

## News/What to Watch For:

Monitor for leafhopper nymphs on apple; examine cherry leaves and peach fruit for powdery mildew; watch apple fruit clusters for signs of fire blight infections; look at cherry fruits for salmon-blush color to start fruit fly control  
Watch for “cottony” colonies of woolly apple aphid in the next few weeks  
Spray timing (codling moth and peach twig borer), page 4  
Spray materials, pages 5-6

## Insect and Disease Activity/Info

### APPLE/PEAR

#### Fire Blight



**watch for fire blight “strikes” and prune them out asap with sterile tools, 12 inches below dead tissue**



**the name ‘fire blight’ is apropos on pear, where the tissue literally looks burned**



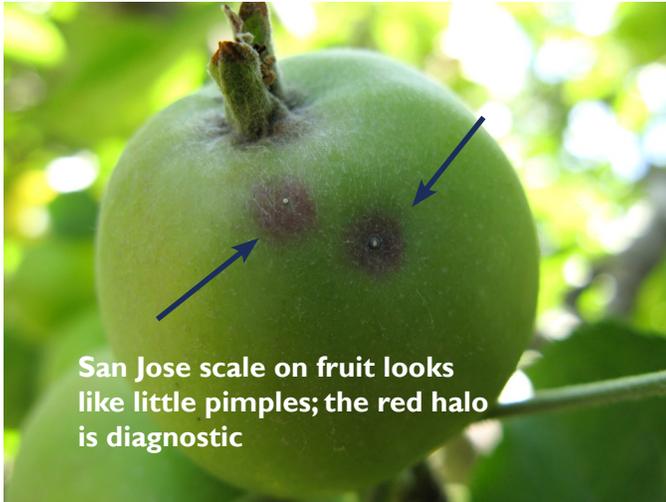
**fire blight can also infect succulent shoots; the recent storms may have caused new infections**

We have seen very few fire blight infections in commercial orchards, but that’s not to say that you shouldn’t check trees in your own orchard or backyard now. By keeping ahead of infections while they are new, you may be able to prevent a bigger problem later. If you can check your trees daily, all the better. The recent rain and hail storms will have spread the fire blight bacteria to succulent shoot growth, causing a tip blight that has the characteristic ‘shepherd’s crook’ shape.

Young trees (up to 8 years) should get special attention. Don’t be afraid to use the “ugly stub” method, where you prune the cankered area back to two-year old wood, leaving a stub of healthy tissue. Two-year old wood is more tolerant of fire blight bacteria than one-year old wood, so the tree can use its defenses to stop the bacterial growth. Then in winter, you can go back and prune the stub off to a branch union. Old trees with heavy infections should probably be pruned in winter. A heavy pruning now could stimulate new shoot growth that is susceptible to infection.

## Insect and Disease Information, continued from previous page

### San Jose Scale



San Jose scale on fruit looks like little pimples; the red halo is diagnostic

You may have noticed that a few weeks ago, we added a column in the 'Degree Day' (DD) table for San Jose scale. Like codling moth and peach twig borer, there is a model for San Jose scale that is used to predict the timing of treatment. To use the model, we must first know when adult males start flying in spring. Because it is difficult to reliably trap the males, entomologists have found that the initial flight of this insect coincides with codling moth biofix, so we use that date for the San Jose scale model. Crawlers (the life stage most susceptible to insecticides) start emerging at 300-400 DD, and the optimal timing for treatment is at 600-700 DD.

Growers in Grand County should treat for San Jose scale (if this pest is present) in the next few days. See table for options. For commercial growers, Esteem has shown to work the best, and for homeowners, horticultural oil or carbaryl.

