News you can use

**Disease management**
When fruit clusters become visible, protect them from Phomopsis with a fungicide application.

**Insect management**
Rose chafer are out, especially in sandy sites. Consider an insecticide treatment if population levels are above threshold. We have also seen the first signs of potato leaf hopper in both SW and NW Michigan. Grape berry moth trap catches are increasing.

**Grower meetings in June**
Check out the calendar of events on page 12 for the next grower meetings in your area.

**Enology education event in August**
Mark your calendars! The next enology education event will be on Monday, August 16 in SW Michigan and Wednesday, August 18 in NW Michigan. This day-long workshop will feature keynote speaker Dr. Nichola Hall. Nichola will present on many timely topics as we approach harvest: basic wine microbiology, fermentation management, nutrition, and sanitation. This will be a great workshop as we prepare for the insanity of harvest and crush. More details to come!

**Growing Degree Days**

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2009</th>
<th>AVG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lawton</td>
<td>5/27</td>
<td>572</td>
<td>417</td>
</tr>
<tr>
<td></td>
<td>6/3</td>
<td>715</td>
<td>487</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>forecast</td>
<td>6/10</td>
<td>808</td>
<td>578</td>
</tr>
<tr>
<td>Benton Harbor</td>
<td>5/27</td>
<td>500</td>
<td>394</td>
</tr>
<tr>
<td></td>
<td>6/3</td>
<td>628</td>
<td>456</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>forecast</td>
<td>6/10</td>
<td>720</td>
<td>547</td>
</tr>
<tr>
<td>Leelanau</td>
<td>5/27</td>
<td>416</td>
<td>243</td>
</tr>
<tr>
<td></td>
<td>6/3</td>
<td>533</td>
<td>270</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>forecast</td>
<td>6/10</td>
<td>609</td>
<td>307</td>
</tr>
<tr>
<td>Old Mission</td>
<td>5/27</td>
<td>384</td>
<td>214</td>
</tr>
<tr>
<td></td>
<td>6/3</td>
<td>486</td>
<td>240</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>forecast</td>
<td>6/10</td>
<td>562</td>
<td>275</td>
</tr>
</tbody>
</table>

See enviroweather.msu.edu for more information.
Conditions remained unseasonably warm for the end of May and are still ahead of our 20-year average. Daytime temperatures reached into the mid-80’s and even into the low 90’s in parts of the north. Nighttime temperatures were also higher than any time this spring, and we observed lots of insect activity with these conditions. Conditions remain particularly dry in NW Michigan. Very little rain fell in the region, and most stations received less than 0.1 inch of rain. Wine grapes in the region are anywhere from 1-2’ of shoot length, and bloom is just around the corner for some varieties.

The first grape berry moth was caught in Leelanau County on 19 May and reports of wild grape bloom have spanned from 26 May through 1 June around the region. The grape entomology team has been working to develop and perfect a model for this pest. The model targets the start of second and third generation egglaying to help identify key treatment timings. According to the model, as of 3 June we have accumulated 131 DD47 if wild grape bloom (biofix) occurred on 26 May in your vineyard. The first treatment window for sites with significant pressure is at 810 DD47 after biofix, and this timing is a ways off.

This week we observed some high infestations of forest tent caterpillar in vineyards. It appears that the caterpillars crawled or were blown in from neighboring woodlots. At this stage of development they have begun to form a protective yellow case (sometimes on grape leaves and vines) where they will develop into the adult moth stage. Management for this pest is not recommended at this time. Forest tent caterpillar follow a boom-bust cycle of population density, and the 2009-10 seasons have seen extremely high populations around northwest Michigan. Forest tent caterpillars are a native species with indigenous natural enemies, diseases, and resource limitations that are expected to naturally control populations in the coming seasons.

Potato leafhopper was trapped this week but appears to be at relatively low levels, growers should remain vigilant for the tell-tale signs of leaffopper damage. Potato leafhoppers can be very destructiv on hybrid or vinifera varieties that are sensitive to the saliva they inject while feeding. Feeding is concentrated on young tissues near the shoot tips. On sensitive varieties, only a few adults are needed to cause leaf yellowing and cupping or shortened shoot internodes.

Some very tiny hornworms were also spotted feeding on leaves in vineyards. Larvae may be brown or green with spots on the sides and a distinctive “horn” on the rear end. The larvae can grow to 5 inches long, and feed voraciously during development. Hornworms are more of a concern in young vineyards with limited leaf area. Larger vines can usually tolerate some leaf area loss from their feeding. Lastly, webworm was observed in multiple vineyards and deer damage was spotted as well.

