IPFP Satellite Project

Testing Oblique Banded Leafroller Pheromone Load Rates and Determining Best Time for Fruit Monitoring - 2002

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OBJECTIVE

Oblique banded leaf roller (OBLR) is widely distributed and has a large host range. Consequently the current pheromone load for OBLR attracts a large number of moths possibly from locations outside the immediate orchard. This makes it difficult to estimate the size of the OBLR population within the orchard. An experimental pheromone load rate (# 8709) will be compared to the commercial pheromone lure (# 3223) to determine if this lower load rate can be used as a better indicator of population levels for monitoring, and still accurately identify the biofix. An additional objective is to determine when to first look for OBLR larvae or larvae damage to accurately identify the best treatment timing.

PROCEDURE

Traps were set out in late April to find the biofix and monitored for several months or to the end of the flight. In the Sacramento Valley the typical biofix is the last week of April or the first week of May. This may be earlier in the San Joaquin Valley.

The commercial lure 3223 and the low load rate lure 8709 were placed in each conventional, reduced risk and check plot in each orchard to compare biofix dates and trap catches. Traps were monitored and trap catches recorded weekly. Traps were placed at least 10 trees from each other. The total trap catches from the 2 traps were compared to the OBLR larvae and/or larval damage found during spring fruit monitoring and the damage found at harvest to see which load rate is the best indicator of potential damage.

At each site records were kept on the number of in-season leafroller larvae and damage found during each weekly fruit sampling, which began at 690 day-degrees and was repeated weekly for five weeks. Monitoring consisted of examining 15 fruit per tree on 80 trees each week. The harvest sample included recording any oblique-banded leafroller damage.

RESULTS

In all 37 cases both the commercial and low load rate lures indicated essentially the same biofix. See an example from one orchard location in Graph 1. The commercial lure caught twice as many moths as did the low load rate lure. (Table 1). Neither load rate provided a good correlation between moth catch and spring time fruit damage (Graphs 2 and 3) or harvest damage (Graphs 4 and 5). Leafroller larvae and/or larval damage first became abundant during the fourth week of fruit monitoring, which correlated to 1000-day degrees from biofix damage. There was significantly more leafroller larvae and/or leafroller damage observed between 1000 and 1099

day degrees from biofix than at any previous weeks fruit monitoring (Graph 6). Actual leaf roller larvae were first found at the third weekly reading, before that only leaf roller damage was recorded (data not shown).

