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PORTLAND

Grapevine Trunk Disease in Oregon- present status and future prospects

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PROGRAM PRODUCER OREGON WINE BOARD

TRADE SHOW PRODUCER OREGON WINEGROWERS ASSOCIATION

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Current situation

- We know we have it
- We don’t know what and how much do we have it

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We know we have it

- Vineyard blocks with all ages and severity
- Climate favorable for many possible GTD pathogens
- Pruning at the midst of rainy winter months

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We know we have it
(Source: OSU-Plant Clinic)

- **Black Foot Disease**
  - *Cylindrocarpon destructans*
  - *C. liriodendri* (sex. Neonectria liriodendri)
  - *C. obtusisporum*
  - *Cylindrocarpon sp.(Neonectria sp.)*

Agusti-Brisach and Amengol, 2013. Phytopathologia Mediterranea 52:245-261

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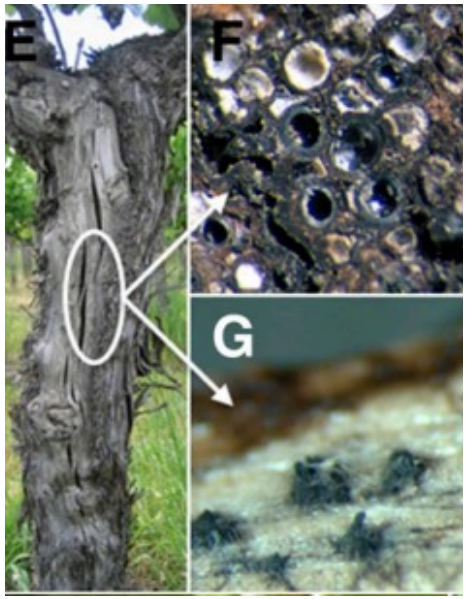
We know we have it
(Source: OSU-Plant Clinic)

- **Botryosphaeria Dieback**
  - *Botryosphaeria dothidea*
  - *B. quercuum*
  - *B. stevensii*
  - *Diplodia seriata*
  - *Diplodia mutila*



Gramaje et al. 2018. Plant Disease 102: 12-39

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We know we have it
(Source: OSU-Plant Clinic)

- **Eutypa Dieback**
  - *Eutypa lata*
  - *Diatrype whitmanensis*

Gramaje et al. 2018. Plant Disease 102: 12-39

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We know we have it
(Source: OSU-Plant Clinic)

- **Esca, Young Esca, Petri disease**
  - *Phaeoacremonium aleophilum*
  - *P. mortoniae*
  - *P. viticola*
  - *P. angustus*
  - *Phaeomoniella chlamydospora*
  - *Cadophora luteo-olivacea*

Gramaje et al. 2018. Plant Disease 102: 12-39

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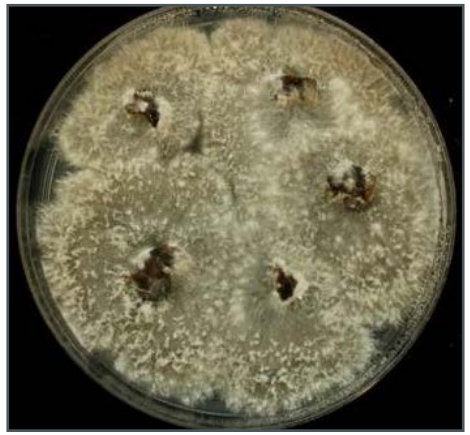
We know we have it (Source: Urbez-Torres et al. 2007)

Very small sample collection conducted in June of 2005

- 56 samples collected from 5 vineyards
- Pinot noir (Hood River)
- Pinot noir (Dundee)
- Chardonnay (Dundee)



Botryosphaeria obtusa
Botryosphaeria stevensii
Diplodia seriata
Eutypa lata
Truncatella angustata
Diaporthe phaseolorum
Diaporthe helianthi

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Úrbez-Torres et al. 2007. *Phytopathologia Mediterranea* 46:109-110

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(Source: Urbez-Torres)

- **Vineyard visits with Dr. W. Mahaffee and Mark Chien in May 2015**
- **Dieback and vine mortality observed to increase in OR since 2010**

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(Source: test reports from vineyard management company)

