Tree Fruit IPM Advisory

Weekly Orchard Pest Update, Utah State University Extension, **April 22, 2010**

News/What to Watch For:

NOTE: When dates for codling moth sprays are announced, we will switch to the two-version format of the advisories, one targeting all grower types, and one basic newsletter targeting residential growers.
Hang codling moth traps within the week in most areas of northern Utah
Examine apple leaves for bright white powdery spores of powdery mildew
Green peach aphid, green and rosy apple aphid, black cherry aphid eggs hatching; white apple leafhopper eggs hatching soon
Images of bud stages, page 5
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Bud Stages

Well, it seems that about 2 weeks of bud development was squeezed into the last 5 days, and now we're just about "even" with bud and insect development from last year. The difference is the lack of rain.

Davis, Box Elder, Salt Lake, Weber counties:
Apples: tight cluster - first pink
Apricots: full bloom - petal fall
Cherries (sweet): first - full bloom
Peaches: first bloom - bloom
Pears: first bloom - full bloom

Cache County:
Apples: half-inch green - tight cluster
Cherries: first white
Peaches: 1/4" green - pink
Pears: Green cluster

Utah County:
Apples: 1/2" green - tight cluster
Cherries (sweet): first - full bloom
Peaches: bloom
Pears: first bloom

Grand County:
Apples: first bloom
Apricot: 1/4" fruit
Cherry: first bloom
Pears: full bloom
Peach: full bloom - petal fall
Plum: full bloom

Insect and Disease Activity/Info

POME FRUITS

Codling Moth

Codling moth is the "worm in the apple" insect. The adult moth emerges in spring to lay eggs on or near fruit. After eggs hatch, the tiny larvae immediately chew into the developing apples and make their way to the seeds to feed. Once finished, they emerge from the apples, drop to the ground, and pupate. They repeat this cycle about three times in northern Utah, with a slight respite between each generation. That is what makes this pest so destructive: it is "around" almost all season.

Right now, though, the only thing to do is wait. Those that have pheromone traps should hang them now or by this weekend in all areas of northern Utah except Cache County. It is important to hang them several weeks before moths start to fly to get an accurate biofix (first moth flight). We use this date to determine when the eggs start to hatch (and when treatments start).

Speckled Green Fruitworm and Cankerworms:

There are several species of fruitworms in Utah, and the most common is the speckled green fruitworm. Adults are starting to emerge now to lay eggs on foliage, twigs, and fruit. A single female can lay up to 300 eggs in one large cluster. The eggs begin hatching during apple bloom or cherry petal fall.

Cankerworms are more of a forest/landscape pest, but have been found in orchards before. They feed on a wide variety of plants and fruits. Adult moths laid eggs last fall, and eggs will be hatching in the next few weeks. The coloring of cankerworm larvae is similar to fruitworm: green with various white markings.

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Insect and Disease Information, continued from previous page

fruitworm feeding damage on plum (left) and cankerworm feeding on apple (right)

fall cankerworm

speckled green fruitworm

Commercial growers are most affected by these pests. Although a large infestation can partially defoliate a tree or a portion of a tree, it is the scarring damage to the fruit, rendering it unmarketable, that is of most concern. Residential growers rarely need to treat for these insects; the few fruit that get damaged can be composted, or injured portions of the fruit can be cut away. Defoliated trees or branches will re-foliate within a few weeks.

Larvae of this insect are only active for about 6 weeks, feeding on leaves and the newly developing fruit. Injured fruit will drop early or show deep sunken scars.

Treatments used for other lepidopteran pests (codling moth, peach twig borer, etc.) will also take care of fruitworms. Otherwise, use Bt (Foray, Dipel, etc.) or spinosad (Entrust, Success) at bloom during dawn or dusk.

Fire Blight

Apples and pears are blooming in southern Utah, and pears have started along areas of the Wasatch Front, so it is time to start thinking about fire blight.

To estimate the risk of blossom infection, we use a computer model called "Cougarblight" (developed by Tim Smith, WSU). The model uses daily maximum and minimum temperatures to calculate a 4-day "degree hour" total. The warm weather has resulted in a high to extreme risk of infection for most areas on April 21 and 22.

