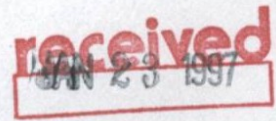


Year 3 of 3
Evaluation of Disease Forecasting
Northeast Regional Sustainable Agriculture
Research and Education Program



Project Leader: *James M. Mohart*

Collaborators: *T. Weigle*, Integrated Pest Management, Cornell Cooperative Extension
J. Kamas, Regional Extension Specialist, Cornell Cooperative Extension
C. Mohart, Grape Farm Assistant

Introduction-

Grape growers in Western New York are searching for alternatives to the present calendar-based system of fungicide applications. Employing the weather system to spray only during post infection in the primary season, may result in one or two fewer spray applications per year. This would be a significant environmental advantage and reduce spray costs for the grape grower.

Method-

A *Sensor Instruments Field Monitor* was employed in a 2 acre Niagara vineyard test plot. Sprays will be timed according to the presence of infections of powdery mildew and black rot fungi and the occurrence of infection periods. A 13 acre Niagara vineyard control plot spray program will be based on a protective calendar system. Disease pressure will be monitored over a three year period in the control and test plots.

Results-

Weather data was downloaded daily via telephone lines and processed using the Sensor Grape software for powdery mildew (*Uncinula necator*) and black rot (*Guignardia bidwellii*) disease models. The first fungicide spray was applied to both the control and test plots on May 25 th. See attached time line graph. A pre-bloom spray was applied to both plots on June 17th. The first post bloom spray was applied June. The 2nd post bloom calendar timed spray was applied on July 9th to the control plot, the test plot received no fungicide treatment at this time. The test plot received it's 2nd post bloom spray on July 16th. A 3rd post bloom spray was applied on July 23rd to the control plot. Scouting was conducted on June 15th, July 16th, August 23rd, and September 21st. No significant levels of powdery mildew or black rot was located on either site.

1st Year Conclusion- (review)

Weather conditions during the 1994 growing season were such that the 3rd post bloom fungicide application was eliminated on the test plot. A savings of approximately \$31.76 per acre. At the same time, no differences of disease pressure was detected between the test and control plots.

2nd Year Conclusion- (review)

The July 18th powdery mildew and black rot infection periods occurred while the test sight was protected by the "weather delayed" 2nd post bloom spray, so a 3rd post bloom fungicide application was eliminated on the test plot. Approximately \$35.75 per acre was saved in spray costs. No differences of disease pressure was detected between the test and control plots.

3rd Year Conclusion-

Once again this year, the mid-July powdery mildew and black rot infection periods occurred while the test sight was protected by the "weather delayed" 2nd post bloom spray, so a 3rd post bloom spray application was eliminated on the test plot. No differences in disease pressure was detected between the test and control plots.

Disease Forecasting Conclusion-

This project provided proof that using a weather station to time the application of fungicide spray applications is both a cost effective and environmentally sound and in the future will be used to time spray applications for the entire farm. In each year of the project a third post bloom fungicide spray application on the test plot was eliminated, without adding disease pressure. A limitation was discovered; the spray window for using chemicals presently available is limited to 72 hours after a infection period occurs. Thus, a grower using this weather timed spray applications is limited to the acreage his manpower and equipment can cover in 72 hours. Also, rain or high winds that continue into the 72 hour spray window, may delay or prevent the application, which could result in additional disease pressure.

1996

CONTROL PLOT

TEST PLOT

5/25 DEAD ARM SPRAY

5/25 DEAD ARM SPRAY

PROTECTED
BLACK ROT
POWDERY
PROTECTED

6/17 PRE-BLOOM SPRAY

6/17 PRE-BLOOM SPRAY

6/26 1ST POST BLOOM SPRAY

6/26 1ST POST BLOOM SPRAY

7/9 2ND POST BLOOM SPRAY

7/16 2ND POST BLOOM SPRAY

7/23 3RD POST BLOOM SPRAY

8/2 VERASION

8/2 VERASION

9/27 HARVEST

9/27 HARVEST

