



# Texas Gulf Coast Vineyard Update September 2007

**Fritz Westover**  
Viticulture Extension Associate  
Texas Gulf Coast Region

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There has been a brief pause since the last Gulf Coast Vineyard Update. I hope that this pause after harvest has given growers time to reflect on the 2007 season and to take notes for the season to come. The 2007 season was not only challenging for Texas grape growers, but also a challenge (and tremendous learning experience) for the new Viticulture Extension Team statewide. Lately I have received several calls from growers requesting advice on post harvest vineyard activities. In this Vineyard Update I will discuss what growers can do in the vineyard from post harvest to leaf drop, address the challenges with pre-harvest Downy Mildew in 2007, and provide an update of current and ongoing research trials in Gulf Coast Vineyards.

### **Post Harvest Vineyard Management**

Despite the relatively dryer weather in September, Downy Mildew (DM) continues to be active in Gulf Coast vineyards at this

time. Weather conditions have been cooler than in most years and moisture is readily available from morning dew and isolated rain events. Downy mildew thrives in wet conditions with high relative humidity, and can remain active in temperatures up to 86°F. Growers who were able to maintain healthy green foliage up until harvest, still have a good shot at maintaining those green canopies until natural leaf drop.

During the time of post harvest to leaf drop, all of the standard chemical control methods become available for maintaining healthy, late season foliage. In regions of the state where cold winter temperatures are a problem, maintaining healthy leaves up until natural leaf drop is essential for storing carbohydrates in roots, cordons, and trunks. Fortunately for growers in the Gulf Coast, damage from low winter temperatures is rare; however, it is still important to maintain healthy foliage after harvest.

New feeder roots develop on vines between the time of harvest and leaf drop, allowing nutrients such as nitrogen and phosphorus to be taken into vines and stored in the roots, and other perennial tissues. Early shoot growth in the following spring is dependent on those nutrient reserves until new “spring” feeder roots are developed (usually after soil temperatures rise). Healthy fall foliage is needed to maintain the post harvest flush of root growth.

The best chemical choices for post harvest control of DM are those materials which are cheapest and at least risk for resistance development by pathogens. Examples of protectant materials (pre-infection) are Mancozeb/Dithane or Captan. Phosphorous acid products offer some systemic protection (post-infection) and some curative action and are also at low risk of resistance development.

Growers who have primarily Blanc Du Bois, Norton/Cynthiana or other varieties that tolerate DM might consider evaluating spray needs of those varieties separately from others of higher susceptibility, such as Black Spanish, Favorite, or most *Vitis Vinifera* varieties. I have been in vineyards this time of year where new foliage (shoot tips) of Blanc Du Bois were defoliated by DM but older leaves on the mid to lower shoot were not affected. Older leaves can generally tolerate some level of DM. This is worth mentioning, because spray intervals can be lengthened according to varietal susceptibility.

In other words, if you are losing a few shoot tips to DM but still have a healthy canopy on the remaining, mid to lower shoot portions, you could likely get away with one or two protective sprays of Dithane or Captan or phosphorous acid for the remainder of the season. The challenge lies in keeping leaves protected while still keeping within the seasonal vineyard expense budget. Growers will need to use good judgment and draw from previous experiences to determine when it is time to put the sprayer to rest for the season. It is also worth noting that foliar symptoms of late season DM differ somewhat from the

typical “oil spots” found in the spring. Figures 1, 2, & 3 show late season symptoms of DM on Blanc Du Bois.



**Figure 1. Symptoms of late season Downy Mildew on Blanc Du Bois. Leaves turn yellow while maintaining blotches of green tissue.**



**Figure 2. Symptoms of late season Downy Mildew on Blanc Du Bois. Yellow discoloration may become brown to bronze stipple on upper leaf surface.**



**Figure 3. Under side of yellowing Blanc Du Bois leaf showing patches of active Downy Mildew.**

**Vineyard sanitation** practices may also begin at this time. In the vineyard canopy, there are likely a large number of dried-up, “mummified” clusters that were either randomly missed during harvest or not harvested due to late season rot problems (Sound familiar?). There is much evidence in the literature showing that Black Rot spores over-winter on mummified clusters, providing significantly greater disease pressure in the following season. Whether you have clusters that rotted from Black Rot, or other late season rots, it is advisable to remove those potential sources of inoculum from the vineyard entirely. Burn, bury, or compost them. If complete removal is not practical, then at least drop those clusters to the vineyard floor, where their decomposition will be aided by soil organisms.

