

CONTROLLING LATE-SEASON GRAPE BERRY MOTH

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Grape berry moth is a key insect pest of Michigan vineyards, causing infestation of berries and increasing the risk of cluster rots. As part of recent research projects in 2001-2003 we have closely monitored for grape berry moth eggs and larvae on clusters in SW Michigan vineyards. This has provided some insight into when this pest is most active, has helped point toward strategies to improve control of this pest, and has stimulated some new research currently underway to try and prevent infestations at harvest.

Timing: Sampling at vineyards with high pressure from GBM in southwest Michigan has shown that the first egg-laying of the season by GBM moths occurred during and just after bloom. This means that in vineyards with a history of infestation by this pest, the first post-bloom spray is the appropriate time for the first insecticide targeting GBM. Depending on the insecticide, this can also control leafhoppers and rosechafers.

One of the most important findings was that egg-laying by the second generation of GBM started in middle July around the time of berry touch and continued well into September, with a distinct increase after veraison. The second and third generations of this pest are not distinct, but instead they merge together, leading to difficulty knowing when to time sprays. From experience, mid-July and early August are important times for controlling GBM during most years in southwest Michigan. However, in warm years it will be important not to put the sprayer away at veraison and to keep scouting vineyards to determine whether there is any late-season increase in GBM pressure. Also checking your clusters each week throughout the year is a great way to keep on top of the pest pressure from GBM and other pests. Mid-July through harvest seem to be the greatest danger periods, and regular scouting during this period can help provide information on the level of pest pressure, and whether your spray program is working well. This effort in the middle of the season can help prevent surprises at harvest. Pictures of GBM and its injury symptoms are in MSU's Pocket IPM Scouting Guide or at the website grapes.msu.edu.

Testing a new option for GBM control: As part of our response to the recent increase in late-season activity of GBM, research is underway to determine whether focusing on protecting the clusters in the critical period from mid-July through harvest helps to reduce infestation from berry moth. To do this, two 4-10 acre Concord vineyards with similar history of GBM infestation have been studied at each of four farms. Both vineyards were treated with Danitol at the first post-bloom timing for berry moth control. After that, one vineyard at each farm received Sevin, Danitol, or Guthion according to the grower's typical spray program. The other was treated with Intrepid at 12 oz/acre for control of second and third generation GBM. Intrepid is a new selective insecticide option for grape growers that disrupts development of young berry moth larvae. Spray decisions for the selective insecticide program were based on weekly scouting, and Intrepid was applied with a spreader-sticker in enough water to get good cluster coverage. Most of these high-pressure vineyards received three GBM-targeted insecticides after bloom.

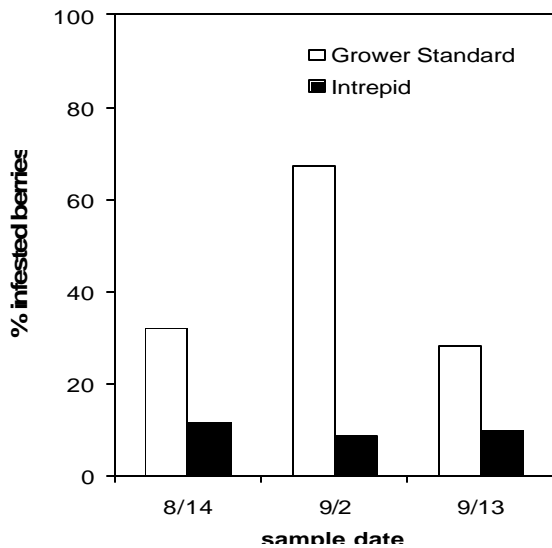


Figure 1. Percentage of infested berries with surviving GBM larvae was lower in Intrepid-treated vineyards.

To measure how well the programs controlled GBM, we collected 100 infested berries from each vineyard at three times through the late summer. In vineyards treated with Intrepid, significantly fewer GBM survived from berries compared to samples taken on the same dates from vineyards treated with grower standard programs (Figure1).

Targeting late-season GBM pressure: These results from vineyard-scale trials, coupled with our experience in small-plot trials over the past five years indicate that Intrepid has a good fit against late-season GBM pressure. This is a selective insecticide with long-residual activity and good rain-fastness, but it also has a 30 day PHI. Because of this, growers should focus on the optimal timing if considering Intrepid, targeting the late-season increase in GBM pressure, between berry-touch and veraison. Good cluster coverage is essential with this product, so applications should be made to every row with higher gallonage.



Figure 2. Parasitism of GBM from this parasitic wasp was greater in vineyards receiving selective insecticides.

An added benefit of using Intrepid is that it is very safe to natural enemies. In our recent studies we have found that mortality of GBM by parasitic wasps (Figure 2) was greater in vineyards treated with Intrepid than in vineyards receiving a standard insecticide program. These wasps lay their eggs inside berry moth larvae and eat the larvae from the inside, killing them in the process.

Future directions: We will continue to compare this selective program to conventional programs at the same farms in 2004-5. This will provide information on the effectiveness of both programs against pest insects, and will reveal indirect impacts on natural enemies. We will also measure long-term effects of these programs in pest abundance.

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