Tree Fruit IPM Advisory

Weekly Orchard Pest Update, Utah State University Extension, **June 29, 2011**

News/What to Watch For:

- More peach twig borer spray timings added for some locations on page 7.
- APHIDS are everywhere this year. Many sprays can control them (soap, oil, Malathion, imidacloprid, etc.), or you can wait it out. Most aphid species on fruit trees will migrate to alternate hosts for the summer (except green apple aphid).
- It's about time to start cherry fruit fly applications.
- Greater peachtree borer has still not been caught in any of our monitoring traps. We will include information on treating (any product that contains permethrin) when we have detected them.
- Commercial growers mark your calendar: USU Extension Tree Fruit Field Day, Utah County, August 18

Insect and Disease Activity/Info

APPLES/PEARS

Codling Moth

Most locations along the Wasatch Front are currently in the midst of peak egg hatch, so hopefully you have timed your sprays so that the fruit is well protected during this time. The peak egg hatch period is a short window of time (about 1-2 weeks) where 12-80% of all eggs will be hatching. At the same time, the fruits are expanding, so the surface area of each fruit originally protected from your prior insecticide spray diminishes. So during this rapid egg hatching and fruit expansion, it is important that your fruit is protected with insecticide to prevent larval entry. Keep tabs on when your first treatment was applied and how long it lasts. If it is waning during the period of peak egg hatch, consider applying your second application sooner (by 1-2 days).

There will be a lag of about 5 days between the end of the first generation and beginning of the second, where it does not matter if the fruit has any residual insecticide. Start spraying again at the start of second generation (shown in table below).

Woolly Apple Aphid

Woolly apple aphid colonies are starting to build in the canopy of apple trees, especially near their overwintering sites on pruning cuts, bark crevices, the graft junction, or trunk wounds. They can also be found on suckers as they migrated up from roots. Eventually they will move to succulent shoots to feed for the summer. Aphids produce a white waxy coating and in large colonies, looks like cotton in the tree (but will be sticky due to the aphid honeydew).

Colonies right now are small, but if left untreated, they will continue to increase in numbers and be more difficult to treat, and also protected from natural enemies. No economic threshold has been determined for treatment.

Insecticides available for WAA control are contact sprays and should be applied when the colonies first become visible in the tree. They should be applied with a high volume to penetrate the waxy coverings, and thorough coverage to dripping.

San Jose Scale

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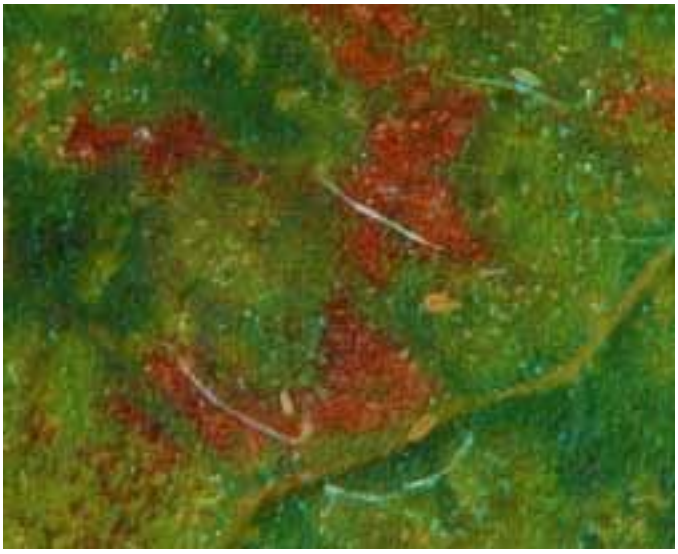
It will soon be time to treat for San Jose scale. Adults have a hard, waxy covering that protects it from insecticides, but the young nymphs, called crawlers, are vulnerable. For this reason, any sprays applied to the trees against this insect that are not during the crawler phase are wasted. (Dormant oil sprays will kill a small portion of the population.)
This insect uses sucking mouthparts to feed on mesophyll cell contents from stems, bark, and fruit. Sometimes growers do not notice this insect until the problem has become serious. This is because they are immobile most of their lives, are difficult to see on the bark, and adult females can lay hundreds of eggs each season.

