

Tree Fruit Pest Advisory

University of Idaho, U.S. Department of Agriculture, and Idaho counties cooperating.

Spring 2012 Issue 3

Protect Yourself

Codling Moth: If you have not started spraying for codling moth you are on the hot seat. Get out and spray when the rain stops. For information on

Research showing rainfast products (products and their degradation in rain) see page 3.

Fire Blight: is at High risks of infection. The ten day forecast with "Cougar blight" models show that May 15th through the 17th were "extremely likely" for infection. The next three days are High Risk for infection. If temperatures increase during this upcoming wet weather you can expect fire blight to be infecting your trees. If April infections occurred the infection started in the flower and moved to the shoot. Your shoots may look like this. On warmer days the infections will ooze with sap-like material. Check your trees daily if possible. Infections usually show up 7-10 days after infection. If you own later

blooming varieties you might check them now. If you see signs of infection prune them out during dry weather (if we get any). Prune at least 8 inches below the signs of infection. Most importantly protect young trees as they are most susceptible to infection.

Western Cherry Fruit Fly (WCFF):

WCFF are going to start flying in the next couple days in certain areas of Southwestern Idaho.

Chemical control sprays should be applied on or before 1060 degree-days to target mature, egg-laying flies. Sprays should be repeated every 10 to 21 days, depending on the residual activity of the product, to maintain residues high enough to kill adults before they lay eggs. Rain may reduce residues, requiring shorter intervals between sprays. Applications of products with a very short residual life are best

repeated every 7 days.

Flatheaded Borers: Trees at risk are young fruit trees near infested trees, stressed by drought, and trees with wounded bark may require preventive insecticide sprays. Spray is applied to the bark to kill hatching larvae. Spray the trunk up to the lower limbs about June 1 and again on July 1.



Degree Day "No biofix" (5/21/12) Look out for:

<u>Sta. Elevation</u>	<u>°Days</u>	<u>50% Hatch</u>
Weiser (2080)	457	June 17
Payette(2150)	521	June 15
Fruitland (2421)	550	June 12
Emmett(2390)	412	June 19
Parma(2309)	475	June 17
Nampa(2713)	480	June 17
Boise (2719)	480	June 18
Mt Home (2992)	490	June 17
Magic Valley (4048)	511	June 19

- Insect activity (codling moth, fruitworm, aphids, leafhopper, and beneficial insects) continues to be at a low due to cold weather.
- Watch for powdery mildew lesions on apple, cherry, and peach leaves.

Fruit Thinning

Fruit trees often set more fruit than they can support, especially if the trees were not properly pruned during the previous season. Excessive fruit compete with each other for energy and remain small. This energy drain can also weaken the tree and make it more susceptible to pests and sunburn damage. Leaving too much fruit on the trees can lead to alternate bearing or limb breakage.

Thinning immature fruit at the appropriate time allows each remaining fruit to develop to its maximum size, with little reduction of tree vigor. Less crowded fruit receive more sunlight which improves color and flavor.

Natural thinning occurs when small immature fruits drop off naturally during what is known as "June drop" Fruits that are diseased or infested with insects may also drop prematurely. In some trees natural thinning is sufficient to produce high-quality fruit such as in cherries, persimmons, and nut trees. Stone and pome fruit require thinning for best production.

Fruit thinning should be done just after the June apple drop, when the fruit is about the size of a cherry or walnut. For most varieties, the apples are removed but the stems stay attached to the fruit spur. Thinning should be done to allow a closer spacing near the base of the branch and a wider spacing near the tip. This is done to avoid having the branches bend or break from too much weight. Early thinning or overthinning may increase the incidence

Peach leaf curl is a sporadic disease of peach and nectarine trees, that we typically only see in backyard trees or smaller orchards. It has been a common disease the last two springs due to the cool wet weather. Infections only occur when temperatures are below 79°F, in the presence of moisture. Once the temperatures rise, further infections of leaves ends.

Peach leaf curl is a fungal-caused disease that affects leaves just as they open, leading to puckering, distortion, and discoloration of the foliage. The affected area is pink at first, and then turns yellow-green, and then brown. As diseases go it is quite attractive. Leaves will eventually drop.

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of disorders such as bitter pit, but delayed thinning can reduce fruit size and return bloom.

Apples should be thinned when the largest fruits are between ½ and 1 inch in diameter usually 30 to 45 days after full bloom. Here's how to thin the apples:

1. Pick off the smallest fruits as well as any that are misshaped or damaged.
2. Remove excess apple clusters so that the tree is left with clusters spaced 6 to 8 inches apart.
3. Thin each remaining clusters to one fruit each (keep the largest). Leaving one apple per cluster can help reduce codling moth infestations.

