UtahState UNIVERSITY extension

Tree Fruit IPM Advisory

UTAH PESTS

Weekly Orchard Pest Update, Utah State University Extension, **June 12, 2008**

News/What to Watch For:

Monitor cherry fruits for salmon-blush color to start fruit fly control; watch apple leaves for dark spots indicating apple scab (rare)
New 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

For a second week in a row, trap catch of codling moth is low across all monitoring sites. About 60% of the first generation moths have emerged, and most of these have not had a chance to fly (they need warm evening temperature), so they more than likely have not had a chance to mate. But there is still 30-40% of the population left to fly, and with the warmer weather coming, those are sure to mate.

Note that the cooler weather delayed the starting spray date for Carbon and Cache counties to earlier this week, and the dates provided on page 4 for "maximum egg hatch" have also changed. At this time period (340-640 degree days), the rate of egg hatch goes from 20% to 80% over a period of about 2-3 weeks. Some warm weather is coming our way this weekend, and it looks like it will be here to stay, so that time frame could shorten up. Be sure that the fruit is protected during this time. If growers are diligent in controlling the first generation, we should see very little damage from subsequent generations this summer.

Fruitworm Damage on Fruit

There are a few fruitworm species that occur in Utah orchards, and the speckled green fruitworm is the most common. Most fruitworms are collectively called "green fruitworms."

speckled green fruitworm

green fruitworm feeding on plum

Although they are done feeding for the season, the damage left behind is quite obvious now. They feed on a wide variety of deciduous trees (maple, birch, poplar) as well as most fruit tree species, with apple and pear being most common. In early spring, they feed on foliage, leaving random holes on the insides and edges of leaves. They will also feed on the skin and pulp of young fruitlets. As the fruits mature, the feeding site heals with a large scar, and the fruits are deformed (but edible).

Since there is only one generation per year, all damage occurs in spring; after feeding they drop to the ground to pupate. The speckled green fruitworm adult moths will emerge next spring while other green fruitworms will emerge in early fall to lay eggs for overwintering.

Woolly Apple Aphid

Small colonies of woolly apple aphid have been found in locations in Utah County. Most woolly apple aphids overwinter on the roots while some overwinter in protected sites in the tree canopy. These aphids can feed on roots year-round in warmer climates. Root feeding causes galls and truncated root growth that contributes to a reduction in yield.

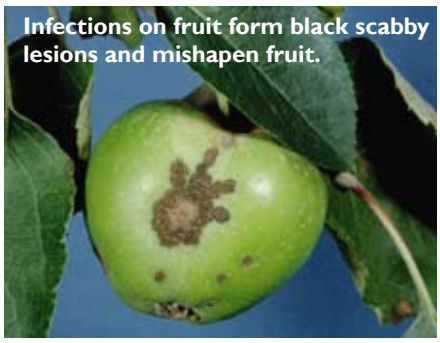
Insect and Disease Activity, continued

In late spring, aphids migrate from the root zone or from above-ground sites to succulent tissue such as new twigs and bases of leaves. They form large colonies of sticky, cottony masses. As they feed, galls form on the twigs and increase in size over multiple years of feeding (shown at right).

Apple Scab

Apple scab lesions on leaves will first appear as purplish-black spots. Later, the leaf will slowly turn yellow and then drop.

Joseph O'Brien, USDA Forest Service, Bugwood.org



Infections on fruit form black scabby lesions and mishapen fruit.

Clemson University - USDA Cooperative Extension Slide Series, Bugwood.org

Apple scab is not common in Utah, but it has shown up sporadically in past years. The conditions this spring have been optimal for infection: cool and wet. Of course, the fungus must be present for infection to occur. We have not seen apple scab lesions yet in our monitoring, but everyone should be aware of this disease and keep an eye out.

The fungus that causes apple scab attacks apple and crabapple trees only. Some varieties are more susceptible than others. Most of the common apple varieties grown in Utah are susceptible. Cortland, Empire, Jonagold, McIntosh, Rome Beauty, and Winesap are considered very susceptible.

