

News/What to Watch For:

Spider mites have started to move to the lowest leaves and populations will build with the hotter weather
Second generation of codling moth spray timings in next newsletter
Endosulfan phase-out details coming soon
Commercial growers mark your calendar: USU Extension Fruit & Vegetable Research Field Day, August 17
Spray timing (codling moth and peach twig borer), pages 5-6
Spray materials, pages 7-8

Insect and Disease Activity/Info

APPLES/PEARS

San Jose Scale



Growers located in all areas along the Wasatch Front and Carbon County should treat for San Jose scale (SJS) crawlers anytime between this Monday, June 28 and Friday, July 2.

SJS is an armored scale that feeds by sucking sap from plant tissues. It can be found on limbs, twigs, and on fruit. We always recommend a dormant oil spray to help knock down the scale population. Ideally, the oil will smother the overwintering nymphs, whose protective “covering” is not as developed as adults. Adults will survive the dormant oil spray, and young nymphs laid by mated females (called crawlers) will need to be treated.

The adult female lays approximately 200 live crawlers 4-6 weeks after mating. They are bright yellow, and slow moving. They walk or are windblown to new sites to settle on twigs or fruit, insert their mouthparts, and feed for the remainder of their lives. Once they form their hard outer covering, they are more resistant to pesticides.

If the scale population is allowed to build on a tree, effects include reduced tree vigor and a decline in yield. It is primarily a problem in standard-sized, poorly pruned trees.

STONE FRUITS

Greater Peachtree Borer



Growers in the Wasatch Front region should begin treatment next week on peach, nectarine, and apricot. (Cherries and plums are rarely attacked in Utah.)

Insect and Disease Information, continued from previous page

We trapped greater peachtree borer adult moths in one location in Utah County, and we expect to see moths in other locations soon. We don't expect to see moths in Cache County for at least 1-2 more weeks.

Greater peachtree borer (sometimes called trunk, root, or crown borer) is a day-flying moth that resembles wasps (male shown at right). You may see them (thin, metallic blue-black body with clear wings) resting on leaves. Adults lay eggs on the lower 12" of the tree trunk or on nearby soil, and larvae bore their way into the wood and remain there for the next 9-11 months.



Sprays only need to be applied to the lower 12-18" of trunk and any exposed roots. The residual material of the insecticide on the bark will kill the eggs and newly hatching larvae.

As an alternative to spraying, growers with at least one acre of peaches can successfully control peachtree borer with mating disruption. This technology prevents males from finding females. Please contact us if you are interested in learning more.

Western Cherry Fruit Fly



Sweet cherries (where they were not killed by frost) are starting to color up, so it is time for growers to pay attention to when to start fruit fly sprays. Look at the fruits in the sunniest location on the tree, as these will color earliest.

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 underneath the skin of cherries that are soft enough. 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.

European Earwig



European earwigs are abundant this year in peach orchards (a young earwig knocked from a peach tree shown at right). Wet springs for the past two months have allowed populations to build. We have seen earwigs in trees, feeding on foliage, but not yet feeding on fruit. They often will enter fruit through the stem end, and also create pits or gouges that extend deep into the fruit, leaving behind their tell tail black droppings.



Some growers have found success in using Sevin applied to the trunk, but protection does not last very long. Trapping or prevention may be the next best option. Entomologist, Diane Alston, is researching earwig biology and management

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in peach orchards. In one project, she is trapping earwigs in strips of rolled corrugated cardboard tied closed with twine. The traps are wrapped around the tree trunks. Earwigs are nocturnal in their activity and will hide in the roll of cardboard during the day. Alston and her crew are finding hundreds of earwigs in these traps each week.

Commercial Growers: Upcoming Fruit Field Day in Kaysville

Extension specialists at USU are hosting a Fruit & Vegetable Research Field Day on August 17 from 1:00 - 5:30 pm at the USU Horticultural Research Farm on 725 South Segoe Lily Dr. in Kaysville.

