Tree Fruit IPM Advisory

Weekly Orchard Pest Update, Utah State University Extension, **June 25, 2008**

News/What to Watch For:

Watch terminals of all fruit trees for feeding by obliquebanded leafroller (damage is somewhat rare); look on undersides of lower, interior leaves for spider mites
Spray timing dates for codling moth and peach twig borer, page 4
Spray information, pages 5-6

Insect and Disease Activity/Info

APPLE AND PEAR

Codling Moth

Even though first generation moth flight is nearing the end in most locations (ended in Castle Valley) moth catch is still high in non-mating disrupted orchards. Egg hatch continues, so fruit should be protected until the end of the first generation. The start of the second generation egg hatch ranges from a week to a few days after the end of the 1st generation (see page 4) so some areas will have a short respite between sprays.

Apple- and Pearleaf Blister Mites

Damage from blister mites is obvious at this time of year. These minute, 4-legged mites feed inside the blisters that form on the leaves, and in late summer, migrate to leaf buds to continue feeding and overwinter. The blisters will turn brown (apple) to black (pear) as the summer progresses. Note that there is nothing to do for treatment at this time of year, but post-harvest and delayed dormant sprays can effectively control this pest.

PEACH, NECTARINE, APRICOT, PLUM

Peach Twig Borer

Spray dates have been added for Cache and Carbon counties. Most other locations should have started their spray program for first generation control. Growers who have had a diligent delayed dormant and first generation treatments will find little damage later in the season.

Greater Peachtree Borer

More peachtree borers have been caught in Box Elder and Salt Lake counties. When treating for this pest, remember that the insecticide only needs to be applied to the lower 2 feet of trunk.

For more information, see the USU greater peachtree borer fact sheet.

Weevil Damage

Notched feeding on leaves is a classic sign of feeding by adult root weevils. In Utah, the most common species is the

Insect and Disease Activity, continued

strawberry root weevil (*Otiorhynchus ovatus*). Feeding was seen in orchards in Utah County.

The primary concern is root feeding by larvae in young orchards. Heavy root weevil feeding can stunt young trees. Where trees are being planted in sites of known weevil activity, control may be warranted. The best timing is in spring, using a soil drench.

ALL FRUITS

Spider Mites

Do not hesitate to monitor your fruit trees (look at lower leaves first) for spider mites, especially since the weather has turned quite warm. Two-spotted spider mites quickly build up populations in high temperatures.

Obliquebanded Leafroller (OBLR)

This is an insect that fortunately, growers in Utah do not need to worry about spraying, nor see loss of yield. However, USU Extension does set traps out in orchards for various leafrollers, and this species is the most common. Some traps catch as many as 70-80 moths in one week. Spray programs for codling moth are effectively controlling this insect.

OBLR overwinters as larvae, and moths of the first summer generation began flying toward the end of last week in most northern Utah orchards. According to the degree day model, eggs will start to hatch around July 4 and will continue to hatch for the following two to three weeks. A second summer generation will emerge in early September.

Larry Gut, Entomologist at Michigan State University, states that high trap catches of OBLR do not necessarily equate to damage in the orchard. As such, the best way to monitor for this pest is to look for larvae. They will be easy to spot, as they either roll leaves or tie leaves together with silk webbing. They occur mostly on the terminals. Open or separate the leaves and look for the shiny green larva with a brown head. (Careful, it will wiggle and squirm away when exposed to light.) My guess is that you won't find many!

Iron Deficiency

Symptoms of iron deficiency are visible now, especially on peaches, although treatments are best made in early spring. Leaves are chlorotic (yellow) while the mid-veins remain green (called "interveinal chlorosis"). Iron is a nutrient necessary for the formation of chlorophyll. Lack of chlorophyll means reduced photosynthesis, and reduced tree vigor.

Iron deficiency is not caused by a lack of iron in the soil, but rather the soil pH. Utah soils are very alkaline, with pH measurements ranging from 7.5 to 8.5. In high pH, iron is insoluble, and therefore not available within the water that roots are absorbing. Our irrigation water is also of the same pH. Therefore, trying to reduce soil pH to manage iron deficiency is difficult. Frequent springtime irrigation or prolonged soil wetness can exacerbate the problem.

Chelated iron can be applied to the soil or foliage, but results are often unpredictable. Soil applications should be made in the spring at the first flush of leaves, and worked into the root zone. Foliar sprays (0.1%) with a spreader-sticker can provide quicker but temporary results. Avoid applications when fruit are present because staining may occur.

