

*Welcome to VCE Virtual
Vineyard Meetings, 2024*

*Every first Thursday of the
month at 1 PM!*

VT VIRGINIA AGRICULTURAL EXPERIMENT STATION
ALSON H. SMITH JR. AGRICULTURAL
RESEARCH AND EXTENSION CENTER
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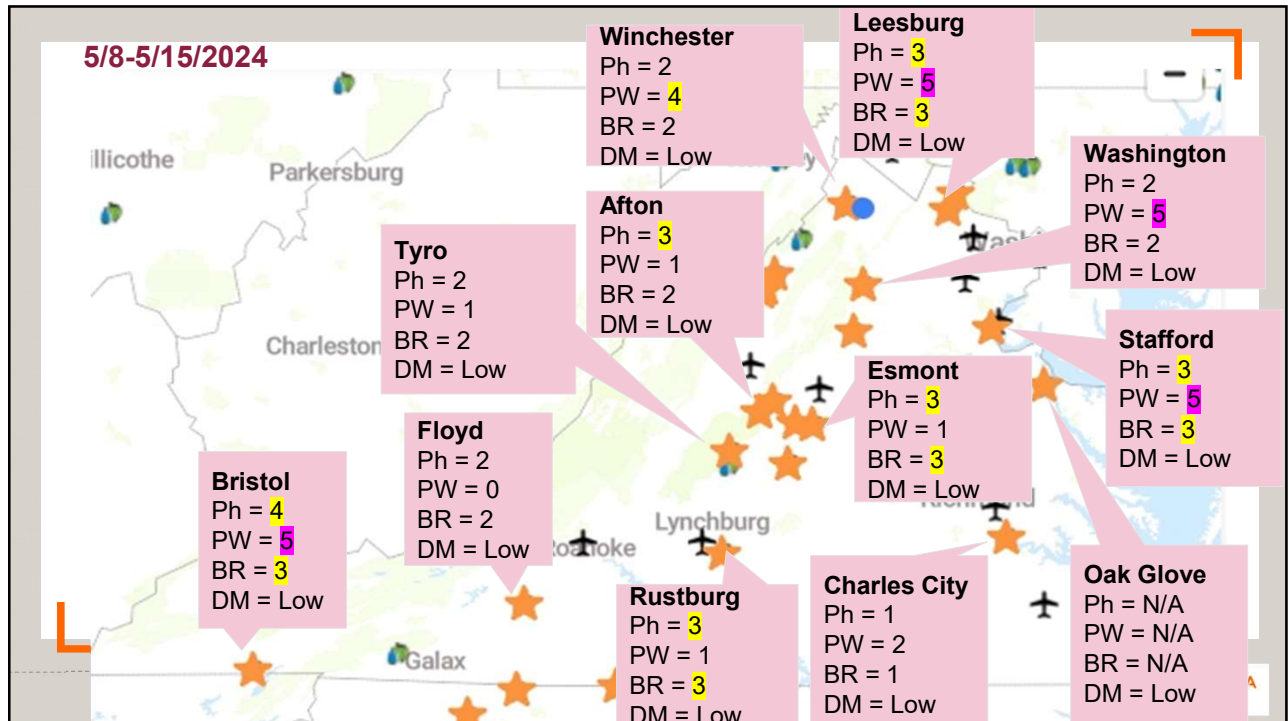
Agenda