There are several factors to remember regarding fire blight infection:

1. **Presence of Flowers.** Fire blight bacteria cause new infections through flowers in spring. The bacteria first colonize the flower stamens, and then moisture is required to wash the bacteria down to the nectary, where infection occurs. If flowers are not present, the "risk of infection" levels provided in this advisory do not apply.

2. **Presence of Fire Blight Cankers.** The fire blight bacteria is spread short distances by wind-driven rain or by pollinators. If your trees had blight last year, the risk of infections increases this year. If blight is not nearby, risk of infection decreases.

3. **Presence of Moisture.** Even if bacteria have colonized the flower stamens, moisture is needed to wash the bacteria into the flower, thus causing an infection. (Moisture also spreads bacteria from flower to flower.) Moisture may come in the form of rain, irrigation sprinklers, or even 2 or more hours of a heavy dew. This is something you would have to gauge on a site-by-site basis.

Look at the table on page 4 to see the risk of infection in your area. The following is an explanation of each rating word, provided by Tim Smith:

Low: Wetting of flowers has not led to new flower blight infections in past years.

Caution: Wetting at this point is not likely to lead to infection, except within a few yards of an actively oozing canker.

High risk: If unprotected flowers are wetted, infection is possible. If flowers are numerous, you may choose to protect every 2 – 3 days with a biological product during the HIGH risk period. Or, apply antibiotic within 24 hours before or after the infection (wetting) event.

Insect and Disease Information, continued from previous page

Extreme: Outbreak may occur if blossoms are wetted, no matter the blight history of your orchard. Apply antibiotic within 24 hours before or after the wetting event. If used, biological products should already be present on flowers and may not work as well if only applied at this risk period.

If you see that you do have a risk for infection, note that you have a 24-hour window in which to apply streptomycin. Streptomycin can be applied in that 24 hour window either before or after the wetting event. Oxytetracycline (Mycoshield) should be applied as soon as possible. Streptomycin provides protection for 3-4 days, and oxytetracycline (which does not work as well) provides protection for 3 days.

The rain the past few days have made it difficult to spray, but if a treatment must be made in your area, only apply when you have an open window of at least 4 hours of rain-free time. If you are unable to make a treatment before tomorrow, then it is probably too late for this infection period.

Some locations in Utah County commercial orchards have been identified as resistant to streptomycin, and the recommendation is that growers can use strep ONCE and it must be mixed with oxytetracycline (Mycoshield). All other sprays for the season should be oxytet only. For this reason, make sure you make good use of the strep spray, and if a spray is warranted, choose to use it when trees have the most open blossoms.

The Utah Climate Center Web site (click here) has a tool for fire blight warnings for approximately 10 locations in northern Utah. To use the tool:

1. select the location on the map nearest you (the beetle icons)
2. select "fire blight" from the drop down menu in the box on the right
3. leave the dates as they are, or if you know when bloom started, change the "biofix" date to start of bloom
4. hit submit; the results will show 5 days of history, the current date, and 4 days of forecast warnings

STONE FRUITS

Thrips on Nectarines

Thrips feeding early in the season can cause significant damage to developing nectarine fruit, including scarring, deformity, and gumming. Thrips are minute insects that are primarily a problem early in the season, particularly at bloom. Activity increases with warmer temperatures. To prevent damage to fruit, apply spinosad (Success, Entrust, Green Light, etc.) at dawn or dusk.

damage to nectarine caused by early thrips feeding

We always remind growers to not spray during bloom to preserve pollinators; however, the insecticide spinosad is safe on bees. Applying at dawn or dusk minimizes direct contact.