In general, you will need to make 2-3 applications (to cover about 3-4 weeks). The time range to apply the first spray is:

Cache County: July 12-16
Davis County: July 7-13
Iron County: July 5-10
SL County: July 3-6
Utah County: July 4-8
Carbon County, Weber County: July 6-10

Options for treatment (this will be included on the spray table in a later newsletter, as well) for commercial growers: Esteem, Diazinon, Centaur, Leverage, Tourismo, Imidan; for backyard growers: 1% horticultural oil, neem oil, Sevin, Malathion

Apple and Pear Rust Mites



Apple rust mite is usually only a problem on non-managed trees. The damage to leaves looks similar to two-spotted spider mite, but begins earlier in the season. These mites overwinter under bud scales and start feeding after leaf emergence. On apples, they almost never cause economic damage, and serve as a food host for predatory mites and hunter thrips, which will in turn keep spider mites at bay.

Pear is more sensitive to feeding by rust mites. Leaves will scorch due to heavy feeding, and fruit can sometimes become russetted, so control of eriophyid mites on pears may be necessary when they occur. Any miticide will work on rust mites, as will horticultural oil (do not apply above 85F), insecticidal soap, or sulfur. Ideally, they are controlled in fall or spring during mite migration to and from buds.

Diseases Typically Uncommon in Utah Showing Up Now

Weather patterns the past few years (cool, moist springs) have resulted in a few diseases showing up in backyard trees that we don't typically see in Utah. Treatment for these diseases occurs in spring, so starting next year around apple bloom, if the weather patterns are similar to this year, fungicides may be warranted.

Rust on Apple

Rust on apple in Utah could be caused either by cedar-apple rust or juniper-hawthorn rust. Rust diseases require two hosts. Rocky Mountain juniper and sometimes Utah juniper is the primary host, while apple, crabapple, hawthorn, mountain-ash, and serviceberry are alternate hosts. Infections on juniper cause round galls that sporulate in spring, forming large orange gelatinous "blobs" with protrusions called telial horns. Millions of spores are relased from these structures, and infect the alternate host that is growing within a few hundred yards.

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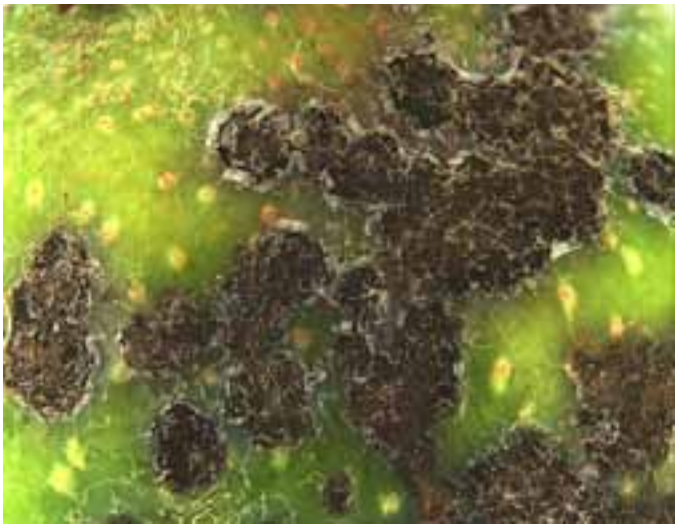
Symptoms on the alternate host look like bright yellow, powdery spots on the leaves and fruit. On leaves, the spots are on the upper leaf surface, and on fruit, infections can sometimes cause malformation. The fruit is still edible, but not aesthetically perfect. Spores borne on infections on the alternate host (apple) can only infect juniper, the primary host.
If you are seeing any rust spots on your apple, it is too late to do anything about it. Infections occurred earlier in the spring (during May and early June), when moisture was plentiful and temperatures cool (below 75 F). Now that the weather is hot and dry, no new infections will occur on the alternate host.

Apple Scab



Apple scab is a fungal disease that causes leaf spots and blotches on fruit. It is a serious disease in the east, where growers use models that use hours of wetness and temperature to show a risk level for infection. In Utah, we seldom worry about apple scab, but it has recently shown up in Davis and Cache Counties.

Infections occur starting in early spring, as leaves are emerging, and continue during moist, wet conditions. The spots appear olive green in color, and may be clustered near the mid-vein. Spots turn darker in color as the season progresses, and the leaves may senesce and drop. Trees with widespread infections may become completely defoliated by mid summer, and have poor fruit production. Fruit that does form are small and deformed, and may drop early. Light infections on leaves and fruit should not be a worry. Fruits are still edible, and the infected area is only skin deep.

There is a similar disease called pear scab.

STONE FRUITS

Peach Twig Borer

More locations have been added to the "When to Spray" table on page 7.
Sprays for peach twig borer should have begun in most areas. Peach twig borer is the primary pest of peaches. Larvae of this pest prefer to feed on succulent tissue inside twigs. Feeding on fruit is the "second best option" when twigs become hardened off and unpalatable. Therefore, the first generation will bore into succulent terminal twigs (hence, its name) while later generations move on to the ripening fruit. Watching for wilting twigs is one way to monitor for this pest.

