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SEASONAL PEST MONITORING AND IPM UPDATES OF THE NORTH SAN JOAQUIN VALLEY

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Objectives

- 1 Monitor and report the seasonal activities of significant arthropod pests of walnut orchards in the northern San Joaquin Valley region.

Background

North San Joaquin Valley is the major walnut-producing region of California, with over 25% of the total state's walnut production occurring within the area. There are several important arthropod pests that growers have to manage actively in walnut orchards. These pests include navel orangeworm, codling moth, walnut husk fly, flatheaded borer, multiple species of soft and hard scale insects, ants, spider mites, leafrollers, and more. As a part of the integrated pest management (IPM) program, pest monitoring, primarily by using traps, is critical for establishing biofix (i.e., initiation of insect activities in the spring), based on which the accumulated heat units (expressed in the form of degree-days) are calculated to guide treatment decisions. Use of the traps and degree-days is the standard practice for codling moth and navel orangeworm management in walnuts. In addition, orchard scouting for damaged branches, damaged nuts, and taking samples at harvest are important practices to understand the pest pressure and assess the risk of the individual orchards.

Methods, Results & Discussion

For monitoring for major walnut pests in 2020, we placed commercially available monitoring lures and traps for codling moth, navel orangeworm, or walnut husk fly in several walnut orchards in San Joaquin and Stanislaus counties. The orchard sites include three sites for codling moth, six sites for navel orangeworm, and seven sites for walnut husk fly. In each location, 3-7 commercially available traps were installed following the protocol from the UC IPM Pest Management Guidelines for these particular pests beginning in the spring, and checked weekly through walnut harvest in late October.

Codling moth activity in the orchard was monitored by using a pheromone trap (1X codlemone lure), and results are presented in Figure 1. In the 2020 season, the first flight biofix for codling moth was on 16 April. The first peak (1A) and the second peak (1B) of the first flight occurred on 7 May and 23 May. The biofix dates for the second and third flights occurred on 16 June and 27 July, respectively. If counts warrant, the UC IPM Guidelines suggest using insecticide sprays around 250-300 degree-days from the biofix dates. We are hopeful that information that we generated from the multiple orchards may be helpful for PCAs (Pest Control Advisers) to compare their trap counts and degree-days and discuss it with the growers in deciding the need and time for nut sampling and insecticide sprays.

For navel orangeworm monitoring, pheromone lure (to attract male moths) and Peterson bait (to attract female moths) were used in wing-style traps. In 2020, we observed high navel orangeworm counts relatively late in the season (September-October). The summary of the in-season navel orangeworm activities is presented in Figure 2.

We used yellow sticky traps supercharged with ammonium carbonate for walnut husk fly monitoring. The walnut husk fly activity in the northern San Joaquin Valley started around the last week of June and continued through September. Since walnut husk fly activities vary significantly from one orchard to another, even within the orchard, we recommend growers to use orchard-specific trap counts as a guide for making treatment decisions for individual orchards.

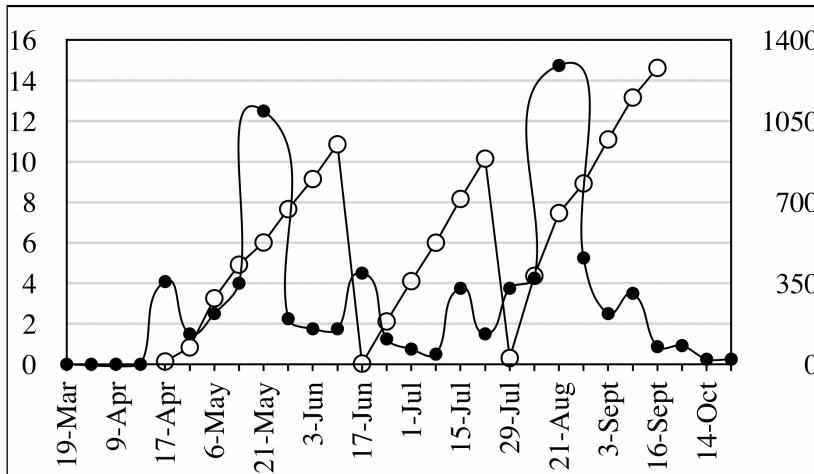


FIGURE 1. Weekly average codling moth counts in pheromone traps (left axis, line graph with closed circles) and degree-days (right axis, line graph with open circles) from walnut orchards in the northern San Joaquin Valley.

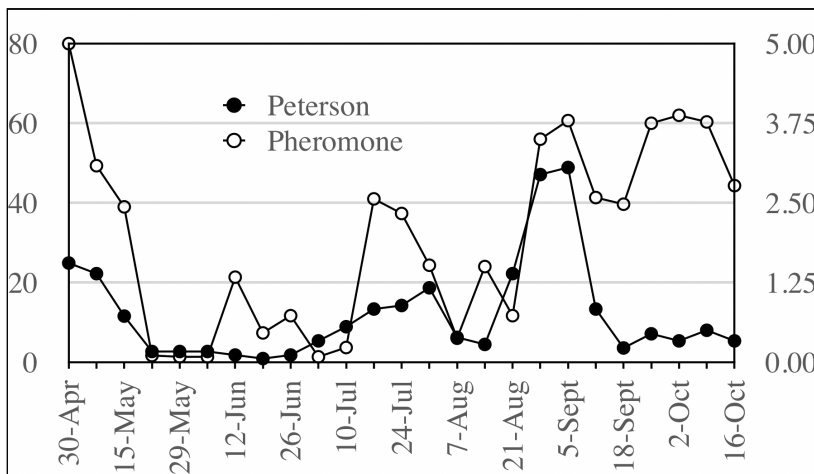


FIGURE 2. Weekly average navel orangeworm male moth counts in pheromone traps (left axis) and female moth counts in the oviposition bait/Peterson traps (right axis) in walnut orchards in the northern San Joaquin Valley.

The information derived from the regional pest monitoring was disseminated to growers and PCAs using online tools (i.e., blogs, websites) and extension articles. For example, we published seasonal insect pest trends and additional information in the IPM Corner blog (www.IPMCorner.com) in addition to updating growers and PCAs during our annual Tree and Vine IPM Breakfast meetings (biweekly, March-June, eight meetings). The results were also presented over 10 extension meetings, including North San Joaquin Valley UCCE Walnut Day, Pacific Nut Producer Tree & Vine Expo, West Coast Nut Walnut Conference, and more.