

Insect IPM Research Progress Report Amorbia Day Degree Study

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The purpose for these studies is to determine how long it takes for each stage; *i.e.*, egg, larval, and pupal stages, of *Amorbia cuneana* to develop at each of five temperatures. Since we have determined that there are two different "types" of *Amorbia*, and to reduce the number of variables we would have to deal with if we were to do them separately, we chose to determine the development times for both "types" simultaneously in each of our bioclimatic chambers.

The two population "types" referred to are the populations which are attracted only to the Low Ratio *Amorbia* pheromone and the populations which are attracted only to the High Ratio *Amorbia* pheromone. We refer to these as the "low ratio" and the "high ratio" populations.

We have completed 65°, 70°, and 75°F. studies for both *Amorbia* populations. The 55° study is still in progress and is expected to be completed within two months [from report date, August 21, 1990]. The bioclimatic chamber in which we were running the 80° study broke down, and we had to terminate that study until we can get another chamber. We expect to be able to complete a rerun of this study in approximately 40 days or less [from the report date].

The value of these studies to California growers and Pest Control Applicators (PCA's) will be that they can use these data to predict accurately which stage of development either population of *Amorbia* is in at any time throughout the year, with or without the use of pheromones, and based on temperatures in their own avocado or citrus groves. This will refine their ability to know when to begin the pest management strategy of choice for the developmental stage most of the *Amorbia* in the particular grove would be in. If it is determined that they are in the egg stage, the choice would most likely be to purchase and release *Trichogramma platneri* wasps, since they only parasitize the egg stage of *Amorbia* (or the omnivorous looper). On the other hand, if most of the *Amorbia* in the grove are in the early stages of larval development, and it is believed that the *Amorbia* population is high enough to warrant a treatment, the election may be to spray them with a selective insecticide.

Population Distribution of High and Low Ratio *Amorbia* in Southern Riverside County and San Diego County

In early April of 1987, we set up a field study to determine which type of *Amorbia* population was predominant at each of seven commercial avocado growing sites. The practical value of this study to growers is that they now know which *Amorbia* pheromone

to purchase if they want to monitor the flight activity of their local *Amorbia* population for purposes of timing the releases of the parasitic wasp, *Trichogramma platerni*.

The first of these sites is known as Ranch 966 and is located near Temecula, in southern Riverside County, within about three miles of the Riverside-San Diego Counties line. The other six sites were all located in San Diego County with one each in Rainbow Valley (Humphrey grove), Pala Mesa, Couser Canyon (Charles Robinson grove), north of Escondido (Charles Froelich grove), Highland Valley (Emery Strong grove) and Morro Hills (George Clayton grove).

At each of these monitoring sites, we set up 12 Pherocon 1c sticky traps. We had three treatments: unbaited, low ratio pheromone baited, and high ratio pheromone baited. Four of the 12 traps were left unbaited, four were baited with low ratio *Amorbia* pheromone, and four with high ratio pheromone. At each site, we used a randomized complete block experimental design. Thus, we had a total of 84 traps in operation. All of the traps were checked and serviced at weekly intervals. The study was terminated on October 29, 1987, after it had run for a period of seven and one-half months.

Details of this study will eventually be published in the Yearbook of the California Avocado Society and elsewhere. An advance overview of the results is given at this time in Table 1.

Table 1. Total *Amorbia cuneana* moths captured in trapping study.

Location	LR	HR	Total	%LR*
1. Ranch 966	2,266	23	2,289	99.0
2. Humphrey	44	30	74	59.5
3. Pala Mesa	1	30	31	3.2
4. Clayton	5	74	79	6.3
5. Robinson	8	30	38	21.1
6. Froelich	2	38	40	5.0
7. Strong	4	34	38	10.5

*%’s with no letter(s) in common are significantly different (frequency table analysis using chi square, test of independence) with P = .05.