Degree Day Accumulations and Insect Development

Upcoming Monitoring/Insect Activity

By Insect (in alphabetical order)	
Cherry powdery mildew (CPM)	Look for small white lesions on new foliage near the base and interior of the tree
Codling moth (CM)	2nd gen. egg-hatch begins at 1100 DD (after biofix)
Green peach aphid (GPA)	Look for colonies on peach, nectarine, plum and for curled leaves
Peach twig borer (PTB)	Egg-hatch begins at 300 DD after biofix
San Jose Scale (SJS)	Watch for crawler activity with double-sided sticky tape (peak activity at 600-700 DD after codling moth biofix)
Spider mite (SM)	Look for damage on leaves closest to ground
Western tentiform leafminer (WTLM)	Second generation flight occurring now
White apple leafhopper (WALH)	Look for nymph activity

By Host (see abbrev. at left)	
Apple	WALH, SM, SJS
Cherry	BCA, BCM
Peach	GPA, PTB, SM
Pear	

Degree Day (DD) Accumulations and Insect Phenology

(click here for more information on degree days)

March 1 - Tuesday, June 24

			Codling Moth			Peach Twig Borer		
County	**Location**	**Base 50**	**DD (post biofix)**	**% Egg Hatch**	**% Moth Flight**	**DD (post biofix)**	**% Egg Hatch**	**% Moth Flight**
Box Elder	Perry	731	602	73	96	354	14	87
Cache	North Logan	592	414	33	78	99	0	10
	Providence	564	396	30	70	---	---	---
	Smithfield	599	443	40	83	---	---	---
Carbon	Price	709	495	54	90	209	0	38
Davis	Kaysville	706	504	54	90	322	8	81
Grand	Castle Valley	1234	842	97	end	770	99	end
Salt Lake	SLC	832	667	83	98	399	28	94
	West Valley City	891	716	89	99	459	49	98
Tooele	Erda	989	684	85	99	---	---	---
	Grantsville	1025	---	---	---	---	---	---
	Tooele	902	654	81	98	467	51	98
Utah	Alpine	678	459	45	85	190	0	38
	Genola	790	612	75	95	347	12	86
	Lincoln Point	700	527	59	92	303	5	76
	Orem	733	621	77	97	347	12	86
	Payson	799	624	77	97	403	28	94
	Provo	673	484	49	88	228	1	55
	Santaquin	729	581	70	95	345	12	86
	West Mountain	758	588	71	95	335	10	84
Weber	Pleasant View	815	673	83	99	395	28	94

"Base 41" and "base 50" refer to the lower temperature threshold at which certain insects develop. For example, no codling moth development occurs below 50 degrees, so this is the number used to calculated degree days associated with this insect.

Spray Timing

Please check this chart each week for updated dates. These dates are forecasted using the average temperature for each site.

Codling Moth, First Generation (begin spray at 220 DD, end by 1020 DD, 2nd gen. starts at 1100 DD.)

County	Location	Dates of Max. Egg Hatch (340-640 DD)	End Protection (1st Generation)	Begin Spray (2nd Generation)
Box Elder	Perry	June 11 - June 26	July 12	July 15
Cache	North Logan	June 19 - July 6	July 23	July 27
	Providence	June 18 - July 6	July 24	July 27
	Smithfield	June 21 - July 7	July 24	July 28
Carbon	Price	June 16 - July 1	July 17	July 21
Davis	Kaysville	June 16 - June 29	July 18	July 17
Grand	Castle Valley	June 1 - June 12	July 2	July 4
Salt Lake	SLC	June 8 - June 23	July 7	July 11
	West Valley City	June 7 - June 23	July 8	July 10
Tooele	Erda	June 7 - June 22	July 6	July 9
	Tooele	June 5 - June 23	July 9	July 13
Utah	Alpine	June 14 - June 30	July 16	July 22
	Genola	June 9 - June 25	July 11	July 15
	Lincoln Point	June 12 - June 27	July 12	July 17
	Orem	June 9 - June 24	July 9	July 14
	Payson	June 10 - June 26	July 13	July 15
	Provo	June 10 - June 27	July 15	July 24
	Santaquin	June 12 - June 27	July 13	July 17
	West Mountain	June 10 - June 25	July 11	July 16
Weber	Pleasant View	June 7 - June 23	July 9	July 13

Peach Twig Borer (If you had moderate to severe PTB damage last year, use the earlier spray date; if you had very little PTB damage last year, use the later date to start sprays. These two dates correspond to 300 and 360 degree days after biofix, or 5% and 16% egg hatch. Ending spray date corresponds to 800 DD.)