Beneficials are out in full force, and lady beetle population seem particularly high. Assassin bugs were also spotted at one site. Adult assassin bugs are medium to large insects and range in color from brown to green. They have long heads with a groove between the eyes and curved beaks. Both the adults and nymphs are important beneficial predators.
SOUTHWEST

Steve Van Timmeren, Research Technician
Trevor Nichols Research Complex

Things are progressing rapidly in the vineyards with lots of insects showing up, although some of these pests won’t likely reach economic thresholds. Scouting your vineyards regularly to determine your own pest pressure is the best way to manage infestations.

Grape Flea Beetles. Grape flea beetle larvae are being found. These larvae are about the size of a grape berry moth larva but are yellow-brown with dark spots and a dark head. You’re most likely to see them feeding on leaves at the borders, but management is generally not necessary.

Rose Chafer. A few rose chafers were spotted on clusters at three of the four vineyards, but none were at high enough levels to warrant control. It’s important to scout for rose chafers during bloom since they can cause significant damage where they are present.

Potato Leafhopper. Potato leafhopper adults started showing up on leaves during scouting last week. This week we’re seeing quite a few nymphs on the leaves at the Berrien Vignoles site and the Allegan Chardonnay site. If you have susceptible wine grape varieties you should be looking closely for potato leafhopper nymphs on the undersides of your leaves. Once populations begin to increase they will continue to increase until you apply control measures.

Grape Berry Moth. Grape berry moth adult male trap catches have increased dramatically beginning last week, indicating that the moths are flying in force. Egg-laying should be starting soon with young larvae hatching shortly afterwards. Remember that any control measures should be targeted at the larva and not the adults. The average timing usually works out to be approximately 10 days post-bloom. If you plan to use the GBM growing degree day model you need to know when wild grape bloomed on your farm. Most of our vineyards in southwest Michigan reached wild grape bloom anywhere from May 22 to May 26. From this point we are accumulating growing degree days with second generation GBM egg-laying predicted to start around 810 GDD.

Phomopsis. Phomopsis spots continue to show up on leaves in low amounts. In areas that have received fewer protectant sprays this spring we’re seeing quite a few infections showing up on shoots and cluster rachises in addition to the normal leaf spots.

Banded Grape Bug and Lygocoris. We’ve seen a few banded grape bug and Lygocoris nymphs showing up at the borders of vineyards. They are a sporadic pest but can cause economic damage by feeding on pre-bloom clusters. If you find more than 1 nymph per every 10 shoots you may want to consider applying an insecticide. However, make sure to scout both the vineyard borders and interiors since populations can vary widely within a vineyard. If they are only found on the borders, spraying is probably not worth it.

Growth Stages. Some bloom has been found on primary clusters at all sites. The Van Buren Concord site had 80% of clusters in bloom, with about 30% of the flowers open. The Berrien Concord site had 90% of clusters in bloom, most in full bloom with a few post-bloom. The Berrien Vignoles site and the Allegan sites had 10-20% of clusters showing trace amounts of bloom.
**Setting biofix for the grape berry moth model in 2010**

This season is off to a break-neck start in Michigan, with degree days accumulated well ahead of normal. We are also ahead of last year’s heat accumulation at this time. This early-season heat means that grape berry moths were trapped in monitoring traps early this season, and wild grape bloom was observed before the end of May throughout most of our region. The crop and this key insect pest are both running ahead of normal, and this season will provide a good example of why degree-day based management decisions are important to consider rather than a calendar-based approach.

MSU’s Grape Berry Moth Model uses wild grape bloom as our ‘biofix’. This means we start counting degree days from 50% wild grape bloom, which is also around the time that black locust trees start dropping flowers. For this season, the approximate dates of wild grape bloom in Michigan (and southern Illinois for comparison) are reported in Table 1. Growers can use this as a guide if they were tracking their own wild grape vines, or if you missed that this season, use the site nearest to your farm.

