Tree Fruit IPM Advisory

Weekly Orchard Pest Update, Utah State University Extension, **July 8, 2009**

News/What to Watch For:

Watch lower leaves of all fruit trees for stippling damage caused by spider mites
Look in interior of tree for cottony masses which are woolly apple aphid
Continue to prune out fire blight strikes to reduce inoculum in the orchard
Spray timing (codling moth and peach twig borer), pages 5-6
Spray material options, pages 7-8

Insect and Disease Activity/Info

POME FRUITS

Codling Moth

First generation egg hatch is ending in the next few days in the Wasatch Front area, with second generation egg hatch to begin between July 12-20. Cache and Carbon counties will see egg hatch of second generation begin in late July.

Woolly Apple Aphid

Woolly apple aphid colonies continue to grow in apple tree canopies. Pay close attention to bark crevices, pruning scars, etc., where overwintering aphids have been multiplying. They typically overwinter in the roots, migrating first to suckers and then the main tree canopy, but a portion of the population remains in the upper tree parts year-round. Aerial populations are also becoming numerous in the outer portion of the tree canopy, and will continue to grow through August. They prefer sprouts and new terminal growth.

Because of their waxy outer covering, they are difficult to control and catching them early is important, rather than waiting until populations are too large to manage. Good coverage of the insecticide of choice (to dripping) is necessary to soak through the insects' woolly coverings.

White Apple Leafhopper

First generation white apple leafhopper activity is waning now, and feeding damage looks similar to spider mite damage. Be sure to turn the leaves over for a closer inspection for spider mites if you do not see the small, white adults flying about.

Second generation egg hatch will begin in late July or early August. In general, feeding on the foliage will not affect apple yield or tree health, but this pest can become a nuisance during apple harvest.

If you are seeing some damage now and did not treat this pest earlier, expect to see numerous leafhopper adults start-

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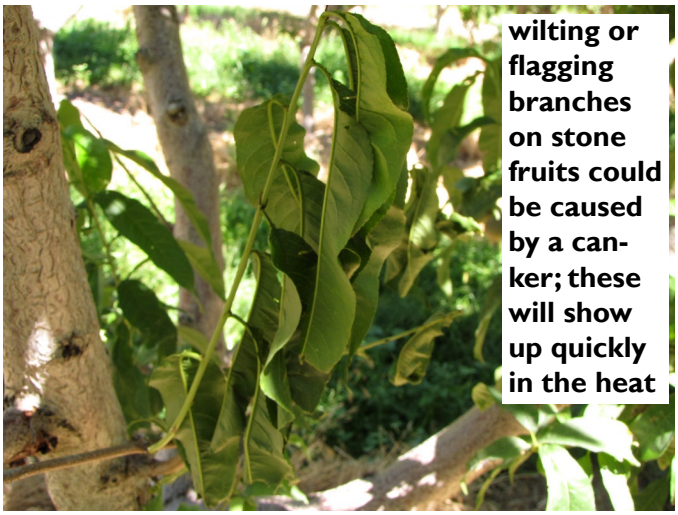
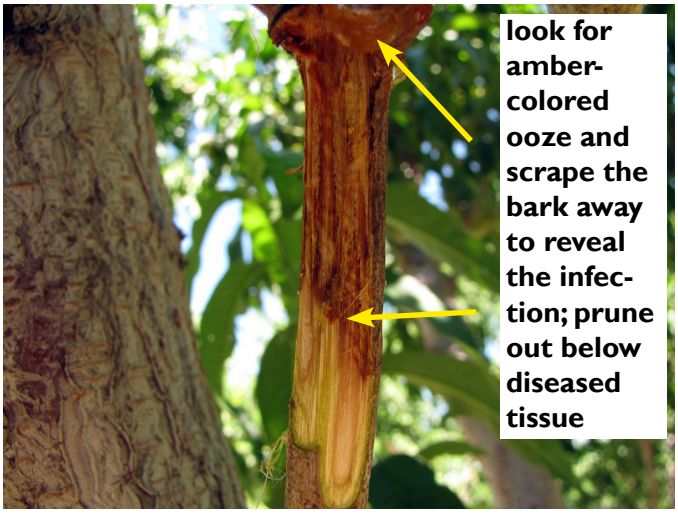
Insect and Disease Information, continued from previous page

ing in mid-August. They will certainly be a nuisance if not suppressed before then. Look on the undersides of leaves in the next few weeks for newly hatched nymphs and plan a treatment, if necessary, soon after hatching.

