The Ohio State University Extension

VegNet *The Vegetable and Fruit Crops Teams Newsletter*

http://vegnet.osu.edu

Editor: Brad Bergefurd

Vol. 21 Number 10, May 15, 2014

In this issue:

North Fairfield and Willard, Ohio Update

Ken and Robert Holthouse, D.R. Walcher & Holthouse Farms

Getting into the fields has been on and off between rains this week. Currently our first plantings of summer squash, cukes and peppers are in the ground. We hope to hit it harder next week, after the brief cold snap that's coming. The wind and heat has kept us hopping making sure plants don't get too hot and dry in the greenhouse. We are seven to ten days behind where we would like to be, but everything should catch up once we can get on the ground and get more planted.

Cucumbers have emerged in Northern Ohio
Photo by Holthouse Farms

2014 Upcoming Events

- **May 22-** Strawberry Plasticulture Field Night, South Centers in Piketon (see p. 2)
- **July 15-** Bramble, Blueberry and Wine Grape Field Night, South Centers in Piketon...details to come.

To list your upcoming events in future additions of the VegNet newsletter, please send details to bergefurd.1@osu.edu

Pollination Investigators Program

from Mary Gardiner, Entomology, College of Food, Agriculture, and Environmental Sciences

The Gardiner Lab is gearing up to begin a new program called Pollination Investigators this week! This citizen science program will engage volunteers across Ohio who would like to research the pollination of garden crops in their backyard. Each volunteer will attend a training workshop where they will be given cucumber, tomato, pepper and sunflower plants, a project summary, sampling protocol and data sheets. Gardeners will plant the vegetable plants and compare seed set in fruits which resulted from flowers open to pollinators with those from flowers that were bagged to prevent pollinators from accessing them. The goal of the project is to determine how much variability exists in the pollination services provided to backyard gardens and if it is related to the availability of local resources or the composition of the surrounding larger-scale landscape. To view the materials handed out to volunteers and learn more check out our website: http://pollinationinvestigators.blogspot.com/.

Southern Ohio Vegetable and Fruit Update

from Brad Bergefurd, Ohio State University Extension Educator, Ohio State University Extension Scioto County and OSU South Centers

Rain has delayed field operations throughout southern Ohio the past week, some were able to sneak into the high ridge fields Sunday afternoon and early evening on 5/11 to work some ground and plant sweet corn and green beans. However, rains began early Monday morning 5/12 which delayed field operations for the rest of the week.

Harvest of high tunnel tomatoes and strawberries continues. Harvest of field strawberries has begun at Marietta and Wilmington. Harvest of asparagus continues with high yields, good quality and great market demand both wholesale as well as retail. Harvest of field chives continues.

Some sweet corn planted the last week of April has been torn up and replanted. Thrips have been found on strawberries with pesticide applications being made. Fertigating of nitrogen continues on a weekly basis in strawberry plantings. Honeybees have been rented and moved into blooming blueberry and strawberry fields. Yellow leaf mottling and spotting is showing up in cabbage and we are working on diagnosing this crop disorder.

Tomatoes have tested positive in Muskingum county for Tomato Spotted Wilt Virus (TSWV) which is vectored by thrips. Thrips are common among ornamental plants and growing vegetable transplants among ornamental flowering plants or baskets is highly discouraged. This link may be helpful to understand TSWV disease cycle, epidemiology and also management. For further information visit
http://vegetablemdonline.ppath.cornell.edu/factsheets/Virus_SpottedWilt.htm

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TSWV symptoms on tomato
Photo by Mark Mechling

Springtime Rainfall – too little may be ok but too much usually is not. What to watch for in a wet spring

from Matt Kleinhenz, Professor, College of Food, Agricultural, and Environmental Sciences, Horticulture & Crop Science

Gauges around your farm give the best estimates of how much rain has fallen on it. The OARDC manages weather stations around the state and makes data from them available online (see http://oardc.osu.edu/newweather/). Data from these stations can be used for reference and comparison to other numbers available to you. OARDC network data verify that rainfall between April 15 and May 12, 2014 has varied a lot by location. Also, rainfall measured during this time compares differently to historical averages depending on station location. The following "2014" and "normal" numbers were taken from the network (all values are in inches; numbers in parentheses, if given, are normal for the period based on historical records): Celeryville – 3.75, Columbus – 4.67 (3.5), Custar – 1.61 (2.9), Fremont – 2.38 (3.2), Madison – 2.67, Pemberville – 1.79, Piketon – 5.07 (3.5), and South Charleston – 3.99 (3.6).