From this biofix date, the GBM Model predicts that egglaying by the second and third generations of this pest will start at 810 and 1620 degree days (base 47 °F) later. To track this easily in Michigan, use the Enviroweather system available for free online at [www.enviroweather.msu.edu](http://www.enviroweather.msu.edu). By selecting the nearest weather station from the map, then clicking on ‘Fruit’ then ‘Grape’ then ‘Grape Berry Moth’, you will reach a table with dates along the top and down the side. Select the date of your biofix from the top of the table, and look down that column. Once the values reach 810 (the boxes will turn red), that is the predicted start of egglaying by grape berry moth second generation, with egg hatch predicted about 100 degree days later (910). At that time, selection of an appropriate insecticide should be made to protect clusters from grape berry moth in vineyards where there is sufficient crop to protect.

While it is too early to tell what June and July have in store for us this season, these early bloom dates suggest that we will reach 810 degree days from wild grape bloom in late June or early July. You can check progress towards this target for cluster protection by weekly visits to the Enviroweather site. As we approach the time for these critical sprays for berry moth control, the Grape & wine newsletter will run an article with an update on how the degree days are progressing, and on the available insecticide options and their relative performance for control of this pest.

<table>
<thead>
<tr>
<th>Location</th>
<th>Wild grape bloom biofix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern Illinois</td>
<td>May 19</td>
</tr>
<tr>
<td>Berrien County, MI</td>
<td>May 24</td>
</tr>
<tr>
<td>Paw Paw, MI</td>
<td>May 24</td>
</tr>
<tr>
<td>Lawton, MI</td>
<td>May 24 - June 1</td>
</tr>
<tr>
<td>Allegan County/Fennville, MI</td>
<td>May 26</td>
</tr>
<tr>
<td>Leelanau County MI</td>
<td>May 30</td>
</tr>
</tbody>
</table>
Regalia, a new fungicide for organic and conventional disease control

Regalia is a new fungicide for grapes and berry crops with a different mode of action from most other fungicides. It is made with an extract from the plant *Reynoutria sachalinensis* (giant knotweed) which, when sprayed on plants, activates natural plant defenses. This induced diseased resistance is not systemic (i.e., only treated green leaf area is protected), but there is a translaminar effect. This means that when the product is sprayed on the top of a leaf, the bottom of that leaf also is protected. New plant growth is not protected – therefore the product needs to be reapplied on a 7-14-day schedule. The resistance induction takes 1 to 2 days and light is required. Therefore, Regalia should be used as a preventative treatment. It is listed by the Organic Materials Review Institute, which means that it is suitable for organic crop production.

The product sold as a micro-emulsion concentrate and should be shaken well prior to use as there are solids in the extract. Use a 50-mesh nozzle screen or larger. The addition of a wetting agent is recommended. Regalia can be tank-mixed with other fungicides to enhance control. Regalia is also a suitable choice for alternation with other effective fungicides in an IPM program and is also an option for fungicide resistance management. Regalia is compatible with many commonly used pesticides, fertilizers, adjuvants and surfactants, but has not been evaluated with all potential combinations. Regalia is labeled for use against powdery mildew, downy mildew, black rot and Phomopsis in grapes.

The use rate is 0.5-1% (or 2-4 qt in 50-100 gallons of water) when applied alone or 1-4 qt per acre when tank-mixed with other fungicides. Use higher volumes with larger crops and extensive foliage to ensure thorough coverage but avoid excessive water volumes that might result in runoff. Apply Regalia preventatively every 7-14 days. Under high disease pressure, use in a tank-mix with another registered fungicide for more effective control. The restricted entry interval is 4 hours and the pre-harvest interval is 0 days. In small plot field trials with an older formulation, Regalia in Michigan provided moderate to good activity against powdery mildew and Botrytis bunch rot of grapes. Additional trials with Regalia are being conducted in grapes this year.
The great debate: Bottle closures in the wine industry

Leah Strate, Michigan State University

The following article was written as an honors option student project for the course ‘Exploring Wines and Vines’, taught by Ron Perry, Department of Horticulture, Michigan State University. It is reprinted here with the authors permission.

While it is often thought that Dom Perignon was the first to use cork as a closure for wine bottles, the history of cork as an enclosure actually dates back to 500 B.C. Roman shipwrecks from that period have been said to contain bottles of wine stopped with corks, although these corks differed significantly from those used today (Taber, 2007). Over much of the next millennia, the use of corks was largely abandoned due to the fall of the Roman Empire, as well as the rise of the Moors, who were forbidden to drink alcohol by the Koran. During the 14th century, corks again became the most popular closure for liquids in containers, especially wine (Taber, 2007). The treatment and storage of wine since then has come a long way, and innovative solutions have come about in response to consumer demand for a quality product as well as competition between producers and marketers. Advances in technology have allowed for the improvement of corks and the development of new enclosure methods. However, consumers, wine makers, and wine marketers have not always embraced alternative methods enthusiastically. It is yet to be determined whether the market will accept new innovations in this area, or if the attempts by many to continue using traditional corks will prevail.

