

Michigan Grape & Wine Industry Council
2014 Research Report

Michigan Vineyard IPM Extension Program

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ABSTRACT

The results of this project have demonstrated that reduced-risk pesticides can be successfully integrated into commercial grape production in Michigan while maintaining effective insect and disease management. In some cases better pest control was achieved compared to broad-spectrum pesticides. In addition, the use of regular insect and disease scouting allows for better timing of pesticide sprays, reducing the number of unnecessary sprays. Biweekly scouting summaries using the data collected in this study were published on MSU Extension Grapes News and are now archived at www.grapes.msu.edu. These summaries highlighted current scouting information from southwest and northwest Michigan and were delivered with timely articles on insect and disease management topics. Results from this and related studies were presented at grape workshops in southwest and northwest Michigan during the growing season. Workshops provided information on current insect and disease topics as well as cultural controls such as tillage for ground floor management in vineyards. Presentations at winter grower meetings including the Great Lakes EXPO and MSU Horticulture Days reinforced the information delivered during the summer.

GOALS & OBJECTIVES

This project demonstrated IPM techniques to the Michigan grape industry using a combination of demonstration vineyards, electronic scouting updates, formal presentations and hands-on workshops. This includes using insect and disease scouting to provide timely information for growers to help them make management decisions. This project also demonstrated and provided training on using IPM tactics including cultural controls to show how effective vineyard management can be achieved with reduced chemical inputs. A particular focus of this training was placed on management of insect and disease problems in the period around harvest.

Objectives:

1. Demonstrate performance of scouting and reduced-risk management in commercial grape vineyards.
2. Deliver information on IPM and cultural controls to the Michigan grape industry.
3. Deliver training programs on harvest-time pest concerns in 2015.

PROJECT PERIOD

This project was conducted during 2014, with fieldwork occurring from May to October.

WORK ACCOMPLISHED DURING THE PERIOD

Objective 1. Demonstrate performance of scouting and reduced-risk management in commercial grape vineyards. A pair of demonstration vineyards of the same variety were established at each of two Berrien County and two Van Buren County grape farms in May of 2014. The Berrien County farms were Vignoles and Concord and in Van Buren County the vineyards were Chancellor and Niagara varieties. In each vineyard pair, one received the grower's "standard" program for insect and disease management (Leverage, Sevin, Imidan, Mustang Maxx, Penncozeb, Ridomil, etc.), while the other vineyard received an IPM program that incorporated reduced-risk pesticides for controlling key insect pests and diseases (Intrepid, Altacor, Belt, Phostrol, Sovran, Orius, etc.). The actual programs are omitted for brevity, but complete records are available from the authors of this report. To compare the efficacy of the management programs, we scouted each vineyard bi-weekly for insect pests (rose chafer, grape leafhopper, potato leafhopper, grape berry moth and Japanese beetle) and diseases (Phomopsis, black rot, powdery mildew, downy mildew, Botrytis, and sour rot) until harvest.

In most cases reduced-risk products consistently performed as well or better than their conventional counterparts. For example grape berry moth control was better in the IPM vineyards where Intrepid and Altacor were used compared to the grower's standard program. The number of infested berries per cluster was lower in vineyards that received the IPM program (Figure 1).

