

TOREE AVOCADO RESEARCH PROJECTS

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Monitoring-Early Warning Project

Amorbia, Amorbia cuneana (Walsingham), and the Omnivorous looper, Sabulodes aegrotata (Guenee), are sporadic pests of avocados in California. Recently both of these pests have also been found on citrus in the San Joaquin Valley in large enough numbers to warrant treatments. Two pheromones have been developed for amorbia because our research as shown that two populations of this pest exist which use different pheromones. A Monitoring-Early Warning Project for these pests has been established in major avocado and citrus growing areas of California. There are 39 trapping (monitoring) sites covering San Diego, Riverside, Orange, Ventura, Santa Barbara, San Luis Obispo, Kern, Tulare and Fresno counties. This project has been successfully operated since early 1987 and will continue for an additional 2 years, until the three pheromones are commercially available. One looper trap and one or both amorbia traps are being operated at each site. Cooperators check the traps and report the counts at weekly intervals to local farm advisors who make this information available by telephone or newsletter to assist growers and pest management professionals in timing releases of Trichogramma platneri wasps for control of these pests. In general, looper catches were highest in January to late March, late April through early June, during July, and again from September through October. Amorbia activity tended to be highest from January through April, late May through June and in September through October. Highest amorbia moth catches were obtained in the San Joaquin Valley.

Greenhouse Thrips

The greenhouse thrips is presently the number one insect pest of California avocados. There are only three approaches to controlling this pest that hold much promise and each has its advantages and disadvantages. You as the grower or pest management professional must choose the approach or combination of approaches which best suits your own needs and temperament.

These approaches are:

1. Biological. Using a beneficial insect to control the thrips.
2. Cultural. Harvest as early as possible to avoid excessive thrips damage.
3. Chemical. Use an effective, selective and persistent insecticide.

Either of the first two approaches are preferred by most people, but if biological control is not yet an effective reality, and early harvest is not always possible, this leaves chemical control or nothing.

Today, only two chemical are registered for use on bearing avocados in California. They are Malathion and Pyrenone Crop Spray.

During 1985, 1986, and 1987, we evaluated the following chemicals.

1. Malathion----- OP
2. Orthene----- OP

3. Spur----- Pyrethroid
4. Brigade----- Pyrethroid

5. Pyrenone Crop Spray----- Botanical
6. Ryania----- Botanical
7. Sabadilla----- Botanical

8. Abamectin----- A fermentation by-product

9. Water----- Nothing added

All tests were done in a commercial avocado grove in Santa Barbara county, on Hass variety, single tree treatments, including untreated checks, replicated 5-6 times, randomized. Applications made to the point of runoff with an orchard hydraulic ground spray rig, at 400 psi, with a handgun. Pre- and post-treatment thrips counts were made of thrips on fruit and mites on leaves.

Results

1. Malathion was effective for about two weeks.
2. Orthene was even more effective and for several months.
3. Both Spur and Brigade were the most effective and were effective longer than Orthene.
4. Pyrenone Crop Spray gave good initial thrips kill but had no residual activity after a day or so, thus newly emerging thrips reinfested the fruit.
5. Neither Ryania nor Sabadilla gave satisfactory thrips control
6. Abamectin was ineffective on thrips.
7. Plain water spray simply washed thrips from the fruit temporarily and reinfestation soon followed.

During this three year study, we found some of these insecticides to be very effective, and provide the necessary residual activity and control. Other materials were ineffective, and or provided insufficient residual activity. None was found to be truly selective, i.e. they all killed beneficial mites as well as thrips, however, neither did we have a "mite blowup" following the application of any of the chemicals at any time during the three year study.

Habitat Range of Amorbia spp.

Development of a synthetic sex pheromone for Amorbia cuneana (Walsingham), a sporadic moth pest of California avocados and citrus crops, has revealed two populations of this insect which could be reproductively isolated due to differences in the ratio of their pheromone components.

A trapping study designed to define as precisely as possible, the geographic boundaries or locations of the high ratio (HR) versus the low ratio (LR) amorbia populations was set up with one site in southern Riverside County (Rancho California) and six more sites in San Diego county. At each of the seven sites four traps baited with HR amorbia pheromone lures, four traps with LR lures, and 4 traps with no lures were checked at weekly intervals for 30 weeks.

Results

Rancho California has an almost 100% LR amorbia population. Five miles to the south in Rainbow Valley (northern San Diego County) we found both LR and HR populations, also the populations were much lower than in the Rancho California area.

Another 5 miles south near Pala Mesa is a HR population.

Five miles to the east of Pala Mesa in Couser Canyon the population is predominantly LR.

Five miles to the west of Pala Mesa in the Morro Hills area is another HR area.

Fifteen miles south of Pala Mesa about 2 miles north of Escondido is another HR area.

Finally, in the Highland Valley area about 8 miles southeast of Escondido is another HR area.

In addition to its scientific significance, this study provides growers and pest management professionals with some essential and practical information, i.e. which amorbia pheromone to order, when these pheromones become commercially available, and use to time the release of T. platneri wasps to control amorbia and looper insect eggs.