STONE FRUITS

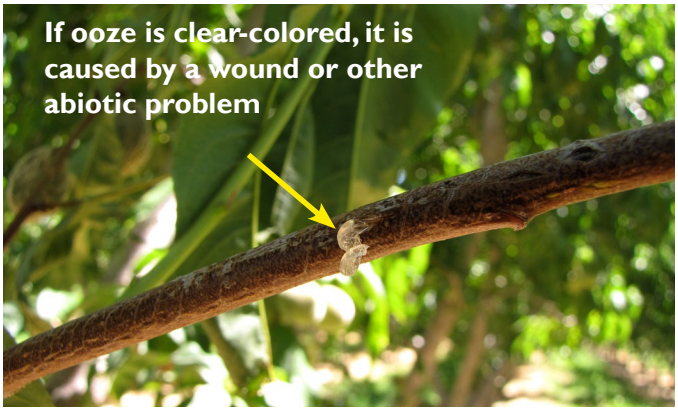
Cytospora Canker





Cytospora is a fungus that attacks a variety of plants, and can be especially troublesome on peach. Cankers can be found in almost all peach orchards in Utah. With the change from cool weather to the heat, trees with cankers are starting to show symptoms now through leaf wilting, fruit shriveling, and branch dieback. Branches will leaf out and appear healthy in spring only to wither and die when the weather turns hot. Affected branches will have an area of sunken or cracked bark, often with copious amounts of amber-colored gumming.

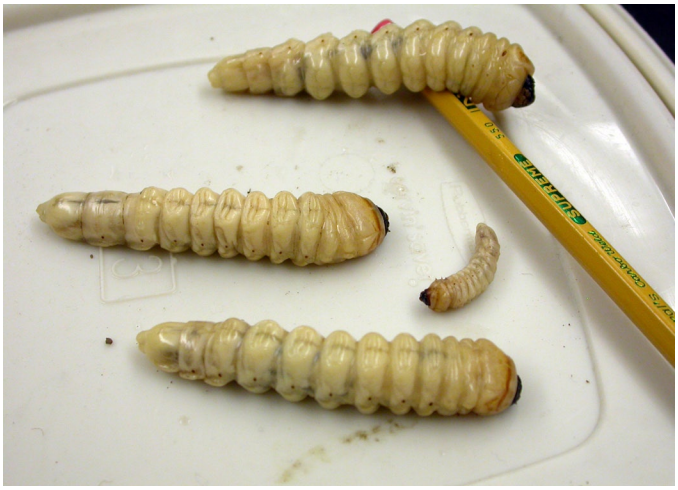
New cytospora infections occur in mild, moist conditions. Although spores of the fungus are ubiquitous, they are opportunistic, meaning they can only invade plant tissue through open wounds. Usually these are caused by winter injury, but



pruning cuts, sun scald, or mechanical or insect damage can also serve as infection sites.

The only way to treat infections is by pruning out all signs of the canker. Fungicides will not kill an existing canker. Keep trees vigorous and prevent wounding.

Prionus Root Beetle



The larvae of this insect bore within the roots of stone fruits, in particular sweet cherry. The adult is a very large (1-2-inch) beetle that emerges from pupation in early July through the end of the month. They fly only at night during their 10-20 day life span. They do not feed; their only objective is to mate.

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After mating, the female lays 150-200 eggs just below the soil surface and near the trunk of trees. Larvae seek out roots for feeding. They begin at the smallest diameter roots and eventually move to larger diameter roots toward the crown of the tree. This process can take 3-5 years. Mature larvae are up to 3 inches long.

A minor infestation will cause tree wilting and possibly yellowing of leaves due to lack of water and nutrient uptake. A heavy infestation will kill trees. The problem tends to be more severe in sandy soils.

There are very little control options. Recently, the female sex pheromone has been identified and Diane Alston is testing the lure for Utah. If the proper timing can be identified, spray materials (carbaryl, synthetic pyrethroids) could be used to target the adults and prevent egg-laying. (There are no controls to kill larvae already in the roots.) The best options are to keep trees healthy, completely remove infested trees, and avoid planting in infested sites.