Three concurrent tours will highlight recent research and hot topics in commercial fruit and vegetable production. You can choose one tour or all three, in any order you would like. The tours will run from 1:00-2:15, 2:30-3:45, and 4:00-5:15. Topics and demonstrations include:

Tree Fruits:

- Organic peach production
- Rootstock evaluations
- Irrigation scheduling
- New pest management technologies

Caneberry Fruits:

- Berry variety evaluations
- Blackberry training and trellis systems
- Insect caneborer studies
- Berry tasting

Vegetables:

- Organic vegetable production
- Cover crops
- Onion nitrogen management and crop rotation
- Onion pest management

Notification of Endosulfan Phase-Out

The Environmental Protection Agency announced on June 9 its plan to phase out and eventually cancel all uses of the insecticide endosulfan, sold under the trade names Thionex and Thiodan. Endosulfan is currently registered for control of various insects on fruit trees. EPA identified Endosulfan as a Persistent Bioaccumulative Toxicant, which is the reason for its impending cancellation. Details of the phase-out are currently being negotiated by EPA and the manufacturer, MANA. Existing stocks of endosulfan can still be used according to label directions.

Degree Day Accumulations and Insect Development

Upcoming Monitoring/Insect Activity

Pest	Host(s)	DD/Monitoring Action
Codling moth- 1st. Gen	apple, pear	Egg-hatch continues through late June/early July
San Jose scale	apple mostly	Crawlers hatch early June; treat in late June
Cherry powdery mildew	cherry	Look for small white lesions on new foliage near the interior of the tree
Western cherry fruit fly	cherry	Treat when fruit develops salmon blush color
Pear psylla	pear	Second generation egg hatch begins last week of June
Peach twig borer- 1st Gen.	peach, nectarine	Egg hatch begins approximately late June
Spider mites	all	Look for activity on lower interior leaves

Degree Day Accumulations and Insect Phenology

March 1 - Thursday, June 24

County	Location	Codling Moth, 1st Gen.			Peach Twig Borer, 1st Gen.		
		DD (post biofix)	% Moth Flight	% Egg Hatch	DD (post biofix)	% Moth Flight	% Egg Hatch
Box Elder	Perry	457	85	45	306	76	5
	Tremonton	257	52	3	200	49	1
Cache	North Logan	276	54	4	17	1	0
	Providence	357	70	20	17	1	0
	Smithfield	230	47	1	18	1	0
Carbon	Price	580	95	70	385	92	22
Davis	Kaysville	615	97	77	478	98	56
Grand	Castle Valley	1002	5 (2nd gen)	100	849	0 (2nd gen)	100
Juab	Tintic	355	70	20	175	32	0
Salt Lake	Holladay	532	92	60	414	95	32
	West Valley City	572	95	70	441	97	42
Sevier	Richfield	535	91	57	464	98	49
Tooele	Erda	328	64	10	328	78	6
	Tooele	443	83	40	313	80	7
Uintah	Vernal	515	91	58	360	89	16
Utah	Alpine	413	80	35	199	38	0
	American Fork	521	91	58	349	87	14
	Genola	531	92	60	353	89	16
	Lincoln Point	481	88	49	317	81	8
	Orem	566	94	66	364	89	16
	Payson	486	88	49	344	85	11
	Provo	557	94	66	375	92	22
	Santaquin	478	88	49	303	76	5
	West Mountain	488	89	51	327	50	1
Weber	Pleasant View	478	88	49	243	57	1
Wasatch	Heber City	239	50	2	15	1	0
Wayne	Capitol Reef	800	100	95	626	100	92

Spray Timing - Codling Moth

Please check these chart each week for updated dates. These dates are forecasted using the average temperature for each site. Fruit should remain protected through each generation according to interval provided on pesticide label.

Codling Moth, First Generation

Most residential growers should start sprays at the “standard start date,” unless you choose to use horticultural oil at 200 DD. The period of greatest egg hatch occurs from 340 DD - 640 DD. Egg hatch for the first generation ends at 920 DD.