**For those of you who prefer a list of suggested activities:**

- Monitor for fungal diseases, especially Downy Mildew. Spray as needed and as economically feasible with the cheapest product options having lowest resistance potential.
- Cut rotten “mummified” clusters from the canopy, remove them from the vineyard or, at minimum, drop them to the vineyard floor.
- Monitor and spray for weeds as needed.
- Apply lime if soil pH and plant nutrient reports show a need. Do

you know your soil pH? If not, now is a great time to collect and send a sample to the laboratory.

- Monitor water status of soil and vines. Water only as needed to maintain healthy foliage, NOT to promote excess vegetative growth.
- Remove grow tubes from young vines by mid-October (Gulf Coast).
- Remove bird netting as soon as possible if it has not been done already.

Following the above management practices should tuck your vines in nicely for a long winter’s nap. Stay tuned for announcements for pruning workshops this winter.

### **Problems with Pre-Harvest Mildew?**

Vineyard managers who found themselves battling DM in the weeks just prior to harvest may have run short on spray options due to the Pre-Harvest Interval (PHI) on most fungicides. A few growers in the latter situation were able to locate phosphorous acid products, which have excellent worldwide recognition for preventing and controlling DM.

Examples of phosphorous acid products on the market include ProPhyt® (manufactured by Helena), which has a 0 day PHI and 4 hour Restricted Entry Interval (REI), or Aliette® (manufacture by Bayer CropScience), which has a 15 day PHI and 12 hour REI. Without comparing cost, it certainly would look more appealing to have ProPhyt® in the tool box for combating DM during the two weeks prior to harvest. I will add here that I bought a 2.5 gallon container of Prophyt® in the state of Texas for \$100 (that is \$5 per pint), which results in a cost of \$15 per acre if applied at a rate of 0.375% of the spray solution or 3 pints/100gal/acre.

I have found no reports showing that phosphorous acid products lead to wine defects or sluggish fermentations, thus they remain an excellent choice for DM control during the weeks leading up to harvest.

**A word of caution:** Phytotoxicity may occur with some varieties if high concentrations of phosphorous acid are applied to foliage. The ProPhyt® label states that spray concentrations should not exceed 0.4%, thus it is important to consider the total gallons of water per acre you will apply before determining the amount of product to add to the tank. In an informal filed trial beginning in late September, I will be evaluating occurrence of phytotoxicity on Blanc Du Bois and Black Spanish vines. Vines will be sprayed with three different concentrations of ProPhyt® on 10 vine replications in a commercial vineyard. This trial will be repeated in the spring on young foliage.

## Research Updates

### Grape Berry Moth Monitoring Project

Monitoring of male Grape Berry Moth (GBM) began in April of 2007 in 6 Gulf Cost Vineyards. Sticky traps containing female GBM sex pheromones were distributed in each site (3 per site) and the number of male GBM's was recorded weekly (Figures 4 & 5). The objective of the study in 2007 was to verify the presence of GBM in all 6 vineyards and to determine how many life cycles might occur in the Gulf Region.



Figure 4. Grape Berry Moth Pheromone trap on vineyard edge.

