Subject: New England Grape Notes, Vol. 6, No. 8
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New England Grape Notes

July 5, 2011, Vol. 6, No. 7

UMass Extension

Phenology: pea sized berries; concerns now – Grape Berry Moth, Japanese Beetle, Powdery Mildew, Downy Mildew
See http://fruit.cfans.umn.edu/grape/IPM/appendixa.htm for good chart on growth stages

Shoot Positioning and Canopy Management

Bruce Bordelon, Purdue University

Once grapes are past fruit set and shoots have toughened-up, it's time to get serious about shoot positioning in grapes. Varieties differ in their need for shoot positioning due to their growth habit and vigor. Some varieties such Vignoles and Chancellor tend to have a semi-upright growth habit and relatively short shoots that stand up well on their own, so shoot positioning is seldom needed. Traminette has relatively upright shoots, but they tend to be long, with large leaves so shoot positioning is important. Other varieties such as Chambourcin, Vidal, and all the American varieties produce horizontally growing shoots that tend to run along the top of the trellis and cause significant shading of the fruit and renewal zone. Shoot positioning is very important with these varieties. The need for shoot positioning on other varieties will vary depending on vigor of the particular site. In high cordon-trained vines, shoot positioning involves pulling lateral-growing shoots off the top of the trellis to hang vertically downward. In mid-wire cordon- trained vines, shoot positioning is done by tucking shoots between sets of catch wires, or pulling catch wires up into position so that the shoots grow vertically upward. Shoot positioning is critical for improving sunlight exposure of fruit and increasing fruit quality. Additionally, it improves fruitfulness of the basal nodes on the shoots for full fruiting potential next year. Shoot positioning may need to be repeated two or three times during the summer.

Leaf removal is another important component of canopy management. While most commonly associated with mid-wire cordon vertically shoot positioned training systems, it can be used on high cordon trained vines as well. Removal of 2-3 basal leaves in the cluster zone anytime from 1 to 3 weeks after bloom can significantly improve fruit quality by decreasing fruit rot potential, and improving sunlight exposure of clusters. Leaf removal later is the season can be effective, but care should be taken to avoid sun burn. We generally recommend removal of leaves mainly on the east side of the rows. Our work with Traminette has shown a significant increase in important flavor and aroma compounds (monoterpenes) and wine quality scores when fruit gets partial sun exposure. (**Source**: Facts for Fancy Fruit, Volume 11 • Issue 6, June 17, 2011)

Crop Management

Joseph A. Fiola, University of Maryland

The goal of most grape growers is to produce high quality grapes for wine. For making the best wine, the highest quality grapes are often the most mature and uniform. In today's quality driven marketplace, the best fruit will command the highest prices and the greatest demand. Climate, environmental circumstances, and cultural practices are all important in determining fruit quality, however, few techniques may impact fruit maturity more than regulating yields to achieve a balanced vine and uniformly mature fruit. A previous "Timely Viticulture" discussed estimating the existing crop in the vineyard. Once tons per acre or pounds per vine data is collected, it is easy to work backwards towards a targeted yield. This issue will address adjusting the crop level for the desired outcome.

Problems associated with over cropping:

- In the Mid-Atlantic region, where many vineyards reside in areas of marginal season length, achieving full ripeness is a challenge, especially with late varieties (Cabernet Sauvignon.)
- Delayed ripening
- Uneven ripening
- Poor color
- Poor sugar content
- Poor varietal character intensity
- Inadequate tannin ripeness
- A vine that is over cropped will be much more sensitive to winter damage.

For young vineyards:

- Crop regulation usually involves removing any fruit in the first and second years, except on vines of exceptional vigor.
- Even in the third year, reducing the crop by half may be a wise measure to keep the vine healthy.
- A vine that is over cropped when it is young will be much more sensate to winter damage and/or may never reach its full production potential.