Too little or too much rainfall has consequences that are very numerous and complex to cover in one newsletter article. Also, there is no cookie-cutter approach to dealing with the consequences. In addition, everything being equal and given the choice, most vegetable growers appear to prefer dryer over wetter springtime conditions. Therefore, this article outlines some of the consequences of excess rainfall and offers suggestions on how to minimize the long-term effects of the consequences.

Excess rain, especially if delivered in frequent showers, has a number of primary effects, each with their consequences. Some effects and their consequences include:

1. Poor transplant condition (e.g., "leggy," or root bound), leading to difficult transplanting, poor and uneven stand establishment or low vigor crops.

2. Increased seed and seedling disease also leading to poor and uneven stand establishment and additional disease pressure.

3. Working wet soil, resulting in compaction and problems stemming from it.

4. Disruptions in scouting and the timely application of pest control measures, leading to increased pest and disease pressure.

5. Delayed or missed cultivation and/or herbicide inactivation, resulting in inadequate weed control.

6. Fertilizer leaching and runoff, leading to crop nutrient deficiency.

7. Waterlogged (and, maybe, compacted) soil, leading to shallow-rooted, low-vigor crops, that may be less resistant to other types of stress.

8. Disrupted planting and expected harvest schedules, leading to supply shortages and excesses.

Article continued on the next page

Springtime Rainfall continued…

What can be done to minimize these negative effects and outcomes? Experienced growers may be familiar with techniques to deal with some of the issues listed above. Let's briefly review some of them here.

1. Transplant Condition ... Slow transplant growth by lowering fertility, supplemental light, and, if possible, temperature levels. Maintain disease and pest control strategies in the greenhouse. Do no transplant vegetable seedlings with symptoms of bacterial diseases. Rainfall will move the bacteria throughout the field, potentially causing many problems later.
2. Being eager to work wet, fine-textured soil … Using every rain-free minute most effectively is important. Balance short- and long-term objectives when deciding to work or not, with wet fine-textured soil. Working, wet, fine-textured soil this year may be useful now, but it will have significant, long-term, negative consequences that are difficult to reverse.
3. Increased seed and seedling disease ... Fungal and bacterial seed and seedling diseases may reduce stand establishment and crop vigor. Re-planting with high vigor, short or medium season varieties may be warranted in extreme cases and fungicide-treated seed is nearly always recommended, especially in years where conditions are conducive to the development of seed and seedling disease. Increased early-season scouting is warranted. Pay special attention to disease management updates.
4. Disease and insect scouting and control ... When weather does not permit the application of crop protectants using ground equipment, little can be done to manage insects or diseases during cool, wet conditions. If crop values warrant, growers may want to consider aerial applications. Insecticide application should not be made without verifying by scouting that the target pest is present. Even if scouting needs to be restricted to field edges, some scouting is better than none at all. Heavy rains sometimes eliminate pests such as aphids, mites, thrips, and small exposed caterpillars such as young European corn borer larvae. Damp weather is conducive to diseases such as Beauveria that can infect and kill insect pests. Scout potatoes carefully for late blight, beginning at emergence. Check leaves and stems. If symptoms are found, destroy infected plants (remove them from the field) and apply appropriate fungicides to the remaining crop immediately.
5. Delayed or absent cultivation and herbicide inactivation ... Rainfall has mixed effects on herbicides; it may further activate and/or leach them. Either way, cultivation and post□emergent herbicides may be needed later in the season to compensate for the lack of longer-term action. Cultivation should be attempted only when soil moisture permits, otherwise declines in soil quality (e.g., compaction) may offset potential gains in weed control. Pay close attention to crop tolerance, application timing, plant back restrictions, and other label details when using any herbicide. Applying some herbicides during periods when growing conditions are poor (e.g., when there is excessive soil moisture or little sun and low temperatures) may damage some crops.
Do not use tank mixes unless they are specified on the label or cleared by a crop advisor or other trained personnel, due to potential antagonism or synergism.