Cat-facing Injury

As the weather gets hotter and drier, stink bugs will increase movement from ground cover and weedy areas into fruit trees, particularly peaches. Adults may lay eggs in or near the orchard, and nymphs and adults will feed on fruit by piercing the skin and sucking out the juices dissolved by their salivary enzyme.

Their feeding leaves a variety of symptoms depending on when it occurred. Early feeding will result in deep pits in the fruit while later feeding (close to pit hardening) will leave brown scars under the skin, and cause clear oozing.

The newer products for peach twig borer control (Intrepid, Delegate, Altacor, Belt) are not as effective on cat-facing bugs. Unfortunately, the broad spectrum insecticides (carbaryl and pyrethroids) are the most effective on the adults. You just need to balance cost of injury versus cost of spray versus cost of killing beneficial insects.

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Western Cherry Fruit Fly on Sweet Cherries

Where your cherries have started to color to a salmon blush, you should start spraying, even if you have some fruit that is still green. This insect is the primary pest tart and sweet cherries in Utah. It overwinters as a pupa in the soil, and starts emerging in mid spring. It lays eggs within the skin of cherry fruits whose skin has softened. The larvae hatch within the fruit and feed on the cherry flesh for 14-21 days. The larvae then crawl out and drop to the ground to pupate and overwinter. Although there is just one generation per year, flies emerge continuously all summer. As such, the fruit must remain protected until harvest.

To treat cherry fruit flies, use insecticides that are targeted at the adult stage. Once sprays have begun, continue them based on protection interval of material used, until harvest time.

Degree Day Accumulations and Insect Development

Upcoming Monitoring/Insect Activity

Pest	Host(s)	DD/Monitoring Action
Codling moth	apple, pear	Egg-hatch approximately 2 weeks after emergence
San Jose scale	apple mostly	Treat crawlers in late June/early July
Pear psylla	pear	Second generation egg hatch begins early July
Peach twig borer	peach, nectarine, apricot	Egg hatch begins late June
Peach powdery mildew	peach	Look for powdery lesions (peach powdery mildew) or rust-colored lesions (apple powdery mildew) in June and July
Cherry powdery mildew	cherry	Look for small white lesions on new foliage near the base and interior of the tree

Degree Day Accumulations and Pest Phenology, through June 28.

Click here for information about degree days.

		Codling Moth (1st Generation)			Peach Twig Borer (1st Generation)		
County	Location	DD (post biofix)	% Moth Flight	% Egg Hatch	DD (post biofix)	% Moth Flight	% Egg Hatch
Box Elder	Perry	460	85	45	228	51	1
	Tremonton	268	53	3	no biofix yet	---	---
Cache	River Heights	239	50	2	21	1	0
	Smithfield	206	41	0	0	0	0
Carbon	Price	446	84	42	143	21	0
Davis	Kaysville	441	83	1	244	58	1
Grand	Castle Valley	1096	12	45	695	100	97
Iron	Cedar City	461	85	45	312	78	6
Salt Lake	Holladay	527	92	60	338	84	10
	West Valley City	533	92	61	344	86	12
	West Jordan	485	89	46	no biofix yet	---	---
Tooele	Erda	374	72	23	278	70	3
	Tooele	421	80	35	351	87	14
Uintah	Vernal	509	90	54	266	66	2
Utah	Alpine	352	68	14	no biofix yet	---	---
	American Fork	423	81	36	262	64	2
	Genola	558	94	66	201	38	0
	Goshen	330	65	10	83	7	0
	Lincoln Point	451	84	43	317	80	8
	Lindon	518	91	58	262	64	2
	Provo	---	---	---	320	81	8
	Payson	447	83	40	no biofix yet	---	---
	Santaquin-West	335	66	11	64	4	0
	West Mountain	344	68	13	no biofix yet	---	---
Weber	Pleasant View	460	85	45	116	14	0
Wasatch	Heber City	265	53	3	no biofix yet	---	---
Wayne	Capitol Reef	523	92	60	no biofix yet	---	---

Spray Timing

Codling Moth, First Generation: After your first insecticide cover has been applied, continue to apply your chosen material(s) at the interval provided on the label. Make sure fruit is well protected during the period of greatest egg hatch. The next advisory will post the start of the 2nd generation, when sprays will start again.

Good residue (insecticide) coverage is important at this timing.

After the first insecticide spray has been applied, continue to apply your chosen material(s) at the interval provided on the label.