Factors to consider when setting a target yield:

- Timing of veraison. If the season is late, the crop may need to be thinned more severely to allow the fruit to ripen in a shorter period.
- If significant tropical storm activity is predicted (as is this year), a grower might elect to carry a smaller crop to allow it to be less sensitive to significant swings in moisture.
- If early frosts are expected, a smaller crop should be carried to allow the crop to ripen earlier and to allow the vines to recover and prepare for winter.
- If canopy has been compromised by disease (defoliated by downy) or insects (laced by Japanese beetles) the crop should be reduced.

An experienced grower will know his site and will develop a sense of what the optimal yields are to achieve full ripeness in certain varieties and fields.

Fruit thinning
After the target yield has been determined, the fruit must be thinned to the proper level.

- Veraison thinning is desirable, especially for red varieties and it is easy to determine and thin the clusters that are behind in ripeness or uniformity of ripeness.
- Veraison thinning is also desirable to help reduce vigor on vigorous sites by allowing more “sinks” (grapes) to sap some of the extra energy.
- If the vineyard soil has high K content, if you wait until veraison to thin, the extra clusters can also be used as "sponges" to absorb the excess K to keep the pH of the remaining fruit from rising too quickly.
- Remove disease or damaged fruit first.
- Remove clusters that are behind in ripening.
- In most cases, remove apical clusters (highest on shoot for VSP).
- Remove clusters that are receiving less sunlight.
- For Smart-Dyson trained vines, allow about 65-70% of the crop on the top canopy and 30-35% of the crop on the lower canopy to help to synchronize ripening.
- Remove an even number of clusters on each side of a bilateral vine.

(**Source**: *Maryland Timely Viticulture, Mid-season Crop Management, 7/9/09*)

Insect Management:

Grape insect update: The start of berry moth’s second generation is approaching

Rufus Isaacs, Michigan State Univ.

With bloom behind us and berries sizing, grape growers in southern Michigan are approaching a key time for making management decisions about controlling the second generation of grape berry moth. In vineyards where berry moth was a significant problem last year, or where recent monitoring or scouting indicates high activity of this pest, protecting clusters from the second generation is a key step towards minimizing the economic impact of this species. The MSU Grape Berry Moth Model can help with identifying the optimal timing of when insecticides should be applied. This model tracks degree days (DD) automatically on the MSU Enviroweather system, and shows when enough DD have accumulated that egglaying by the second and the third generations of berry moth will commence. These are predicted to occur at 810 DD after wild grape bloom (second generation) and 1620 DD after wild grape bloom (third generation). It is important to note that these are the predicted starts of egglaying in these generations, but that increasing egglaying and egg-hatch by larvae will pick up after these key times.

To run the model, you must know when wild grape (Vitis riparia) bloomed near your farm. This is the biofix point from which the degree days are counted. If you didn't track this during the spring, approximate dates are shown in the table below. This also shows where we stand this week in Berrien, Van Buren, Allegan, and Grand Traverse counties, and it demonstrates well how variable the season is across the state. Visit other weather stations at the Enviroweather site (www.enviroweather.msu.edu) to check conditions in your own location. Once at the Enviroweather homepage, access this GBM Model by first clicking on the yellow dot representing the nearest weather station. Then navigate to the model by selecting Fruit from the menu bar at the top. Scroll down the menu at the left of the page for Grape, and then Grape Berry Moth. Clicking on this will bring up a table full of numbers relevant to that specific weather station and its conditions this season.

First, look along the top for the date of wild grape bloom at your site. Then, look down that column for the point at which 810 DD have been accumulated. Once the model reaches 810, and then 1620 DD, the cells in the table turn red to alert you. Based on the current weather conditions this spring we are not quite at the point when the second generation egglaying is starting. Because the model also uses the predicted weather conditions to calculate DD one week ahead, we can see that it looks as if the weeks after July 4th weekend will see the predicted start of the second generation of berry moth in 2011. This will be happening early in the month in SW Michigan and much later into July in NW Michigan.

