2. Implementation

MENDOCINO COUNTY AREA-WIDE MATING DISRUPTION IMPLEMENTATION PROJECT

Lucia G. Varela
UC Cooperative Extension & Statewide IPM Project
Santa Rosa, CA 94706

Abstract

1. Average infestation at harvest was 0.08%. Results of monitoring 40 sites of ten acres each yielded one group of 37 which experienced no damage at harvest and 3 sites (a contiguous 30 acres) having 1% infestation during the first harvest and 2% infestation during the second harvest.
2. Azinphosmethyl use was reduced by 66% assuming 4 applications of organophosphates per season. Number of applications per site range from 1-4 with 50% of the acreage receiving only one application of azinphosmethyl.
3. Traps with lures loaded with 10 mg of pheromone placed high in the tree at a spacing of 1 trap per 2.5 acres did a good job of predicting "hot spots".

An Environmental Stewardship grant was awarded to the pear industry by EPA via California EPA's Department of Pesticide Regulation through the University of California at Berkeley. With partial funds from this grant, an areawide codling moth mating disruption project was initiated this year in 400 acres of pears in the Ukiah Valley, Mendocino County. University campus-based faculty, Extension personnel, growers and Pest Control Advisors joined the pear industry to develop and implement the project. Grower participation, a key factor for success, was a major criterion in the selection of the site.

Successful adoption of mating disruption is based on acquiring confidence in monitoring codling moth under mating disruption and on determining when further measures are needed. Predicting codling moth damage under mating disruption required intensive monitoring and experience in accessing trap catches. Major concerns in blocks under pheromone confusion are controlling codling moth on orchard borders, the reliability of trap monitoring, and the appearance of secondary pests such as leafrollers and sting bugs. Growers, PCAs, and the Project Coordinator participated in weekly data collection, project review and decision-making in an effort to learn how to address these concerns and to acquire the experience needed to continue a pheromone-based program in the future.

A program combining reduced pesticide use and codling moth pheromone confusion was implemented on 400 contiguous acres of pears. Isomate-C+ dispensers were applied twice. The first tie went up the last week of March and the second tie was applied at approximately 900 degree-days, during the first week of June. A guthion cover-spray was applied in the entire acreage at approximately 300 degree-days the first week in May. A second cover spray, timed for the beginning of the second generation, was applied in one third of the acreage. A single block of 30 acres, with a history of guthion resistance and high codling moth populations for the past three years, required four guthion sprays.

Program efficacy was determined by fruit evaluations 4 times during the growing season: preceding the second application of pheromone, pre-harvest and at first and second harvest. In addition fruit was collected from the ground at the June drop and cut open to detect hidden infestation. For monitoring purposes, the project's 400 acres were divided into 40 ten-acre sites. Weekly monitoring for codling moth relied on pheromone traps baited with 10 times the normal rate of pheromone and placed high in the tree canopy at a density of one trap per 2 acres. Extra traps were placed at the borders of the project and near packing sheds and stored bins. To verify that trap catches accurately reflected the population of codling moth present and to avoid finding ourselves in the situation of not detecting them with the traps but suffering damage at harvest, we periodically inspected fruit for egg laying and early entries or stings.

In this first year of the project, organophosphate use for codling moth control was reduced by 66% and, with an intensive monitoring regimen, we were able to predict and control codling moth hot spots. We succeeded in tracking codling moth seasonal trends in flight activity and generation development. The trap catches also predicted very well the hot spots. In those areas where there was no damage at harvest, trap catches did not exceed an average of 2 moths per trap per week during peak flight. In contrast, in the 30 acre block where we had 1% damage at first harvest, the average trap catches at peak flight was 25 moths/trap/week. On average, the percent infestation at harvest was 0.08. Results of monitoring the 40 sites (Table 1) yielded one group of 37 which experienced no damage at harvest and 3 sites (a contiguous 30 acres) having 1% infestation during the first harvest and 2% infestation during the second harvest. We did not detect codling moth damage or larvae in the fruit sampled prior to the second application of pheromone. The first indication of damage was detected when we cut open ground fruit during the June drop, although the percent infestation at that time was very low. The sites that experienced damage had had 8% damage the previous year and resistance to guthion had been documented for these sites.

Table 1.- Codling moth fruit damage sampled at five different times during the growing season.

	% Fruit Damage	
	37 Blocks	3 Blocks
Fruit sampled at 900 dd	0.0	0.0
5% cut fruit at 900 dd	0.0	0.0
Ground fruit	0.0	0.1
Pre-harvest sample	0.0	0.7
First pick bin sample	0.0	1.0
Second pick bin sample	0.0	2.0