UNIVERSITY OF IDAHO **EXTENSION UPDATE**

Tree Fruit Pest Advisory

University of Idaho, U.S. Department of Agriculture, and Idaho counties cooperating.
Spring 2009 Issue 5

Protect Yourselves

Codling Moth

As moth flight decreases this week, egg hatch is on the rise and cover sprays are losing effectiveness due to the wet spring weather we are experiencing. The cool weather is increasing the length of the first generation and making for a spotty distribution of moths. Having said that (and if you are curious), we are more than a week and a half behind what we were in 2008, 1 week ahead of 2007, about the same as 2006, and about a week behind 2005.

Keep your fruit protected with rain-fast products during this year's maximum egg hatch (see RainFast article). During this narrow window of two weeks about 70% of larvae hatch. At the same time fruit is expanding. Pay careful attention to your spray intervals and make sure you are protecting your fruit.

White Apple Leafhopper

Large numbers of leafhopper are now showing up in un-managed apple trees. White apple leafhopper adults are creamy white to yellowish-green in color and about 3 to 4 mm (1/8 inch) long. They hold their wings in a roof-like position when resting and appear as tiny wedges when seen from above. Adults are active and fly readily when disturbed.

There are two generations of leafhopper per year. Although the first generation is fairly small, and foliar damage is rarely noticed, the second generation density in late summer can be quite large. In addition to direct leaf injury, these leafhoppers excrete resin-like material, in deposits called tarspots. Tarspots on the fruit substantially reduce quality and value. Most of

the significant fruit spotting is associated with the second generation of white apple leafhopper.

Leafhoppers should be sampled from the underside of leaves, especially on suckers or older terminal growth. Count the number of leafhoppers on ten leaves from each of ten trees, and calculate the average number of leafhoppers per leaf. Treatment is suggested if there is an average of

Degree Day post biofix (6/10/09)

Sta. Elevation	CM/PTB	50%Hatch	WCFF
Payette(2150)	745	June 16	1221
Emmett(2390)	688	June 19	1109
Caldwell(2431)	687	June 19	1171
Parma(2290)	749	June 15	1264
Ontario(2188)	756	June 17	1289
WallaWalla(1375)	688	June 21	1235

Look out for:

- Monitor for leafhopper nymphs on apple; examine cherry leaves and peach fruit for powdery mildew; watch apple fruit clusters for signs of fire blight infections;
- Watch for "cottony" colonies of woolly apple aphid in the next few weeks

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more than 1 leafhopper nymphs per leaf. However, apples trees can handle large populations (more than 6 nymphs/leaf) before fruit tarspot injury occurs.

Peach Twig Borer

Applications are recommended for this weekend. Early season (May) larvae bore into the tips of tender twigs killing the tips and causing lateral twig growth. Cutting out these flags, as we call them, will reduce pressure. Later generations attack peach fruits, either penetrating to the pits or hollowing out areas beneath the skin.

Within an IPM program, the preferred management strategy for peach twig borer is well-timed treatments of environmentally sound insecticides around bloom time. These include *Bacillus thuringiensis,* spinosad (Entrust, Success), methoxyfenozide (Intrepid), and diflubenzuron (Dimilin). However, most applications in Idaho tend to target the second generation larvae and protect susceptible fruit.

Mating disruption with sex pheromones can be used to supplement dormant or bloom time sprays. The main practical use for mating disruption is post-bloom treatment in organic systems where other materials are not available. Mating disruption has not been reliable against peach twig borer when used alone. It is most effective in orchards with low moth populations that are not close to other untreated peach twig borer hosts or almond orchards.

Greater Peachtree Borer

Growers in the Treasure Valley should begin treatment on peach, nectarine, and apricot. Although cherry is listed as a host, this pest is not a major threat to our cherry orchards and Plums as well are rarely attacked.

Greater peachtree borer or crown borer is a day-flying moth that resembles wasps. You may see a clear-winged moth with blue-black bodies with yellow or orange bands across the abdomen. The adult peachtree borer may be found from June to September resting on leaves, with larvae present in the tree the rest of the year.

Adults lay eggs on the lower 12" of the tree trunk or on nearby soil, and larvae bore their way into the wood and remain there for the next 9-11 months. Sprays only need to be applied to the lower 12-18" of trunk and exposed root flare. The residual material on the bark is there to kill the eggs and newly hatching larvae. As an alternative to spraying, growers with at least one acre of peaches can successfully control peachtree borer with mating disruption. This technology prevents males from finding females.

Western Cherry Fruit Fly

Most sweet cherries are beyond the point of "coloring up" and sprays should have started on these trees around June 4th. Chemical treatment needs to continue for the next three weeks, time your applications appropriately. Make sure to check pre-harvest Intervals on all chemicals you are using as harvest will be approximately 2 weeks away.

During this peak emergence period, about 15 to 20 percent of the population emerges each week. During this most active time, one fly can oviposit ten to twenty eggs each day. Most cherry fruit fly in Idaho is found in non-commercial sweet or tart cherry trees planted in home orchards. Few hobby orchardists have the ambition, knowledge or equipment necessary to control this pest. Pest populations can be greatly reduced in a region by organized efforts to identify and treat or remove these wild or neglected host trees. If you are a hobbyist please control this pest or remove your trees.

The US Food Quality Act enforces zero tolerance of this pest and has forced growers into intensive control programs to achieve perfect control. Commercial growers begin spraying when first fly emergence is detected, or when temperature-driven phenology models indicate emergence has commenced in the region. The phenology models in Idaho have predicted first trap catch of adults on heavily infested trees very accurately.

Growers continue to spray every week to ten days, depending on product used, until harvest is completed. Usually, one or two sprays are applied post harvest to disrupt the attack on unharvested fruit and reduce populations for the following year.