## PEACH/NECTARINE/APRICOT

### Peach Twig Borer

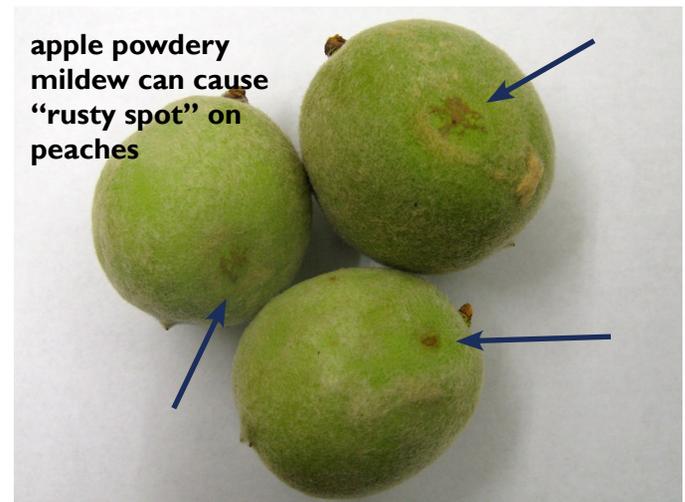


Moths have been captured in more locations. See table on page 7 for timing of insecticide for your location. As mentioned earlier, peach twig borer larvae bore into shoots in the first generation, so if you see shoot tips dying back as shown at lower left, you can prune these out to reduce populations.

### Coryneum Blight (Shot Hole)

New coryneum blight infections on leaves are showing up in Box Elder, Davis, and Utah counties. This disease is caused by a fungus, *Wilsonomyces carpophilus*, and infects leaves, fruit, buds, and twigs. On leaves, it causes a circular lesion that eventually drops out, leaving a hole. On fruit, it causes corky lesions (on young fruit) or sunken/soft lesions (on more mature fruit). If you are seeing a lot of infection, you can prevent more by using captan, chlorothalonil, or a strobilurin only as needed.

### Apple Powdery Mildew on Peach



apple powdery mildew can cause "rusty spot" on peaches

As long as shoots are actively growing, apple powdery mildew (*Podosphaera leucotricha*) can cause new infections on apple foliage. With continued wet weather, preventative fungicides may need to be applied through June.

This pathogen does double duty because in Utah, it can also cause lesions on young peach fruit. It does not affect peach foliage (although there is another species of powdery mildew that can affect the foliage). Infected areas appear as white fuzzy lesions that eventually turn a rusty brown with a web-like pattern.

### Greater Peachtree Borer

We have not trapped any borer adults in northern Utah yet, but we expect to see them in the next few weeks. Do not spray trunks of peach, nectarine, or cherry until moths have been trapped.

## Insect and Disease Information, continued from previous page

### CHERRY

#### Western Cherry Fruit Fly

Tart cherries are still green, but sweets are starting to color up. Fruits in Utah County are mostly still yellow, but there was a report in Bountiful this week that an orange blush had started to develop on the yellow fruits in the sunniest locations. Fruit fly adults have been trapped in Kaysville. Keep an eye on your own trees for fruit color.



cherry fruit fly cannot lay eggs in cherry until the skin is soft enough, which is the time when it develops a salmon blush

Western cherry fruit fly is a serious pest of tart and sweet cherries. 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. Commercial growers should note the pre-harvest interval (PHI) of your material. If you know your harvest date, you can time your sprays backward by starting from that date.

#### New Cherry Pest Found in California

(reprinted from [American/Western Fruit Grower](#))

A new, potentially serious pest of sweet cherries showed up recently in ripening cherries in Northern California orchards. It has been tentatively identified as a drosophilid fruit fly of unknown genus and species, says Bill Coates, a University of California Cooperative Extension farm advisor for San Benito, Santa Cruz, Santa Clara and Monterey Counties.

These are flies usually associated with damaged or decaying fruit and are called vinegar flies, says Coates. In this particular case the fruit appears undamaged except for what appears to be 'stings' on the surface of the fruit and maggots feeding within the fruit. Early varieties such as Early Burlat and Black Tartarian have been extensively damaged in Santa Clara County. Growers are beginning to apply protective sprays to guard against infestation of the main 'Bing' crop.

