobacterium vitis* - Crown Gall
3. *Cytospora* species – (woody trunk pathogens)
Cytospora viticola (woody trunk pathogen)
4. *Diatrylpella* species (associated with Eutypa)
5. *Diatrypaceae* species (woody trunk pathogens)
6. *Eutypa* species - Eutypa Dieback
Eutypa lata
7. *Pestalotiopsis* species (foliage, fruit and trunk disease)
8. *Phaeoacremonium* species (associated with Young Esca - Petri Disease)
Phaeoacremonium minimum
9. *Phaeomoniella chlamydospore* (associated with Young Esca - Petri Disease)
10. *Phomopsis* species - Phomopsis Dieback
Diaporthe ampelina (*Phomopsis* species)
11. *Phaeomoniella* species. (associated with Young Esca - Petri Disease)
12. *Seimatosporium* species (associated with Dead Arm Disease)
13. *Stereum* species (primarily a saprophyte living off of dead and dying woody tissue)

An **endophyte** is often a bacterium or fungus, that lives within a plant for at least part of its life cycle without causing apparent disease.



Insidious Disease exists without marked symptoms but ready to become active upon some slight occasion; a disease not appearing to be as bad as it really is.

Lab Contacts

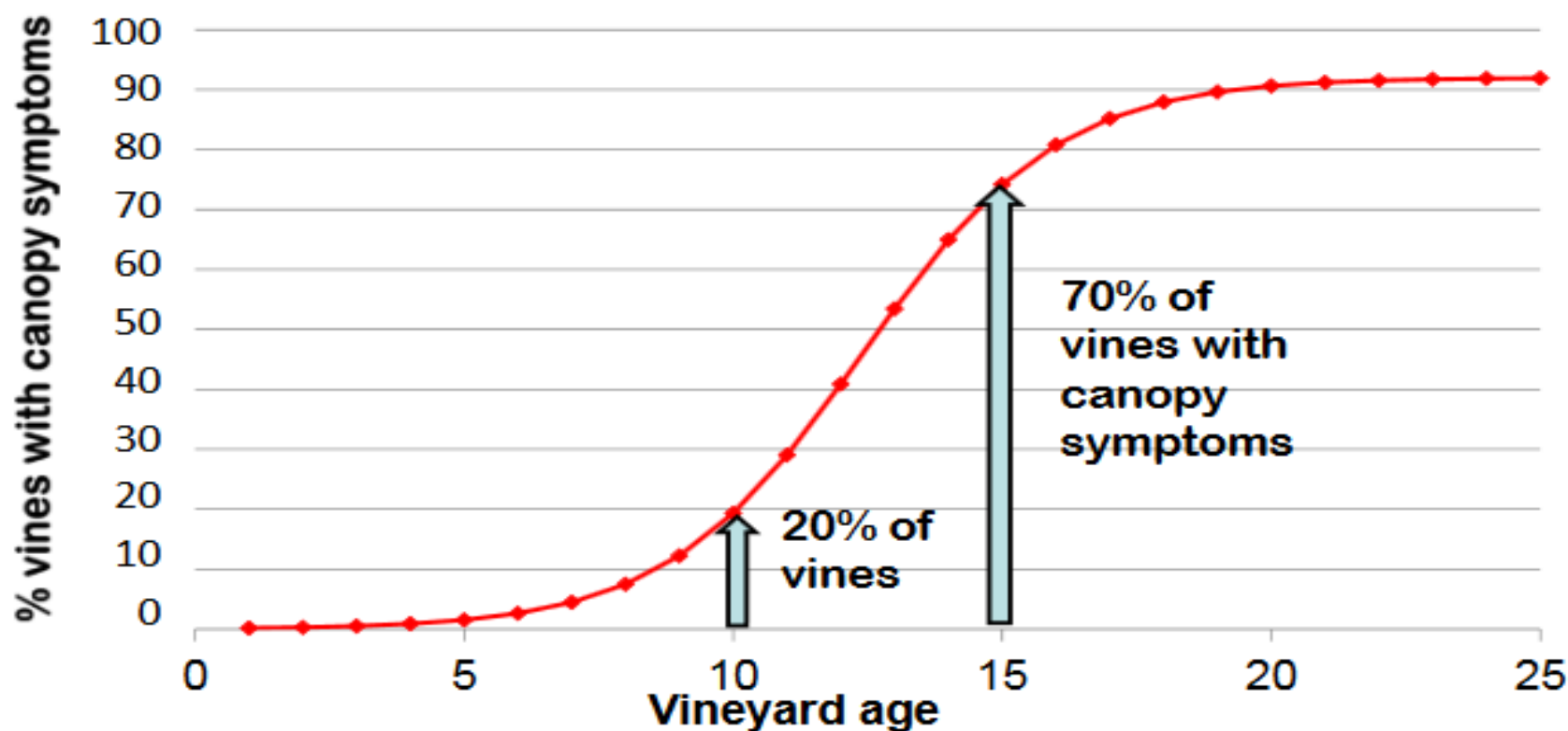
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\$130 / sample