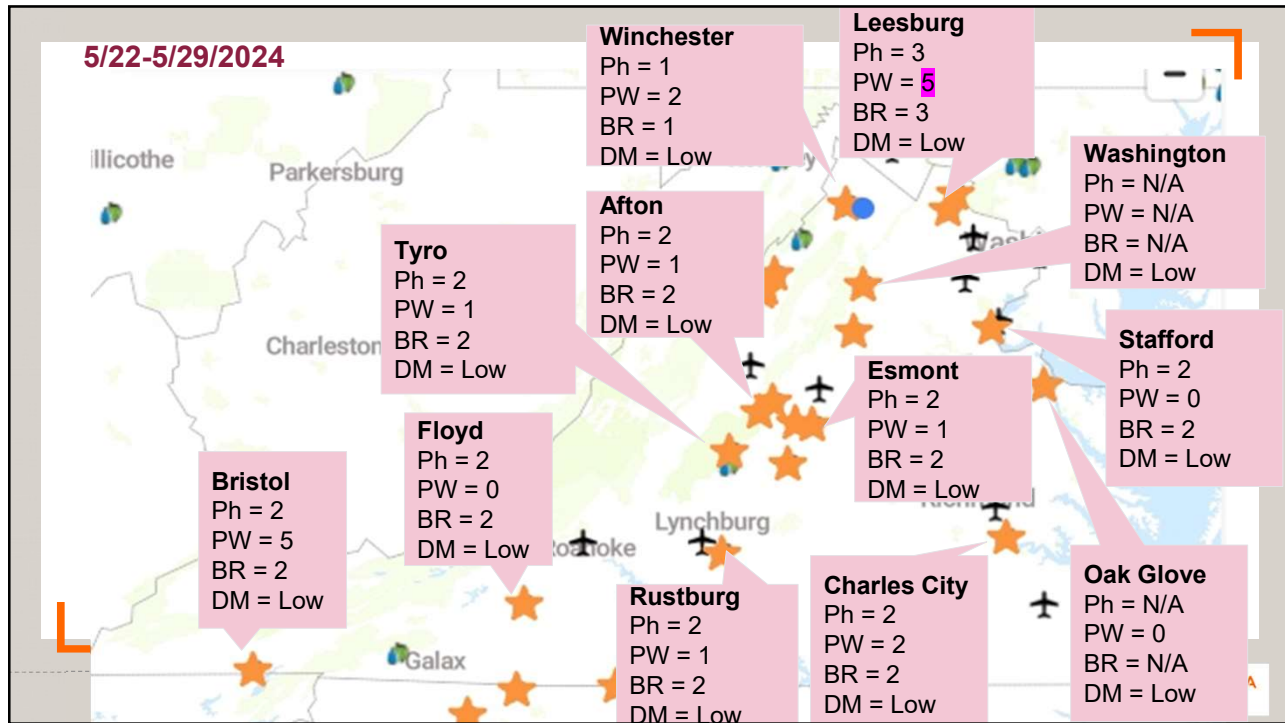
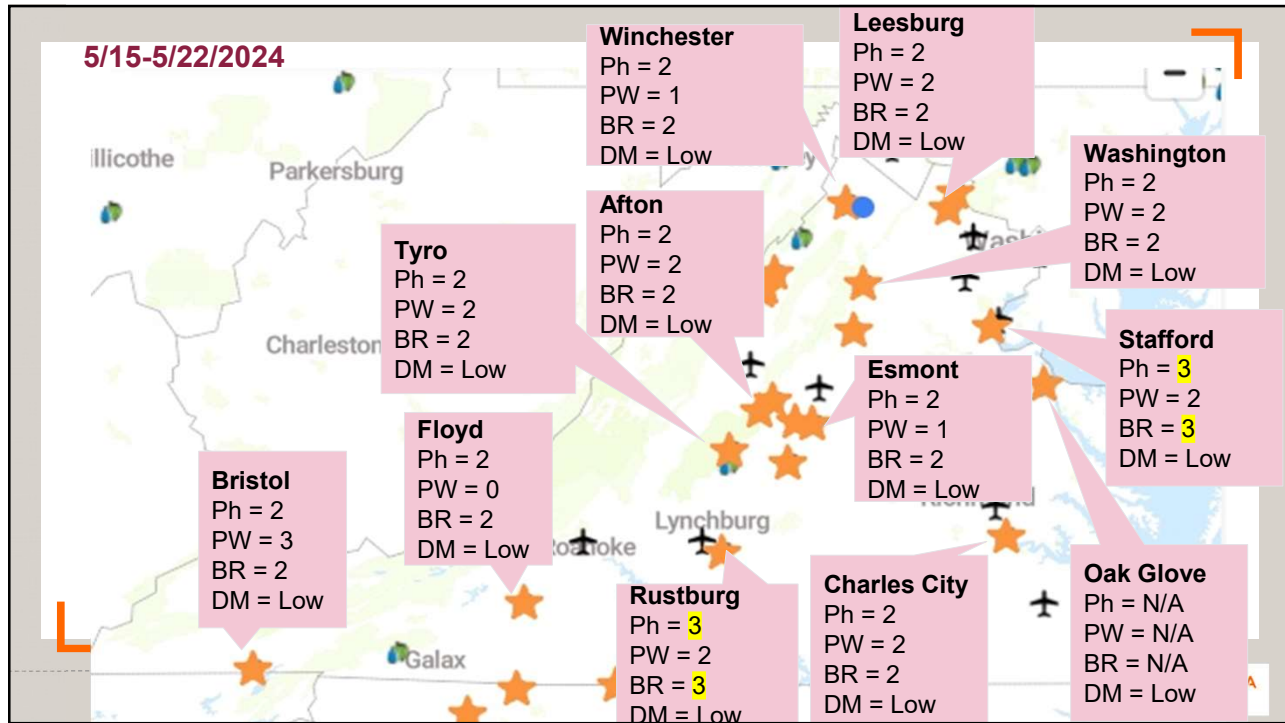
- Grape Disease Management Updates (Mizuho Nita)
- Viticulture Updates (Drew Harner)