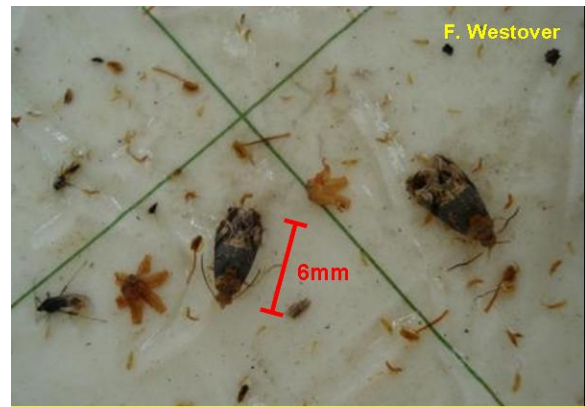
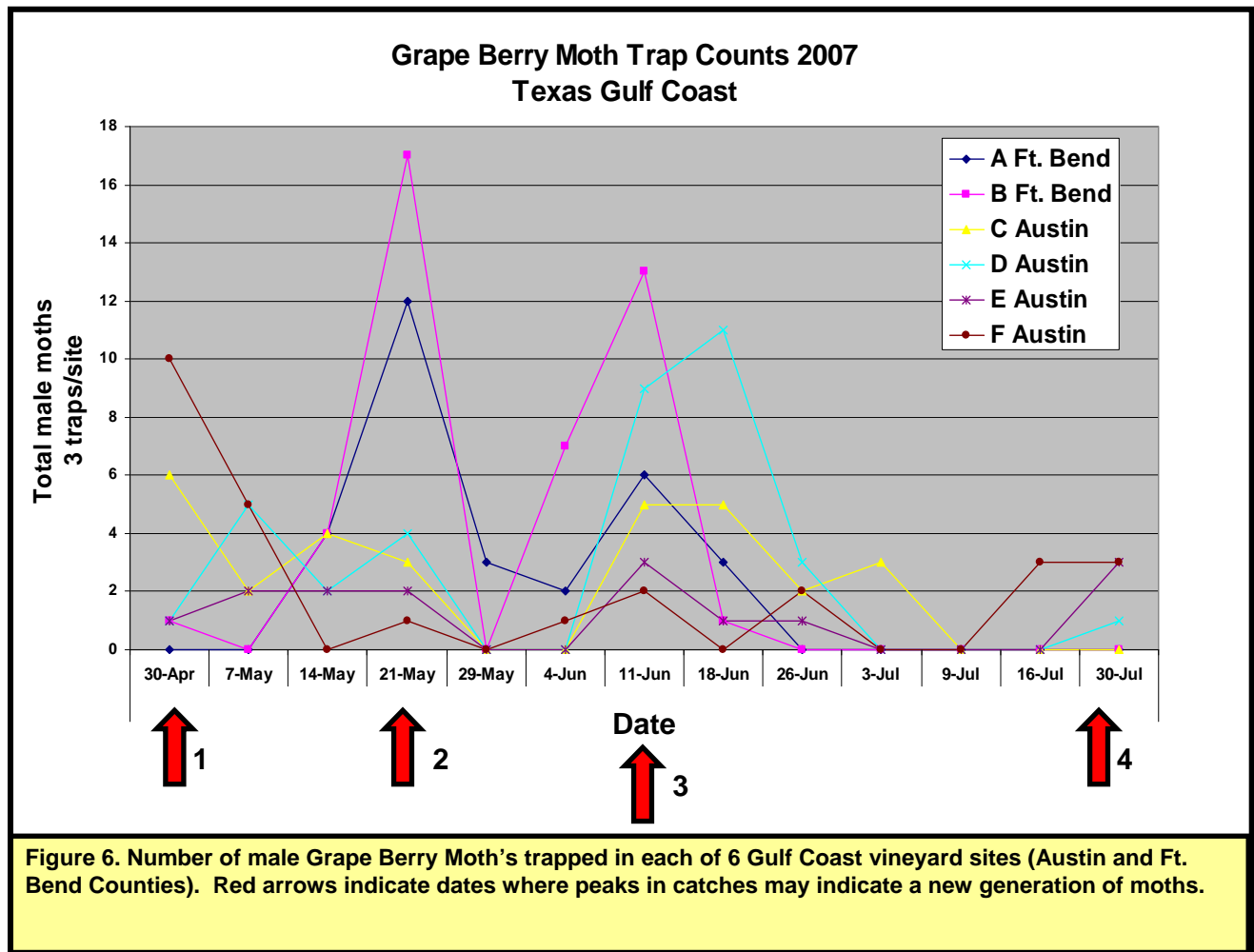


Figure 5. Male Grape Berry Moths caught on pheromone traps.

The data shows that all 6 sites contained GBM's (Figure 6), and it appears as though 4 or more generations occurred during the growing season. The final trap count date was 30 July, however, there was evidence that GBM activity may have continued later into the season. Secondary clusters were present in many vineyards after the onset of harvest. Secondary clusters are those produced in mid-summer, on the upper portions of shoots, which are still hard and green during harvest of primary clusters. The first variety to be harvested in the test vineyards was Blanc Du Bois. Harvest occurred from approximately 7 July to 22 July in both counties.

