UtahState UNIVERSITY extension

Tree Fruit IPM Advisory

UTAH PESTS

Weekly Orchard Pest Update, Utah State University Extension, **August 28, 2008**

News/What to Watch For:

Maintain protection of apples until Sept. 15 for codling moth, and for peach twig borer on peaches: until harvest. Watch apples for leafhopper; prepare for fall treatments for blister mites and coryneum blight (shot hole).

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

Third generation egg hatch is now just beginning in Box Elder, Utah, and Weber counties. Continue to watch for moth trap catches as some areas are still seeing high numbers. Toward harvest is not the time we want to see injury on the fruits. If a supplemental spray is needed, be sure to watch for pre-harvest intervals, especially for those early ripening varieties.

All growers should continue keeping fruit protected until harvest, or until September 15, whichever is earlier.

White Apple Leafhopper

White apple leafhopper summer generation nymphs are continuing to build in numbers. As they mature to adults, activity will peak in mid September, around apple harvest time. This is when the leafhopper is considered a true pest: flying into the face and eyes of pickers.

Normally control should target first generation nymphs, but if necessary, treatments on second generation nymphs will also work. Waiting until they are adults decreases the effectiveness of your insecticide of choice.

STONE FRUITS

Bacterial Canker

NOTE: *The following article, written by Dr. Kent Evans, Extension Plant Pathologist, appears in the fall 2008 issue of the quarterly UTAH PESTS Newsletter. If you would like to receive the newsletter, you can subscribe here.*

This spring, growers and USU Extension staff noticed a tip dieback, bud death, and flower blasting problem of peaches in various orchards. Certainly spring frosts contributed to a portion of the problem, but the symptomology suggested that a pathogen was in play. Cultures of several specimens yielded the answer: a bacterium called *Pseudomonas syringae* pv. *syringae*, that causes bacterial canker. The disease is characterized by a complex interaction of plant host, pathogen, and environmental conditions that can make disease development difficult to predict.

Infections by the bacteria often start in the late fall just prior to winter, and symptoms appear the following spring. The bacteria persist in orchards, living as a non-pathogenic epiphyte on leaf surfaces of peaches, cherries, and many other plants including weeds. Late season rainfall spreads the bacteria from leaf surfaces to buds where the infections take place. Infections are inconspicuous in the fall and winter but

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Insect and Disease Activity/Info, continued

Erin Frank, USU Extension

become more obvious in the spring, with dead buds that often exhibit signs of gummosis. The bacterial pathogen can also infect blossoms at flowering if rainfall occurs. Infected flowers will die prematurely and symptoms of gummosis are often evident on dead or dying blossoms.

Bacterial canker is common on sweet cherries in the PNW, Idaho, and Colorado. Note amber-colored gummosis and long vertical cankered wood.

A bacterial infection can girdle the twig. Branch death caused by cankers usually spreads from the infection point to the tip, but occasionally spreads downward. The disease does not cause death of the trees' roots, like the fire blight bacteria can on apples. The disease can affect crop yield and can weaken the host tree (although 2008 losses due to this disease have not been determined for Utah). Infected trees are predisposed to more infection or infection from other diseases such as coryneum (shothole blight), powdery mildew, or other diseases.

Management requires a combination of cultural and chemical methods. Bacterial canker of peaches and cherry is more serious in young plantings (the first few years) and in orchards that are stressed by lack of water and poor nutrition, such as iron chlorosis, a common problem due to Utah's alkaline soils.

Dead wood should be removed by pruning in late summer. Care should be taken to disinfect pruning tools between cuts using isopropyl alcohol, 10% bleach solutions, or spraying tools with a surface disinfectant containing at least 70% alcohol. Copper compounds, such as basic copper and/or copper sulfate, should be applied in fall (2-3 applications beginning at 10% leaf drop to just after full leaf drop) and early spring prior to bud break.

Isolates of the bacteria causing this disease have been found resistant to copper compounds in Michigan, California, and Oklahoma and could potentially occur in Utah as well, although that has not been shown to date. We are presently isolating these pseudomonad bacteria from infected peaches and will be testing them for resistance to copper compounds this fall.

ALL TREES

Spider Mites

Mites are still active, but starting to wane. Spider mites overwinter as females, and the "overwintering adults" are starting to form with the onset of cooler and shorter days. They turn orange to brick red and eventually loose the dark spots. They migrate in droves to sheltered locations under ground debris or groundcover plants, or in bark crevices at the base of plants.