County	Location	Start sprays (large population)	Start sprays (small population)	End Protection (1st summer generation
Box Elder	Perry	June 23	June 26	July 14
Cache	North Logan (June 19)	July 5	July 8	July 27
Carbon	Price (June 15)	June 29	July 1	July 19
Davis	Kaysville	June 24	June 27	July 13
Grand	Castle Valley	June 3	June 5	June 26
Salt Lake	Salt Lake City	June 20	June 23	July 9
	West Valley City	June 19	June 21	July 9
Tooele	Tooele	June 15	June 18	July 15
Utah	Alpine	June 30	July 3	July 19
	Genola	June 21	June 24	July 12
	Lincoln Point	June 21	June 24	July 12
	Orem	June 21	June 23	July 11
	Payson	June 21	June 23	July 13
	Provo	June 23	June 26	July 17
	Santaquin	June 20	June 23	July 13
	West Mountain	June 22	June 24	July 12
Weber	Pleasant View	June 20	June 22	July 11

Spray Materials - Commercial Applicators

Target Pest	Host	Chemical	Example Brands	Amount per acre	REI	Comments
Apple aphids	apple, peach, cherry	imidacloprid acetamiprid	Provado Assail	4-8 oz 1.7 oz	12 h 12 h	
Codling moth	apple, pear	acetamiprid deltamethrin methoxyfenozide phosmet spinetoram thiacloprid codling moth virus	Assail Battalion Intrepid Imidan Delegate Calypso Virosoft, etc	3.4 oz 7-14 oz 16 oz 5.33 lbs 6-7 oz 4-8 oz ---	12 h 12 h 4 h 5 d 4 h 12 h ---	• see table on page 4 for timing • ensure good coverage for effective control • virus must be applied every 7 days
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	
San Jose scale	apple, others	acetamiprid pyrproxyfen	Assail Esteem	3.4 oz 4-5 oz	12 h 12 h	treat crawlers at 600-700 dd after codling moth biofix
Spider mites	apple, peach	abamectin bifenazate difocol fenpyroximate spirodiclofen	Agrimek Acramite Kelthane Fujimite Envidor	10-20 oz .75-1 lb 4 lb 32 oz 16-18 oz	12 h 12 h 4 h	
Woolly apple aphid	apple	endosulfan diazinon	Thionex Diazinon	3-4 lbs 4 lbs	24 h 4 d	
Western cherry fruit fly	cherry	carbaryl malathion imidacloprid spinosad spinosad	Sevin Malathion Provado Success, Entrust GF-120	1 pint 12 oz 2 oz see label see label	12 h 12 h 12 h 4 h 4 h	GF-120, when applied every 7 days, can provide 100% control.
Greater peachtree borer	peach, nectarine, apricot	chlorpyrifos esfenvalerate permethrin	Lorsban Asana Pounce	see label see label 4-8 oz	4 d 12 h 12 h	use once/year on trunk only
Green peach aphid	peach	imidacloprid	Provado	2 oz	12 h	
Peach twig borer	peach, nectarine, apricot	Bt methoxyfenozide phosmet spinosad spinetoram tebufenozide	Dipel Intrepid Imidan Entrust Delegate Confirm	see label 2 pints 4 lbs 4-8 oz 4.5-7 oz 16-30 oz	4 h 4 h 5 d 4 h 4 h 4 h	

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
Aphids	apple, pear (rare), peach, plum, cherry	azadiractin hort. oil imidacloprid insecticidal soap malathion	Azatin variety Bayer Advanced Safer, M-Pede Malathion	
Codling moth	apple, pear	azadirachtin carbaryl esfenvalerate malathion permethrin pyrethrin spinosad	Azatin Sevin, Bonide Fruit Tree Spray Ortho Bug-B-Gone Malathion Bayer Advanced Dust Concern Multi-Purpose Green Light	• Rotate among chemical classes to prevent resistance. • Most are applied every 7 days, but read the label. • See spray timing on page 4.
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.
San Jose scale	apple, others	carbaryl esfenvalerate hort. oil malathion neem oil	Sevin Ortho Bug-B-Gone variety Malathion Concern	treat crawlers once approximately 600-700 degree days after codling moth biofix; check branches where adults occur with 10-20x hand lens for crawler activity
Woolly apple aphid	apple	carbaryl hort. oil malathion	Sevin variety Malathion	
Western cherry fruit fly	cherry	carbaryl esfenvalerate malathion pyrethrin spinosad	Sevin Ortho Bug-B-Gone Malathion Concern Multi-Purpose Ferti-Lome, GF-120, etc.	
Greater peachtree borer	peach, nectarine, apricot	esfenvalerate	Ortho Bug-b-Gone	treat lower trunk only until mid-Sept.
Peach twig borer	peach, nectarine	Bt carbaryl esfenvalerate malathion pyrethrin pyrethrum spinosad	Dipel Sevin Ortho Bug-B-Gone Malathion variety Pyganic Entrust	• Rotate among chemical classes. • See spray timing on page 4.
Coryneum blight	peach, nectarine, apricot	captan chlorothalonil ziram	Captan Daconil Ziram	

Tree Fruit IPM Advisory
is published weekly by Utah State University Extension

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

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