UC Pre-hull split field meeting: Timing and sprayer calibration

June 21, 2024

8:00 am – 10:00 am

Nickels Soil Lab, Marine Ave, Arbuckle, CA

(38.95631 N, 122.07491 W)

No charge, but please register so coffee order is right.

2.0 hours of PCA CE hours ("other") requested

2.0 hours of CCA CE hours requested

8:00 AM **Welcome**
Franz Niederholzer, UCCE Orchard Advisor, Colusa and Sutter/Yuba Counties
Sudan Gyawaly, UC IPM Advisor, Sacramento County

8:10 AM **Timing hull split sprays and harvest for best results**
Sudan Gyawaly, UC IPM Advisor, Sacramento County

8:45 AM **Sprayer calibration and set up for best navel orangeworm control**
Franz Niederholzer, UCCE Orchard Advisor, Colusa and Sutter/Yuba Counties

10:00 AM **Meeting complete, open for discussion**

First Hull Split Spray: Timing and Practice

Franz Niederholzer, UCCE Farm Advisor, Colusa and Sutter/Yuba Counties
Sudan Gyawaly, UC IPM Advisor, Sacramento Valley
David Haviland, UCCE Entomology Advisor, Kern County

Hull split for the 2024 almond crop is just ahead. Successful hull split spraying lowers NOW damage but requires accurate spray timing and careful spray practices. Good coverage, applied on time will be especially needed this year. Navel orangeworm (NOW) populations are extremely high in many almond districts. The following information is intended for growers planning to apply two hull split sprays before Nonpareil harvest.

First hull split spray timing:

Hull split sprays protect the nuts, targeting NOW eggs and just-hatched larvae. The most common products are the ovicides/larvicides Intrepid and Altacor. Pyrethroids are also used in some parts of the state where NOW has not become resistant, and where growers are willing to risk flare-ups of spider mites due to the loss of natural enemies. Regardless of the product chosen, the best management strategy is to achieve good/excellent insecticide coverage at the start of hull split so that 1) NOW eggs are laid on recently treated nuts, 2) newly laid eggs are sprayed, and/or 3) newly hatched larvae crawl over treated surfaces. NOW eggs hatch in four days under summer temperatures, and new larvae move quickly to feeding on the interior of the nut, so spraying must occur either before or within 4 days of the start of egg laying.

The UC IPM Pest Management Guidelines states, “Time the spray to the beginning of hullsplit (no later than 1% hullsplit) if eggs are being laid on egg traps or pheromone traps indicate that the second flight has begun.” This timing was chosen because NOW cannot successfully attack an almond until the hull is split, and because the volatiles coming from the first nuts to split are extremely attractive to females looking for places to lay eggs. The guideline of 1% split in Nonpareil provides a good balance between spraying too early (residues degrade before eggs are laid on split nuts) and too late (worms penetrate to the kernels before the spray is made).

Attaining the perfect spray timing can be tricky for large growers, especially when there are limitations on the amount of equipment. When faced with this situation, growers should begin making sprays at the initiation of hull split, or perhaps even a little before the initiation of hull split, to ensure that the last of the orchards is sprayed by the time that 1% of the nuts are split. In cases where equipment limitations force the first orchards to be sprayed earlier than ideal, growers should consider a bracket spray program by making a second application approximately two weeks after the first is made. This will help compensate for the less than ideal timing, while also ensuring that a spray is made during the peak (as compared to the beginning) of the second flight, at a time that nonpareil nuts have mostly split, and when pollinators are starting to split.

In a year like 2024, growers should be preparing now for their hull split spray(s). This is a year where flight timing and crop phenology appear to be on schedule with long-term averages, but where pressure is very high, presumably due to reduced sanitation efforts by growers anticipating low prices. Growers should have their recommendations written, the sprayers ready, and the material in the shed. Then, the key is to use degree-day models (1050 dd from the egg biofix), current pheromone trap captures, and careful monitoring for the first splits to decide when to spray. Focus your attention on trees on the edge of the orchard because they tend to split first. However, don’t assume that that this is always the case, as sometimes nuts in trees within the orchard can split first, especially in orchards with

lower nutrient levels or less vigor (Lovell, Rootpac R, etc.). Nuts in the tree tops mature and split first, so use a pole pruner, ladder, binoculars, etc. to look for splitting nuts in the treetops. Spraying a few days early is better than spraying a few days too late.

With relatively low almond prices there has been an increase in growers asking whether they should make their first hull split spray to the entire orchard, or only to the Nonpareils. If a pyrethroid is being used, the answer is definitively no. Pyrethroids are relatively cheap compared to the cost of application and target highly mobile adults. Leaving gaps in the orchard makes little to no sense. However, if Intrepid and Altacor are used, where the target is eggs and newly-hatching larvae, then there is some logic behind only spraying Nonpareil, assuming it is the only variety with splits. However, early pollinizers such as Sonora, Aldrich, or Winters may split soon after Nonpareil, so growers and PCAs must decide if the savings from just spraying the NP is worth the extra material cost compared to missing any early splits in those pollinizers. If all the pollinizers are later maturing varieties (Fritz, Carmel, or Monterey), the decision to spray just the Nonpareil in the first spray may be easier to make. If a second hull split spray is applied as a bracket spray (for example, 10-21 days after the first hull split spray), all varieties are usually sprayed, especially this year with the high NOW pressure.

Spray practices:

Good, uniform spray coverage is key to the best NOW control possible. More spray volume (150-200 gallons per acre) and slow sprayer speeds (2-2.5 MPH) using a powerful PTO or engine-drive sprayer deliver good spray coverage throughout vigorous, mature almond trees. Coverage in the treetops is most important; that's where most nuts are. Slow speeds ensure that the sprayer fan(s) have time to move the spray to the treetops. Driving too fast means good coverage, low, but poor coverage higher in the trees. Spraying at night reduces spray evaporation and improves coverage in the tops compared to spray applied when relative humidity (RH) drops below 40%; as early as 10-11 AM on a summer morning. As always when spraying, read and follow the label.

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