This disease can infect flowers, fruit, and foliage, although foliar infections are most common. The fungus overwinters in infected leaf litter and in spring, rains cause spores to develop and discharge into the air, where they are carried to newly expanding leaves. Lesions (small dark spots) appear within 10-30 days of infection. Under optimal conditions (mature spores, a period of wetness, and temperature below 79° F) secondary spores form on these lesions and infect other plant parts.

No treatments or sprays are recommended at this time (we're just on the "look-out"). If you suspect an infection, see your county Extension agent for submission to the Utah Plant Pest Diagnostic Lab, or email me for instructions.

PEACH, NECTARINE, APRICOT, PLUM

Peach Twig Borer

Because of the cool weather, first spray dates have moved up a bit, so check the chart on page 4. First moth flight has not yet occurred in Cache or Carbon counties.

Green Peach and Other Leaf curling Aphids

Many inquiries have come in about aphids on peach and plum. These are most likely green peach aphid, the most common aphid on peaches, which also feeds on plums. These aphids overwinter as eggs in protected sites, and hatch in early spring and start feeding immediately. As their colonies build in spring, the damage becomes more noticeable. Leaves curl inward, turn yellow, and eventually drop prematurely. When the colonies build to high numbers, they form wings and migrate to other feeding sites, either on the peaches, or in adjacent weeds.

There are several predators that feed on aphids including lady beetles, lacewings, and parasitic wasps. A delayed dormant application of oil is the first step in controlling aphids.

Greater Peachtree Borer

Traps are out in monitoring sites, but no peachtree borers have been caught yet. This clearwing moth feeds on wood near the lower trunk and root collar region. Watch later advisories for notification on when to start treatment.

CHERRY

Black Cherry Aphid

Black cherry aphid causes similar damage and has a similar life cycle to green peach aphid. This aphid is shiny black and only feeds on cherries. It leaves the cherry trees for an alternate host for the summer, and returns in fall to lay eggs on small twigs.

WALNUT

Walnut Husk Fly

Walnut husk fly emerges later than western cherry fruit fly (around early July), and their feeding stains the nutshell, and makes the husk difficult to remove from the nut. Watch the advisory for fly emergence and spray timing.

Degree Day Accumulations and Insect Development

Upcoming Monitoring/Insect Activity

By Insect (in alphabetical order)	
Black cherry aphid (BCA)	Watch terminals for leaf-curling and feeding
Cherry powdery mildew (CPM)	Look for small white lesions on new foliage near the base and interior of the tree
Codling moth (CM)	Egg-hatch begins at 220 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
Spider mite (SM)	Look for damage on leaves closest to ground
Western cherry fruit fly	Watch fruit maturity
White apple leafhopper (WALH)	Look for nymph activity

By Host (see abbrev. at left)	
Apple	RAA, WALH, PM, SM
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 - Wednesday, June 11

County	Location	Base 50	Codling Moth			Peach Twig Borer			Western Cherry Fruit Fly (base 41)
			DD (post biofix)	% Egg Hatch	% Moth Flight	DD (post biofix)	% Egg Hatch	% Moth Flight	
Box Elder	Perry	468	340	12	67	91	0	9	993
Cache	North Logan	388	210	0	42	---	---	---	849
	Providence	354	187	0	35	---	---	---	762
	Smithfield	388	233	1	47	---	---	---	831
Carbon	Price	457	243	2	50	---	---	---	959
Davis	Kaysville	451	249	2	51	67	0	5	977
Grand	Castle Valley	914	522	58	91	450	45	97	1608
Salt Lake	SLC	538	373	22	72	105	0	10	1118
	West Valley City	564	389	27	75	104	0	10	1155
Tooele	Erda	696	391	30	77	---	---	---	1308
	Grantsville	724	---	---	---	---	---	---	1330
	Tooele	646	398	30	77	---	---	---	1244
Utah	Alpine	500	281	4	54	---	---	---	1007
	Genola	547	369	22	72	105	0	10	1080
	Lincoln Point	470	297	6	59	74	0	6	958
	Orem	483	372	22	72	98	0	10	995
	Payson	527	352	16	68	131	0	18	1034
	Provo	542	353	16	68	98	0	10	1069
	Santaquin	473	325	10	65	89	0	8	968
	West Mountain	527	357	18	69	104	0	11	1026
Weber	Pleasant View	550	408	310	78	130	0	18	1102