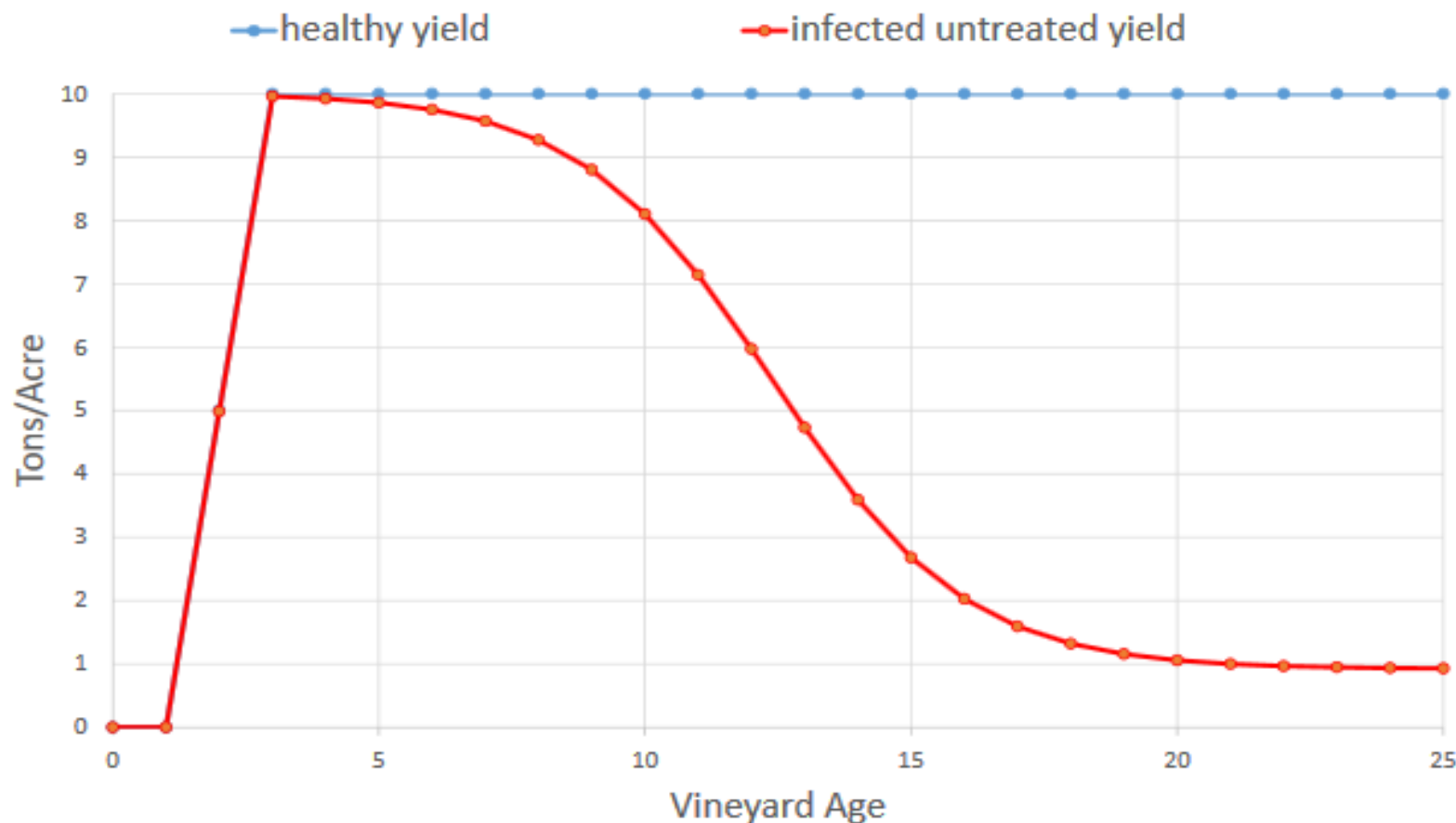


Trunk disease incidence (% vines with dead spurs, stunted shoots, leaf symptoms)



From Munkvold et al. 1994

Annual yields for healthy vs. infected Cabernet Sauvignon vineyards -- crush district 11 (Lodi) --