Botryosphaeria die back

Location	Date tested	Results
Dayton, OR	6/6/2014	***Botryosphaeria***
Dayton, OR	2/1/2016	***Botryosphaeria***
Dayton, OR	7/12/2016	*Phytophthora, Cylindrocarpon, Rhizoctonia, Fusarium*
Newberg, OR	10/12/2016	*Gymnopus and other saprophytes*
Dayton, OR	11/2/2016	*Phomopsis, Eutypa leptoplaca, Seimatosporium*
Dayton, OR	4/13/2017	*Botrytis, Phoma, Truncatella*
Dundee, OR	8/22/2017	***Botryosphaeria***
McMinville, OR	10/11/2017	*Cylindrocarpon spp*
Dayton, OR	12/1/2017	*Eutypa lata*
Dayton, OR	3/21/2018	*Cylindrocarpon, Aspergillus*
Dundee Hills, OR	3/21/2018	*Phaeoacremonium, Cadophora*
Yamhill, OR	5/31/2018	*Eutypa lata, Seimatosporium*
Yamhill, OR	6/1/2018	*Phaeoacremonium*
Dayton, OR	7/24/2018	*Eutypa lata, Cadophora*
Spangler Hill, OR	9/21/2018	*Phaeoacremonium*
McMinville, OR	10/30/2018	*Eutypa, Phaeoacremonium*
Dayton, OR	12/5/2018	***Diplodia***
Dayton, OR	12/5/2018	*Diplodia, Phaeoacremonium*
Dayton, OR	12/5/2018	*Diplodia, Phaeoacremonium, Eutypa lata*
Dayton, OR	12/5/2018	*Phaeoacremonium*
Dayton, OR	12/5/2018	*Phaeoacremonium*
Dayton, OR	12/5/2018	*Phaeoacremonium*
Dayton, OR	12/5/2018	*Phaeoacremonium*
Newberg, OR	10/29/2019	***Botryosphaeria***

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(Source: test reports from vineyard management company)

Eutypa die back

Location	Date tested	Results
Dayton, OR	6/6/2014	*Botryosphaeria*
Dayton, OR	2/1/2016	*Botryosphaeria*
Dayton, OR	7/12/2016	*Phytophthora, Cylindrocarpon, Rhizoctonia, Fusarium*
Newberg, OR	10/12/2016	*Gymnopus and other saprophytes*
Dayton, OR	11/2/2016	*Phomopsis,* ***Eutypa leptoplaca****, Seimatosporium*
Dayton, OR	4/13/2017	*Botrytis, Phoma, Truncatella*
Dundee, OR	8/22/2017	*Botryosphaeria*
McMinville, OR	10/11/2017	*Cylindrocarpon spp*
Dayton, OR	12/1/2017	***Eutypa lata***
Dayton, OR	3/21/2018	*Cylindrocarpon, Aspergillus*
Dundee Hills, OR	3/21/2018	*Phaeoacremonium, Cadophora*
Yamhill, OR	5/31/2018	***Eutypa lata,*** *Seimatosporium*
Yamhill, OR	6/1/2018	*Phaeoacremonium*
Dayton, OR	7/24/2018	***Eutypa lata,*** *Cadophora*
Spangler Hill, OR	9/21/2018	*Phaeoacremonium*
McMinville, OR	10/30/2018	***Eutypa****, Phaeoacremonium*
Dayton, OR	12/5/2018	*Diplodia*
Dayton, OR	12/5/2018	*Diplodia, Phaeoacremonium*
Dayton, OR	12/5/2018	*Diplodia, Phaeoacremonium,* ***Eutypa lata***
Dayton, OR	12/5/2018	*Phaeoacremonium*
Dayton, OR	12/5/2018	*Phaeoacremonium*
Dayton, OR	12/5/2018	*Phaeoacremonium*
Dayton, OR	12/5/2018	*Phaeoacremonium*
Newberg, OR	10/29/2019	*Botryosphaeria*

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(Source: test reports from vineyard management company)

Black Foot disease

Location	Date tested	Results
Dayton, OR	6/6/2014	*Botryosphaeria*
Dayton, OR	2/1/2016	*Botryosphaeria*
Dayton, OR	7/12/2016	*Phytophthora, **Cylindrocarpon**, Rhizoctonia, Fusarium*
Newberg, OR	10/12/2016	*Gymnopus and other saprophytes*
Dayton, OR	11/2/2016	*Phomopsis, Eutypa leptoplaca, Seimatosporium*
Dayton, OR	4/13/2017	*Botrytis, Phoma, Truncatella*
Dundee, OR	8/22/2017	*Botryosphaeria*
McMinville, OR	10/11/2017	***Cylindrocarpon** spp*
Dayton, OR	12/1/2017	*Eutypa lata*
Dayton, OR	3/21/2018	***Cylindrocarpon**, Aspergillus*
Dundee Hills, OR	3/21/2018	*Phaeoacremonium, Cadophora*
Yamhill, OR	5/31/2018	*Eutypa lata, Seimatosporium*
Yamhill, OR	6/1/2018	*Phaeoacremonium*
Dayton, OR	7/24/2018	*Eutypa lata, Cadophora*
Spangler Hill, OR	9/21/2018	*Phaeoacremonium*
McMinville, OR	10/30/2018	*Eutypa, Phaeoacremonium*
Dayton, OR	12/5/2018	*Diplodia*
Dayton, OR	12/5/2018	*Diplodia, Phaeoacremonium*
Dayton, OR	12/5/2018	*Diplodia, Phaeoacremonium, Eutypa lata*
Dayton, OR	12/5/2018	*Phaeoacremonium*
Dayton, OR	12/5/2018	*Phaeoacremonium*
Dayton, OR	12/5/2018	*Phaeoacremonium*
Dayton, OR	12/5/2018	*Phaeoacremonium*
Newberg, OR	10/29/2019	*Botryosphaeria*