Graph 1. Comparison of the Commercial and Low Load OBLR Pheromone

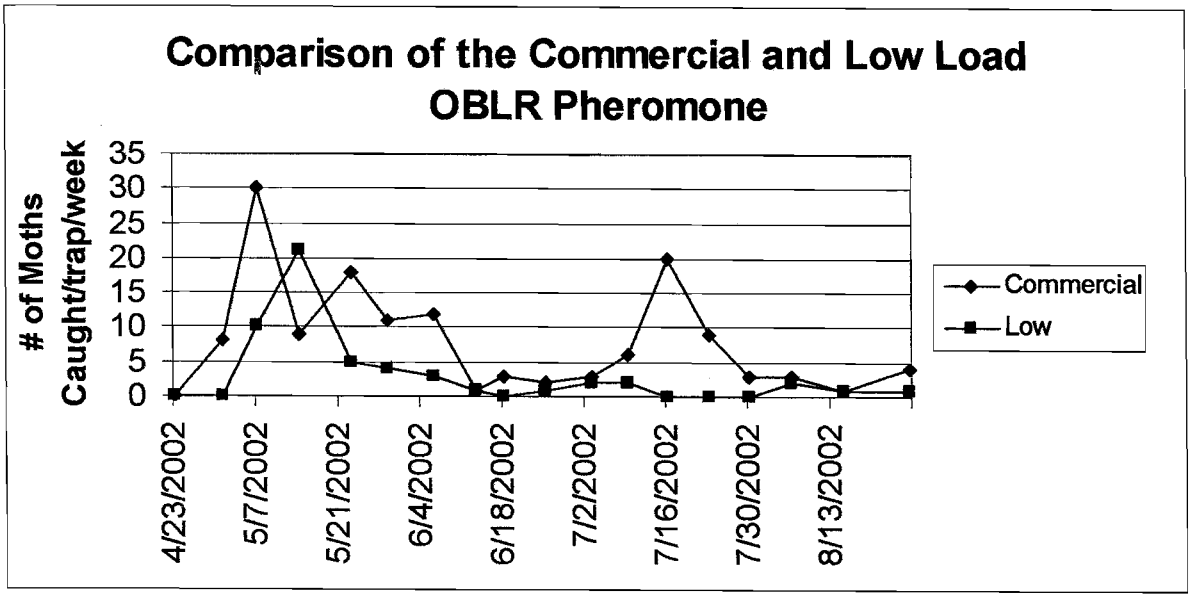
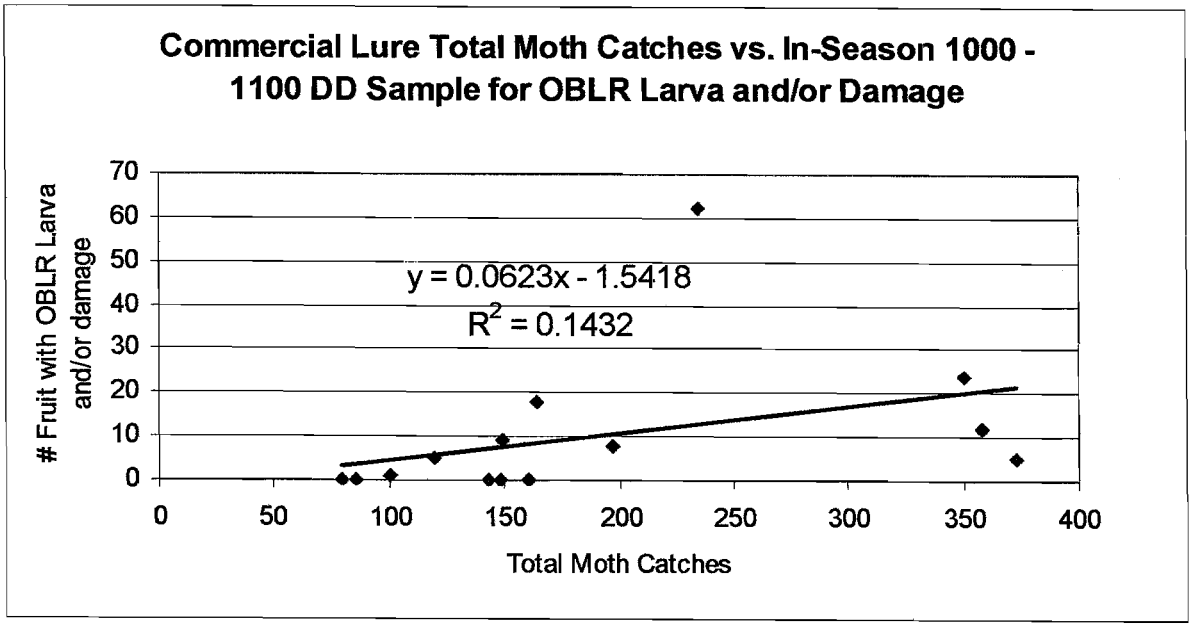