Article continued on the next page

Springtime Rainfall continued...

6. Fertilizer leaching and runoff ... Fertilizer lost to excess soil moisture can be replenished in several ways. Often a combination of methods is best. First, fertilizer may be soil-applied in "sidedress" applications. A complete fertilizer may be used but expect a delay between fertilizer application and nutrient availability. Second, nutrients may be applied foliar-applied, alone or in combination with crop protectants. This approach is best suited for nitrogen and some micronutrients but can be expected to deliver a minor portion of total crop nutrient needs (e.g., 2-3 lb. N/A/application). Pay special attention to materials and tank mixes in order to avoid burning the crop. Third, nutrients (nitrogen, potassium) may be injected into irrigation water. Clearly, this method works best when soil moisture warrants irrigation. Which method (s) growers choose will depend on crop, soil condition, available equipment, and other factors. A crop's appearance (e.g., color) is not a reliable indicator of its nutrient status. Therefore, post-planting fertilizer applications should be made in conjunction with sap or tissue tests whenever possible.

7. Waterlogged, potentially compacted soils ... Heavy rainfall compacts bare soil and promotes erosion and runoff. In the future, consider that both can be minimized by using plant residue mulches or other minimum□tillage practices. Root channels and above□ground debris permit rapid infiltration, shield the soil from the impact of rain drops, and absorb some moisture. Of course, these benefits must be balanced against the challenges of additional residue. Ways to minimize these challenges are being discovered and implemented by teams of researchers and farmers aiming to enhance the use of minimum-tillage approaches in commercial vegetable production. Resources are available online (e.g., SARE, Midwest Cover Crops Council) and from grower organizations and Extension. Clearly, tiling and other types of drainage improvement is also useful.

Fields have been frequently flooded this spring
Photos by Brad Bergefurd

COLLEGE OF FOOD, AGRICULTURAL, AND ENVIRONMENTAL SCIENCES

Strawberry Plasticulture Field Night

At OSU South Centers

Hosted by Brad Bergefurd

Tuesday,

May 22, 2014

6:00—9:00 P.M.

Location: OSU South Centers
1864 Shyville Rd., Piketon, OH

Cost: $15.00 per person

To Register: Registration is recommended.

Contact Charissa McGlothin at mcglothin.4@osu.edu or at 740.289.2017 ext. 132.

DEADLINE to register is May 19, 2014.

Plasticulture and matted row strawberry field research will be showcased.

Topics to be covered will include:

- winter protection techniques
- Israeli drip irrigation demonstration and management
- row cover management
- cultivar evaluations
- pest and disease control
- Spotted Wing Drosophila monitoring and trapping
- Integrated Pest Management (IPM) techniques

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Fruit Disease Update

from Mike Ellis, Department of Plant Pathology, The Ohio State University

I hope everyone is keeping up with their spray program for apple disease control. At least in the area of Wooster, Ohio this is shaping up to be one of the worst scab and potentially fire blight years we have had in several growing seasons.

Fungicides for Controlling Primary Apple Scab and Resistance in the Scab Fungus

Last year (2013) we sampled five apple orchards in Ohio for fungicide resistance in the apple scab fungus. We collected 50 leaves with scab lesions from each orchard and sent them to Dr. Kari Peter. Dr. Peter is an Assistant Professor at the Pennsylvania State University. She tested the scab fungus isolated from each orchard for sensitivity to the fungicides that are currently available for controlling primary apple scab. The following classes of fungicides were tested;
QoI (Strobilurin) fungicides. FRAC group 11 (Flint and Sovran)
Sterol Inhibiting (SI) fungicides. FRAC group 3 (Rally, Indar, Topguard and Inspire Super)
Dodine FRAC group U12 (Syllit)
Anilinopyrimidine fungicides. FRAC group 9 (Vangard and Scala)
SDHI fungicides FRAC group 7 (Fontelis, Luna Tranquility, Luna Sensation and Merivon)