In an attempt to combat some of the shortcomings of natural corks, several new types of closures have been created. The three most common wine bottle closures, and the ones that will be focused on in more detail, are natural cork, synthetic cork, and screw caps. While there are advantages and disadvantages associated with each of these types of closures, the bottom line is that the wine industry must find a balance between quality control, price control, and market appeal in order to be successful.

Natural Corks

Natural cork is still the most widely used and accepted type of bottle closure, with less than 1% negative sentiment from wine drinkers, according to a U.K. survey (Barker). Advocates of natural cork cite several advantages of the traditional closures over alternative closures, maybe none more important than their ability to allow wine to age and improve over long periods of time. There is a widely held belief that cork is an essential component of the long-term aging of a wine, and that the slow oxidative process that apparently takes place through cork generally rounds out a wine and softens the tannins. This process relies heavily on the quality of cork used, because if any fissures or cracks exist in the cork, then the oxidation process will occur too quickly and ruin the wine. Cork is also known to be a material which can withstand extreme pressures and temperatures, and is also long lasting. In fact, in 1956, 20 bottles of vintage 1789 wine were found with corks still in them in a French cave. The corks were still in fine condition, and the wine was still preserved, although slightly brown and obviously over-aged (Barker).

Another aspect of natural cork that can never be reproduced by any alternative is its appeal as the “traditional” method that has been utilized for centuries and is an integral part of the wine drinking experience. Many experienced and premium wine drinkers perceive natural cork an integral aspect of the romance and sophistication of wine drinking. While it may not be the most logical explanation for a preference towards natural cork, the debate over wine closures is still heavily influenced by consumer’s emotional appeal.

While there are many advantages of using natural corks, there are also major disadvantages that have precipitated the development of alternative closures. The major downfall of natural cork is its tendency of harboring the chemical compound 2, 4, 6-trichloroanisole, more commonly referred to as TCA. The compound, which was first identified in the early 1980’s by Hans Tanner, forms through the interaction of plant phenols, chlorine, and mold, and is so powerful that it can be detected in infinitesimal amounts (Taber, 2007). The threshold for many expert wine drinkers may be as low as 1 part per trillion, while an average wine drinker may detect TCA at levels of 5 parts per trillion (Laube, 2007). TCA most often originates in the bark of a cork tree and is transferred directly from the cork to the wine after bottling. However, it can also originate elsewhere in wineries where damp surfaces
and chlorine based cleaning products are commonplace, including barrels, wooden pallets, wood beams, and cardboard cases (Laube, 2007). Streptomyces spp. bacteria are often implicated in the formation of the “musty” compounds in corks, including TCA (Fugelsang and Edwards, 2007). When TCA is present, wines are said to be “corked,” and they often have a moldy or musty smell that makes the wine undrinkable. The estimated frequency of TCA-tainted bottles varies significantly, depending upon who the estimate comes from. The cork industry estimates that only 1-2% of corks are tainted, while Wine Spectator reported that the average amount of “corked” wines that are opened for wine tastings in California routinely runs around 15% (Laube, 2007). TCA is a problem that not only costs wineries millions of dollars every year in lost business, but also the loyalty and trust of their customers.

Other disadvantages of natural cork exist, including their tendency to shrink slightly when they become dried out, sometimes the result of being without contact with the wine for extended periods of time. This presents challenges in both storing and shipping, during which bottles must be placed horizontally in order to keep the cork moist to prevent air from entering the wine and causing oxidation, as well as to prevent leakage. Also, high quality natural cork is relatively expensive when compared to alternative closures. This is due to the fairly limited supply of cork oak trees and the time it takes for raw cork to mature enough to be used as wine corks. 80% of the world’s cork trees are located in Spain and Portugal, and it takes several harvests before raw cork from the cork oak tree is suitable for wine bottling, typically about 25 years (Taber, 2007). When the cork is finally mature enough to become a bottle enclosure, it must undergo a fairly labor-intensive process that varies depending on the quality of the wine cork. This lengthy, arduous process results in a product that is in high demand as reflected by price for the product. The average price of a good quality natural cork can range anywhere from 50 cents to one dollar per cork (Goode, 2008), as opposed to synthetic wine corks which average between $0.10 and $0.20 per unit (WidgetCo).

