CFAES

OHIO GRAPE-WINE ELECTRONIC NEWSLETTER

Edited by: Dr. Maria Smith

September / 2019

Photo: Sauvignon blanc at harvest 9/17/2019, OARDC Wooster, OH. Photo credit: Maria Smith

IN THIS ISSUE:

Full-swing harvest mode

So far, all indicators point towards a great 2019 vintage. Much of the state has remained dry throughout September, which continues to be a stark contrast from the 2018 season.

Even though much of the hard part is done, continue to monitor and manage vines through the next couple of months into the post-harvest period to ensure proper vine acclimation into winter dormancy.

As always, please let us know if you have questions. We wish you the best throughout this time for continued success both in the vineyard and the winery.

-Maria and the V&E Team

2019 Harvest update

By: Dr. Maria Smith, HCS-OSU

Weather overview

Precipitation. Following a record-breaking rainy 2018 season, it seemed as if we were pointed that direction again at the onset of the 2019 season. Through July and August, Wooster had already exceeded precipitation totals over the same time period in 2018, with accumulation totaling more than 12" above the 30-year average [July OGEN]. In August, however, the clouds parted and rainfall has been well below average through September (**Fig. 1**). When we zoom out over the past 90 days, rainfall through the state has been average to below average throughout the most of the state and approximately 1-2" above mean rainfall in northeastern counties (**Fig. 1**).

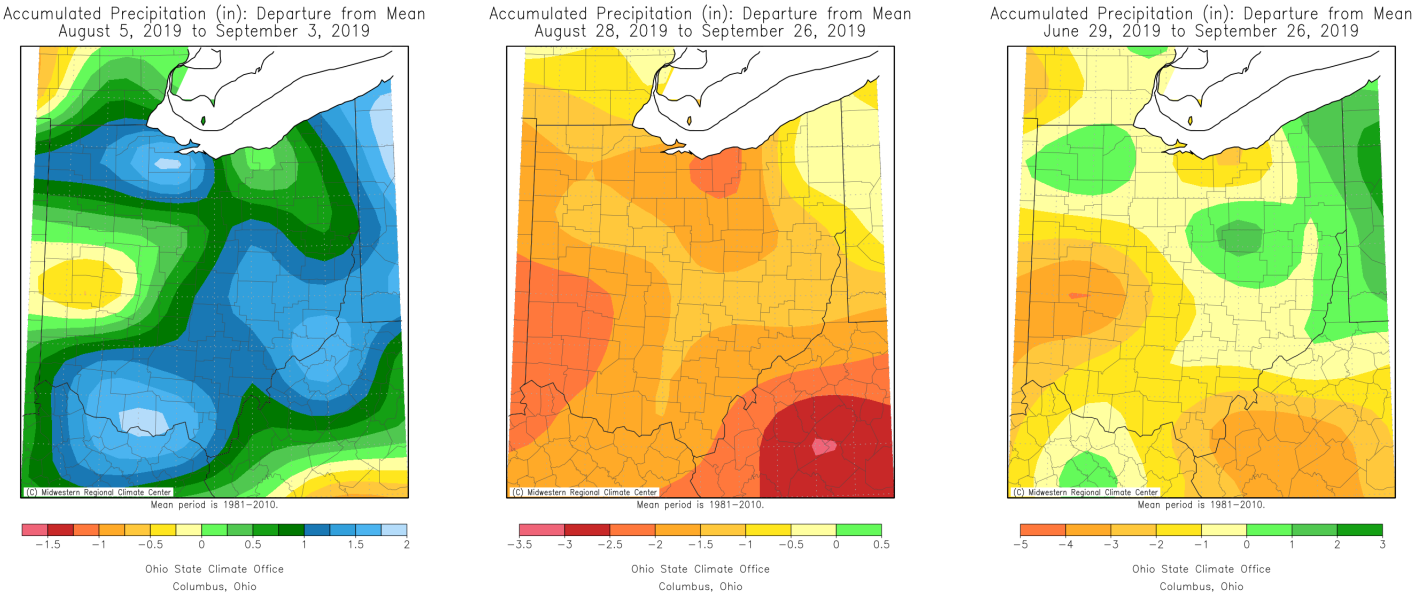

Figure 1. *30-day precipitation departure from the 30-year average (1981-2010) for August (left; 5 Aug - 3 Sep) and September (center; Aug 28 - Sep 27) 2019, and the 90-day precipitation departure from the 30-year mean (right; 29 Jun - 26 Sep). Data retrieved from climate.osu.edu*

Temperature. Unlike the above average temperatures between July and November 2018, 2019 has been cooler and close to average through August, while daily average temperatures in September have exceeded the 30-year mean by 3 to 6 °F (**Fig. 2**). The last week of September has been particularly warm, with near record high temperatures and daily average temperatures between 6 to 10 °F above the 30-year mean (**Fig. 3**). In terms of seasonal heat accumulation (growing degree days; GDD), we are below our heat accumulation in 2018. As of 23 Sep at OARDC (Wooster, OH), GDD is 252 lower than 2018 (2733 in 2019 vs. 2985 in 2018) and 280 lower (2532 in 2019 vs. 2812 in 2018) at AARS (Kingsville, OH) .