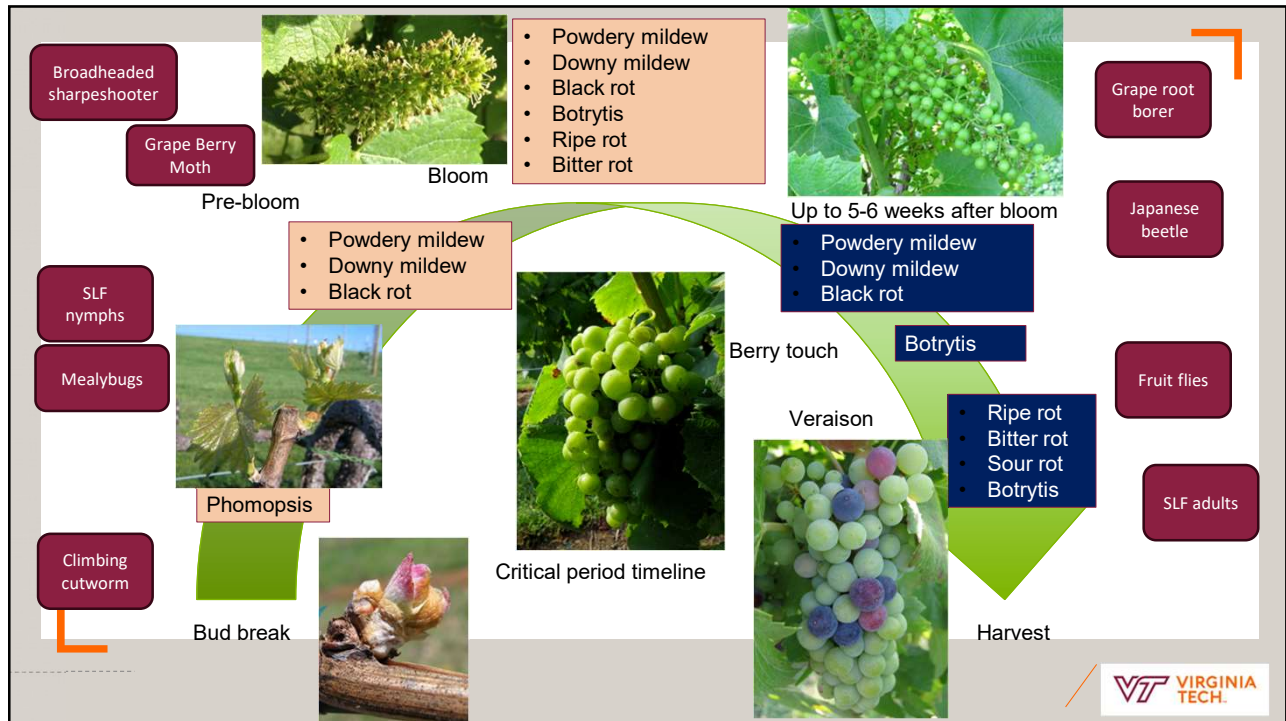
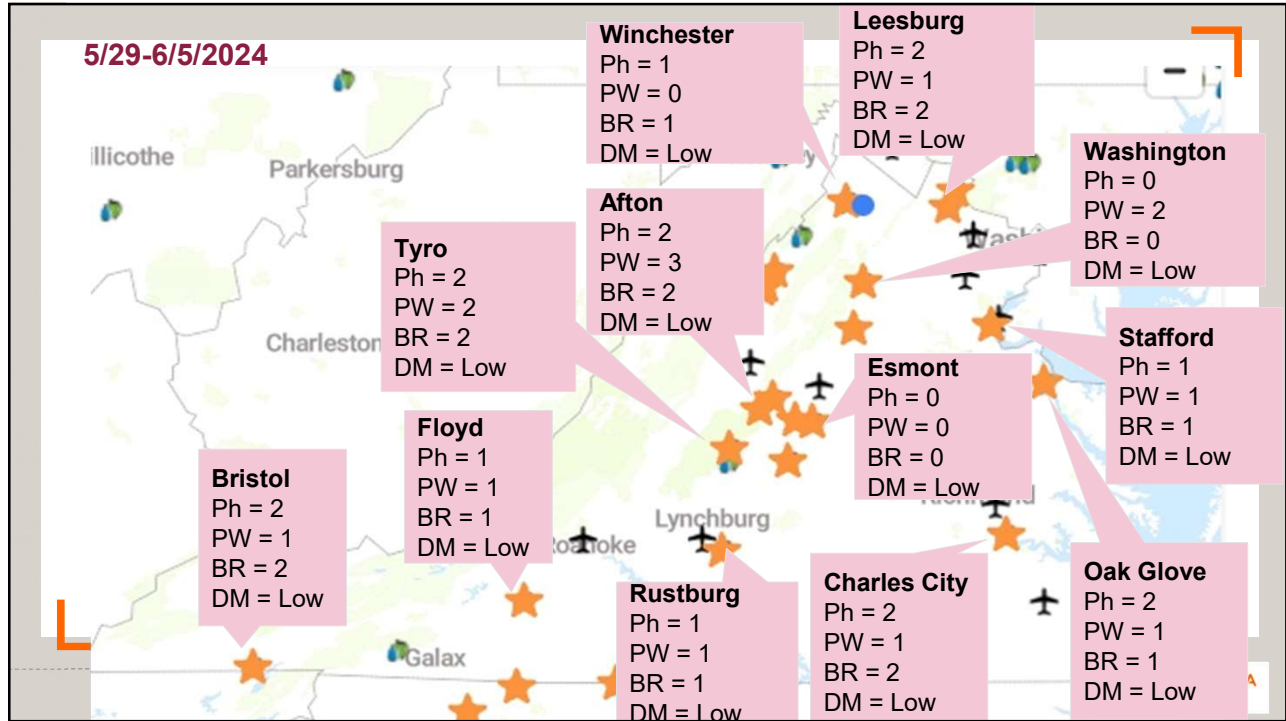
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After bloom to veraison Disease Management Reminders