Degree Day Accumulations and Insect Development

Upcoming Monitoring/Insect Activity

By Insect (in alphabetical order)	
Codling moth (CM)	3nd gen. egg hatch begins at 2160 DD (after biofix)
Obliquebanded Leafroller (OBLR)	2nd gen. moth flight ends at approx. 2400 DD (base 50)
Peach twig borer (PTB)	3rd gen. egg-hatch begins at 2000 DD after biofix
San Jose scale (SJS)	Second generation crawlers active at 1916 DD (base 50)
Spider mite (SM)	Look for damage on leaves closest to ground first
White apple leafhopper (WALH)	Look for nymph and adult activity; look for stippling on leaves

By Host (see abbrev. at left)	
Apple	CM, FB, OBLR, SM, WALH
Cherry	OBLR
Peach	PTB, SM
Pear	FB

Degree Day (DD) Accumulations and Insect Phenology

(click here for more information on degree days)

March 1 - Wendesday, August 27

			Codling Moth - 2nd/3rd Gen.			Peach Twig Borer - 2nd/3rd gen.		
County	**Location**	***GDD50**	**DD (post biofix)**	**% Egg Hatch**	**% Moth Flight**	**DD (post biofix)**	**% Egg Hatch**	**% Moth Flight**
Box Elder	Perry	2350	2221	3	22	1971	0 (3rd)	11 (3rd)
Cache	North Logan	1855	1676	65 (2nd)	90 (2nd)	1360	28	81
	Providence	1915	1747	74 (2nd)	94 (2nd)	1455	51	94
	Smithfield	2023	1869	87 (2nd)	99 (2nd)	1512	63	96
Carbon	Price	2225	2011	96 (2nd)	5	1725	94	100
Davis	Kaysville	2315	2113	100 (2nd)	11	1931	0	7 (3rd)
Grand	Castle Valley	3121	2729	unk	unk	2656	84	99
Salt Lake	SLC	2558	2393	20 (est.)	60 (est.)	2125	4 (3rd)	33 (3rd)
	West Valley City	2627	2451	30 (est.)	70 (est.)	2194	10 (3rd)	49 (3rd)
Tooele	Erda	2793	2487	35 (est.)	75 (est.)	---	---	---
	Grantsville	2819	---	---	---	---	---	---
	Tooele	2656	2409	21 (est.)	65 (est.)	2221	12 (3rd)	53 (3rd)
Utah	Alpine	2118	1900	89 (2nd)	0	1630	85	99
	Genola	2303	2125	0	12	1861	99	3 (3rd)
	Lincoln Point	2133	1960	93 (2nd)	2	1736	95	100
	Orem	2327	2216	3	22	1941	0 (3rd)	8 (3rd)
	Payson	2338	2163	1	15	1942	0 (3rd)	8 (3rd)
	Provo	2308	2119	0	12	1865	99	3 (3rd)
	Santaquin	2252	2104	0	10	1868	99	3 (3rd)
	West Mountain	2226	2056	97 (3rd)	7	1803	97	1 (3rd)
Weber	Pleasant View	2484	2341	12 (est.)	40 (est.)	2063	2 (3rd)	23 (3rd)

*GDD50 (growing degree days base 50) are degree days since March 1, calculated using 50 F as the lower threshold value. This number is used for insects that develop at temperatures above 50 F only.

Spray Timing

Codling Moth, Second and Third Generations (period of greatest egg hatch of 2nd generation is 1380 - 1780 DD, and end of 2nd gen. egg hatch is 2100 DD after biofix; third generation egg hatch begins at 2160 DD after biofix)

County	Location	Period of Greatest Egg Hatch	End of Protection (egg hatch ends)	Begin Protection (3rd gen. egg hatch)
Box Elder	Perry	July 24 - Aug 8	Aug. 21	Aug. 24
Cache	North Logan	Aug. 10 - Aug. 31	Sept. 27	---
	Providence	Aug. 5- Aug. 25	Sept. 16	---
	Smithfield	Aug. 8 - Aug. 29	Sept. 23	---
Carbon	Price	July 30 - Aug. 16	Sept. 1	Sept. 4
Davis	Kaysville	July 28- Aug. 12	Aug. 26	Aug. 29
Grand	Castle Valley	July 13 - July 25	Aug. 5	Aug. 6
Salt Lake	SLC	July 20 - Aug. 3	Aug. 15	Aug. 18
	West Valley City	July 19 - Aug. 2	Aug. 14	Aug. 16
Tooele	Erda	July 19 - Aug. 2	Aug. 13	Aug. 15
	Tooele	July 20 - Aug. 2	Aug. 15	Aug. 18
Utah	Alpine	Aug. 3 - Aug. 20	Sept. 5	Sept. 11
	Genola	July 26 - Aug. 11	Aug. 24	Aug. 29
	Lincoln Point	July 30 - Aug. 15	Aug. 29	Sept. 4
	Orem	July 23 - Aug 9	Aug. 22	Aug. 25
	Payson	July 25 - Aug. 10	Aug. 25	Aug. 27
	Provo	July 25 - Aug. 11	Aug. 28	Aug. 31
	Santaquin	July 26 - Aug. 11	Aug. 26	Aug. 30
	West Mountain	July 28 - Aug. 13	Aug. 29	Sept. 1
Weber	Pleasant View	July 21 - Aug. 4	Aug. 17	Aug. 20

Peach Twig Borer, Second and Third Generations Second generation egg hatch ends at 1900 DD. Third generation egg hatch (5%) begins at 2140 DD after biofix.