As with all types of wine bottle closures, there are both advantages and disadvantages of using natural corks. TCA is natural cork’s greatest downfall and is a problem that many winemakers are choosing to avoid altogether through the use of alternative closures. Many winemakers and consumers, however, are not willing to give up natural cork for its ability to continue aging wine within the bottle. However, as wines in general are beginning to be drunk younger, the necessity of using natural cork for the majority of wines appears to be declining.

**Synthetic Corks**

Synthetic wine corks were developed as a response to combat the downfalls of natural cork. They are manufactured using a type of plastic called thermo plastic elastomers, and are free from the fine pores that natural cork contains. All synthetic corks are manufactured using medical or food grade plastics. Synthetic corks became widely available in 1992 when Supreme Corq, a leading manufacturer of synthetic corks, was established in Washington (Goode, 2008). It is estimated that about 10% of all wine bottles in the world are sealed with synthetic corks, and that number is expected to increase in the future (Barker).

The main advantage that synthetic corks hold over natural cork is the fact that they are composed of a solid piece of plastic which does not harbor the harmful TCA compound. Thus, synthetic corks are lauded for being neutral products that do not add or “scalp” any flavors to the wine. Another advantage of synthetic corks is how they behave under adverse conditions, specifically during temperature variances. Whereas natural cork will inhale air to replace volume in the headspace after heating and cooling, synthetic corks are simply sucked further into the bottleneck when the wine contracts (Barker). Essentially, synthetic corks prevent oxygen from entering into the wine bottle and thus risking spoilage during periods of temperature change. Additionally, synthetic corks allow for the “pop” that many wine drinkers desire, without the chance of the cork breaking or crumbling into the wine, which occasionally occurs with natural corks. Many winemakers who have switched over to using synthetic corks have saved significant amounts of money, due to the lower price when compared with natural corks. While the lower price alone should not be the determining factor for wineries to make the leap from natural to synthetic, it is undoubtedly an added benefit.

While much credit can be given to synthetic corks for their ability to prevent TCA, there are other disadvantages which many consumers and winemakers cannot see past. It has been said by some synthetic cork opponents that they serve no other purpose than that of a “plug” (Amorim, 2001). While natural corks are often used as tools to initially decipher the quality, aromas, and freshness of a wine, synthetic corks simply do not take on any of the characteristics of the wine which it is enclosing. Thus, it is impossible to determine a bottle that has been oxidized with a synthetic cork since it has no natural drying fibers. Further, synthetic corks are impermeable to even the slightest amount of air, and in many people’s opinions this makes them incapable of conducting any aging of the wine inside the bottle. The air that is allowed through the pores of a natural cork, although miniscule, is the reason for the slow aging process that takes place in bottles sealed with them. Since synthetic corks do not allow for the wine to make contact with even the slightest bit of oxygen, these corks are typically not appropriate for bottles meant to be aged for longer than a year (Barker). However, this is becoming less and less of a problem, since about 90 percent of wine is consumed within a year of purchase, and most is drunk within 24 hours (Barker).
Another critical drawback of synthetic corks is their inability to retain sulfur dioxide levels in the wine. Sulfur dioxide is a common wine preservative which protects wine from oxidation, and when levels of sulfur dioxide drop to a certain level, excessive development and oxidation are likely to proceed quickly. Evidence from numerous studies has shown that synthetic stoppers do not perform as well as cork and screw caps for retention of sulfur dioxide, especially in the second year of storage (Amorim, 2001). This makes it necessary for winemakers to significantly increase the amount of sulfur dioxide at the point of bottling (Barker).

In the past, synthetic corks were criticized for their difficulty in extraction as well as their propensity to oxidize due to the seal not being tight enough and allowing too much oxygen to enter the bottle. Both of these problems were resolved by reconstructing the makeup of the corks into two parts, an outer core which is made of a tight, thin layer of elastomer to provide a tight seal, and the inner core which is made of a softer, foam-like material and is easier to extract (Goode, 2008). However, many consumers remain unaware of the improvements made to the early synthetic corks and still remain skeptical of them.