2019 Harvest update (continued)

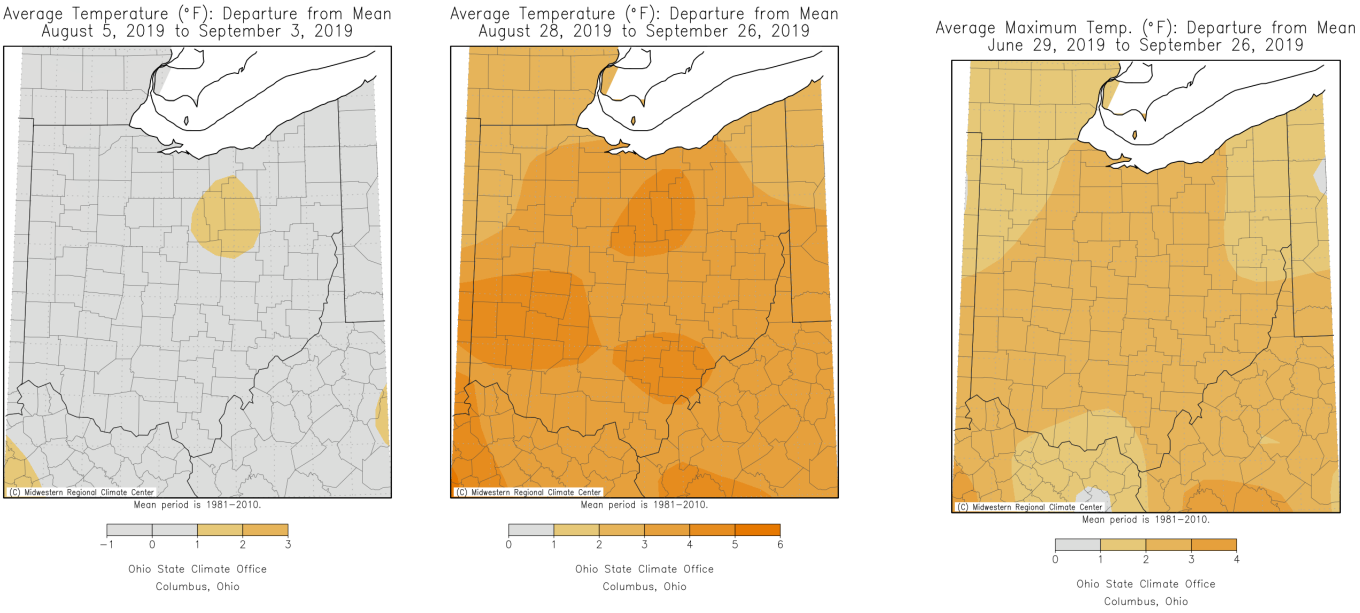

Figure 2. *30-day average temperature departure from the 30-year average (1981-2010) for August (left; 5 Aug - 3 Sep) and September (center; Aug 28 - Sep 27) 2019, and the 90-day average temperature departure from the 30-year mean (right; 29 Jun - 26 Sep). Data*

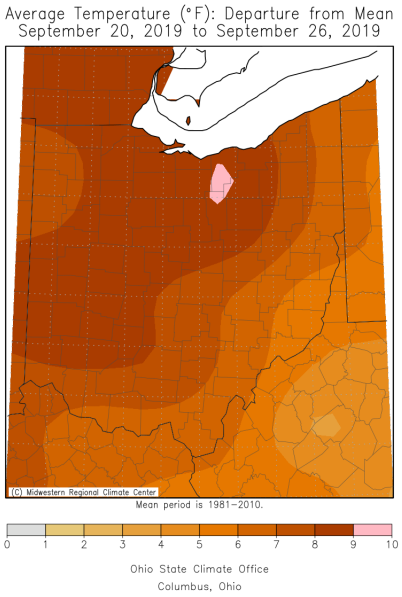

Figure 3. *7-day average temperature departure from the 30-year mean. Data retrieved from climate.osu.edu*

2019 Fruit maturity

For current and historic fruit maturity data, please visit https://ohiograpeweb.cfaes.ohio-state.edu/grape-growing/fruit-maturity-osu-vineyard-2015-2019

Compared to the seemingly endless late-season precipitation in 2018, 2019 has been a welcome change. Overall, it appears that if early-season diseases were kept under control, the reward has meant high fruit quality at harvest. Pressure from *Botrytis* has been low this year, and although sour rot has still been observed, it has generally been less severe. One consistent trend over 2019, however, has been higher acid in the fruit at harvest. This may be attributed to the overall cooler temperatures during the ripening period compared with the very warm late-season in 2018.