The pest has also appeared in the northern San Joaquin Valley, says Coates, who adds that he doesn't yet know whether other fruits are susceptible. This is an excellent example of the collaboration between growers, pest control advisers, UC Cooperative Extension, agricultural commissioners and the California Department of Food and Agriculture, he says.

"I was first informed of this pest on Thursday, May 14 by a pest control adviser and a cherry grower," he says. "I was able to determine from the symptoms that it was not light brown apple moth but a fruit fly of some type. I provided fruit fly traps to growers by late Thursday. On Friday samples from both infested fruit and fruit fly traps were taken by the Santa Clara County Agricultural Commissioners office to Sacramento for identification by the CDFA."

The species of drosophila has still not been confirmed by the CDFA, says Coates. It does not seem to match existing North American species. These are drosophilid, not tephritid fruit flies - the latter group contains most of our common fruit-infesting fruit flies. It has been found infesting cherries in Santa Clara, Yolo and Stanislaus counties with unconfirmed reports from other counties. A similar, if not the same drosophila, is also infesting strawberries and canberries in Santa Cruz County.

"Most cherry growers in the Central Coast are applying multiple GF-120 bait sprays and doing extensive sorting of fruit. I am trying a variety of trap types but the presence of the common drosophila species - drosophila melanogaster, complicates monitoring," says Coates. "Currently, the best indication of infestation is to check early-ripening pollenizers such as Black Tartarian and Early Burlat and then apply controls to protect the main Bing crop. There is no replicated research on control measures for these type of flies in California in cherry orchards."

**Insect and Disease Information, continued from previous page****Hail Damage**

That was quite an intense storm on Tuesday night in Cache and Box Elder counties. I would expect that growers will probably see some fruit damage in the next few weeks as the fruit enlarges. Young peaches are very sensitive. Examine your fruit carefully. If you experience losses, you may consider cutting back on insecticide sprays to save money, or just applying border sprays. This decision must be made on a site by site basis.



Photo Courtesy Shawn Steffan  
Utah State University Extension

Another danger of hail storms is the spread of fire blight bacteria to freshly wounded foliage. Streptomycin could be used within 24 hours of the storm, but the pre-harvest interval is 50 days on apples (30 on pear) so take this into consideration. Otherwise, as discussed earlier, watch trees for new infections and prune them out as noticed.

Below are some pictures of hail damage to fruit.



# Degree Day Accumulations and Insect Development

## Upcoming Monitoring/Insect Activity

Pest	Host(s)	DD/Monitoring Action
Cherry powdery mildew	cherry	Look for small white lesions on new foliage near the base and interior of the tree
White apple leafhopper	apple	Look for nymph and adult activity
Codling moth	apple, pear	Egg-hatch begins at 220 DD (after biofix)
Western cherry fruit fly	cherry	Adults can lay eggs within fruit at salmon blush coloring
Peach twig borer	peach, nectarine	5% egg hatch begins at 300 DD (after biofix)
Flatheaded appletree borer	apple, pear (uncommon)	Adults start laying eggs at 500 GDD
San Jose scale	apple mostly	Crawler emergence at 300-400 DD after biofix Treat at 600-700 DD