It is interesting to note that in sites C and E, secondary clusters of Blanc Du Bois and Norton showed signs of GBM infestation on 8 August and again on 22 August. Those clusters were sent to the Lake Erie Regional Grape Research and Extension Center in Northeast, Pennsylvania, where researchers from Penn State University were able to hatch many live pupae from clusters collected on both of those dates. Could this mean that there were potentially 5 to 6 generations of GBM in 2007? What effect do those secondary clusters have on GBM populations? These questions will be investigated further in the 2008 season.

Additional data to be collected in 2008 will include temperature data, vine phenology in the vineyard *and* in native vines surrounding vineyards, rainfall, and cluster infestations by GBM. The pheromone trapping will also be carried out longer in the 2008 season.



#### Blanc Du Bois Fruit Set Study

The white winegrape variety Blanc Du Bois has developed a reputation for being one of the premier white winegrape varieties for the Texas Gulf Coast, and quite possibly, the state of Texas. Blanc Du Bois has earned a reputation in the winery for its aromatic nose and its ability to stand alone as a varietal wine, and in a wide range of wine styles (bone dry to semi sweet). Growers are well aware of Blanc Du Bois' ability to resist many diseases, including Pierce's Disease, and to grow in a wide variety of soil types. The importance of this variety has been highlighted at numerous statewide meetings and at the recent National Blanc Du Bois Symposium in Cat Spring, Texas in May of 2007.

Blanc Du Bois is currently grown using a wide range of training systems and

management regimes in the Gulf Coast. Despite these diverse vineyard practices, it is a common observation that clusters of Blanc Du Bois do not set fruit consistently in most seasons (Figure 7). Inconsistent or poor fruit set can be the result of numerous factors, such as cool, wet, or windy conditions during bloom, crop load, drought stress, heat stress, and a number of nutritional deficiencies, including Boron, Zinc, and Molybdenum. In some grape varieties, poor fruit set is a genetic trait and not always a result of vine nutrition or other stresses. Poor or inconsistent fruit set of Blanc Du Bois is not fully understood.



**Figure 7. Blanc Du Bois cluster showing poor fruit set and mixed berry size.**

Numerous vineyards in the Gulf Coast have shown low levels of boron in bloom petiole tests. Growers apply foliar sprays of boron to Blanc Du Bois in some years, however, there are currently no guidelines as to the efficiency of various application methods or timing, or on the effects those sprays have on fruit set. Work in California has shown that foliar sprays of boron are adsorbed more efficiently in the fall, as post harvest applications ([http://calag.ucop.edu/0602AMJ/pdfs/9\\_FoliarSpray.pdf](http://calag.ucop.edu/0602AMJ/pdfs/9_FoliarSpray.pdf)).

I have recently teamed with Jim Kamas, Assistant Professor & Extension Horticulturist - Fruits, in the Department of Horticultural Sciences (Texas Cooperative Extension) to investigate fruit set of Blanc Du Bois in the Gulf Coast. The purpose of this study is to determine the optimal method and timing of Boron applications in the Texas Gulf Coast and to test vineyard practices that may improve fruit set and yield of Blanc Du Bois. In our study, we will test three boron treatments: post harvest foliar, pre-bloom foliar, post harvest ground application.

In addition to testing the timing of boron applications, we will investigate the effects of pre-bloom applications of molybdenum, and the effects of shoot “tipping” at peak bloom, both of which have shown to improve fruit set and yields in field trials with other grape varieties. This study is being conducted at a commercial vineyard in Austin County. All treatments are randomized in the vineyard and will be compared to non-treated control vines. Fall applications of boron were applied on 11 September 2007 and pre-bloom treatments will be applied in spring of 2008. The experiment will be repeated in 2008-2009, and updates will be reported in future newsletters and meetings. I would like to extend a special thanks to Jim Kamas for his interest and intellectual support in this study and to Austin County Vineyards for the use of their Blanc Du Bois vines.

As always, feel free to contact me if you have any questions or comments.

Best regards,

Fritz Westover  
Viticulture Extension Associate  
Texas Gulf Coast Region

Texas AgriLife Extension  
Harris County Office  
3033 Bear Creek Drive  
Houston, TX 77084  
Phone: 281-855-5608  
Fax: 281-855-5638

Email: [fawestover@ag.tamu.edu](mailto:fawestover@ag.tamu.edu)  
Web: <http://winegrapes.tamu.edu>

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