Degree Day Accumulations and Insect Development

Upcoming Monitoring/Insect Activity

Pest (in order of appearance)	**Host**	**Appearance/Management Action**
Rosy apple aphid	Apple leaves and fruit	First egg hatch around tight cluster stage
Black cherry aphid	Cherry leaves	Egg hatch at cherry bud break
Green peach aphid	Peach leaves; Nectarine fruit	Egg hatch at full bloom
Campylomma bug	Apple fruit	Egg hatch begins at first pink (apples)
White apple leafhopper	Apple leaves	Egg hatch begins at first pink (apples)
Codling moth	Apple fruit	Hang traps at first pink First flight approximately 2 weeks later

Degree Day Accumulations

March 1 - Wednesday, April 21

County	**Location**	**GDD (50)**	**Fire Blight Warning**
Box Elder	Perry	114	April 22 - EXTREME; April 23 - CAUTION; April 24 - LOW
	Tremonton	89	
Cache	North Logan	79	
	Providence	99	
	Smithfield	75	
Carbon	Price	105	
Davis	Kaysville	115	April 22 - EXTREME; April 23 - CAUTION;April 24 - LOW
Grand	Castle Valley	252	
Juab	Tintic	77	April 22 - HIGH; April 23 - CAUTION;April 24 - LOW
Salt Lake	Holladay	147	
	West Valley City	146	
Tooele	Erda	117	
	Tooele	114	
Uintah	Vernal	106	
Utah	Alpine	111	April 22 - HIGH; April 23 - CAUTION; April 24 - LOW
	American Fork	124	April 22 - HIGH; April 23 - CAUTION; April 24 - LOW
	Genola	147	April 22 - HIGH; April 23 - CAUTION; April 24 - LOW
	Lincoln Point	97	April 22 - HIGH; April 23 - CAUTION; April 24 - LOW
	Orem	-	
	Payson	130	April 22 - HIGH; April 23 - CAUTION; April 24 - LOW
	Provo	153	
	Santaquin	113	April 22 - HIGH; April 23 - CAUTION; April 24 - LOW
Weber	Pleasant View	119	April 22 - EXTREME; April 23 - CAUTION; April 24 - LOW
Wasatch	Heber City	78	

Bud Phenological Stages

Apple

Pear

Peach

Cherry

Spray Materials - Commercial Applicators

Target Pest	Host	Chemical	Example Brands	Amount per acre	REI	Comments
Thrips	light-skinned apples, nectarines	endosulfan spinosad	Thionex Success	3.33 qt 4-8 oz	2 d 4 h	Thionex: apply at pink or petal-fall; toxic to pollinators; will also control lygus and campylomma Success: apply during bloom; safe on pollinators
Campylomma bug	apple	acetamiprid endosulfan	Assail Thionex	1.7-3.4 oz 3.33 qt	12 h 2 d	apply before or after bloom apply only apply if populations are high; adults are beneficial predators
Powdery mildew	apple	potassium bicarbonate myclobutanil trifloxystropin triflumizole fenarimol boscalid/pyraclostrobin	Kaligreen Rally Flint Procure Rubigan Pristine	2.5-3 lb 5 oz 2-2.5 oz 8-16 oz 12 oz 14.5-18 oz	4 h 24 h 12 h 12 h 12 h 12 h	apply starting at open cluster stage
Fire blight	apple, pear	streptomycin oxytetracycline	Agri-mycin Mycoshield	check label		apply within 24 h of a wetting event only if fire blight was present last year

Spray Materials - Residential Applicators

Note that these treatments are only recommended if you know you have the particular pest in your trees.

Target Pest	Host	Chemical	Example Brands	Comments
Thrips	nectarine	spinosad	Bonide, Ferti-Lome, Green Light	may require 2 applications 7 days apart; apply starting at pre-bloom, and one application at bloom
Powdery mildew	apple	bayleton lime sulfur propiconazole neem oil potassium bicarbonate	Bonide Lilly Miller Ferti-Lome Garden Safe Kaligreen	do not apply lime sulfur when temperature is over 75 degrees F
Fire blight	apple, pear	biological streptomycin oxytetracycline	Blightban, Bloomtime Ferti-Lome oxytetracycline	• Biologicals should be applied at 15-20% bloom and again at full bloom • Do not use antibiotic unless necessary; apply within 24 h of a wetting event only if fire blight was present last year

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Editor: Marion Murray, marion.murray@usu.edu

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