While synthetic cork does not appear to be the perfect alternative to natural cork, it has had much success in overcoming some of the pitfalls of natural cork. Many winemakers and experts believe that synthetic cork is advantageous for wines meant to be consumed within one year, including most white wines and relatively inexpensive red wines, because of its resistance to TCA contamination. As consumers continue to buy wines less and less for long term storage and more for immediate consumption, synthetic corks are an increasingly viable option.

**Screw Caps**

The closure debate continues to be a heated topic for traditionalists and forward thinkers alike, but no alternative closure has received as much attention as the screw cap. A screw cap refers to any metal cap which is sealed over a bottle top. The term “Stelvin” is used interchangeably these days, but should specifically refer to the patented closure developed in the 1950s by La Bouchage Mecanique. Screw caps are the answer to many winemakers and retailers prayers, who have been repeatedly disappointed and frustrated by the occurrence of TCA taint in natural corks. Not only do screw caps resolve the issue of TCA contamination altogether, they have for the most part been found to effectively preserve wines. There has certainly been acceptance of screw caps in certain markets, such as New Zealand, with screw cap usage at an estimated 90% (Goode, 2008). However, the biggest hurdle screw caps face is their lower quality image and the question remains whether the market will accept the product as natural cork’s predecessor.

The effectiveness of screw caps depends on the quality and type of liners on the inside of the cap. The types of liners used give winemakers an element of control over the desired permeability of the seal. Currently there are two types of liners used: saran/tin and saranex liners. The first is completely impermeable due to a layer of tin sandwiched between layers of polyethylene, and is used almost exclusively in New Zealand and Australia. The second liner allows for a little more airflow than the average cork, and is largely the liner of choice for the rest of the world (Goode, 2008). The ideal liner would have a level of permeability somewhere in between the two current ones, but for now these are the options that winemakers are faced with, and as a whole, screw caps with both types of liners have both advantages and disadvantages.

The most obvious and talked about advantage of screw caps are their ability to seal a bottle of wine without the risk of TCA. As this characteristic has already been discussed in depth regarding synthetic corks, this paper will focus on the other advantages screw caps possess. First, as compared to synthetic corks, screw caps are much better at maintaining desired levels of sulfur dioxide, performing fairly consistent with natural cork. Thus, screw caps are a good means to protect wines from oxidation by keeping sulfur dioxide at desired levels (Amorim, 2001).

Another aspect of screw caps which is considered by some to be a benefit and by others to be a weakness is its general impermeability to air. Although the saranex liners allow for a bit of permeability of oxygen, for the most part screw caps are recognized to be impermeable to air. While many wine experts believe that tiny amounts of oxygen are necessary for a bottle of wine to mature inside the bottle, others dispute that oxygen is not a necessary component of the aging process. Vernon Singleton, a UC Davis Professor Emeritus and a leading international authority on wine aging, believes that chemical reactions responsible for aging are not oxygen dependent. His opinion is that bottle aging does not occur unless there is considerable protection from oxygen (Barker). Thus, the impermeability of screw caps to oxygen would not be a hindrance to wine quality, and would actually be more effective at protecting wine from unwanted contact with air and oxidation. There is still much more research to be done in this area before any side of the argument is deemed conclusive.

As Tyson Stelzer (2004) states in his book Screwed for Good, “corks are difficult little creatures to keep happy”. An aspect of screw caps that makes them appealing over natural cork is that they are fairly low maintenance when it comes to shipping and storing. There are many requirements that must be met in order for natural cork to do its job correctly, including specific and stable temperature conditions, ideal humidity, and horizontal
positioning. While it is still important for wine sealed with any closure to be stored at lower temperatures to prevent spoilage, screw caps have no requirements when it comes to humidity or storage positioning. This makes shipping more convenient and efficient, as bottles can be packaged standing up as opposed to on their sides. Finally, screw caps can be a way for wineries to save money in the long run by switching from cork, which can cost up to $1 per unit. However, the initial cost of switching from in-neck closures to screw caps is somewhat significant since completely new bottling equipment is needed, compared to synthetic corks which are compatible with existing equipment.

As with every alternative, there are also disadvantages to the screw cap. One such disadvantage is the issue of excess headspace in the bottle of the neck as compared to natural and synthetic corks, since screw caps do not fill the neck as the others do. Since the bottling lines for screw caps do not generally allow for the pulling of a vacuum, the headspace typically must be purged with an inert gas, usually nitrogen, before capping to reduce the amount of oxygen in the bottle (Barker). This is not so much of a problem as it is an added hassle for the winemakers, creating an extra step in the bottling process and using valuable time.