## Degree Day Accumulations

March 1 - Wednesday, June 3

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	565	337	66	11	111	13	0	316
	Tremonton	504	214	42	1	---	---	---	201
Cache	North Logan	388	197	38	0	---	---	---	184
	Providence	423	238	49	2	---	---	---	222
	Smithfield	366	190	36	0	---	---	---	177
Carbon	Price	511	251	51	3	34	1	0	233
	Spring Glen	588	217	44	1	---	---	---	202
Davis	Kaysville	529	292	57	5	131	16	0	273
Grand	Castle Valley	934	640	98	80	479	98	55	574
Salt Lake	Holladay	597	327	64	11	141	21	0	302
	West Valley City	603	335	66	11	146	22	0	311
Tooele	Erda	564	332	65	10	110	12	0	314
	Grantsville	768	455	84	43	107	11	0	414
	Tooele	565	332	65	11	103	10	0	311
Uintah	Vernal	518	280	54	4	---	---	---	261
Utah	Alpine	518	270	53	3	---	---	---	253
	Genola	602	351	69	17	94	9	0	324
	Lincoln Point	519	265	52	3	86	8	0	248
	Orem	558	363	71	21	106	11	0	340
	Payson	562	337	66	11	87	8	0	314
	Provo	710	352	69	18	139	19	0	321
	Santaquin	551	337	66	11	98	10	0	304
Weber	Pleasant View	531	316	62	8	---	---	---	292

“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 Generation:

“Start sprays” occurs at 220 DD. The period of greatest egg hatch occurs from 340 DD - 640 DD. “Last spray” is two weeks *prior* to the end of egg hatch. Materials that last 2 weeks, should be applied on this date.

County	Location	Start Sprays (1% egg hatch)	Period of greatest egg hatch	Last Spray Date
<b>Box Elder</b>	Perry	May 28	June 3 - June 22	June 26
	Tremonton	June 3	June 12 - June 29	July 1
<b>Cache</b>	N. Logan	June 5	June 15 - July 3	July 7
	Providence	June 1	June 12 - July 1	July 5
	Smithfield	June 6	June 15 - July 4	July 7
<b>Carbon</b>	Price	May 31	June 12 - July 3	July 8
	Spring Glen	June 3	June 14 - July 4	July 9
<b>Davis</b>	Kaysville	May 30	June 6 - June 23	June 23
<b>Grand</b>	Castle Valley	May 12	May 18 - June 3	June 6
<b>Salt Lake</b>	Holladay	May 28	June 4 - June 19	June 20
	West Valley City	May 28	June 3 - June 20	June 22
	Erda	May 28	June 4 - June 21	June 22
<b>Tooele</b>	Grantsville	May 20	May 28 - June 14	June 17
	Tooele	May 28	June 4 - June 20	June 22
<b>Uintah</b>	Vernal	May 30	June 8 - June 26	June 30
	Alpine	May 30	June 8 - June 26	June 29
	Genola	May 25	June 2 - June 21	June 24
	Lincoln Point	May 31	June 8 - June 26	June 27
<b>Utah</b>	Orem	May 25	June 2 - June 18	June 19
	Payson	May 26	June 3 - June 20	June 22
	Provo	May 26	June 2 - June 19	June 20
	Santaquin	May 27	June 3 - June 22	June 24
<b>Weber</b>	Pleasant View	May 29	June 5 - June 21	June 23

## Spray Timing - Peach Twig Borer

### Peach Twig Borer, First Generation:

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.

County	Location	Start Date (large population)	Start Date (small population)	Last Spray Date
<b>Box Elder</b>	Perry	June 16	June 19	June 27
<b>Carbon</b>	Price	June 25	June 29	July 8
<b>Davis</b>	Kaysville	June 13	June 17	June 22
<b>Grand</b>	Castle Valley	May 24	May 28	June 4
<b>Salt Lake</b>	Holladay	June 12	June 15	June 19
	West Valley City	June 12	June 15	June 21
<b>Tooele</b>	Erda	June 14	June 17	June 23
	Grantsville	June 15	June 18	June 23
	Tooele	June 15	June 18	June 23
<b>Utah</b>	Genola	June 17	June 20	June 26
	Lincoln Point	June 17	June 20	June 26
	Orem	June 14	June 17	June 22
	Payson	June 15	June 18	June 24
	Provo	June 12	June 15	June 21
	Santaquin	June 16	June 20	June 26