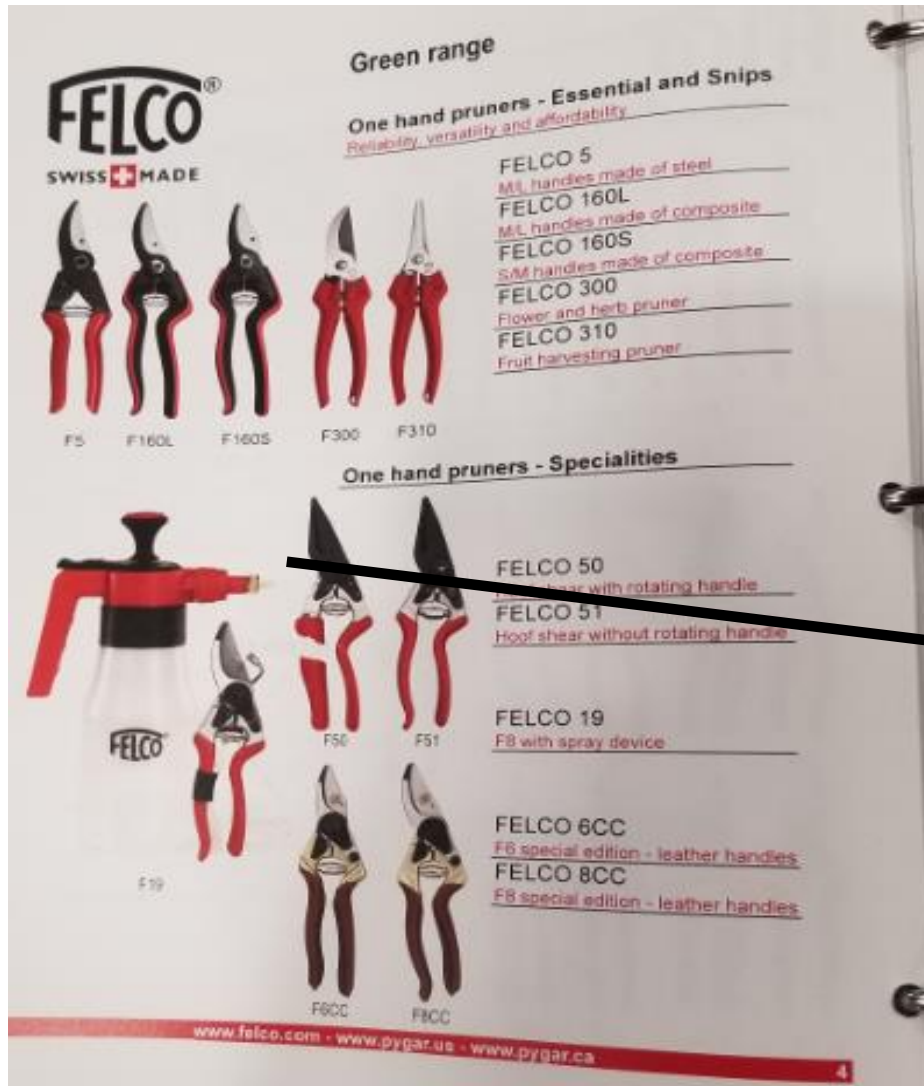
GTD Management Options

1. Sanitation: Remove the pruning debris from the vineyard. Burn, bury or compost this material so that the fungal spores cannot re-infest the vines.