The 810 DD spray timing is the ideal timing for using the reduced-risk insecticides Intrepid (8-12 oz/acre) or Altacor (4 oz/acre) since these have activity on eggs and young larvae and are best timed for early egglaying. In our recent MSU tests at commercial grape farms using these new insecticides timed at 810 and 1620 DD with the degree day model, growers have consistently achieved better control of GBM compared with sprays on a calendar spray program with conventional broad spectrum insecticide products. Beware that both of these insecticides must be applied in a way to get excellent coverage of the clusters to work well against GBM. Additionally, Altacor reduces the level of Japanese beetle feeding on grape leaves and can therefore provide control of both pests if they are present in July or August (and we have started to see Japanese beetle for the first time this week).

Growers have many other insecticide options available to them for berry moth control, including organophosphate, carbamate, and pyrethroid insecticides. These are best timed for egg hatch, which is expected to start 100 DD after egglaying starts. So, for the second generation it would be best to make a broad spectrum application at 910 DD, typically a week or more after the predicted start of egglaying. At this time of the season, some important issues to be aware of include 1) cluster coverage is critical for GBM control, 2) if using pyrethroid insecticides their residual activity will be shorter in hot and sunny weather, 3) if using a product with only a week of residual control this will be insufficient to cover the second generation completely and reapplication will be needed to cover the second generation.

For high pressure vineyards getting good control of the second generation of GBM is important to minimize later-season berry cracking and diseases. Watching the degree day model for your local site will help refine the timing for protecting your vineyards in July. The third generation of berry moth, when population pressure climbs rapidly is typically starting about one month after the second. So, check back

in later in the summer to determine when the 1620 DD timing is reached. (***Source**: Michigan Grape & Wine Update, June 30, 2011*)

Japanese Beetles

Joseph A. Fiola, University of Maryland

Japanese beetles are already making their presence known in Maryland vineyards. They create large holes in the younger leaves of your vines and cause severe lacing in heavy infestations. Because of the drought conditions of the past 2 years, it is predicted that the JB's will not be as great a problem as they have been in some recent years. Always be extra careful in young vines as they cannot tolerate severe defoliation.

- Japanese beetles (scarab beetle family) are approx. 1⁄2 inch with metallic green bodies and copper-colored wings.
- They are voracious feeders and attack the foliage of numerous woody and ornamental species (roses are a preferred food) as well as grapevines.
- Adults emerge from the soil and begin moving into vineyards in late June.
- Scout for damage and the presence of beetles from mid-late June through mid-late August.
- They tend to feed on younger leaves.
- They remain present for about 2 months during which they feed, mate, and the female lays eggs in the soil.
- Because they are constantly emerging and moving into the vineyard, constant scouting and vigilance is required and control measures may be needed quickly and even frequently.
- Remember that well-established vines can tolerate significant foliar feeding by Japanese beetles, when it is the upper younger leaves that are above the top catch wire and about to be hedged off anyway.
- In an extreme infestation without control vines can be completely defoliated.
- Younger vines tolerance is much less because total leaf area can easily be defoliated which can lead to
- increased winter damage and vine death.
- Japanese beetles become established in an area (in the turf) and populations rapidly build up over a couple of years.
- Once established, the chances of eradicating them from an area are slim.
- They have a very broad list of alternate species they feed on and have been known to fly for up to 5 miles.

Control:
- If you have a few in the vineyard, just "squish" them on the leaf. There is evidence that the dead beetles may repel others.
- The best materials for controlling Japanese beetles are Sevin®, Danitol®, Assail®, Avaunt® [and Voliam Flexi®].
- Imidan® (14 day REI!) and Malathion® are also labeled for control.
- Surround® can be used to protect the foliage from feeding and has been very effective in,some locations.
- Remember the risk of using frequent, repeated sprays of Sevin® is that it also kills many beneficial insects (including mite predators) which can then lead to a mite outbreak. Especially in hot dry weather.
- Where Japanese beetle populations are low or beetles are just beginning to be seen and fewer sprays are needed, using a "softer" insecticide can reduce the risk of mite outbreaks.
- Always read the pesticide label for complete information and product safety.