SDHI Fungicides are a relatively new class of fungicide chemistry

Fontelis is a SDHI fungicide alone and is not package mixed with another class of fungicide.
Luna Tranquility is a combination (package mix) of a SDHI (fluopyram ,FRAC group 7) and a QoI (trifloxystrobin, FRAC group 11).
Luna Sensation is a combination (package mix) of a SDHI (fluopyram, FRAC group 7) and an (Anilopyrimidine, FRAC group 9)
Merivon is a combination (package mix) of a SDHI (Pyremethinil, FRAC group 7) and a QoI (pryraclostrobin, FRAC group 11).

Dr. Peter's results suggest that reduced sensitivity or resistance to the **QoI (strobilurin**) fungicides has developed and is present in all orchards tested. These fungicides are effective against scab, rust and mildew. Even though resistance to these materials has developed in the apple scab fungus, they should still be useful in our apple disease control programs for powdery mildew and rust, as well as the summer disease complex (sooty blotch and fly speck). However, we should not be using the QoI (strobilurin) fungicides alone for control of apple scab. They should be used in combination with a full rate of a **protectant fungicide such as Captan, mancozeb or polyram**, and they should not be applied more than 2 times during the primary scab control program (greet tip through first or second cover).

Protectant Fungicides

The **EDBC fungicides (Mancozeb and Polyram)** have restrictions for use on apple. If used at the full rate of 6 lbs./A, no more than 4 applications can be made and they cannot be applied after bloom. If used at the half rate of 3 lbs./A, they can be applied 7 times and have a preharvet interval of 66 days. I like a combination of **3 lbs. of Captan 80 WDG plus 3 lbs./A of Mancozeb or Polyram**.

Article continued on the next page

Fruit Disease Update continued

This combination provides a full rate of protectant fungicide for scab control and the EDBC adds some control of rust. There is no problem with the development of fungicide resistance with these protectant materials; Therefore, they can be used throughout the period for primary scab control (greet tip through first or second cover).

Of the other fungicides evaluated for resistance **(Dodine, Anilinopyrimidine, and SDHI fungicides)** all appeared to still be effective for controlling scab, or in other words the scab fungus appears to still be sensitive to them. However, all of these materials are at high risk for resistance development in the scab fungus and I feel they should not be used alone for control of apple scab. I recommend they should be tank mixed with a protectant fungicide and should not be applied more than twice during the period for control of primary scab (greet tip through first or second cover).

Dodine (Syllit) was used extensively throughout Ohio several years ago. Reports of resistance in the scab fungus to Dodine have prevented most growers for using it for the past 15 to 20 years. I do know some apple growers in Ohio that have continued to use Dodine and feel that it is working well for them. Dodine was highly effective against scab because it would “burn out” scab lesions or stop them from producing conidia. Dr. Dave Rosenberger, Cornell University had the following comment about Dodine in the March 24, 2014 issue of the newsletter Scaffolds, “ Syllit (dodine) should be applied in combination with Mancozeb in two early season sprays in High inoculum orchards unless dodine –resistant apple scab is known to be present in the block”. One problem with using Syllit (Dodine) is, how do you know if you have scab resistant to Syllit or not. Syllit may be useful in scab control programs in Ohio, but I would not recommend using it without tank mixing with full rate of protectant fungicide.