Wooster. As of 30 Sep, harvest is nearing completion with all but late-ripening Cabernet franc and Chambourcin varieties remaining.

Kingsville. At the AARS research station, harvest has only just begun, with early-ripening Siegrrebe harvested on 9-Sep. By this same time last year, several other early varieties, including Pinot noir and Sauvignon gris had also reached maturity.

2019 Harvest update (continued)

Monitor your vines through harvest into dormancy

Drought potential. That's not a problem you're likely used to thinking about in Ohio, but it does happen. Over the past several weeks with low rain and warm temperatures (thus, high evaporative loss of soil moisture), "abnormally dry" to "moderate drought" conditions now cover almost 75% of the state (**Fig. 4**). Coupled with high water demand during ripening, this can create stressful conditions for the vine. However, that does not necessarily mean that vines are exhibiting symptoms of water stress, since that is contingent on several factors (e.g, soil depth, water holding capacity). It does mean that you should pay closer attention to them since persistent drought conditions can negatively impact fruit ripening as well as leaf function in the post-harvest period.

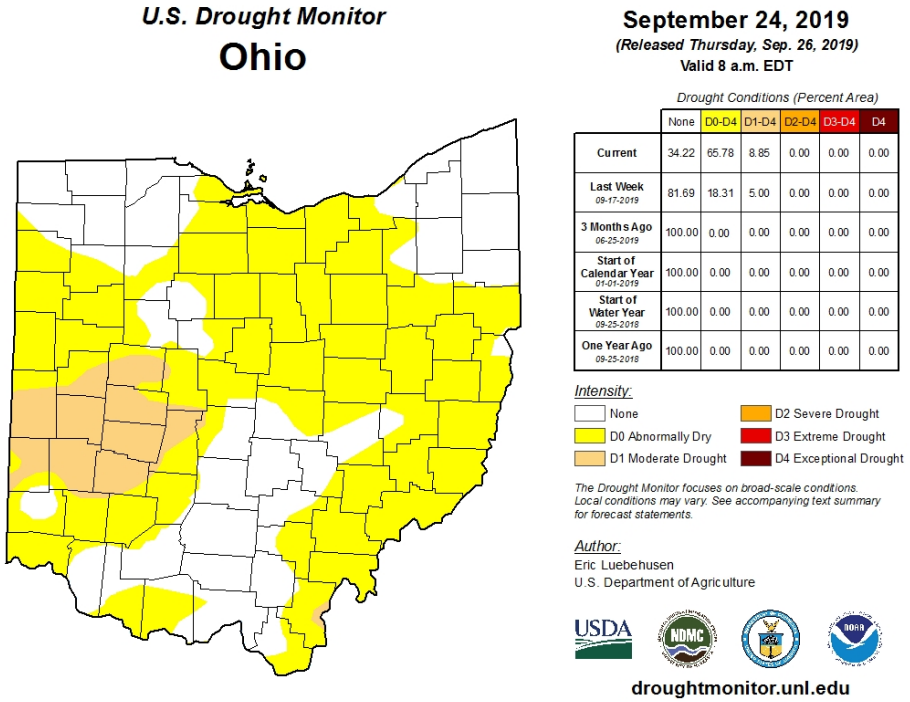

Figure 4. *Ohio drought conditions through 24 Sep 2019. Data from droughtmonitor.unl.com*

Vine drought symptoms. There is a spectrum of symptoms that appear as vines try to conserve water during periods of drought. This can vary from shoot growth cessation (mild) to leaf senescence and loss of berry turgidity (severe).

Young vines in particular are susceptible to water stress, as root systems are still relatively shallow. Since vegetative growth and root system establishment are the primary goals in the first 2-3 years, weekly watering of vines to maintain shoot growth and leaf function throughout the growing season is necessary under drought conditions.

For mature vines, monitor symptoms. If observed water stress symptoms progress in severity, watering may be warranted through harvest and the post-harvest acclimation periods.