For further information on the biology and control of Japanese beetles, check out the following websites:
http://www.ento.vt.edu/Fruitfiles/JBGrape.html
http://www.uky.edu/Agriculture/Entomology/entfacts/trees/ef409.htm
http://ohioline.osu.edu/b919/0011.html
(**Source**: *Maryland Timely Viticulture, Mid-season Crop Management, 7/9/09*)

Disease Management:

Downy Mildew

Alice Wise and Wayne Wilcox, Cornell University

Downy mildew control requires a combination of canopy management, rotation of products and vigilance. Canopy management is an important component of DM control. For example, timely hedging of the canopy and leafing of the cluster zone both allows leaves and fruit to dry out more quickly. Keeping downy mildew completely out of your vineyard is difficult in a year like this. Besides the deluge of last week (2-3" of rain 6/24), we had a long stretch of foggy mornings and cloudy but warm days. Fortunately, as of June 30 we have a good stretch of nice weather which will temper the spread of infections. A few spots (we all have them) do not reflect failed management, rather it reflects how challenging DM control can be when weather is favorable for it. Treatment options are listed below. Note that price may be a factor in selection of product as well.

- **Mancozeb** - A 66 days to harvest restriction on mancozeb products means that time of harvest is becoming a consideration. This may not be an option for earlier varieties or blocks used for sparkling wine. A protectant only.
- **Ridomil Gold/Copper** is still an option (42 day PHI). Ridomil is very effective, also resistance prone, though if used prudently (not applied repeatedly to raging infections) the development of resistance is much less of a risk. Ridomil has both protectant and postinfection ability.
- **Copper** is a good protectant and can be tank mixed with sulfur. Copper can cause phyto, even with a spray lime safener, if drying conditions are poor.
- **Phosphonate** products have been widely used and effective. Many however have felt that they don't hold up under pressure. This slippage is a possible symptom of early resistance. However, with big canopies and possible compromises in coverage, don't rush to judgment on this topic. These can be tank mixed with sulfur. There have been a few reports of phyto from PA-sulfur tank mixes.
- **Captan** is a good protectant but does not offer post infection control. Should we get into extended wet conditions, captan has the advantage of providing good activity against most of the common non-Botrytis cluster rots that can occur under those conditions. Note that most labels have 48-72 hr REI's, down from 96 hrs.
- **Ziram** is another labeled protectant that offers DM control, although it is not as effective as captan.
- **Revus** is newly registered in 2009, reflecting a unique class of fungicides on grapes. It is absorbed into leaves and provides at least some post-infection activity. It did well in trials at LIHREC as well as in Wilcox's trials. Grower experiences last year were good but then pressure was moderate at best. It is not a miracle product and the same warnings about resistance apply to Revus – don't apply to raging infections and rotate with different chemistry products.
- **Strobilurins** –Tanos is not technically a strobie but according to Wilcox has the same mode of action as Abound and Pristine. Thus it is not a suitable rotational partner for these materials. Also the Tanos label requires that it be tank mixed with a protectant fungicide. As a group, these products have provided decent control of DM but there have been failures under heavy disease pressure. In more southerly regions, resistance has been documented by researchers.
- **Presidio**--Unrelated to any other grape product on the market. It has locally systemic properties, hence some postinfection activity, although this is not well characterized. It has consistently provided excellent control in Wilcox's trials. Note that Presidio is restricted use and has a tank mix requirement.
- **Ranman**--Also unrelated to any other grape product. Primarily a protectant fungicide, it has provided good to very good control in our trials when used alone, very good to excellent control when tank-mixed with a phosphorous acid product to add post-infection activity. The label has multiple resistance warnings and a 100 GPA minimum water requirement.
- **Reason**—Not labeled for use on grapes in Nassau and Suffolk Counties of NY.