County	Location	End Protection (egg hatch ends)	Begin 3rd. Generation Treatment (if necessary)
Box Elder	Perry	Aug. 23	Sept. 4
Cache	All locations	after Sept. 30	---
Carbon	Price	Sept. 5	---
Davis	Kaysville	Aug. 25	Sept. 6
Grand	Castle Valley	Sept. 12 (3rd)	---
Salt Lake	Salt Lake City	Aug. 18	Aug. 28
	West Valley City	Aug. 16	Aug. 25
Tooele	Tooele	Aug. 14	Aug. 25
Utah	Alpine	Sept. 9	---
	Genola	Aug. 27	Sept. 11
	Lincoln Point	Aug. 30	Sept. 16
	Orem	Aug. 25	Sept. 5
	Payson	Aug. 25	Sept. 7
	Provo	Aug. 31	Sept. 17
	Santaquin	Aug. 27	Sept. 12
	West Mountain	Aug. 29	Sept. 14
Weber	Pleasant View	Aug. 21	Aug. 31

Spray Materials - Commercial Applicators

Target Pest	Host	Chemical	Example Brands	Amount per acre	REI	PHI	Comments
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 ---	7 d 21 d 14 d 7 d 7 d 30 d 0 d	• ensure good coverage for effective control • virus must be applied every 7 days
San Jose scale	apple, cherry	acetamiprid buprofezin imidacloprid lambda-cyhalothrin hort. oil	Assail Talus Provado Warrior variety	3.4 oz 34.5 oz 8 oz	12 h 12 h 12 h	7 d 14 d 7 d 21 d 0 d	see degree day table for timing (after 1916 DD post biofix for codling moth)
White apple leafhopper	apple	acetamiprid horticultural oil imidacloprid indoxacarb thiamethoxam	Assail variety Provado Avaunt Actara	1.1-1.7 oz see label 4-8 oz 4-6 oz 2-2.7	12 h 0 h 12 h 12 h 12 h	7 d 0 d 7 d 14 d 14 d	
Woolly apple aphid	apple	endosulfan diazinon	Thionex Diazinon	3-4 lbs 4 lbs	24 h 4 d	21 d 21 d	
Box-elder bug	peaches, nectarine	carbaryl pyrethrin	Sevin 4F Prentox Pyronyl	see label 1-12 oz		3 d 0 d	
Earwigs	peaches, nectarine	carbaryl	Sevin 4F	see label		3 d	
Greater peachtree borer	peach, nectarine, apricot	chlorpyrifos endosulfan esfenvalerate	Lorsban 4EC Thionex Asana	see label see label see label	4 d 24 h 12 h	14 d 21 d 21 d	use Lorsban only once/year; keep trees protected until mid-Sept.
Peach twig borer	peach, nectarine, apricot	Bt methoxyfenozide phosmet spinosad spinetoram	Dipel Intrepid Imidan Entrust Delegate	see label 2 pints 4 lbs 4-8 oz 4.5-7 oz	4 h 4 h 5 d 4 h 4 h	0 d 14 d 14 d 0 d 7 d	Continue until harvest
Walnut husk fly	walnuts	cyfluthrin phosmet spinosad spinetoram permethrin	Baythroid Imidan GF-120 Delegate Ambush	2.4-2.8 oz 4.33-8.5 lb. 20 oz 3-7 oz 16-24 oz	12 h 5 d 4 h 4 h 12 h	see label for all	

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	How Often	Comments
Codling moth	apple, pear	azadirachtin bifenthrin carbaryl esfenvalerate malathion permethrin pyrethrin spinosad	Azatin Ortho Bug-B-Gone (new) Sevin, Bonide Fruit Tree Spray Ortho Bug-B-Gone (old) Malathion Bayer Advanced Dust Concern Multi-Purpose, Green Light	Most are applied every 7 days, but read the label. Continue through harvest or until Sept. 15.	• Rotate among chemical classes to prevent resistance. • to reduce number of sprays, time them so that none are applied in between generations
San Jose scale	apple, cherry	bifenthrin carbaryl hort. oil imidacloprid neem oil	Ortho Bug-b-Gone Sevin variety Gordon's Professional Concern FTE	single application to crawlers	see degree day table for timing (after 1916 DD post biofix for codling moth)
White apple leaf-hopper	apple	carbaryl horticultural oil insecticidal soap permethrin	Sevin variety variety Bayer Advanced, Maxide, etc.	one application only if necessary	
Woolly apple aphid	apple	carbaryl hort. oil malathion	Sevin variety Malathion		
Peachtree borer	peach, nectarine	binfenthrin esfenvalerate	Ortho Bug-b-Gone (new) Ortho Bug-b-Gone (old)	once, or as directed on label	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 (old) Malathion variety Pyganic Entrust	Most are every 7 days. Continue until harvest.	• Rotate among chemical classes. • to reduce number of sprays, time them so that none are applied in between generations
Walnut husk fly	walnuts	spinosad esfenvalerate malathion permethrin	GF-120, Gardens Alive Bullseye Ortho Bug-B-Gone (old) malathion Bayer Advanced Dust	Most are every 7 days. Continue until harvest.	

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

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