For more info on vine water stress, visit: https://psuwineandgrapes.wordpress.com/tag/water-stressed-vines/ and https://grapesandwine.cals.cornell.edu/newsletters/appellation-cornell/2016-newsletters/issue-26-august-2016/grapes-101/

Sour rot management updated

By: Dr. Maria Smith, HCS-OSU

The sour rot complex

In contrast to other common grape diseases such as powdery mildew (*Uncinula necator*) or black rot (*Guignardia bidwellii*), ***sour rot*** is not caused by a single organism. It is instead a condition caused by a complex of various acetic acid bacterias and yeasts that contribute to rapid berry decay and characteristic vinegar and nail polish aromas associated with acetic acid and ethyl acetate, respectively [**1**]. The berries with symptoms of sour rot are often light brown (white grapes) or purplish-red (red grapes) in color, however, they do not have the gray fuzzy spores that are indicative of another late-season fruit rot, Botrytis (*Botrytis cineria*; **Fig. 1**).

Figure 1. *Left: Sour rot in* V. vinifera *Chardonnay (2018), Right: Botrytis in* V. vinifera *Pinot gris (2018).*

Sour rot infection conditions

Sour rot development occurs under humid and warm conditions beginning during ripening when berries reach approximately 15 °Brix [**2**]. As discussed in September 2018, ***fruit flies*** (*Drosophila* spp.) are a critical component to the development of the sour rot complex, although their role in sour rot development beyond vectoring bacteria and yeasts is still unknown [**3**]. However, several additional factors also contribute to the susceptibility of sour rot, including:

- Berry skin thickness
- Cluster compactness (close berry-to-berry contact)
- Mechanical berry damage (hail)
- Bird or insect berry damage
- Precipitation events (berry swell and split)

Sour rot management (continued)

Sour rot management

Due to the potential for high crop losses, sour rot management in the vineyard is critical. Using management practices that focus on ***1) reducing berry injury; 2) maintaining an open canopy; and 3) controlling fruit fly populations*** are currently the most successful means for reducing sour rot potential in the vineyard

Reducing berry injury:

- Variety selection: choosing thicker skinned, loose-cluster varieties (Cabernet, Chardonel, Vidal, Chambourcin) with lower susceptibility to sour rot than thin-skinned, highly compact cluster varieties (Riesling, Pinot, Chardonnay, Vignoles)
- Bird control options: netting, sound cannons, distress calls, encouraging predatory birds, visual repellents, chemical repellents
- Although, weather is out of our control, harvest dates are not. Monitor weather and fruit conditions closely around maturity and plan accordingly. You may consider plans to harvest prior to a major rain event to avoid potential berry splitting and sour rot spread, especially if fruit is starting to break down and rot has already appeared. If the fruit is still intact and healthy, consider letting it continue to hang if it has not yet reached desired maturity [Determining grape maturity].

Maintaining an open canopy:

- Similar to other diseases, air flow and pesticide spray penetration are important for reducing sour rot. Improve fruit microclimate conditions by adopting best canopy management practices for your variety and site

Fruit fly control:

Chemical control using a combination of late-season fruit fly insecticides and anti-microbial (e.g., Oxidate 2.0) products beginning at 15 °Brix has become a go-to response for managing fruit flies and sour rot. While the combination has demonstrated success in reducing sour rot [**4**], ***rotating chemical modes of action (IRAC codes) is necessary to avoid developing insecticide resistant fruit fly populations.*** One such population that was resistant to 3 classes of insecticides (zeta-cypermethrin, acetamiprin, and malathion) has recently been identified in a Finger Lakes (NY) vineyard [**2, 5**], with the problem likely to increase in the coming years. Several classifications of insecticides are currently registered for fruit fly control [**6**]. Be sure to follow label guidelines for application rates and limits. For a suggested rotational insecticide spray schedule, see “Manging Fruit Flies for Sour Rot” [**2**].

Cited references:

[1] McFadden-Smith W and Gubler D. 2015. Compendium of Grape Diseases, Disorders, and Pests, 2nd Edition. pp. 87-90.

[2] Loeb G and Walter-Peterson H. 2019. Managing Fruit Flies for Sour Rot in 2019. https://nygpadmin.cce.cornell.edu/pdf/newsletter_notes/pdf116_pdf.pdf

[3] Hall M et al. 2018. Phytopathology 108: 1429-1442.

[4] Hall M et al. 2018. American Journal of Enology and Viticulture. 69: 342-350.

[5] Sun H et al. 2019. Journal of Economic Entomology. 112: 1495-1501.