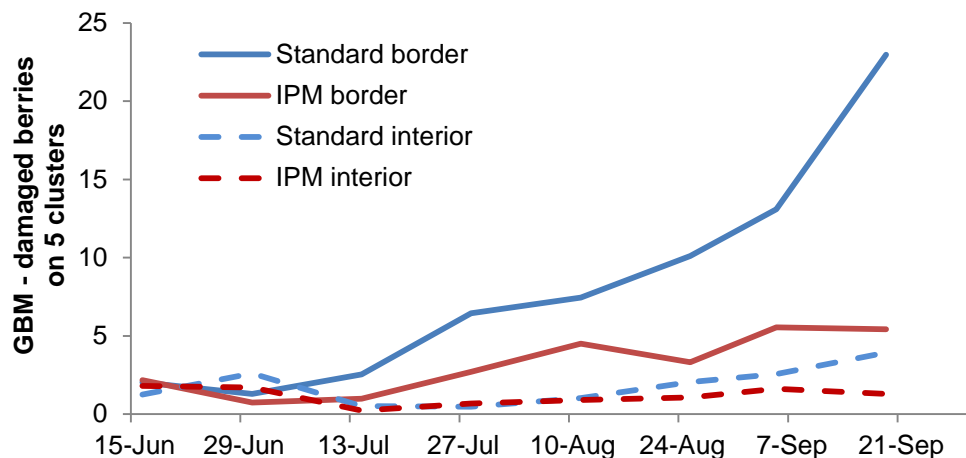


Figure 1. Comparison of grape berry moth control in IPM (reduced-risk) and Standard programs at four farms southwest Michigan grape farms.

Very low abundance of other important insect pests were found in all vineyards, and numbers were similar between IPM and standard programs. In general, both fungicide programs kept diseases at similar levels in all vineyards in spite of the very wet and cool growing season in 2014. However, in the Chancellor IPM vineyard, the reduced risk fungicide program could not keep powdery mildew under control, and the grower elected to use Ridomil Copper and Revus Top to slow the infection of clusters and leaves (Figure 2). We did not find powdery mildew to be an issue of concern in the other vineyards, including the Chancellor vineyard that received the grower's standard program. Botrytis, black rot and sour rot were present in some vineyards, and the IPM program performed well against these late season diseases. These results show there are some opportunities to incorporate reduced risk pesticides into pest management programs, but in some situations where varieties are highly susceptible to certain insects or diseases, a conventional pesticide may be needed for control.

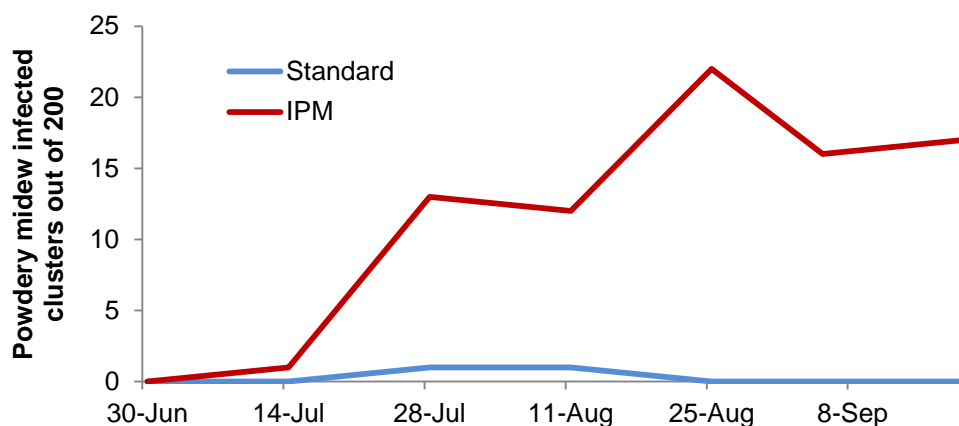


Figure 2. Comparison of powdery mildew infected clusters at IPM (reduced-risk) and Standard vineyards. Only data from wine grape vineyards (2 farms) are shown.