Mizuho Nita: Nita24@vt.edu
<https://ext.grapepathology.org>







Powdery Mildew Management

- Canopy management for
 - Good air circulation
 - Good light penetration
- Timing for chemical management is pre-bloom to harvest
 - However, the risk of infection is low when the temperature hits 90F or higher, so, if you keep the vines clean until mid-July or so, you may not need to worry about powdery mildew.
- Young berries infected by the powdery mildew pathogen tend to crack open later, thus, early season PM management will be important for Botrytis, sour rot, and fruit fly management too!!



Powdery Mildew

Timing: pre-bloom to harvest

Pre-bloom application is critical esp. with under high pressure

Clusters are susceptible from bloom to 4-6 wks after bloom

- **Good:** Sulfur (Group M2), Vivando (50), SDHI (Pristine, Endura, Luna Experience, Kenja, Aprovia, Miravis Prime, etc. Group 7),
- **Good, but...:** **DMI** (Sterol-inhibitor, Rally, Mettle, Rhyme, Top Guard EQ (3+11), etc., Group 3), **Quintec** (Group 13, one case of resistant isolate found in VA)
- **Fair:** Fixed copper (Group M1), Torino (Group U6), etc.
 - DMI: there are evidence of chemical resistance in Europe, AND good evidence of resistance development among VA isolates
 - Torino works, but not as strong as others. Good mixing partner to sulfur to have an extra kick
- **Bad:** QoI (group 11) or Topsin-M most likely not going to be help

Powdery Mildew "after outbreak" fungicide options

- Stylet Oil (Group M) [early season, some varieties may show phytotoxicity when applied on premature fruits]
 - Efficacy = Good
 - **DO NOT mix oil with sulfur or captan!!!**
 - **Cannot spray within two weeks of each other**
 - You may be able to spray a certain oil product then sulfur after one week (try in a small area first!)
- Potassium salt products (Group M, Kaligreen, Milstop, etc.)
 - Efficacy = Good
 - Requires through coverage, and it is expensive!

Downy mildew

- **Canopy management**
- Pre-bloom: Consider not only infection event (=rain), but also warm and humid nights (>60F and 80-90%) that promote spore production (2009, 2013, and 2018...)
 - Overwintering spores are active for 3 to 6 months
- **After bloom:** Critical time for the cluster runs about 4-6 weeks.
- **After critical time:** Leaves are still susceptible to the infection.
 - Late summer infections



Downy Mildew

Timing: all season

Clusters are susceptible from bloom to 4-6 wks after bloom

- **Preventative fungicide application**
 - **Good:** Mancozeb, ziram (Dithane, Penncozeb, Gavel, etc. Group M3), Ranman (Group 21), captan (Group M4), copper (Group M1)
 - **Good, but...:** Revus/Forum (**Group 40 – resistance spreading quickly**), Zampro (Group 40 + 45),
 - **Don't know:** Lifeguard (defense activator) and Zonix (bio-control) - inconsistent reports, please use them with a caution (can be a good rotation or tank mix partner)
 - **Bad:** Any QoI (Group 11) fungicides (e.g., Aboud, Pristine, etc.)