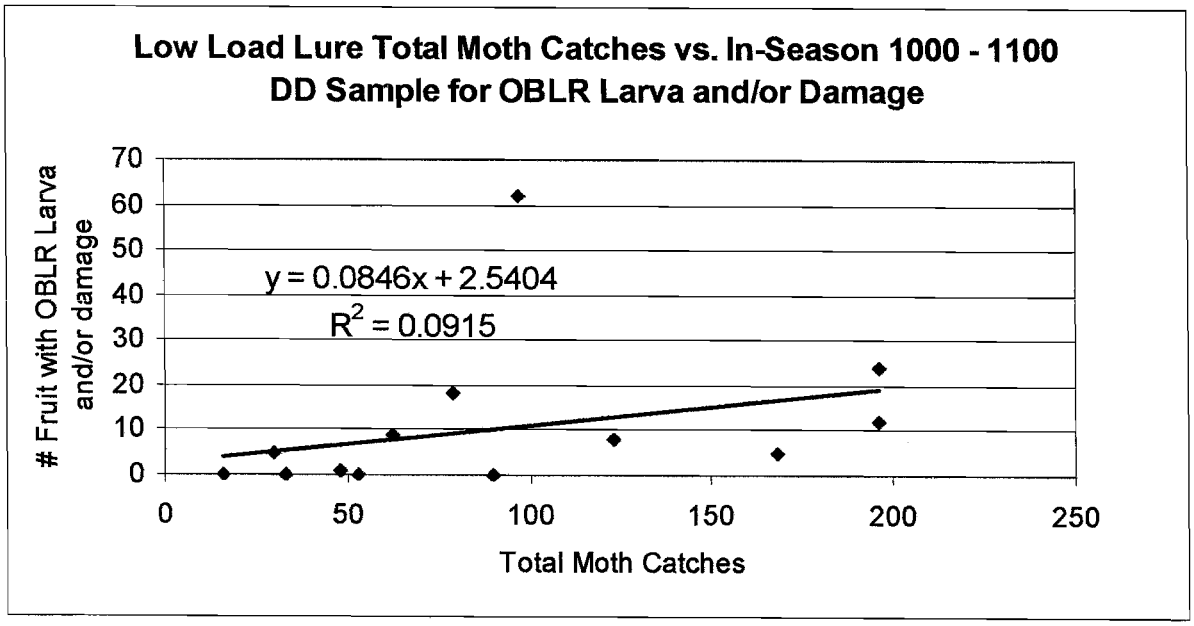
Table 1.

Orchard	Commercial Lure (3223)	Low Load Lure (8709)
1	94	59
2	128	119
3	99	78
4	95	27
5	119	30
6	36	15
7	148	90
8	87	30
9	164	79
10	234	97
11	70	32
12	197	123
13	61	37
14	85	33
15	100	48
16	127	80
17	203	74
18	252	137
19	223	108
20	373	168
21	358	196
22	350	196
23	149	62
24	160	90
25	126	45
26	129	20
27	79	16
28	143	53
29	45	15
30	57	16
31	23	8
32	105	136
33	132	79
34	84	25
35	107	35
36	76	38
37	86	19
Total	**5104**	**2513**
Average	**137.95**	**67.92**

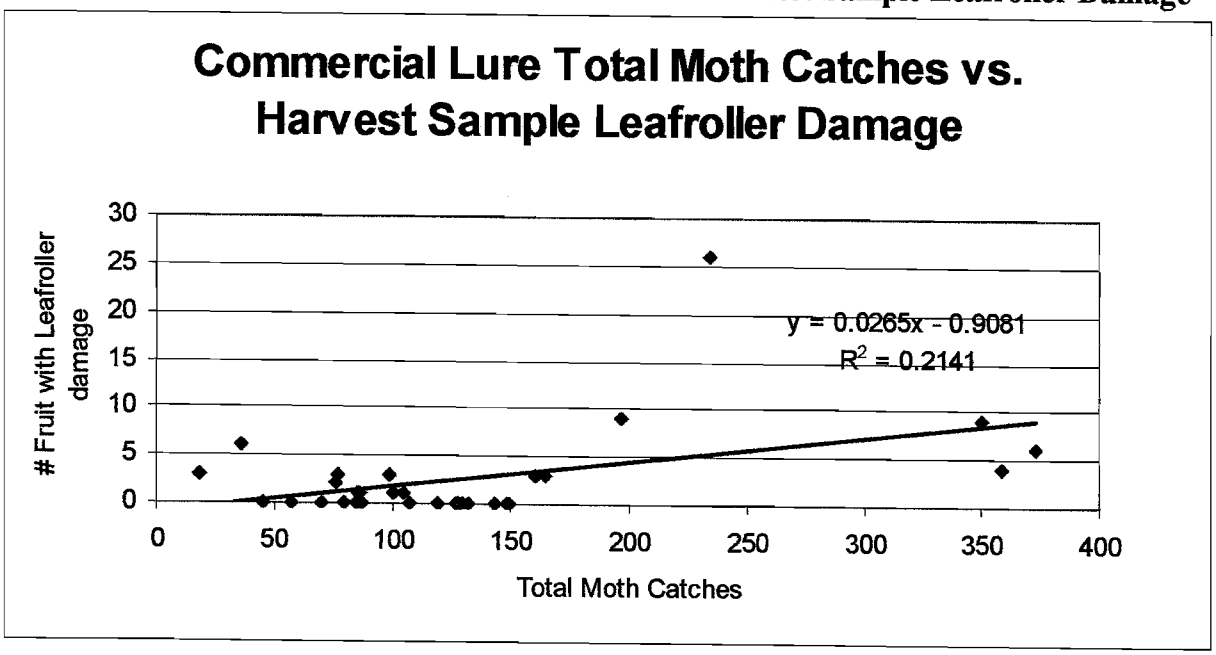
Graph 2. Commercial Lure Total Moth Catches vs. In-Season 1000 - 1100 DD Sample for OBLR Larva and/or Damage



