Leaffooted Bugs in Almonds

Think Before you Spray this Season

By David Haviland

Since the 2006 season many almond pest control advisors have been asking the question of what will happen with leaffooted bug in 2007? While nobody knows the exact answer, there are definitely two major factors that will influence the results. On one hand, cold, dry winter weather has not been highly conducive to winter survival of leaffooted bugs; on the other hand, populations going into the winter were higher than normal. How these two factors interact is anybody's guess. The important thing is to go into the 2007 season as educated as possible.

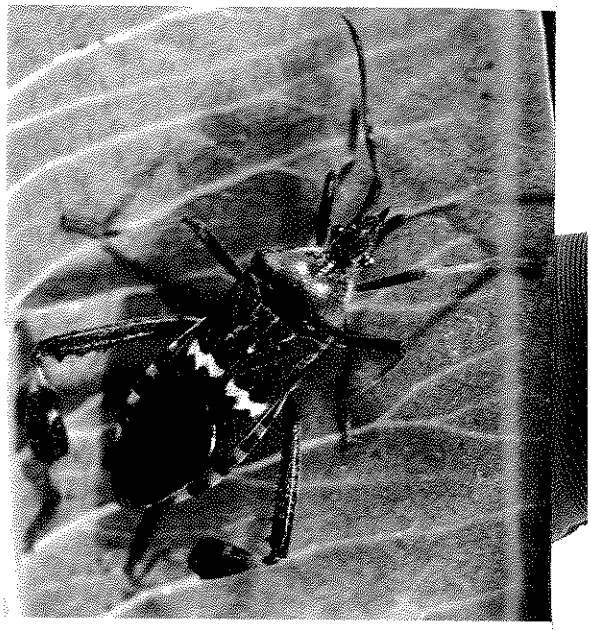
Pest Biology

Leaffooted bugs overwinter in the adult stage, and in 2006 we learned that the majority of them migrate into orchards during late March and April, with lingerers sometimes showing up in May. The date of migration is influenced by temperature, day length, and the availability of food, with migrations tending to occur earlier in the southern part of the Valley. As adult leaffooted bugs move into an orchard they feed on the nuts. The great majority of the nuts that are fed on during April and May abort, and have one or more spots of gummosis at the site where feeding by the bug occurred. Nuts fed on later in the year, though less common, can stay on the tree and be present through harvest.

Feeding by the overwintering adults is the primary concern in almonds. This is because they can live all the way into June, meaning that each adult can feed within the trees for a period of 2-3 months. Adult females in the orchard also lay eggs, which are often found on the sides of nuts. However, all indications are that these eggs are a very minor issue. This is because 1) most eggs hatch, but do not appear to develop all the way to adults in almonds, 2) the mouthparts of immature leaffooted bug are not big enough to damage the almonds, and 3), any immatures that do become adults appear to migrate out of almonds to search out food sources better than an almond after shell hardening, such as pistachios or pomegranates. Because of this trend, more than one treatment should not be needed for leaffooted bugs, even in a bad year.

Monitoring

To date, nobody has developed a good monitoring program for leaffooted bugs. This is primarily due to their very cryptic nature, their spotty distribution



patterns, and because very low numbers of bugs can do a lot of damage. The most accurate way to sample for leaffooted bug, and the hardest to do, is to do surveys for the actual bugs. History states that this is very difficult, since it is not uncommon to find orchards with damaged nuts, and even egg masses, but never see the actual adults.

Because of this a more common monitoring method is to look for damaged nuts in the trees. These nuts can be identified by the presence of gummosis on the outer surface of the hull. When this gummosis is seen, take a knife and cut some cross-sections into the nut to see if the gummosis is associated with a puncture wound. If it is, the problem is likely leaffooted bugs. If there is not a puncture mark, the damage could be due to factors related to diseases or tree physiology.

The last monitoring method is to look for aborted nuts on the ground. This method is very easy, and can even be done without getting out of the truck. The problem is that damaged nuts take about 7 to 10 days to abort, meaning that once nuts begin to fall, even immediate

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Leaffooted Bug

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treatments cannot prevent another week and a half's worth of damaged nuts to continue to fall from the trees.

Treatments

If leaffooted bugs or the damage they cause are found in April or May, insecticides should be considered. This is because monitoring programs are not very effective and even low pest populations can cause significant damage. Additionally, there are no biological control organisms that are effective against the adult stage of the bugs.

Before treating, however, it is important to consider which varieties of almonds are present in the field. Data in 2006 showed that Fritz trees are extremely susceptible to damage, followed by Aldrich, Sonora, Butte and Livingston. Moderately to slightly susceptible varieties include Nonpareil, Wood Colony, and Monterey; damage is usually not significant in Carmel, Mission, Padre, Price and Ruby.

The primary pesticide used for leaffooted bugs is Lorsban. It can be applied by ground or by air, with many preferring by air. Most leaffooted bugs tend to be towards the top of the trees where they are exposed during aerial applications, and many PCAs think aerial applications are less prone to cause flare-ups of mites. This is because predatory mites during April and May still tend to be in the lower portions of the tree where the spider mites are located. Another problem with Lorsban is that it is a high emitter of volatile organic compounds (VOCs) that contribute to ozone pollution. Other products that can be effective include Brigade, Warrior or permethrin-based products like Pounce, Ambush or Perm-Up, that each has the potential to flare mites. However, if properly timed, each may also help with control of peach twig borer or navel orangeworm.

The most important thing for 2007 is not to be extremist. Don't go out and spray just because damage occurred last year, but likewise don't just ignore the situation or go ultra-green and hope that biocontrol is going to solve the problem, because it won't. Problems in 2006 were not the result of lack of control options, but were the result of nobody having this pest on their radar screen. This year the radar will be on, and everybody should be ready for what the future has in store.

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