## Spray Materials - 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 label		• for all products, ensure good coverage for effective control
		acetamiprid	Assail	3.4 oz	12 h	
		deltamethrin	Battalion	7-14 oz	12 h	• <b>hort. oil</b> works on eggs only
		methoxyfenozide	Intrepid	16 oz	4 h	
		phosmet	Imidan	5.33 lbs	5 d	
		spinetoram	Delegate	6-7 oz	4 h	• <b>codling moth virus</b> must be applied every 7 days
		thiacloprid	Calypso	4-8 oz	12 h	
		rynaxypyr	Altacor	3.5-4.5		• <b>Altacor</b> and <b>Delegate</b> have shown to have good efficacy
codling moth virus	Virosoft, etc	---	---			
Powdery mildew	apple	potassium bicarbonate	Kaligreen	2.5-3 lb	4 h	apply starting at open cluster stage
		myclobutanil	Rally	5 oz	24 h	
		trifloxystrobin	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	<b>Talus:</b> one application/season <b>Esteem:</b> 45-day PHI; but provides excellent control
		buprofezin	Talus	see label		
		pyriproxifen	Esteem	4-5 oz	12 h	
Woolly apple aphid	apple	spirotetramat	Ultror	12 oz	24 h	<b>Ultror:</b> 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	<b>Delegate:</b> apply 7 day intervals
		endosulfan	Thionex	4 lb	4 d	
		phosmet	Imidan	4 lb	4 d	
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 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	<i>Conventional</i> carbaryl malathion gamma-cyhalothrin acetamiprid	Sevin, Bonide Fruit Tree Spray, etc. Malathion Spectracide Triazide Ortho Max Flower, Fruit, and Vegetable	<b>Carbaryl:</b> every 7 days <b>Malathion:</b> every 14 days <b>Acetamiprid:</b> every 14 days
		<i>Soft/orgainc</i> hort. oil spinosad	many options 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	<b>hort. oil:</b> lasts 7 days; use at beginning of each generation; apply at 1% rate ONLY when temperatures are below 80 <b>spinosad:</b> every 7 days
Powdery mildew	apple	<i>Conventional</i> bayleton propiconazole	Lilly Miller Ferti-Lome	do not apply lime sulfur when temperature is over 75 F
		<i>Soft/orgainc</i> lime sulfur neem oil potas. bicarbonate	Bonide Garden Safe, others Kaligreen	
San Jose scale	apple	<i>Conventional</i> bifenthrin carbaryl	Ortho Bug-b-Gone Sevin	two applications spaced 7-14 days apart should be enough
		<i>Soft/organic</i> hort. oil neem oil	many options Concern, Garden Safe, others	
Woolly apple aphid	apple	<i>Conventional</i> carbaryl	Sevin	apply only as needed; thorough coverage essential
Peach twig borer	peach, nectarine	<i>Conventional</i> carbaryl malathion permethrin	Sevin, Bonide Fruit Tree Spray, etc. Malathion Adams Yard Spray, Ortho Basic Solutions Yard and Garden, Bonide Eight RTU, Hi Yield Permethrin Concentrate	see comments under Codling Moth  <b>Surround:</b> every 3-5 days; works to repel, not kill insects; only moderate control; must purchase online
		<i>Soft/orgainc</i> spinosad kaolin clay	see 'codling moth' above Surround	
Western cherry fruit fly	cherry	carbaryl esfenvalerate malathion pyrethrin spinosad ( <i>Soft/Organic</i> )	Sevin Ortho Bug-B-Gone Malathion Concern Multi-Purpose Ferti-Lome, Green Light, Natural Guard, GF-120	start applications only when fruit in sunniest locations develops a salmon blush  <b>spinosad:</b> every 7 days

**Precautionary Statement:** Utah State University Extension and its employees are not responsible for the use, misuse, or damage caused by application or misapplication of products or information mentioned in this document. All pesticides are labeled with ingredients, instructions, and risks. The pesticide applicator is legally responsible for proper use. USU makes no endorsement of the products listed herein.

### Tree Fruit IPM Advisory

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