While too much oxygen is bad for wine and can cause oxidation, too little oxygen can also pose problems for a wine. The problem is called reduction, and it causes wines bottled under anaerobic conditions to develop all kinds of sulfur compounds and create off odors, ranging from sewage and burnt rubber to rotten egg and garlic. The common solution to reduction is to add copper to the wine before bottling, called copper fining, which has become a routine practice for winemakers using screw caps. However, this process does not guarantee that smelly odors won't develop later, and there are multiple problems with the technique. First, copper fining can have the unintended consequence of stripping wines of attractive aromas. Also, too much of the heavy metal is a potential health risk, and is seen by consumers and many winemakers as a step away from the natural winemaking process in a time when demand for natural and organic wines is on the rise.

The disadvantage of screw caps that has been their biggest setback in becoming a real contender in the closure battle is their assumed indication of a low quality wine. Wine marketers and wineries are often reluctant to make the leap from cork to screw caps because of the adverse effects it could have on the image of the brand and the risk of appearing to “cheapen” the brand. While there are numerous advantages of using screw caps, winemakers cannot afford to ignore the cognitive effects that screw caps have on the consumer.

While screw caps have been able to solve the issue of TCA that has for so long plagued the wine industry, they have also brought about new problems of their own. At the 2006 International Wine Challenge in London, while 4.4 percent of bottles showed signs of cork taint, 2.2 percent of bottles suffered from rotten-egg or onion odors caused by reduction. Although the failure rate of screw caps appears to be less than that of natural cork, it is a reminder that screw caps are not the perfect solution. While the search continues for the ideal wine closure, many new product developments have utilized a combination of the three alternatives in order to create a closure which meets the different criteria for the perfect wine closure. Some examples of these types of closures are the vino-seal, which is a glass seal released by Alcoa in 2003. By using a glass stopper with an inert O-ring, the vino-seal creates an airtight seal that prevents oxidation and TCA contamination. The downfall of the vino-seal is that its price is relatively high and comparable to that of cork, at around 47 to 63 cents (Goode, 2008). Another such closure is the Zork, which looks like a screw cap but “pops” like a cork. The Zork is composed of three parts; an outer cap providing a tamper evident clamp, an inner metal foil which provides an oxygen barrier similar to that of a screw cap, and an inner plug which creates the “pop” on extraction and reseals the bottle after use (Goode, 2008). While it is doubtful that there will ever be unanimous agreement on the “ideal” closure for a bottle of wine, good quality alternatives do exist and will continue to be improved upon until the perfect closure is found.

References
Taber, George M. 2007. To Cork or Not to Cork. New York: Scribner, 278 pp..
Is your winery signed up for the inaugural Great Lakes Wine Festival?

www.GreatLakesWineFest.com

This is the first event organized by the Michigan Wine Foundation to raise money for Michigan’s wine industry. Funds from this event and others will support viticulture and enology research and education for our industry.

Top reasons why your winery should participate:
1. An excellent facility to host events (NY has a similar event and in its 9th year it attracted 9,000+ people)
2. A commitment to Michigan only wine (and Michigan brewers in a separate tent)
3. Customers can taste wines & buy by the bottle as they leave the festival (all wine is bought wholesale from the wineries - this could be a money making event and great exposure!)
4. If all the wineries arrive Friday night for set up we could have a wine trail kickball tournament just for the fun of it! (WOMP & LPVA do have some experience in this endeavor so get your enthusiasm organized!)

Winery application can be found here

The Michigan Wine Foundation is a 501c3 organization that works to create scholarships, educational events, outreach, research and information to support the Michigan wine grape industry. The foundation works in partnerships to accomplish the activities identified as priorities by the industry. It is a 501 (c)(3) nonprofit newly organized in January 2009.

How is the Foundation Funded and Governed?
The foundation will be funded through contributions and grants made by individuals, companies and organizations. Special fundraising events will be organized to further support the organization. Donations to the 501(c)(3) nonprofit are tax deductible as allowed by law. A volunteer board of directors and committees govern the foundation. The foundation accepts checks, cash, and donated items for future auctions or events.

What Makes the Foundation Unique?
A foundation is one of the only vehicles that can collectively support and fund important industry needs like training for employees whether pruning vines or pouring wines. This truly is the wine and grape industry’s foundation! This umbrella organization can bring together resources and help to preserve unity and cooperation. Through the foundation, the industry can track and recognize its combined charitable and educational activities.