For almost 30 years prior to 2005, most Ohio growers were using the **sterol inhibiting** fungicides in a 10-day extended protectant program. The curative activity of these fungicides (3 to 4 day curative or after-infection activity) allowed for the development of such after-infection programs. In 2005, we conducted a survey for scab resistance to the sterol inhibiting fungicides due to several scab control failures across Ohio where they were used. We sent scab infected leaves from 5 orchards to Cornell University for testing and all scab was highly resistant to the sterol inhibiting fungicides. Growers in Ohio essentially had to stop using the sterol inhibiting fungicides **(Nova, now Rally and Rubigan)** and were forced to move to a 7-day protectant program for scab control using other fungicides. The recent tests conducted by Dr. Peter suggest that the scab fungus in some Ohio orchards may have reverted back from resistant to more sensitive. This can occur with the type of resistance the scab fungus has for these fungicides; therefore, we may be getting some additional scab control when we are using the Sterol inhibitors for control of powdery mildew and rust. Even if these materials are becoming more effective for scab control, I strongly recommend that they always be used with a full rate of protectant fungicide and never be used in curative (after -infection) applications for scab control. I also believe that they should not be used more than two times during the period for primary scab control.

Article continued on the next page

The following tables are intended to be "Food for Thought" related to the use of fungicides for control of Primary apple scab. I have tried to emphasize fungicide resistance strategies in these "Potential Fungicide Programs".

Potential Fungicide programs

Table 1. Low Input fungicide program

Green tip through first or second cover (6-Sprays at a 7-day interval)
Captan 80WDG 3 lb. / A **(controls apple scab)**
Plus
Mancozeb 75 DF 3 lbs. or Polyram 75DF 3 lbs./A **(controls apple scab and Rust)**
Plus
Pink through first or second cover
Sulfur (rates vary greatly depending on the formulation of sulfur you use-read the label)
(controls powdery mildew)

Approximates 25 years ago apple growers in Ohio used the fungicide DIKAR in a program similar to this for control of early season diseases (Scab, rust and powdery mildew).
DIKAR was a package mix of Mancozeb and Karathane. Mancozeb controlled scab and rust and Karathane controlled powdery mildew. Both of these materials are broad spectrum protectants and could be used full season for apple disease control without the risk of fungicide resistance development.

Table 2. High Input fungicide program using modern Fungicides with at high risk for fungicide resistance development

Green tip half (inch green) to tight cluster (2 applications at 7-day interval)

Captan 80 WDG 3 lbs. /A
Plus
Mancozeb 75 DF 3 lb./A or Polyram 3 lbs./A
OR
Vangard 5 oz./A or Scala 7-10fl oz./A or Syllit 3.4 F 1.5 to 3 pints/A
Plus
Captan 80 WDG 3 lbs./A
Plus
Mancozeb 75DF 3lb /A or Polyram 75 DF 3lb /A

Then
Open cluster and Pink (two applications at 7-day intervals)
(two applications of a strobilurin fungicide)
Flint 50 WG 2-2.5 oz./A or Sovran 50WG 4-6 oz./A or Pristine 38 WG 14.5-18.5 oz./A
Plus
Captan 80 WDG 3 lbs. /A
Plus
Mancozeb 75 DF 3 lb./A or Polyram 3 lbs./A
OR
(two applications of an SDHI fungicide)
Fontelis 1.67 F 16-20 FL oz. or Luna Sensation 4-5.8 FL oz. or Merivon 4-6.7 fl oz
Plus
Captan 80 WDG 3lbs/A
Plus
Mancozeb 75 DF 3lbs/A or Ploram 75 DF 3lbs/A

Then

Bloom or petal fall and first cover
(two applications of a sterol-inhibitor)
Rally 40WSP 5-8 oz./A or Indar 2F 6-8fl oz./A or Inspire Super 12 fl oz./A or Top Guard 8-13 fl oz./A
Plus
Captan 80WDG 3lbs /A
Plus
Mancozeb 75 DF 3 lb./A or Polyram 75 DF 3lbs/A

This makes a total of **6 sprays** on a 7-day interval. We should be through primary scab by this time and we should have good scab control.

Note: For fungicide resistance management, I recommend using fungicides that are at high risk for resistance development in blocks of no more than 2-sprays, then switching to two sprays of another group of chemistry. Several fruit pathologists recommend switching fungicide chemistry every spray when using fungicides at high risk for infection.

Wayne County IPM Scouting Program Update

from *Rory Lewandowski, Extension Educator, Agriculture and Natural Resources*

May 12-13 so far this week...