Pruner Sprayer

10% Chlorox / Water?
70%+ Alcohol?
Fungicides?



**Felco Pruner with
spray nozzle and
pump sprayer.
Approx. \$290**



**Felco 19 hand
pruners.**



BlocCade™, physical coating to prevent Eutypa, Neonectria and Esca, 2-8-15, Hortipro – Netherlands, 2:16 min.:

<https://www.youtube.com/watch?v=kwj1TN-NIDI>

2. Long or Double Pruning:

Leave extra buds during your initial winter pruning. Come back just prior to budbreak and do your final pruning.

The warmer temperatures during this final pruning will allow the pruning cuts to heal over much quicker deterring additional infection from GTD spores in the air.



3. Do NOT Prune During Raining Periods: Rain hastens the production of GTD airborne fungal spores as temperatures rise above 45°F. These spores can quickly infect pruning scars.

Rainfall induces spore release and transport.



4. Regular Trunk and Cordon Renewal: As the vines age, GTD's increasingly take a larger toll. Be ready to gradually train up new suckers on own rooted vines or water sprouts on the trunk for trunk renewal and replace cordons as they decline.



5. Barrier Products: There are a number of non-pesticide products that can be painted on the fresh pruning wounds. [Tech-Gro B-Lock](#), or just plain latex paint can be used to seal the cut. [Vitiseal](#) and [SpurShield](#), are two products that are considered barriers that can be painted or sprayed.





Tech-Gro B-Lock Vine Paint

5% Boric Acid

Not a pesticide.

Do not apply within 24 hrs of an expected rain.

Store 40°F to 90°F

\$33 / gal. 3 gal., 1 gal. & 1 pt. containers

Call: 877-832-4356



**Organic Certified wound sealant
Sprayed or painted.**

Apply between 50°F to 85°F

Concentrate \$159 / gal.

dilute 1 gal. / 9 gal. water

https://youtu.be/_DNupYJwUHE



RTU (Ready to Use) for painting.

\$60 / gal.

<https://youtu.be/fyXnVdcYhmo>

Label does not allow mixing other products with it.



Vitiseal Application



Wound Sealant – not a pesticide

Natural resin barrier spray

Polymer of Cyclohexane, 1 methyl -4 (1-methylethyl)

Eutypa, Bot Canker, Esca and other common diseases

1.5 to 2 qt / Ac in directed spray with minimum of 30 gallons / acre.

**1 qt / 10 gal / ac for daubing or spraying
Fungicides can be mixed with it.**

Sets within 1 hour

6-8 weeks degrades down to a white powder

Approx. \$85 / gal. 2 qt/ac = \$42.50/ac

6. Fungicides: I am aware of three fungicides currently labeled for protection against some of the major GTD's in the U.S. [Topsin-M](#), (thiophanate methyl – 2 day REI), [Rally](#) (myclobutanil – 24 hr. REI) and [Mettle](#) (tetraconazole – 12 hr. REI) (REI = Restricted Entry Interval). These fungicides should be sprayed daily after pruning and re-applied approximately 1-2 weeks later. A spray dye is recommended to ensure that the pruning wounds are well covered. Some growers are mixing fungicides in their barrier products to give added longevity of the fungicide. As always: **READ AND FOLLOW LABEL DIRECTIONS.**



Topsin-M WSP

70% Thiophate – Methyl

2 Day REI

**Special 24C GTD Label for CA, OR, TX
& VA only.**

Need State 24C label to apply for GTD.

3.2 oz / gal. painted on

1.5 lbs / 30 gal. per acre sprayed on.

Apply within 24 hrs of pruning.

2nd application may be needed in 2 weeks

Surfactant and spray dye recommended.

Approx. \$10.60 / lb.

**Waiting for a Special
Local Needs 24C
label.**



Rally 40 WSP
40% Myclobutanil
24 hr. REI
5 oz. per acre in 42 gal. water
Spray application only.
Apply within 24 hrs. of pruning.
Make 2nd Application 2 weeks later.
Spray dye recommended.
No Special Local Needs 24C label
needed.

Approximately \$4.25 lb.



