

Monitoring Weather Data and Insect Activity to Build a Data Base and Assist in Spray Recommendations for Washington County Orchards Phase II

A Research Report Compiled by
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Introduction

In 2002, efforts were made to time pesticide sprays for control of Peach Twig Borer based on weather data and insect activity. We were successful in identifying five generations based on trapping data. Tracking weather data and calculating degree-days assisted in determining when to apply sprays. Biofix was set when trap catches occurred and remained on the increase. Spray timing was determined at 400 degree-days above 50 degrees Fahrenheit.

In 2003, the same approach was taken by using degree-days and trap catches to determine spray timing. Again, as in the previous season, five generations were identified based on trap counts and predicted spray dates were set based on the 400 degree-day model. Grower comments indicated that the predictions were helpful as far as deciding when to spray.

Methods

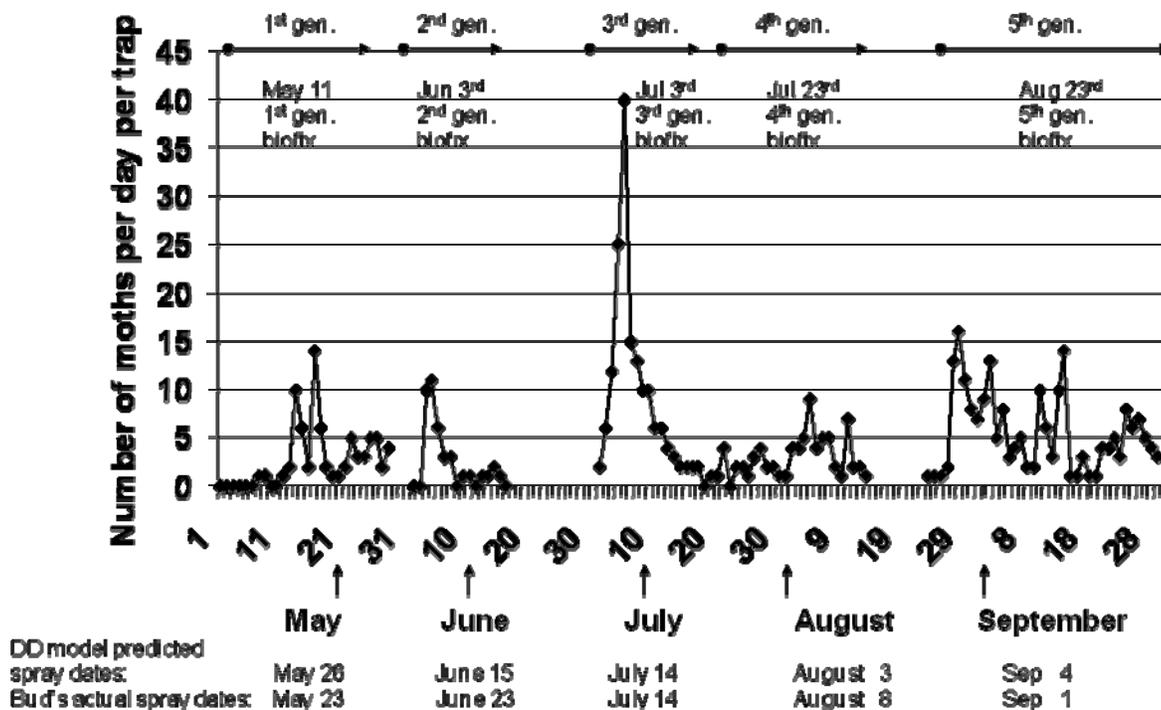
During the 2003 growing season, the first Twig Borers were caught May 11, establishing biofix for the first generation. Predicted spray timing indicated the first cover spray should be applied May 26, and the grower sprayed on May 23. The second generation began June 3rd with predicted spray timing as June 15. The grower sprayed on June 23. The third generation biofix did not occur until July 3rd--one month after the second biofix. The predicted spray date was July 14, which is also the same day the grower sprayed. Differentiation between the third and fourth generation became blurred since there were only two days during the month of July when trap numbers were zero (Table 1). Generally, we look for trap counts to go to zero and stay there for at least a few days before they go up, indicating the start of the next generation (biofix). By selecting July 23 as fourth generation biofix, the predicted spray date became August 3. August and September spray dates are necessary to keep late season fruit clean. The fifth generation biofix was determined on August 23rd, and the spray date to control this flight was predicted for September 4. Grower spray date for this generation was September 1.