For more information, contact one of these individuals on the Board of Directors:
Liz Berger, 231-223-4110
John Burtka, 517-531-3080
Katie Maurer, 269-473-9463
Adam Satchwell, 231-935-1620
Spencer Stegenga, 231-223-7615
Grape scouting survey for new insect pests of grapes in Michigan

The Allegan and Leelanau County Conservation Districts will be conducting a survey looking for new pests of grape in West Michigan. The survey is sponsored by the Michigan Department of Agriculture and the USDA's Animal and Plant Health Inspection Service. Farms are most needed in Berrien, Grand Traverse, Leelanau and Van Buren Counties. Farms are also needed in Cass, Allegan, Kalamazoo and Kent Counties farms.

Three visits will be made to each participating farm, and no destructive tests will be required. There is no cost for participation.

The survey will target the following pests:
- Adoxophyes orana (summer fruit tortrix moth)
- Autographa gamma (silver y moth)
- Epiphyas posivitanna (light brown apple moth)
- Spodoptera littoralis (Egyptian cottonworm)
- Spodoptera littura (cotton cutworm)
- Thaumatotibia leucotreta (false codling moth)
- Cernuella virgata (vineyard snail)
- Meloidogyne mali (apple root-knot nematode)
- Heteronychus arator (African black beetle)

Interested in helping with this survey? Please call the Conservation District closest to your farm:

**SW Michigan grape growers:**
Tina Clemons, Allegan Conservation District: 269-673-8965, X3

**NW Michigan grape growers:**
Buzz Long, Leelanau Conservation District: 231-256-9783

Thank you in advance for helping with this survey!

---

Grape*A*Syst-ance

National Grape Cooperative, the Michigan Grape & Wine Industry Council, and the Michigan Wine Foundation are working cooperatively to have all Michigan grape producers complete the Grape*A*Syst workbook this year. Your participation is confidential and will provide baseline data for the sustainability of grape production in Michigan.

Need help completing the Grape*A*Syst workbook and/or action plan? Contact the Grape*A*Syst technician for your area:

**Berrien County:** Suzy Forraht
269-471-9111 X103
suzanne.forraht@mi.nacdnet.net

**Van Buren County:** Todd Tapper
269-569-0965
tapp3@yahoo.com

**NW Michigan & Paul Jenkins**
other regions: 517-648-5099
jenki132@msu.edu
Great Lakes Wine & Brew Fest
June 26-27
Michigan International Speedway

2010 NW Wine Grape IPM Updates
More information: Erin Lizotte, 231-946-1510.
June 4
3-5PM
NWMHRS
Speaker: Duke Elsner
July 9
3-5PM
2Lads Winery, OMP
Speakers: Paul Jenkins and Paolo Sabbatini
August 6
3-5PM
Ligon Farm, OMP
Speaker: Paolo Sabbatini
September 3
3-5PM
L. Mawby
Speaker: Rufus Isaacs

2010 NWMHRS Annual Open House
More information: Nikki Rothwell, 231-946-1510.
August 19
3-5PM
NWMHRS

2010 SW Juice Grape Grower Meetings
More information: Mark Longstroth
269-330-2790 or Diane Brown-Rytlewski
269-944-4126 X4012.
June 23
6-8PM
SWMREC
Speakers: Annemiek Schilder & Rufus Isaacs
August 17
1:30-3:30PM
Location TBA
Speakers: Annemiek Schilder & Rufus Isaacs

2010 SW Wine Grape grower meetings
More information: Diane Brown-Rytlewski
269-944-4126 X4012.
June 16
12PM
Tom Zabadal’s Vineyard, Watervliet
This meeting will feature wine and food pairings and a presentation by Tom Zabadal on crop adjustment and trunk renewal in mature vineyards. Cost: $25 per person.
August 4
12PM
Location TBD

2010 SW Viticulture Field Day
More information: Tom Zabadal,
269-944-1477.
July 29
9AM-5PM
SWMREC
Please note this event is on a Thursday this year.

ASEV-Eastern Section Conference
More information:
http://www.nysaes.cornell.edu/fst/asev/index.php
July 13-15, pre-conference tour July 12
Geneva, New York
Hobart and William Smith Colleges

National ASEV Conference
More information:
http://asev.org/national-conference-2010/
June 20-24
Seattle, WA
This meeting is in conjunction with the 7th International Cool Climate Symposium (June 20-22).