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(Source: test reports from vineyard management company)

Esca disease

Location	Date tested	Results
Dayton, OR	6/6/2014	*Botryosphaeria*
Dayton, OR	2/1/2016	*Botryosphaeria*
Dayton, OR	7/12/2016	*Phytophthora, Cylindrocarpon, Rhizoctonia, Fusarium*
Newberg, OR	10/12/2016	*Gymnopus and other saprophytes*
Dayton, OR	11/2/2016	*Phomopsis, Eutypa leptoplaca, Seimatosporium*
Dayton, OR	4/13/2017	*Botrytis, Phoma, Truncatella*
Dundee, OR	8/22/2017	*Botryosphaeria*
McMinville, OR	10/11/2017	*Cylindrocarpon spp*
Dayton, OR	12/1/2017	*Eutypa lata*
Dayton, OR	3/21/2018	*Cylindrocarpon, Aspergillus*
Dundee Hills, OR	3/21/2018	***Phaeoacremonium, Cadophora***
Yamhill, OR	5/31/2018	*Eutypa lata, Seimatosporium*
Yamhill, OR	6/1/2018	***Phaeoacremonium***
Dayton, OR	7/24/2018	*Eutypa lata,* ***Cadophora***
Spangler Hill, OR	9/21/2018	***Phaeoacremonium***
McMinville, OR	10/30/2018	*Eutypa,* ***Phaeoacremonium***
Dayton, OR	12/5/2018	*Diplodia*
Dayton, OR	12/5/2018	*Diplodia,* ***Phaeoacremonium***
Dayton, OR	12/5/2018	*Diplodia,* ***Phaeoacremonium****, Eutypa lata*
Dayton, OR	12/5/2018	***Phaeoacremonium***
Dayton, OR	12/5/2018	***Phaeoacremonium***
Dayton, OR	12/5/2018	***Phaeoacremonium***
Dayton, OR	12/5/2018	***Phaeoacremonium***
Newberg, OR	10/29/2019	*Botryosphaeria*

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Grapevine Trunk Diseases (GTDs) in Oregon Vineyards: A Pilot Project on Epidemiology and Management

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Objective 1:
Identify the major grapevine trunk disease problems in Oregon vineyards and the pathogens associated with each disease

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Vineyard survey

- September 2019
- Vineyards were selected primarily based on the history of trunk diseases
- A newer block in the same vineyard were also included whenever applicable
- Surveyed 15 vineyards in Willamette Valley and 16 vineyards in Rogue Valley for GTD symptoms

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Vineyard survey

- Surveying for disease data involved systematic random sampling
- Altogether, 419 vines in WV and 416 vines in RV were identified for which symptom data recorded in 2019 fall

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Vineyard survey

Symptoms ranged from diebacks, dead arms, stunted growth, short internodes, tiger stripes, fruit measles etc.

Some vines were symptomless

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Vineyard survey

- Wood samples collected from seven vineyards in RV
- Samples collected from top of a trunk, near graft union whenever present (if not middle of the trunk), and base of the trunk near soil line
- The drill bits are thoroughly disinfected before drilling another hole
- Will collect wood samples from identified 15 vineyards in WV and rest of RV vineyards in summer of 2020

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Vineyard survey

- We will grind the collected wood tissues, plate them in artificial media, and identify the fungal pathogens based on culture morphology as well as sequencing of conserved genes

- Another funding requested through ODA- to look at overall fungal community using ITS-metabarcoding

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Objective 2:
Understand the timing of spore release and dispersal by the most common pathogen(s) at critical stages of vine development

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Timing of spore release

- Spore traps installed in Willamette and Applegate on first week of December, 2019
- Two spore traps installed per vineyard with one in newer and the another in older block

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Timing of spore release

- Tapes on the trap changed every week in all four traps
- By 02/13/2020 we will have 40 tapes collected with 70 days of spore data from each site
- Collected tapes are being processed for DNA extraction and quantification

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Objective 3:
Compare dormant pruning practices to minimize inoculum production and spread within a vineyard

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Acknowledgement

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- **Rogue Valley Winegrowers Association**
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  - Melodie Putnam
  - Walt Mahaffee
  - Leigh Bartholomew
  - Jason Cole
- **SOREC plant pathology lab members**
  - Dr. Monica Hernandez
  - Joseph Deshields
  - Undergraduate Research Assistants

Field trip- Bilingual Field Day 2019, Southern Oregon

Field trip- IWGTD 2019, British Columbia

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