The grower selects spray materials for insect control in his orchard. A couple of noteworthy things occurred during the 2003 season, which may or may not be related to material selection and spray timing. Peach trees throughout the county had an unusually high number of aphids in mid-April. Bud applied Guthion and oil during the delayed dormant period and followed up with an application of Thiodan on April 18. Within a few days of the aphid increase (April 29), Coccinellid beetles (Lady Bugs) arrived at Scow's orchard in large numbers. The beetles fed on the aphids and kept economic damage low. Based on the high numbers of predatory beetles, and the timing of their arrival, the decision was made not to apply any additional insecticides specifically to control the aphids. Other factors included the concern for killing any predatory insects that may be present with a contact insecticide. At this stage in the season, contact

insecticides strong enough to remove aphids will have a negative effect on populations of non-target species as well. Another orchard within a couple of miles or so applied a synthetic pyrethroid during the same time to control aphids.

Table 1

Peach Twig Borer Trap Catch Scow Orchards, Hurricane - 2003



With concerns over the future loss of Guthion, growers are looking for other chemicals that will give insect control. There is also a need to protect the natural insect populations in the orchard. The chemical “Success” has been suggested as one to use that will give Peach Twig Borer control without negative effects on non-target species. Scow Orchards used Success twice on (May 23 and June 23) on the Red Globe Red Globe. On the Canadian Harmony variety, he used Success on May 23 and Guthion on June 23. Mid- and late-season varieties (Elberta and Fairtime) were treated June 25 and July 14 with Guthion. Fairtime was treated again on August 8 with Guthion and September 1 with Dipel.

Each season is different, but of particular note is the large numbers of twig borer moths caught around July 6 and 7. The other notable thing is that trap numbers only went to zero on two days after the third generation peak, (July 22 and 26), making it difficult to determine when to set biofix for the fourth generation. During the fifth generation, trap catches remained high and for a relatively long period of time. This made insect control critical on the Fairtime variety.

Conclusion

Trapping of Peach Twig Borer in 2003 confirmed again that there are five flights or generations of this insect in Washington County. Use of the 400 degree-day model to determine spray timing is helpful. Observations indicate that careful timing of pre-bloom sprays and the use of “safer” pesticides may be helping in controlling seasonal outbreaks of aphids and mites.

The current weather data collection method, using the Spectrum “Watch Dog” monitoring system, requires that the data be downloaded to a laptop computer. If degree days could be counted and re-set by the grower, he would not have to rely on the need to download the data, sometimes causing a delay in decision making. This could be made possible by the use of a biophenometer. Each time biofix was determined, the grower could reset the biophenometer for the next generation and determine his spray timing.

Table 2

Peach Tree Borer Control

Date	Early	Mid	Late
	Red Globe Canadian Harmony	Lemon Elberta Elberta	Fairtime
2-21-03	4 lbs. Thiodan, 1 quart Bravo, 3½ gallons oil	4 lbs. Thiodan, 1 quart Bravo, 3½ gallons oil	4 lbs. Thiodan, 1 quart Bravo, 3½ gallons oil
4-18-03	4 lbs. Thiodan, 1 quart Bravo, 1 quart Spreader	4 lbs. Thiodan, 1 quart Bravo, 1 quart Spreader	4 lbs. Thiodan, 1 quart Bravo, 1 quart Spreader
5-21-03		2 lbs. Guthion, 1 quart Spreader	2 lbs. Guthion, 1 quart Spreader
5-23-03	6 oz. Success, 1 quart Spreader		
6-23-03	6 oz. Success, 1 quart Spreader (Red Globe) 2 lbs. Guthion, 1 quart Spreader (Can. Harmony)		
6-25-03		6 oz. Success, 1 quart Spreader	6 oz. Success, 1 quart Spreader
7-05-03	6 oz. Success, 1 quart Spreader		
7-14-03		2 lbs. Guthion, 1 quart Spreader	2 lbs. Guthion, 1 quart Spreader
8-8-03			2 lbs. Guthion, 1 quart Spreader
9-01-03			2 lbs. Diapel, Captan 2½ lbs.
9-06-03			2 lbs. Dipel, (¼ lb. Acrimite (spot spraying))