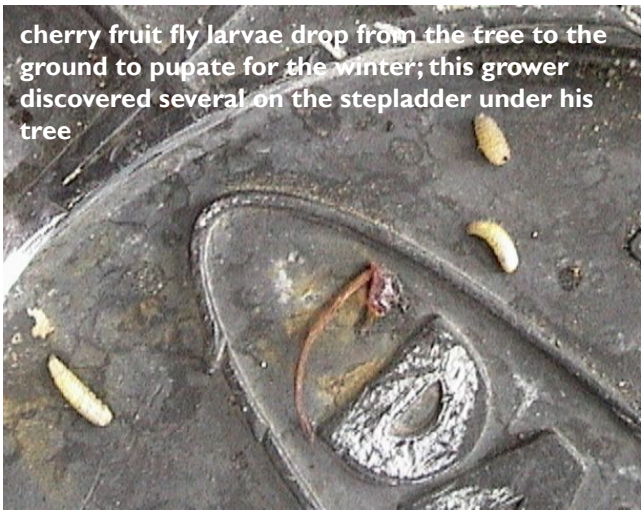
Western Cherry Fruit Fly

this will be a banner year for tart cherries

The first flies were just caught in Cache County, and we continue to trap flies in cherry orchards throughout northern Utah.

Tart cherry harvest is coming up, and growers should continue managing for fruit fly up to harvest. It is also a good idea to apply one to two more treatments after harvest so that populations do not build in the orchard on unharvested fruit. Adult emergence generally peaks just before or at cherry harvest and it is at this time that cherry fruits are highly susceptible to egg-laying by female flies.

Insecticides with short pre-harvest intervals (PHIs) should be used as fruit nears harvest: GF-120-4 hr, Sevin-3 days, Ambush and Pounce-3 days, Success and Entrust-7 days, Provado-7 days, and Imidan on tart cherries-7 days. Sevin, Ambush, Pounce, and Provado can flare spider mites, so limit use of these insecticides when temperatures rise above 85°F because spider mites reproduce rapidly under hot conditions.



cherry fruit fly larvae drop from the tree to the ground to pupate for the winter; this grower discovered several on the stepladder under his tree

Wayne Lowry, Tooele

cherry fruit fly adults have a distinctive wing pattern that helps to identify it from apple maggot and walnut husk fly

Degree Day Accumulations and Insect Development

Upcoming Monitoring/Insect Activity

Pest	Host(s)	DD/Monitoring Action
Western cherry fruit fly	cherry	Adults continue emerging through late summer (beyond harvest)
Fire blight	apple, pear	Prune out strikes in July 18" down
San Jose scale	apple mostly	Treat at 600-700 DD Treat again at 1900 DD for 2nd generation crawlers
Woolly apple aphid	apple	Cottony populations start building in early July
Codling moth	apple, pear	Second generation egg-hatch begins at 1100 DD (after biofix)
Spider mite	all	Look for stippled leaves closest to ground first; populations build in hot weather

Degree Day Accumulations

March 1 - Wednesday, July 8

County	Location	GDD (50)	Codling Moth			Peach Twig Borer			San Jose Scale (base 51)
			DD (post biofix)	% Moth Flight	% Egg Hatch	DD (post biofix)	% Moth Flight	% Egg Hatch	
Box Elder	Perry	1144	916	1 (2nd)	98	690	0 (2nd)	96	827
	Tremonton	1028	738	99	89	477	98	64	687
Cache	North Logan	825	634	98	79	338	84	10	586
	Providence	932	746	100	91	394	93	27	688
	Smithfield	793	618	97	76	336	83	9	573
Carbon	Price	1056	796	100	95	578	0 (2nd)	83	742
	Spring Glen	902	677	99	84	453	98	47	633
Davis	Kaysville	1087	850	1 (2nd)	97	689	0 (2nd)	96	770
Grand	Castle Valley	1711	1417	62 (2nd)	23 (2nd)	1256	59 (2nd)	10 (2nd)	1231
Salt Lake	Holladay	1188	918	2 (2nd)	99	732	2 (2nd)	99	808
	West Valley City	1217	948	2 (2nd)	99	759	0 (2nd)	99	845
Tooele	Erda	1223	991	5 (2nd)	100	769	0 (2nd)	99	905
	Grantsville	1476	1164	20 (2nd)	2 (2nd)	815	0 (2nd)	100	985
	Tooele	1196	963	3 (2nd)	99	734	2 (2nd)	99	876
Uintah	Vernal	1052	814	100	95	603	0 (2nd)	89	754
Utah	Alpine	1010	762	100	92	473	98	52	716
	Genola	1161	911	1 (2nd)	98	654	0 (2nd)	94	809
	Lincoln Point	1044	791	100	94	611	0 (2nd)	90	722
	Orem	1160	966	3 (2nd)	99	708	0 (2nd)	97	866
	Payson	1156	931	2 (2nd)	99	681	0 (2nd)	96	843
	Provo	1329	970	3 (2nd)	99	757	0 (2nd)	99	862
	Santaquin	1094	880	1 (2nd)	98	641	0 (2nd)	93	792
Weber	Pleasant View	1122	908	1 (2nd)	98	623	0 (2nd)	92	826

"Base 41," "base 50," and "base 51" refer to the lower temperature threshold at which certain insects develop. For example, codling moth does not start developing in spring until temperatures reach 50 degrees or more.