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New Cherry Pest Found in California

(reprinted from American/ Western Fruit Grower)

A new, potentially serious pest of sweet cherries showed up recently in ripening cherries in Northern California orchards. It has been tentatively identified as a drosophilid fruit fly of unknown genus and species, says Bill Coates, a University of California Cooperative Extension farm advisor for San Benito, Santa Cruz, Santa Clara and Monterey Counties.

These are flies usually associated with damaged or decaying fruit and are called vinegar flies, says Coates. In this particular case the fruit appears undamaged except for what appears to be 'stings' on the surface of the fruit and maggots feeding within the fruit. Early varieties such as Early Burlat and Black Tartarian have been extensively damaged in Santa Clara County. Growers are beginning to apply protective sprays to guard against infestation of the main 'Bing' crop.

The pest has also appeared in the northern San Joaquin Valley, says Coates, who adds that he doesn't yet know whether other fruits are susceptible. This is an excellent example of the collaboration between growers, pest control advisers, UC Cooperative Extension, agricultural commissioners and the California Department of Food and Agriculture, he says. "I was first informed of this pest on Thursday, May 14 by a pest control adviser and a cherry grower," he says. "I was able to determine from the symptoms that it was not light brown apple moth but a fruit fly of some type. I provided fruit fly traps to growers by late Thursday. On Friday samples from both infested fruit and fruit fly traps were taken by the Santa Clara County Agricultural Commissioners office to Sacramento for identification by the CDFA."

The species of drosophila has still not been confirmed by the CDFA, says Coates. It does not seem to match existing North American species. These are drosophilid, not tephritid fruit flies - the latter group contains most of our common fruitinfesting fruit flies. It has been found infesting cherries in Santa Clara, Yolo and Stanislaus counties with unconfirmed reports from other counties. A similar, if not the same drosophila, is also infesting strawberries and caneberries in Santa Cruz County. "Most cherry growers in the Central Coast are applying multiple GF-120 bait sprays and doing extensive sorting of fruit.

I am trying a variety of trap types but the presence of the common drosophila species – drosophila melanogaster, complicates monitoring," says Coates. "Currently, the best indication of infestation is to check early-ripening pollenizers such as Black Tartarian and Early Burlat and then apply controls to protect the main Bing crop. There is no replicated research on control measures for these type of flies in California in cherry orchards."

RainFast characteristics of insecticides

John Wise, MSU

The heavy rainfall events experienced over the last several weeks has prompted many questions about the relative "rainfastness" of the insecticides used in fruit production. Very little research has been done on this subject in recent years, leaving growers to depend largely on folk-lore to guide their decisions of whether or not they need to spray after a rain event. In 2006, the Michigan Agriculture Experiment Station provided funds to purchase and install a state-of-the-art rainfall simulation chamber at the MSU Trevor Nichols Research Complex. Precipitation events vary in duration, intensity, and droplet size.

In the 2007 apple study, we compared the performance of Azinphos-methyl (GuthionÒ), Phosmet (ImidanÒ), Esfenvalerate (AsanaÒ), Indoxacarb (AvauntTM), Novaluron (RimonÒ), Emamectin Benzoate (ProclaimÒ) and two neonoctinoids, Acetamiprid (AssailTM) and Thiacloprid (CalypsoÒ) on the codling moth. Fruit clusters harvested 24 hours after treatment were then exposed to codling moth larvae in the laboratory, comparing fruit protection to untreated samples with no simulated rainfall. Parallel fruit samples were analyzed for their surface and sub-surface residue levels.

All treatments that were exposed to the half-inch of rain after 24 hours of drying provided good control of codling moth, even though residue losses to wash-off ranged from 10 to 50 percent. This suggests that even with significant residue wash-off, fruit protection is maintained from insecticides in the first few days after a spray. When fruit clusters were collected from the same field treated plots eight days later, some differences in performance became visible. Whereas performance of Calypso, Avaunt. Imidan and Guthion remained relatively equal between the rainfall and no-rain fruit, the activity of Rimon, Assail, Proclaim and Asana on codling moth was reduced from the half-inch of simulated rain. For the conventional insecticides Asana, Imidan and Guthion that have primarily surface residues, the amount of chemical lost from half-inch simulated rainfall ranged from 30 to 50 percent. This suggests that pyrethroid and organophosphate insecticides are similarly susceptible to wash-off from precipitation, but that the OPs' higher toxicity to codling moth larvae maintained performance, though this may not occur in commercial orchards where OP resistance exists. Assail and Calypso, being neonicotinoids, have systemic movement into plant tissue. The residue data showed that even though losses of surface residues were similar to that of the OPs, the residues that had moved in and below the plant cuticle were protected from wash-off. For Avaunt, Rimon and Proclaim the residue wash-off from fruit was significant, but residues in leaf tissues appeared to be quite resistant to rainfall wash-off. There is much more work to be done in this area of research, including the simulation of more severe rainfall events. We expect to be reporting our findings as they develop over the coming years.

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RAINFAST continued:

Marion Murry, USU

In general the factor that causes the greatest residual breakdown is UV exposure rather than water; materials break down faster in direct sunlight than under cloudy conditions otherwise use these recommendations:

• do not spray when rainfall may occur within 2 hours

• make sure plants are dry before spraying

• if the material is allowed 4 hours to dry after spraying, then depending on the material, it will usually be rainfast to light rains and reapplication earlier than label recommendation is not necessary

• if a heavy rain (1+ inches) falls, then the residual amount of some materials may decrease by half; for example if a material lasts 14 days and heavy rains fall a few days after application, it should be re-applied after 7 days.

Materials that are not rainfast:

Surround (kaolin clay), neem, spinosad, GF-120, sulfur, Mancozeb, copper

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