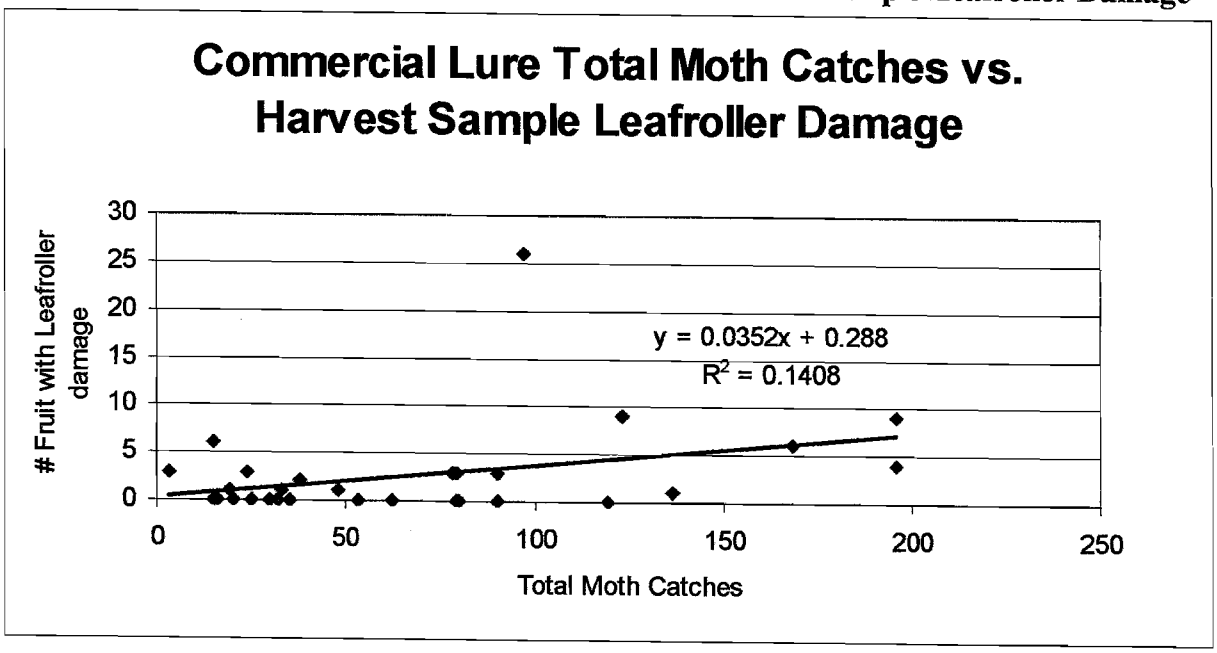
Graph 3. Low Load Lure Total Moth Catches vs. In-Season 1000 - 1100 DD Sample for OBLR Larva and/or Damage