Peaches, nectarines, apricots, and plums should be thinned when fruits are ¾ to 1 inch in diameter. Thinning too early can increase split pit. Waiting too long wastes the plant's energy and the opportunity to get the largest, sweetest fruit possible. Here's how to thin these species:

1. Space fruit out 2 to 4 inches along a shoot for plums and apricots and 3 to 5 for peaches and nectarines.
2. If the trees have not been properly pruned to reduce the amount of fruiting wood, additional thinning may be required to prevent a heavy crop from breaking limbs.
3. To achieve the large sweet peaches that we all enjoy, a moderate-sized peach tree should only produce 100 to 150 fruits on the entire tree.

If you see these symptoms, note that there are no fungicides that can be applied at this time. The best treatment is a single application of a fixed copper at leaf fall.



WSU Decision Aid System

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 rain-fall simulation chamber at the MSU Trevor Nichols Research Complex. Precipitation events vary in duration, intensity, and drop-let size. In the 2007 apple study, we compared the performance of Azinphosmethyl (Guthion), Phosmet (Imidan), Esfenvalerate (Asana), Indoxacarb (Avaunt™), Novaluron (Rimon), Emamectin Benzoate (Proclaim) and two neonictinoids, Acetamiprid (Assail™) and Thiacloprid (Calypso) 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 per-cent. 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.

Helpful tips for rainfastness of your products:

- 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 re-application 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.
- for residual control of insects, 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

Materials that are not rainfast:

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

Leafroller and Codling Moth Movement During the Season

(Ute Chambers & Vince Jones, TFREC)



Movement of codling moth and leafrollers into your orchard can be the start of serious damage. Both CM and leafrollers can easily fly 5-7 miles in a single night and their reproduction is as high as those that do not fly. Although 5-7 mile flights are common, the likelihood of the moths coming to your orchard in high numbers is directly related to wind speed, distance from the source, and the environment in between the source and your orchard.

Impact of wind speed and direction

Our studies have shown that CM rarely fly at wind speeds above 3.3 mph and that they are unable to locate lures (or mates) at those wind speeds. Wind speed in orchards with high tree density tends to be lower than in low-density orchards. This suggests that moths may be able to fly further in a high-density orchard where wind velocity would be less than 3.3 mph a greater percentage of the time. Studies with marked CM have also shown that the majority of adults migrate in the direction of prevailing wind.

Impact of migration on reproduction

In lab studies we let CM and oblique-banded leafroller (OBLR) adults fly over a distance of approximately 6,200 feet (1.17 miles) and then looked at their reproduction in comparison to moths that did not fly. CM reproduction was not affected by this flight distance. OBLR reproduction even increased 2-2.5 fold after the flight. This means that migrating OBLR can produce 2-2.5 times more offspring when they arrive at a new location compared to moths that do not fly before mating. This is critical information for resistance management, as migrating individuals carrying a gene for pesticide resistance should be able to easily pass that on in the area where they settle. The flight distance of 6,200 feet translates into an area of more than 2,772 acres that moths can infest without a reproductive dis-

advantage. Our studies further suggest that mated moths fly further than unmated ones and that the flown distance decreases with moth age.

Impact of cover sprays on flight distance

We tested the effects of sublethal doses (LD10) of Assail and Guthion on flight of CM and OBLR in the lab with flight mills (a cheaper and more sensitive method to evaluate these effects compared to field trials). After CM females and males received a sublethal dose of Assail, they flew shorter distances, less frequently and for shorter periods of time. Guthion did not significantly change flight patterns of CM adults. OBLR females exposed to sublethal doses of Assail and Guthion showed significant reductions in flight distance, number of flights and flight duration. Males were unaffected. Our data suggest that migration of CM and OBLR may be reduced due to sublethal effects, however, those effects vary depending on the pesticide used, the pest species and sex.

Impact of kaolin on CM migration

Our studies showed that a border spray of 3 rows with kaolin can reduce CM migration significantly, even in the face of high population pressure, as long as the coverage is thorough and without gaps. Kaolin works as a deterrent as females do not lay their eggs on surfaces covered with kaolin. We suggest to treat only border rows as the kaolin can flare spider mites and interferes with natural enemies (they spend more time cleaning themselves than attacking pest insects and mites). CM migration into an orchard from outside decreases sharply after the first few rows. In sloped orchards, however, CM may be able to fly over the top of the orchard border rows (instead of from tree to tree), thus migrating further than in flat orchards.

Washington County

ALWAYS read and follow the instructions printed on the pesticide label. The pesticide recommendations in this UI publication do not substitute for instructions on the label. Pesticide laws and labels change frequently and may have changed since this publication was written. Some pesticides may have been withdrawn or had certain uses prohibited. Use pesticides with care. Do not use a pesticide unless the specific plant, animal, or other application site is specifically listed on the label. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

Trade Names--To simplify information, trade names have been used. No endorsement of named products is intended nor is criticism implied of similar products not mentioned.

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