(***Source**: Long Island Fruit & Vegetable Update, No. 16, June 30, 2011)*

Weed Management:

Mechanical Weed Control Options

Michael Colizzi, Finger Lakes Grape Program

Proper mechanical weed control is all about timing. As is the case with chemical weed control, it is much easier and more effective to cultivate weeds when they are three inches high rather than when they are 3 feet high. Mechanical weed management can be relied on as your only method for weed control or in combination with a chemical program. Rotating between chemical and mechanical methods will help to ensure you don't burn out herbicides. However, it can be a time-consuming and more expensive practice that requires attention throughout the growing season. For grafted vines, the process of unhilling in the spring tends to work well as an early mechanical weed control. A few of the more commonly-used systems include those from Braun, Weed Badger, and Green Hoe.

Braun offers several different cultivators, all of which are hydraulically operated and feature a trip arm to guide them in and out of the vines. There are a couple of attachments for these units, which can be used for hill-up and take down as well as suckering. The unit features hydraulic lift and tilt to accommodate steep vineyard slopes. The Braun uses a flat blade that slices along just under the soil surface cutting the roots of the weeds. On the back of the blade are lifter tines, which help to expose the roots to air and sunlight preventing the roots taking hold again.

Weed Badger has many mechanical weed control options. All of these machines use a rotating disc with metal cultivator tines to disrupt and rip out the weeds. Some of these units are sensor-controlled while others rely on the operator to guide them in-between the vines. Weed Badger's tractor-mounted units have external hydraulic tanks and pumps, which means they can be used on tractors from 25-90 horsepower. They also have a tilting head feature, but it is not hydraulically controlled like the Braun is. Attachments for this unit include a broom, rake, sweeper/tiller, disk, spade, and mower. One limiting factor of the rotating head is that tall or vine-like weeds or can become entangled in the tines – another reason why it is important to cultivate while the weeds are young.

Green Hoe provides a couple of cultivator options for their Hyd-Row-Hoe platform, which includes a rotary cultivator, tooth cultivator, and an undercut blade. The tooth cultivator can be outfitted with an automatic sensing attachment. There are also other attachments for this unit that include a disc mower, a vine auger, and a graft cleaning brush. (**Source**: *Lake Erie Vineyard Notes*, #6, June 24, 2011)

Weather data: (Source: UMass Landscape IPM Message #17, June 24, 2011)

Region/Location	2011 Growing Degree Days (base 50˚ from March 1, 2011)		2010 Growing Degree Days (base 50˚ from March 1, 2010)
	1-week gain	total accumulation for 2011	total accumulation at comparable 2010 dates
Cape Cod	130	693	*869*
Southeast MA	129	684	*872*
East MA	147	739	*947*
Metro West MA	126	743	*851*
Central MA	120	693	*861*
Pioneer Valley MA	116	756	*906*

Berkshires MA	100	604	811

Additional Weather Data is available form the following sites:

UMass Cold Spring Orchard (Belchertown MA), Tougas Family Farm (Northboro MA), and Clarkdale Fruit Farm (Deerfield MA) at http://www.umass.edu/fruitadvisor/hrcweather/index.html

University of Vermont Weather Data from several sites around the state at http://pss.uvm.edu/grape/2010DDAccumulationGrape.html

New Hampshire Growing Degree Days at http://extension.unh.edu/Agric/GDDays/GDDays.htm

Connecticut Disease Risk Model Results at http://www.hort.uconn.edu/ipm/

Network for Environment and Weather Applications program run by the Cornell IPM team at http://newa.cornell.edu/.

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We also acknowledge the excellent resources of Michigan State University, Cornell Cooperative Extension of Suffolk County, and the University of Vermont Cold Climate Viticulture Program. See the links below for additional seasonal reports:
University of Vermont's Cold Climate Grape Growers' Newsletter
UConn Grape IPM Scouting Report

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