Mettle 125ME

11.6% Tetraconazole

12 hr. REI

**5 lbs / acre as a directed spray within
24 hrs. of pruning in 25 -50 gal./ ac.**

Suggest spray adjuvant & spray dye.

2nd application may be made at 14 days.

Approx. \$470 / gallon



Natural Fungicides for Grapevine Trunk Disease

***Trichoderma* (several fungi species)**

***Bacillus subtilis* – fungus**

Both are fungal organisms that cover and colonize the wound preventing further infection. They also provide antibiotic properties.

Best if they be applied 2-3 weeks prior to infection period to grow and colonize the wound.

Both marketed under numerous labels.

UC Davis IPM Pest Mgt. Guidelines 2017

Fungicide	Resistance risk (FRAC#) ¹	Eutypa dieback	Bot Canker	Dead Arm (<i>Phomopsis</i> sp.)
Rally	high (3)	+++	++	++
Rally+Topsin-M ⁵	high (1+3)	++++ ⁶	++++	++++
Sovran	high (11) ²	----	NR	++++
Topsin-M, T-Methyl, Incognito	high (1) ²	++++	++++	++
Ziram	low (M3)	----	----	+++
B-Lock*	low	++++	++	NR
Vitiseal	low	++++	----	----

Disease Control Efficacy (% pruning wounds protected)

Trunk Disease	Delayed Pruning	Double Pruning	Topsin
Botryosphaeria	58 – 72%	58 – 72%	60 – 80%
Esca	28 – 87%	28 – 87%	52 – 58%
Eutypa	75 – 97%	75 – 97%	100%

Sources: Amponsah et al. (2012), Larignon & Dubos (2000), Rolshausen et al. (2010), Urbez-Torres & Gubler (2011), Weber et al. (2007).

8. Healthy Grapevines: are key to keeping many of these GTD organisms at bay. Many of these GTD organisms are **endophytes**. They are parasitic organisms that live within the vine and cause no harm unless something triggers them to do so. Declining vine health could trigger them to become pathogenic. These are **insidious** diseases. Diseases that exist without marked symptoms but ready to become active.



7. Clean Nursery Stock: It makes sense to start out with disease free vines, right? Unfortunately there is no “Government Approved” GTD Nursery Certification Program operating in the U.S. and we do not have an efficient way to quickly test for these GTD’s. We have a LONG way to go before this gets done. In the meantime, I would suggest sending in a few vines of your intended new planting in for analysis.

Options to Consider

1. Hot water treatment = 122°F for 30 minutes in moving water.
2. Tissue Culture.
3. Sterile greenhouse conditions.
4. Testing for GTD
5. Industry Certification





**Viticulture, enology and marketing
for cold-hardy grapes**



Dr. Jose Urbez-Torres

Research Scientist, Agriculture and Agri-Food Canada
Summerland Research and Development Center
British Columbia, Canada

**Follow-up GTD
Webinar coming
on 4-11-19**

Northern Grapes Webinar

Grapevine trunk diseases: The fungi that cause them, how they develop and spread, and how they are managed.

December 11, 2018, 1:00 PM Eastern Standard Time (12:00 Noon Central Time)



PENTICTON BRITISH COLUMBIA CANADA

**Registration Now
Open**

Celebrating 20 years of research.

11th International Workshop on Grapevine Trunk Diseases

July 7 – 12, 2019 – Penticton, British Columbia, Canada

Google these Additional Resources

SCRI Trunk Disease Project *****

**Trunk Disease Management for Eastern Grape Growing
Regions *******

International Council of Grapevine Trunk Diseases

Grapevine Trunk Disease – OSU Plant Clinic (Oregon)

Grapevine Trunk Diseases. A Review. April 2016, 25 pp.

**Managing Trunk Diseases in California Vineyards: The
Benefits of Prevention – UC Davis ppt. 36 slides**

**Managing grapevine trunk diseases with respect to etiology
and epidemiology, Jan. 2018, 29 pp. *******

Quite a few good videos on YouTube



Wine Grower News

Weekly in-season
viticulture/enology
newsletter.

42 states, 12 countries

To Subscribe to this FREE Newsletter

E-mail “ **mlwhite@iastate.edu** ” with the word
subscribe in subject line.

<https://www.extension.iastate.edu/wine/growersnews>

