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Mating Disruption/SIR

Comparison of sprayable mating disruption to conventional pesticide program for codling moth management in walnuts

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Abstract: This field study was one segment of the California Walnut IPM Expansion Project for the Center for Ag Partnerships. In this particular study, performance of a sprayable pheromone (3M) program was compared to the grower standard pesticide control (Chlorpyrifos, Tebufenozide) in large block trials in the southern San Joaquin Valley of California. The ranch has three varieties of early and mid-season walnuts with a drive dividing each in half providing the project with conventional and mating disruption blocks for each of the varieties. Pheromone traps, DA traps, dropped nut counts and canopy nut counts were used to monitor CM populations. Harvest data and pesticide cost analysis were also used to evaluate the performance of each program. Pheromone traps indicated a moderate to high population initially, therefore a Chlorpyrifos treatment was applied to most blocks before the sprayable pheromone was available. Conventional blocks received between one and three treatments of Chlorpyrifos and/or Tebufenozide (Confirm). Once the pheromone was applied to the mating disruption half of the ranch (downwind of the conventional half) the pheromone trap catches were nearly zero in mating disruption blocks and were severely inhibited in the conventional blocks. DA traps showed some indication of flight activity. Dropped nut counts indicated infestation levels were low in previously Chlorpyrifos treated areas while the untreated conventional blocks showed a higher level of nut infestation. Canopy nut counts were used to monitor second generation CM activity. Those numbers indicated little difference between conventional and mating disruption blocks except for one conventional block that did not receive a first generation Chlorpyrifos treatment. Harvest data showed that the mating disruption program had at least the same or lower total worm damage than the conventional. After separating Navel Orangeworm and codling moth damage, the mating disruption blocks had higher NOW levels especially in the early variety (Ashley). Although the sprayable mating disruption looked comparable to the conventional blocks for codling moth damage, the cost analysis showed that the total cost of the application and pesticides to be between 1.5 to five times higher in the mating disruption blocks.