Spray Timing - Codling Moth

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

Codling Moth, First and Second Generations

"Start sprays" for second generation egg hatch occurs at 1100 DD.

County	Location	Keep Fruit Protected Through This Date (1st Gen.)	Start Sprays (2nd Generation)
Box Elder	Perry	July 12	July 16
	Tremonton	July 19	July 23
Cache	N. Logan	July 24	July 29
	Providence	July 20	July 24
	Smithfield	July 24	July 28
Carbon	Price	July 18	July 24
	Spring Glen	July 24	July 29
Davis	Kaysville	July 14	July 18
Grand	Castle Valley	June 23	June 26
Salt Lake	Holladay	July 11	July 14
	West Valley City	July 10	July 13
Tooele	Erda	July 8	July 12
	Grantsville	July 2	July 5
	Tooele	July 9	July 13
Uintah	Vernal	July 16	July 21
Utah	Alpine	July 18	July 22
	Genola	July 11	July 15
	Lincoln Point	July 16	July 20
	Orem	July 9	July 13
	Payson	July 10	July 14
	Provo	July 9	July 13
	Santaquin	July 13	July 16
Weber	Pleasant View	July 11	July 15

Spray Timing - Peach Twig Borer

Peach Twig Borer, First and Second Generations: The "start spray date" for second generation corresponds to 1200 DD.

County	Location	Last Spray Date (1st generation)	Start Date (2nd generation)
Box Elder	Perry	July 13	July 30
	Tremonton	July 21	August 6
Cache	All Locations	July 28	August 16
Carbon	Price	July 19	August 8
	Spring Glen	July 25	August 15
Davis	Kaysville	July 12	July 28
Grand	Castle Valley	June 21	July 6
Salt Lake	Holladay	July 10	July 24
	West Valley City	July 10	July 24
Tooele	Erda	July 9	July 24
	Grantsville	July 8	July 22
	Tooele	July 11	July 25
Uintah	Vernal	July 17	August 4
Utah	Alpine	July 22	August 7
	Genola	July 14	July 29
	Lincoln Point	July 15	July 31
	Orem	July 12	July 26
	Payson	July 12	July 28
	Provo	July 9	July 25
	Santaquin	July 14	July 30
Weber	Pleasant View	July 15	July 29

Spray Material Options - Commercial Applicators

NOTE: If your trees are in bloom, we do not recommend applying any pesticides unless you are controlling fire blight with antibiotics. Although it is OK to use "softer" materials such as Bt or spinosad during bloom, we still recommend either: waiting until the petal fall stage or applying at dawn or dusk when pollinators are not active.

Target Pest	Host	Chemical	Example Brands	Amount per acre	REI	Comments
Codling moth	apple, pear	hort. oil	variety	see lable		• for all products, ensure good coverage for effective control
		acetamiprid	Assail	3.4 oz	12 h	
		deltamethrin	Battalion	7-14 oz	12 h	
		methoxyfenozide	Intrepid	16 oz	4 h	• **hort. oil** works on eggs only
		phosmet	Imidan	5.33 lbs	5 d	
		spinetoram	Delegate	6-7 oz	4 h	• **codling moth virus** must be applied every 7 days
		thiacloprid	Calypso	4-8 oz	12 h	
		rynaxypyr	Altacor	3.5-4.5		
		codling moth virus	Virosoft, etc	---	---	• **Altacor** and **Delegate** have shown to have good efficacy
Powdery mildew	apple	potassium bicarbonate	Kaligreen	2.5-3 lb	4 h	apply starting at open cluster stage
		myclobutanil	Rally	5 oz	24 h	
		trifloxystropin	Flint	2-2.5 oz	12 h	
		triflumizole	Procure	8-16 oz	12 h	
		fenarimol	Rubigan	12 oz	12 h	
		boscalid/pyraclostrobin	Pristine	14.5-18 oz	12 h	
San Jose scale	apple	acetamiprid	Assail	3.4 oz	12 h	**Talus**: one application/season
		buprofezin	Talus	see label		**Esteem**: 45-day PHI; but provides excellent control
		pyriproxifen	Esteem	4-5 oz	12 h	
Woolly apple aphid	apple	spirotetramat	Ultor	12 oz	24 h	**Ultor**: apply once; petal fall is optimal timing
		diazinon	Diazinon	4 lb	4 d	
		endosulfan	Thionex	3-4 lb	4 d	
Peach twig borer	peach, nectarine	Bt	Dipel, Foray	see label	4 h	begin sprays according to spray timing table on previous page and keep fruit protected
		spinetoram	Delegate	4.5-7 oz	4 h	
		spinosad	Success, Entrust	see label	4 h	
		methoxyfenozide	Intrepid	8-16 oz	4 h	
		endosulfan	Thionex	4 lb	4 d	**Delegate**: apply 7 day intervals
		phosmet	Imidan	4 lb	4 d	
Greater peachtree borer	peach, nectarine, apricot	chlorpyrifos	Lorsban	see label	4 d	**Lorsban**: max once/season; do not allow spray to touch foliage/fruit
		endosulfan	Thionex	see label	4 d	
		esfenvalerate	Asana	see label	12 h	
		pemethrin	Pounce	4-8 oz	12 h	**Thionex**: max twice/season
Western cherry fruit fly	cherry	carbaryl	Sevin	1 pint	12 h	
		malathion	Malathion	12 oz	12 h	
		imidacloprid	Provado	2 oz	12 h	
		spinosad	Success, Entrust	see label	4 h	
		spinosad + bait	GF-120	see label	4 h	