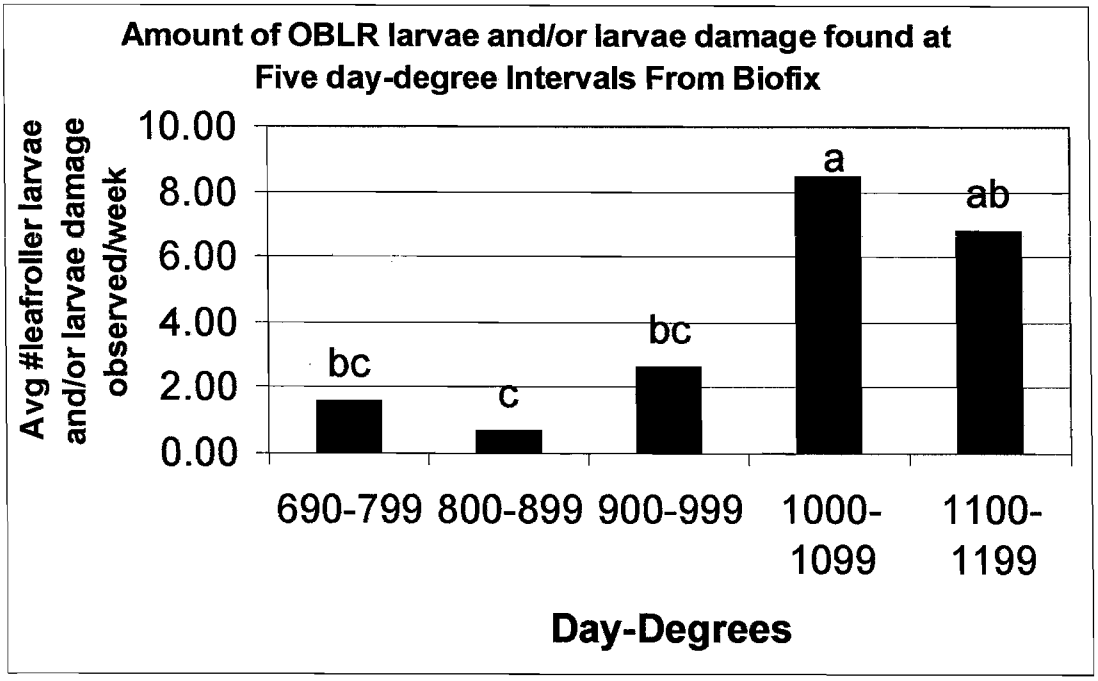
Graph 4. Commercial Lure Total Moth Catches vs. Harvest Sample Leafroller Damage



Graph 5. Commercial Lure Total Moth Catches vs. Harvest Sample Leafroller Damage



Graph 6. Amount of OBLR larvae and/or larvae damage found at Five day-degree Intervals From Biofix



Treatment means that are not followed by a common letter are significantly different from each other at the 5% level according to Duncan's Multiple Range Test for Mean Separation.

CONCLUSION

The low load rate identified the same biofix as the commercial load rate but caught fewer moths suggesting that the moths attracted by the low load lure may not have been attracted from far away and may have been moths from within the orchard. This suggests that the total trap catch may be a more accurate reflection of the moth density within the orchard where the low load lure is used. However, with no strong correlation between trap catch and fruit damage the number of moths caught has no meaning in terms of ultimate fruit damage. This is not surprising and is consistent data collected from other moth species.

Although some leafroller damage was recorded at the 690-799 and the 800-899 day-degree reading from biofix no larvae were actually found. This suggests that these early identifications of fruit damage caused by leafrollers were in error. Leafroller larvae were first found at the 900-999 day degree reading from biofix. Significantly more leafroller larvae and/or larval damage was found between the 1000-1099 day degree reading from biofix. Leafroller larvae and/or larval damage observed did not increase after the 1000-1099 day degree reading from biofix. Although waiting until 1000 day degrees from biofix has lapsed before monitoring for leafrollers may be too late to make a timely treatment decision, monitoring at 690 day degrees is too early to find evidence of leafroller larvae in order to make a treatment decision. A good monitoring strategy might be to monitor the fruit between 900-999 day degrees from biofix. If a treatment decision can not be made (yes or no) at this monitoring a second and final monitoring would be recommended one week later to confirm that the leafroller population has not exceeded the treatment threshold.

The low load rate tested in this trial appears to be adequate in determining biofix and in catching enough moths to represent the moth flight. It has the advantage of not catching too many moths to fowl the traps early and may more accurately represent the OBLR population in the orchard being monitored.