

EXECUTIVE SUMMARY

STRATEGIC IR-4 INSECTICIDE PROGRAM FOR MICHIGAN GRAPES

The long-term goal of the MSU Grape IR-4 Program is to identify new products with potential for activity against insect pests of grape, and to understand the best fit of promising insecticides for use in grapes.

During the 2002 growing season, insecticides were tested for activity against Japanese beetle and grape berry moth. Pest pressure in both trials was extremely high, with 78% of clusters infested with GBM in the untreated plots in the Concord vineyard, and high levels of defoliation from Japanese beetle in the Niagara vineyard.

Sevin, Dipel, and Danitol applied against first generation grape berry moth reduced cluster infestation, but these treatments were not significantly different from the untreated control. Applications against mid-season and pre-harvest generations of grape berry moth were variably effective, depending on the timing and on the product used. All these treatments had significantly lower damage than the untreated plots, which sustained an average of 78% cluster infestation by GBM in late September. This high level of infection in the untreated plots reinforces the extremely high pest pressure from this insect experienced across the grape production region.

Measurements on September 26 showed that even the best treatments only reduced grape berry moth to less than 30% cluster infestation. This was achieved with both Esteem and Avaunt applied once against the second and against the third generations. These two products show promise as new tools for use in grape, but are currently not registered for this crop. Intrepid was also effective, providing 25% cluster infestation at this time after applications once against the second and against the third generations. This product recently received a registration for use in grapes at 8oz/acre against GBM, and plots treated with this product provided 25% infestation. Dipel (*Bacillus thuringensis*) has a relatively short residual activity, but two applications against each of the second and third generation provided 28% infestation. Comparison of different timings for control of GBM using Danitol as a standard treatment showed no statistical difference between timings, but there was a numerical difference in which infestation in a program targeting the first and second generation of larvae was more effective than targeting the second and third, or third only.

Our trial against Japanese beetle confirmed that Japanese beetles are sensitive to pyrethroid, carbamate, and organophosphate insecticides at rates used in grapes. The longevity of these products tested as direct toxicants was limited to less than two weeks, though some longer-term damage protection was observed. Neonicotinoids were also shown to have a potential fit for use in grapes against Japanese beetle, with Assail being more active than Provado or Actara. Assail was registered during 2002 for use in grape against grape leafhopper. These results provide grape growers with general information on insecticide effectiveness, but also help show that applications of some neonicotinoids for selective control of leafhoppers will also provide protection from Japanese beetle.

In summary, our insecticide trials at the Trevor Nichols Research Complex are helping us to understand how different insecticides might fit for use in Michigan vineyards. The results generated through these studies provide information that will be used to support future registrations of promising compounds in grape, through the IR-4 Program.