Spray Material Options - Residential Applicators

Note that these treatments are only recommended if you know you have the particular pest in your trees. We recommend learning about specific pests, and scouting your trees at least once/week.

Target Pest	Host	Chemical	Example Brands	Comments
Codling moth	apple, pear	*Conventional*		**Carbaryl**: every 7 days
		carbaryl	Sevin, Bonide Fruit Tree Spray, etc.	**Malathion**: every 7 days
		malathion	Malathion	**Acetamiprid**: every 14 days
		gamma-cyhalothrin	Spectracide Triazide	
		acetamiprid	Ortho Max Flower, Fruit, and Vegetable	
		Soft/orgainc		
		hort. oil	many options	**hort. oil**: lasts 7 days; use at beginning of each generation; apply at 1% rate ONLY when temperatures are below 80
		spinosad	Green Light Lawn and Garden Spinosad, Gardens Alive Bull's Eye, Ferti-Lome Borer, Bagworm, Leafminer & Tent Caterpillar Spray, Monterey Garden Insect Spray, Natural Guard	**spinosad**: every 7 days
San Jose scale	apple	*Conventional*		two applications spaced 7-14 days apart should be enough
		bifenthrin	Ortho Bug-b-Gone	
		carbaryl	Sevin	
		Soft/organic		
		hort. oil	many options	
		neem oil	Concern, Garden Safe, others	
Woolly apple aphid	apple	*Conventional*		apply only as needed; thorough coverage essential
		carbaryl	Sevin	
Peach twig borer	peach, nectarine	*Conventional*		see comments under Codling Moth
		carbaryl	Sevin, Bonide Fruit Tree Spray, etc.	
		malathion	Malathion	
		permethrin	Adams Yard Spray, Ortho Basic Solutions Yard and Garden, Bonide Eight RTU, Hi Yield Permethrin Concentrate	**Surround**: every 3-5 days; works to repel, not kill insects; only moderate control; must purchase online
		Soft/orgainc		
		spinosad	see 'codling moth' above	
		kaolin clay	Surround	
Greater peachtree borer	peach, nectarine, apricot	permethrin, bifenthrin	Bonide Eight, Ortho Bug-b-Gone, Green Light Borer Killer, Bonide Borer-Miner Killer Enforcer Outdoor Insect Killer, Hi-Yield Indoor/Outdoor Broad Use Including Gardens; Hi-Yield Pemethrin, Lilly Miller Multi-Purpose Insect Spray, Spectracide Bug Stop Garden	**permethrin**: apply every 14-21 days until mid-September in highly infested areas; apply twice (now and one month later) in low infestations
		carbaryl	Sevin, Bonide Fruit Tree Spray	**carbaryl**: must be applied every 7 days
Western cherry fruit fly	cherry	carbaryl	Sevin	start applications only when fruit in sunniest locations develops a salmon blush
		esfenvalerate	Ortho Bug-B-Gone	
		malathion	Malathion	
		pyrethrin	Concern Multi-Purpose	
		spinosad *(Soft/Organic)*	Ferti-Lome, Green Light, Natural Guard, GF-120	**spinosad**: every 7 days

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