"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 at 1020 DD)

County	Location	Begin Spray (1st Generation)	Dates of Max. Egg Hatch (340-640 DD)	End Spray (1st Generation)
Box Elder	Perry	May 29	June 11 - June 26	July 13
Cache	North Logan	June 12	June 19 - July 6	July 23
	Providence	June 10	June 18 - July 6	July 24
	Smithfield	June 13	June 21 - July 7	July 24
Carbon	Price	June 10	June 16 - July 1	July 17
Davis	Kaysville	June 8	June 16 - June 29	July 18
Grand	Castle Valley	May 22	June 1 - June 16	July 1
Salt Lake	SLC	May 28	June 8 - June 23	July 7
	West Valley City	May 27	June 7 - June 23	July 8
Tooele	Erda	May 25	June 7 - June 22	July 6
	Tooele	May 25	June 5 - June 23	July 9
Utah	Alpine	June 7	June 14 - June 29	July 15
	Genola	May 27	June 9 - June 25	July 10
	Lincoln Point	May 31	June 12 - June 27	July 12
	Orem	May 27	June 9 - June 24	July 9
	Payson	May 31	June 10 - June 26	July 13
	Provo	May 29	June 10 - June 27	July 15
	Santaquin	May 30	June 12 - June 27	June 14
	West Mountain	May 27	June 10 - June 25	July 11
Weber	Pleasant View	May 27	June 7 - June 23	July 9

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 Sprays (1st summer generation
Box Elder	Perry	June 19	June 21	July 11
Davis	Kaysville	June 23	June 26	July 12
Grand	Castle Valley	June 3	June 5	June 24
Salt Lake	Salt Lake City	June 20	June 22	July 9
	West Valley City	June 21	June 23	July 9
Utah	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
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	
Apple aphids	apple, peach, cherry	imidacloprid acetamiprid	Provado Assail	4-8 oz 1.7 oz	12 h 12 h	
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	
White apple leafhopper	apple	formetanate hydro-chloride imidacloprid indoxacarb	Carzol Provado Avaunt	1 lb 4-8 oz 6 oz	5 d 12 h 12 h	leafhopper develops resistance quickly so rotate among classes. Sevin, when used for thinning, also provides control.
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.
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	
Coryneum blight	peach, nectarine, apricot, cherry	azoxystrobin captan ziram pyraclostrobin, boscalid	Abound Captan Ziram Pristine	2.75-3.75 oz 1.5 lbs 2.6-3.6 oz		rotate among classes to prevent resistance

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
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.
Aphids	apple, pear (rare), peach, plum, cherry	azadiractin hort. oil imidacloprid insecticidal soap malathion	Azatin variety Bayer Advanced Safer, M-Pede Malathion	
White apple leaf-hopper	apple	carbaryl esfenvalerate horticultural oil imidacloprid insecticidal soap kaolin clay malathion	Sevin Ortho Bug-B-Gone variety Bayer Advanced variety Surround Malathion	• Usually only one application is necessary. • Imidacloprid should be applied as a soil drench. • Kaolin clay is OMRI certified organic.
Woolly apple aphid	apple	carbaryl hort. oil malathion	Sevin variety Malathion	
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.
Western cherry fruit fly	cherry	carbaryl esfenvalerate malathion pyrethrin spinosad	Sevin Ortho Bug-B-Gone Malathion Concern Multi-Purpose Ferti-Lome, Green Light, Natural Guard, GF-120	
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	

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