Tree Fruit:

- 68 oriental fruit moths were captured in one trap in an orchard that is being monitored.
- Codling moth numbers are still low in most orchards but are averaging 3 or more per trap in a couple of the southern- most orchards that are being monitored.

Fire blight symptoms showing up on some apple trees (photos attached)

Vegetables:

- Flea beetles noted on cabbage
- Some light slug damage noted on early planted sweet corn under row cover

Fireblight Symptoms
Photo by Christine Medley

Fireblight Symptoms
Photo by Christine Medley

OSU South Centers Update at Piketon

from Thom Harker, Research Assistant OSU South Centers

Matted row strawberry trial was planted at the OSU South Center on May 7. This trial was funded by the Ohio Vegetable & Small Fruit Research & Development Program. These new varieties will be evaluated and compared to current variety recommendations for matted row strawberry production in Ohio. We will be evaluating eight different varieties, some of the varieties include: Laurel, Sonata, Rubicon and Mayflower.

Matted row strawberry planting
Photo by Thom Harker

North Central Research Station and Northwest Ohio Update

from Allen Gahler, Extension Educator, Agriculture and Natural Resources, Sandusky County

Cabbage variety trial planted Friday, May 9, northern Ohio sweet corn trial seeded Tuesday, May 13, which included 34 sh2 varieties and 10 se varieties.
Area growers are seeing sweet corn emerging, with significant acreage being planted in the last 5 days. A majority of plants at NC OARDC have been moved outdoors but with forecasted lows in the low 40s the next few days, plans have not been made yet to set peppers or tomatoes in the ground.

Sweet corn being planted at Fremont
Photo by Allen Gahler

44 Sweet Corn Varieties on test
Photo by Allen Gahler

Cabbage Trials planted at Fremont
Photo by Allen Gahler

Sweet corn selections being sorted
Photo by Allen Gahler

Cabbage planting
Photo by Allen Gahler

Critical Periods for Fungicide Applications on Grapes

from Mike Ellis, Professor, College of Food, Agricultural, and Environmental Sciences Department of Plant Pathology, The Ohio State University

There are five major grape diseases that need to be dealt with on an annual basis in the upper Midwest and eastern United States. All of them have the capability of causing serious damage to the crop and even destroying it under the right environmental condition. They are **Phomopsis Cane and Leaf Spot, Black Rot, Downy Mildew, Powdery Mildew and anthracnose**. These diseases need to be controlled simultaneously in the vineyard and will probably require some level of fungicide use annually in order to provide sufficient control. Another important fungal disease on tight clustered varieties is Botrytis Bunch Rot. Fungicides are a major component of the integrated disease management program. I wish it were not so, but I strongly believe that most vineyards in the Midwest and upper Midwest will not be successful unless they have an effective fungicide program and use good cultural practices for disease control. There are many things to consider in developing an effective fungicide program. Most currently used fungicides do not have a spectrum of activity that will control all of the diseases simultaneously. Therefore tank mixes using more than one fungicide are often required. Growers need to know what diseases a fungicide will control in order to select the appropriate materials. You also need to learn when to apply the fungicide in order to get effective control. This is called fungicide timing. I cannot overemphasize the importance of early season fungicide applications for effective disease control.

It is important to realize that all four major diseases (Phomopsis Cane and Leaf Spot, Black Rot, Downy Mildew and Powdery Mildew) can get established in the vineyard very early in the growing season. Therefore, early season disease control is **absolutely critical**. At times, less experienced growers may not see powdery mildew, downy mildew or black rot until later in the growing season (post bloom). There is tendency to think that these are summer diseases that develop later in the growing season; however, infections by all of the pathogens can become established in the vineyard very early (pre bloom). Often when you see the disease post bloom, it may be too late to get it under control. I will discuss the environmental conditions required for infection in my presentation. Research in New York has shown that primary infections by the powdery mildew fungus can occur with .01 inch of rain at 50 Fahrenheit and downy mildew infections can occur after 4 inches of new cane growth with 0.4 inches of rain and 50 Fahrenheit. Obviously, these conditions can occur very early in the growing season. This allows the diseases to get established. You may not see them because they are there at low levels. Under the proper environmental conditions later in the growing season, these low levels of disease can blow up into full scale epidemics before you can react to them. For this reason, it is important to maintain and effective fungicide program throughout the entire season with emphasis on early season disease control. The most destructive phase for all of these diseases is fruit infection. Research in New York has shown that the most critical period for fruit (cluster) infection by powdery mildew, downy mildew and black rot is the period from **immediate pre bloom through 4 -5 weeks after bloom**. At 4 to 5 weeks after bloom (probably earlier on some varieties) the fruit develops resistance (ontogenic resistance) to infection by all of these diseases.