[6] Beckerman J et al. 2019. Midwest Fruit Pest Management Guide 2019-2020. Grape Spray Schedule pp. 79-95. https://ag.purdue.edu/hla/Hort/Documents/ID-465.pdf

Additional references:

Muza A. 2019. A Complex Late Season Bunch Rot. https://psuwineandgrapes.wordpress.com/2019/09/12/a-complex-late-season-bunch-rot/

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FALL FRUIT

FIELD NIGHT AT OSU SOUTH CENTERS

THURSDAY, OCTOBER 10, 2019
5:30 p.m. - 8:30 p.m.

Hosted by Dr. Gary Gao and Ryan Slaughter

Have you ever eaten Ohio-grown figs? Learn about growing these super sweet and flavorful, exotic fruits right in your own backyard, or as a commercial crop on your farm, during this informative field night at The Ohio State University South Centers.

Expert South Centers faculty and staff members will be on hand for presentations, demonstrations, and to answer your questions on a variety of topics related to high-value specialty fruit crops including figs, blackberries, grapes, raspberries, and more.

Learn the basics on these topics:

- Hardy fig production
- How to trellis hardy kiwis
- Rotatable cross arm trellis for blackberries
- Late season vineyard management
- Weed badger demonstration
- Raspberry cultivars

First 25 registered will receive two free red raspberry bushes.
(Heritage and Caroline)

LOCATION: OSU SOUTH CENTERS
1864 SHYVILLE ROAD
PIKETON, OHIO, 45661
go.osu.edu/pruningschool

COST: $25 per person
$40 per couple
Dinner will be provided

REGISTER: Contact Bradford Sherman
sherman.1473@osu.edu
740-289-2071 x 115

DEADLINE TO REGISTER:
Monday, October 7, 2019

OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER

OHIO STATE UNIVERSITY EXTENSION

THE OHIO STATE UNIVERSITY
COLLEGE OF FOOD, AGRICULTURAL, AND ENVIRONMENTAL SCIENCES

Ohio Agricultural Research and Development Center (OARDC)
1680 Madison Ave.
Wooster, OH 44691

go.osu.edu/grapes

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Dr. Doug Doohan, Professor Horticulture & Crop Science 116 Gourley Hall - OARDC	330-202-3593	email: doohan.1@osu.edu	Vineyard weeds and control. Recommendation on herbicides.
Dr. Gary Gao, Professor & Small Fruit Specialist OSU South Centers 1864 Shyville Rd., Piketon, OH 45661 OSU Main Campus, Rm 256B, Howlet Hall, 2001 Fyffe Ct., Columbus, OH 43210	740-289-2071 Ext. 123 Fax: 740-289-4591	email: gao.2@osu.edu	Viticulture research and outreach in Southern Ohio.
Dr. Melanie Lewis Ivey, Asst. Professor Plant Pathology 224 Selby Hall - OARDC	330-263-3849	email. ivey.14@osu.edu	Grape diseases, diagnostics, and management. Recommendation on grape fungicides and biocontrols. Good agricultural practices and food safety recommendations.
Diane Kinnney, Research Assistant Horticulture & Crop Science 218 Gourley Hall - OARDC	330-263-3814	email: kinney.63@osu.edu	Vineyard and lab manager - viticulture program. Website manager for Buckeye Appellation website.
Andrew Kirk, AARS Station Manager Astabula Agricultural Research Station 2625 South Ridge Rd. Kingsville, OH 44048	440-224-0273	email: kirk.197@osu.edu	Viticulture research and outreach in northeastern Ohio.
Dr. Erdal Ozkan, Professor Food Agriculture & Biological Engineering 590 Woody Haes Drive Colubmus, OH 43210	614-292-3006	email: ozkan.2@osu.edu	Pesticide application technology. Sprayer calibration.
Patrick Pierquet, Research Associate Horticulture & Crop Science 220 Gourley Hall - OARDC	330-263-3879	email: pierquet.1@osu.edu	Wine cellar master. Enology research, micro-vinification, sensory evaluation, and laboratory analysis.
Dr. Maria Smith, Viticulture Outreach Specialist Horticulture & Crop Science 205 Gourley Hall - OARDC	330-263-3825	email: smith.12720@osu.edu	Maria is the primary contact for viticulture extension and outreach. Evaluation of site suitability for vineyard establishment and all aspects of commercial grape production.
Todd Steiner, Enology Program Manager & Outreach Horticulture & Crop Science 118 Gourley Hall - OARDC	330-263-3881	email: steiner.4@osu.edu	Todd is the primary contact for enology research and extension. Commerical wine productoin, sensory evaluation, laboratory analysis/setup and winery establishment.