County	Location	<i>If using oil for early ovicide</i>		Standard Start Date (1% egg hatch)	Period of Greatest Egg Hatch (340-640 DD)	Egg Hatch Ends
		Apply Oil (200 DD)	Apply delayed 1st cover (350 DD)			
Box Elder	Perry	past	past	past	June 18 - July 3	July 16
	Tremonton	past	June 29	past	June 28 - July 12	July 23
Cache	N. Logan	past	June 28	past	June 28 - July 13	July 25
	Providence	past	June 24	past	June 23 - July 9	July 23
	Smithfield	past	June 30	past	June 30 - July 14	July 25
Carbon	Price	past	past	past	June 8 - June 28	July 14
Davis	Kaysville	past	past	past	June 17 - July 2	July 13
Grand	Castle Valley	past	past	past	past	past
Juab	Tintic	past	past	past	June 22 - July 9	July 21
Salt Lake	Holladay	past	past	past	June 13 - June 28	July 9
	West Valley City	past	past	past	June 9 - June 27	July 8
Sevier	Richfield	past	past	past	June 11 - June 30	July 14
Tooele	Erda	past	June 25	past	June 25 - July 7	July 18
	Tooele	past	past	past	June 19 - July 2	July 13
Uintah	Vernal	past	past	past	June 12 - July 1	July 14
Utah	Alpine	past	past	past	June 20 - July 5	July 18
	American Fork	past	past	past	June 10 - June 30	July 12
	Genola	past	past	past	June 10 - June 29	July 11
	Lincoln Point	past	past	past	June 15 - July 2	July 13
	Orem	past	past	past	June 9 - June 27	July 8
	Payson	past	past	past	June 15 - July 1	July 13
	Provo	past	past	past	June 9 - June 28	July 9
	Santaquin	past	past	past	June 15 - July 2	July 13
West Mountain	past	past	past	June 13 - July 1	July 12	
Weber	Pleasant View	past	past	past	June 16 - June 30	July 12
Wasatch	Heber City	past	July 1	past	July 1 - July 18	August 2
Wayne	Capitol Reef	past	past	past	June 3 - June 17	June 29

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

County	Location	Start Date (large population)	Start Date (small population)	Keep Fruit Protected Up To:
Box Elder	Perry	June 24	June 27	July 17
	Tremonton	July 1	July 3	July 21
Cache	All Locations	July 10	July 13	August 1
Carbon	Price	past	June 24	July 18
Davis	Kaysville	past	June 26	July 14
Grand	Castle Valley	past	past	past
Juab	Tintic	July 1	July 4	July 24
Salt Lake	Holladay	past	past	July 9
	West Valley City	past	past	July 9
Sevier	Richfield	past	past	July 12
Tooele	Erda	past	June 25	July 13
	Tooele	past	June 26	July 14
Uintah	Vernal	past	June 24	July 16
	Alpine	June 29	July 2	July 21
	American Fork	past	June 25	July 14
	Genola	past	June 24	July 13
	Lincoln Point	past	June 26	July 15
	Orem	past	June 24	July 12
	Payson	past	June 25	July 13
	Provo	past	past	July 12
	Santaquin	June 24	June 27	July 16
Utah	West Mountain	past	June 26	July 14
	Pleasant View	June 27	June 29	July 16
	Heber City	July 12	July 15	August 8
	Capitol Reef	past	past	July 1