County	Location	Period of Greatest Egg Hatch (340-640 DD)	Keep Fruit Protected up To: (1020 DD)	Second Generation (1120)
Box Elder	Perry	June 20 - July 5	July 23	July 27
	Tremonton	July 1 - July 14	July 28	July 30
Cache	River Heights	June 26 - July 12	July 27	Aug 2
	Smithfield	June 29 - July 12	July 27	Aug 1
Carbon	Price	June 25 - July 12	July 31	Aug 2
Davis	Kaysville	June 18 - July 2	July 18	July 25
Grand	Castle Valley	past	June 26	June 29
Iron	Cedar City	June 20 - July 5	July 22	July 26
Salt Lake	Holladay	past	July 13	July 19
	West Valley City	past	July 15	July 20
	West Jordan	past	July 21	July 22
Tooele	Erda	June 22 - July 5	July 21	July 27
	Tooele	past	July 20	July 25
Uintah	Vernal	June 18 - July 4	July 23	July 27
Utah	Alpine	June 20 - July 10	July 26	July 31
	American Fork	past	July 23	July 27
	Genola	past	July 19	July 21
	Goshen	past	July 22	July 30
	Lincoln Point	past	July 21	July 25
	Lindon	past	July 17	July 21
	Payson	past	July 19	July 25
	Provo	past	July 19	July 24
	Santaquin-West	past	July 21	July 25
	West Mountain	past	July 19	July 24
Weber	Pleasant View	June 18 - July 2	July 18	July 23
Wasatch	Heber City	July 1 - July 18	August 8	Aug 15
Wayne	Capitol Reef	past	July 13	July 20

Spray Timing

Peach Twig Borer, First Generation: All locations at which we have caught peach twig borer moths are included in the table below; dates for remaining locations will be added next week.

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. End of egg hatch, where you should "keep fruit protected up to" is at 800 degree days.

There will be a second generation a few weeks after this current one, where sprays will start again.

County	**Location**	***Start Sprays (300 DD:*** large population/heavy damage)	***Start Sprays (360 DD:*** small population/little to no damage)	**Keep Fruit Protected Up To: (800DD)**
Box Elder	Perry	July 3	July 5	July 25
	Tremonton	---	---	---
Cache	River Heights	July 12	July 15	Aug 3
	Smithfield	July 12	July 14	Aug 1
Davis	Kaysville	June 30	July 3	July 20
Grand	Castle Valley	past	---	July 3
Iron	Cedar City	past	July 1	July 20
Salt Lake	Holladay	past	---	July 15
	West Valley City	past	June 29	July 16
Tooele	Erda	---	July 1	July 18
	Tooele	past	June 29	July 16
Uintah	Vernal	July 1	July 4	July 24
Utah	Alpine	---	---	---
	American Fork	June 30	July 2	July 21
	Genola	July 2	July 5	July 22
	Goshen	July 7	July 10	July 27
	Lincoln Point	past	July 1	July 18
	Lindon	June 29	July 1	July 18
	Provo	past	June 29	July 17
	Santaquin	July 9	July 13	July 29
	West Mountain	---	---	---
Weber	Pleasant View	June 30	July 2	July 19

Spray Materials - Commercial Applicators

The options provided below are not all-inclusive and are not endorsements of USU. Please check the label before mixing.