Downy Mildew

Timing: all season

Clusters are susceptible from bloom to 4-6 wks after bloom

- **Kick-back fungicide application (after the rain, not after you see downy!)**
 - **Good:** Phosphonate (Prophyt, Phostrol, etc. Group P07 (used to be 33)), Ridomil products (Group 4),
 - **Poor:** Tanos (Group 11 + 27) note: we did not find a good result with Tanos in VA), Tanos need a mixing partner





Black rot management

- Canopy Management
 - It takes at least seven hours for the pathogen to cause disease.
- At bloom to ~ six weeks after bloom is the critical period
 - Berries become resistant after that.
- Mancozeb plus DMI, SDHI, or even QoI



Black rot

Timing: pre-bloom to 4-6 wks after bloom

Clusters are susceptible from bloom to 4-5 wks after bloom

- Preventative fungicide options
 - **Good:** Mancozeb, SDHI (Pristine, Luna Experience, Aprovia, Kenja, Miravis Prime, etc. Group 7)
 - **Good, but...:** Sterol-inhibitors (Rally, Mettle, Rhyme, Luna Experience, Top Guard EQ, etc., **Group 3**), Strobilurins (QoI, Pristine, Abound, Flint, Intuity, Group 11):
 - **There may be resistance issue with group 3 fungicides...**
 - When you are in doubt, please contact me (nita24@vt.edu)
 - **Poor or not working: Captan and copper**

Black rot kick-back fungicide options

- Myclobutanil (Rally) is known to have a good kick-back activity against black rot fungus. It has an efficacy up to 6 days after infection.
- Azoxystrobin (Abound) does have some curative activity against black rot fungus; however, the efficacy is not as good as that of myclobutanil.
- **Note: Rally is group 3 and Abound is group 11...**

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Botrytis management

- Timing: At bloom, bunch closure (the last opportunity to deliver fungicides inside of the cluster), and at veraison (spore availability)
- Canopy management is critical because the outbreak is often associated with a long wetness event.
- Injury management (*Grape Berry Moth*, Birds, PM) is also important
- Caps remaining on clusters *can* host the pathogen
 - **HOWEVER:** It won't be the major source of inoculum, but make sure to have good coverage!



Botrytis Management Preventative fungicide options

- **Fair to Good:** Group 2: iprodione (Rovral/Meteor – resistance = low/mod risk),
- **Good, but....:** Group 7 (SDHI): boscalid (Endura), Luna Experience, Kenja, Miravis Prime (– resistance = high)
- **Good:** Group 9: cyprodinil (Vanguard, Inspire super, Switch- resistance = mod)
- **Good:** Group 12: cyprodinil + fludioxinil (Switch – resistance = mod)
- **Good:** Group 17: fenhexamid (Elevate – resistance = unknown)
- **Fair:** Group 19: polyoxins (Oso, Ph-D – resistance = mod)
- **Fair:** Group M4: captan – fair activity, but it will be a good mixing partner!
- **Fair:** Group M1: copper (the same comment as above)
- **Bad:** QoI fungicides, Pristine (7 + 11), Topsin-M

Ripe rot management



Timing: flowers, veraison, and late season



OK materials: mancozeb, captan, Switch, Iprodione (Rovral), Aprovia, Howler?



Mix two of them and keep eyes on the PHI!



Ripe rot application timing: at bloom, veraison, plus you may need one or two more, if you have susceptible cultivars with a history of outbreak...

- All materials shown here are “fair” in efficacy by itself
- MIX mancozeb (M3) or captan (M4) with
 - a QoI (Pristine, Flint, Abound, FRAC = 11), Rovral (2), Switch (9 + 12), tebuconazole (3),
 - or Howler (not as good as Switch)
 - Copper is not as effective as mancozeb (66-day PHI) or captan
- In 2022-23 trial, Mancozeb or Aprovia Top applied at bloom, then Howler plus captan or Switch plus captan applied at veraison and on provided good controls.
 - Another successful treatment was Switch plus Howler applied three times



▪ **Any questions?**