Thus, fungicide protection for the fruits and rachises (the cluster) is absolutely critical during this period. If you go out into the vineyard post bloom and see that your clusters are covered with downy or powdery mildew, there is little or nothing you can do at that point. Under the proper environmental conditions you may have lost the entire crop.

Article continued on the next page

Critical Periods for Fungicide Applications on Grapes continued...

If you do a good job of controlling the diseases through the **critical period**, the crop is set and the fruit is now resistant to infection.

It is important to remember that the rachises (cluster stems) remain susceptible to infection through out the growing season. In addition, leaves and young cane tissues remain susceptible. Therefore, it is important to maintain a good fungicide program through out the season. The amount or fungicide protection required throughout the remainder of the season (past the critical period) will depend largely upon environmental conditions. If it is dry, less fungicide will be required and you can focus on powdery mildew control. Powdery mildew is a dry weather disease that requires high relative humidity to infect and does not require free water. If it is wet, the threat of late season downy mildew infection (which can defoliate the vine) will probably require a more intensive fungicide program through harvest. One of the main points I want to make is that if you do not control fruit (cluster) infections during the critical period (early in the season), the late season fungicide application are not going to save you. A sad fact is that if you do loose your crop to early season cluster infections, you will probably still have to spray the vines later in the season to control the build up of powdery and downy mildew in the vineyard. In wetter growing seasons, late season downy mildew epidemics can rapidly become very severe resulting in premature defoliation of the vines. If vines are prematurely defoliated, they will not harden off (become winter hardy) as they normally would and serious winter injury can occur leading to long term damage to the vine. This probably applies to the more winter hardy varieties as well.

Growers need to develop a fungicide program that controls all of the major diseases during three main periods of the growing season: **the pre bloom period** (1to 3 inch shoot growth through immediate pre bloom), **immediate pre bloom through**

4 to 5 weeks after bloom (the most critical period for fruit infection) and **the late season period** (4 to 5 weeks after bloom through harvest). I have a handout titled “developing an effective fungicide program for Wine grapes in Ohio” that summarizes my fungicide recommendations.

As mentioned previously, selection of the proper fungicides for use during these periods is extremely important. Most currently used fungicides do not have a spectrum of activity that will control all of the diseases simultaneously. Therefore, tank mixes using more than one fungicide are often needed. It is important to know what diseases a fungicide will control in order to select the appropriate materials. Recently, I was in a 7-acre ‘Chardonnay’ vineyard that had 100% cluster infection from powdery mildew. The fruit were a total loss. In reviewing the growers spray program, applications were made at appropriate times, yet disease destroyed the fruit. The reason for the control failure was that the grower was using only Mancozeb fungicide in the tank through all of the early season sprays. Mancozeb provides excellent control of Phomopsis, downy mildew and black rot, but provides no control of powdery mildew. Thus powdery mildew came in and wiped out the crop. Had the grower tank mixed Mancozeb with a fungicide that would control powdery mildew (such as sulfur or several other materials) the crop would probably have been saved. I also have a handout describing the currently available fungicides for grape disease control.

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VegNet Newsletter

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Brad Bergefurd

Bergefurd is an Extension Educator, Agriculture and Horticulture Specialist with Ohio State University Extension, with statewide responsibilities for outreach and research to the agriculture and commercial fruit and vegetable industries Brad has offices at the OSU Piketon Research & Extension Center in Piketon and at OSU Extension Scioto County in Portsmouth.

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