Target Pest	Host	Example Brands	Chemical	Amount per acre	REI	Comments
Codling Moth	apple	Altacor 35WDG	chlorantraniliprole	3.0-4.5 oz	4 h	re-apply based on product interval through each generation until harvest on Sept. 15
		Assail	acetamiprid	1.7-3.4 oz	12 h	
		Belt SC	flubendiamide	5 oz	12 h	
		Delegate 25WG	spinetoram	6-7 oz	4 h	
		Imidan 70W	phosmet	3.5-5.3 lbs	3 d	
		Voliam Flexi	thiamethoxam +chloran-traniliprole	4-7 oz	12 h	
San Jose scale	apple	acetamiprid	Assail	3.4 oz	12 h	**Talus:** one application/ season **Esteem:** 45-day PHI; but provides excellent control
		buprofezin	Talus	see label	12 h	
		pyriproxifen	Esteem	4-5 oz	12 h	
Woolly apple aphid	apple	Assail	acetamiprid	1.7 oz	12 h	apply post bloom only if scouting shows that this pest is present
		Beleaf	flonicamid	2-2.8 oz	12 h	
		Calypso	thiacloprid	2-4 oz	12 h	
		Clutch	clothianidin	2-3 oz	12 h	
		Admire Pro; generics	imidacloprid	see label	12 h	
Peach twig borer	peach, nectarine	Belt	flubendiamide	3-4 oz	12 h	reapply based on protection interval until harvest
		Altacor	chlorantraniliprole	3.0-4.5 oz	12 h	
		Delegate	imidacloprid	4.5-7.0 oz	12 h	
		Imidan	phosmet	4.25 lbs	12 h	
		Voliam Flexi	thiamethoxam+ chloran-traniliprole	4-7 oz	12 h	
Greater peachtree borer	peach, nectarine, apricot	chlorpyrifos	Lorsban	see label	4 d	**Lorsban**: max once/ season; do not allow spray to touch foliage/ fruit **Thionex**: max twice/ season
		endosulfan	Thionex	see label	4 d	
		esfenvalerate	Asana	see label	12 h	
		pemethrin	Pounce	4-8 oz	12 h	
Powdery mildew	peach	Adament	tebuconazole+ trifloxys-trobin	4-8 oz	4 h	monitor fruit and leaves for powdery mildew and only apply if necessary; chance of fruit infection decreases after pit hardening
		Abound	azoxystrobin	11-15 oz	12 h	
		Orbit, Tilt	propiconazole	4 oz	4 h	
		Pristine	boscalid+ pyraclostrobin	2-2.4 oz	12 h	
Western Cherry Fruit fly	cherry	Altacor	chlorantraniliprole	3.0-4.5 oz	4 h	start applications when fruit develops salmon blush color on top of yellow and continue until harvest
		Assail	acetamiprid	5.3-8 oz	12 h	
		Delegate	spinetoram	4.5-7 oz	4 h	
		GF-120	spinosad+bait	10-20 oz	4 h	
		Admire Pro; generics	imidacloprid	see label	12 h	
Powdery mildew	cherry	Abound	azoxystrobin	11-13 oz	4 h	
		Pristine	boscalid+ pyraclostrobin	10.5-14.5 oz	12 h	
		Quintec	quinoxyfen	7 oz	12 h	
		Rally	myclobutanil	2.5-6 oz	24 h	
		Rubigan	fenarimol	6-12 oz	12 h	

Spray Materials - 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*		**acetamiprid**: every 14 days **carbaryl**: every 14 - 21 days **malathion**: every 7 days **gamma-cyhalothrin**: every 14 days **bifenthrin**: every 14 days **hort. oil**: lasts 5-7 days for killing eggs; use at beginning of each generation; apply at 1% rate only when temperatures are below 80; follow up with a different product **spinosad**: every 7 days
		carbaryl	Sevin, Bonide Fruit Tree Spray, etc.	
		acetamiprid	Ortho Max Flower, Fruit, and Veg.,	
		malathion	Malathion	
		gamma-cyhalothrin	Spectracide Triazicide	
		bifenthrin	Ortho Max Garden Insect Killer	
		Soft/organic		
		hort. oil (1%)	Many products	
		spinosad	Green Light, Gardens Alive Bull's Eye	
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	
Peach twig borer	peach, nectarine	*Conventional*		see comments under Codling Moth **permethrin**: every 14 days; this ingredient is becoming less available in stores **Surround**: every 3-5 days; works to repel, not kill insects; only moderate control; must purchase online
		acetamiprid	Ortho Max Flower, Fruit & Veg	
		carbaryl	Sevin, Bonide Fruit Tree Spray, etc.	
		malathion	Malathion	
		permethrin	Basic Solutions Yard & Garden	
		Soft/organic		
		spinosad	see 'codling moth' above	
		kaolin clay	Surround	
Greater peachtree borer	peach, nectarine, apricot	permethrin, bifenthrin	variety	**permethrin:** apply every 14-21 days until mid-September **carbaryl:** must be applied every 7 days
		carbaryl	Sevin, Bonide Fruit Tree Spray	
Aphids	all fruit trees	carbaryl	Bayer Advanced	start with a single application
		bifenthrin	Ortho Bug-B-Gone	
		malathion	Bonide, Malathion	
		permethrin	Lilly Miller	
Powdery mildew	all fruit trees	bayleton	Bonide	do not apply lime sulfur when temperature is over 75 degrees F. **Neem oil** and **Kaligreen** are organic options
		lime sulfur	Lilly Miller	
		propiconazole	Ferti-Lome	
		neem oil	Garden Safe	
Western cherry fruit fly	cherry	potassium bicarbonate	Kaligreen	start applications when fruit in sunniest locations develop a salmon blush **spinosad**: every 7 days
		malathion	Malathion	
		pyrethrin	Concern Multi-Purpose	
		spinosad	see above	

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

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

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