2. Deliver information on IPM and cultural controls to the Michigan grape industry.

The data from bi-weekly scouting in the demonstration vineyards was compiled into Vineyard IPM Scouting Updates that were distributed through MSU Extension Grape News. These bi-weekly updates provided growers with detailed information on current insect and disease pressure in vineyards in southwest Michigan, and a similar report was written by Dr. Duke Elsner to cover vineyards in the northwest. Growers were able to use this information to determine when and which pesticides to apply. In addition to current scouting information, the reports contained timely feature articles on a wide range of topics including disease and insect control and various aspects of viticulture. A total of 10 issues of the Vineyard IPM Scouting Update were produced in 2014 from May to September, and these are now archived on grapes.msu.edu. The Vineyard IPM Scouting Update was sent out to the Grape & Wine Industry Constant Contact list. This list was initiated in May 2014 with 220 contacts and has now more than doubled to 529 contacts. Out of the approximately 70 Constant Contact email lists maintained by MSU Extension, the Grape & Wine Industry list has the highest email open rate at 38-44 percent, and the average open rate for “Educational” organizations is 25 percent. Over the first year of this project, the www.grapes.msu.edu website has seen an increase in traffic, which demonstrates this website is a powerful tool for transferring information to the grape and wine

industry. Between the April 7 launch and December 31, 2014, grapes.msu.edu attracted over 11,000 users making 14,200 sessions (visits) with 28,500 pageviews. During 2014, articles containing the word “grapes” at the MSU Extension website received 20,300 pageviews of which 17,500 were unique pageviews.

3. Deliver training programs on harvest-time pest concerns in 2014.

Three "First Friday" grape workshops were organized and led by Dr. Duke Elsner in northwest Michigan in 2014, each focused on insect, disease, and vine management-related topics relevant to the time of the season. Workshops took place at commercial vineyards and participants were provided with practical, hands on training on a variety of IPM topics. Attendance at the First Friday workshops ranged from 20 to 30 growers. In southwest Michigan a harvest time insect and disease control workshop was organized by Brad Baughman and held on August 21, 2014 at Lemon Creek Winery in Berrien Springs, MI and was attended by 45 grape growers, winemakers and other industry representatives (Figure 3). Topics and presenters included Managing cluster rots and other harvest diseases (Dr. Annemiek Schilder), Recovering from winterkill (Dr. Tom Zabadal), mealybug and grapevine leafroll virus (Dr. Rufus Isaacs), and what to expect from grape berry moth (and other insects) around harvest (Keith Mason).



Figure 3. Dr. Annemiek Schilder presents information on how to manage harvest time diseases at the harvest-time workshop at Lemon Creek winery August 21, 2014.

COMMUNICATIONS ACTIVITIES, ACCOMPLISHMENTS, AND IMPACTS

Results from this project have been shared during summer and winter grower meetings, including the SWMREC Viticulture Days, Great Lakes Expo, Southwest Hort Days, and the Northwest Orchard and Vineyard Show. The information was also presented in the twelve newsletters that were distributed via email through the growing season. In addition, information

was disseminated via webinars held by members of the grape team during summer, fall and winter of 2014.

RESULTS & CONCLUSIONS

This project has supported the delivery of relevant and timely information to the grape industry regarding vineyard management. It has also supported the gathering of weekly scouting information used to present timely updates and recommendations in the Grape eNews distributed through MSU Extension. The scouting information has also been taken at vineyards where reduced-risk insect and disease management programs have been used, and this has allowed demonstration of their efficacy under commercial conditions, resulting in improved pest control and reduced dependence on broad-spectrum pesticides. Through the support of this project, we were also able to inform the industry about the increasing incidence of grapevine mealybug and the spread of grapevine leaf roll virus. During 2014 we also organized and delivered a workshop covering late-season insect and disease issues in vineyards.

OUTCOMES

Growers have been able to see the performance of new pest management programs at the whole vineyard scale and these commercial sites have provided venues through the growing season for discussion of relevant issues in the plant pathology, entomology, and horticulture. Our ongoing extension program has helped improve vineyard management in Michigan and we have had highly positive feedback from growers on the information being provided. Feedback from growers at post-harvest meetings indicate the following outcomes: increasing adoption of certain reduced-risk products such as Intrepid, Altacor and Prophyt; incorporating tactics like dormant season fungicides into spray programs; increased use of scouting to determine if sprays are necessary and use of the grape berry moth degree model to time sprays.

ACKNOWLEDGEMENTS

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