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 (Classification)	Amount per acre	REI	Comments
Codling moth	apple, pear	hort. oil acetamiprid deltamethrin methoxyfenozide phosmet spinetoram thiacloprid rynaxypyr codling moth virus	variety Assail Battalion Intrepid Imidan Delegate Calypso Altacor Virosoft, etc	see label 3.4 oz 7-14 oz 16 oz 5.33 lbs 6-7 oz 4-8 oz 3.5-4.5 ---	12 h 12 h 4 h 5 d 4 h 12 h ---	<ul style="list-style-type: none"> for all products, ensure good coverage for effective control hort. oil works on eggs only codling moth virus must be applied every 7 days Altacor and Delegate have shown to have good efficacy, and target eggs and larvae
San Jose scale	apple	acetamiprid buprofezin pyriproxifen	Assail Talus Esteem	3.4 oz see label 4-5 oz	12 h 12 h	Talus: one application/season Esteem: 45-day PHI; but provides excellent control
Woolly apple aphid	apple	acetamiprid carbaryl diazinon endosulfan flonicamid imidacloprid	Assail Sevin Diazinon Thionex Beleaf Admire	1.7 oz 1.5-3 qt 4 lb 3-4 lb 2-2.8 oz 7-10.5 oz	12 h 4 d 4 d 12 h 12 h	Beleaf: 21 day PHI Admire: soil application only; 21-day PHI
Earwigs	peach	carbaryl	Sevin	1.5-3 qt	12 h	take care when using Sevin as it can increase spider mite production
Greater peachtree borer	peach, nectarine, apricot	chlorpyrifos endosulfan esfenvalerate pemethrin	Lorsban Thionex Asana Pounce	see label see label see label 4-8 oz	4 d 4 d 12 h 12 h	Lorsban: max once/season; do not allow spray to touch foliage/fruit Thionex: max twice/season
Peach twig borer	peach, nectarine	Bt chlorantraniliprole spinetoram spinosad methoxyfenozide endosulfan phosmet	Dipel, Foray Altacor Delegate Success, Entrust Intrepid Thionex Imidan	see label 3-4.5 oz 4.5-7 oz see label 8-16 oz 4 lb 4 lb	4 h 4 h 4 h 4 h 4 h 4 d 4 d	begin sprays according to spray timing table on previous page; maintain residual through end of egg hatch Delegate, Altacor: apply at 14 day intervals
Powdery mildew	peach	azoxystrobin myclobutanil potassium bicarbonate pyraclostrobin + boscalid sulfur products	Abound (11) Rally (3) Kaligreen Pristine (7+11) variety (M)	11-15 oz 2.5-6 oz 2.5-3 lb 14.5-15.5 oz see label	4 h 24 h 4 h 12 h 24 h	
Western cherry fruit fly	cherry	acetamiprid carbaryl malathion imidacloprid spinetoram spinosad spinosad + bait	Assail Sevin Malathion Provado Delegate Success, Entrust GF-120	2.5-3.4 oz 1 pint 12 oz 2 oz 4-4.5 oz see label see label	12 h 12 h 12 h 12 h 4 h 4 h 4 h	start when fruit develops salmon blush color; continue until harvest

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> acetamiprid carbaryl malathion gamma-cyhalothrin bifenthrin <i>Soft/organic</i> hort. oil (1%) spinosad codling moth virus	Ortho Max Flower, Fruit, and Veg., Sevin, Bonide Fruit Tree Spray, etc. Malathion Spectracide Triazicide Ortho Max Lawn and Garden Many products Green Light Lawn and Garden Spinosad; Gardens Alive Bull's Eye; Ferti-Lome Borer, Bagworm, Leafminer & Tent Caterpillar; Monterey Garden Insect Spray; Virosoft, Cyd-X	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 codling moth virus can only be purchased online
San Jose scale	apple	<i>Conventional</i> bifenthrin carbaryl <i>Soft/organic</i> hort. oil neem oil	Ortho Bug-b-Gone Sevin many options Concern, Garden Safe, others	two applications spaced 7-14 days apart should be enough
Greater peachtree borer	peach, nectarine, apricot	permethrin, bifenthrin carbaryl	Bonide Eight, Ortho Bug-b-Gone, Green Light Borer Killer, Bonide Borer-Miner Killer, Enforcer Outdoor Insect Killer, Hi-Yield Broad Use Including Gardens; Lilly Miller Multi-Purpose Insect Spray, Spectracide Bug Stop Sevin, Bonide Fruit Tree Spray	permethrin: apply every 14-21 days until mid-September in highly infested areas; apply twice (now and one month later) in low infestations carbaryl: must be applied every 7 days
Peach twig borer	peach, nectarine	<i>Conventional</i> acetamiprid carbaryl malathion permethrin <i>Soft/organic</i> spinosad kaolin clay	Ortho Max Flower, Fruit & Veg Sevin, Bonide Fruit Tree Spray, etc. Malathion Basic Solutions Yard & Garden, Bonide Eight see 'codling moth' above Surround	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
Western cherry fruit fly	cherry	carbaryl malathion pyrethrin spinosad (<i>Soft/Organic</i>)	Sevin Malathion Concern Multi-Purpose see above	start applications when fruit in sunniest locations develop a salmon blush spinosad: 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.

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