

News/What to Watch For:

Examine lower and interior cherry leaves for bright white spores of powdery mildew (which spreads from last year's fallen leaves)
Examine apple leaves for powdery mildew (which spreads from infected terminals)
Examine apple, peach, and cherry leaves for new colonies of aphids forming
Spray timing (codling moth), page 5
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Insect and Disease Activity/Info

APPLES/PEARS

Codling Moth

We have recorded biofixes (first moth flight) for several locations:

Alpine: May 12	Pleasant View: May 11
Castle Valley: April 26	Provo: May 12
Genola: May 6	Santaquin: May 6
Holladay: May 12	Tooele: May 11
Orem: May 6	West Valley City: May 12
Payson: May 6	
Perry: May 10	

So what does this mean? It means that now we can tell you when to spray! See page 5 for the table on when to spray.

Based on past research, we know that eggs start hatching at 220 degree days after biofix. So if you are using products that target larvae (as most residential applicators should), there is no need to spray before this timing.

If you are considering using an ovicide for your first spray, the spray date ranges are provided in the table. As we mentioned in an earlier advisory, some research out of WSU has shown that growers can get good efficacy if they use horticultural oil (1%) for their first cover spray at 200 DD. The oil smothers the existing eggs. Eggs laid after the oil spray will be hatching around 350 DD, so the second spray should go on at this timing. Oil is less expensive than most insecticides, so taking this route can save money, and provide good protection.

Brown mite



This pest is fairly uncommon in northern Utah orchards, but a large population was seen in a Utah County orchard this week. According to Betsy Beers at WSU, this pest used to be common several decades ago, but has rarely been seen since. The brown mite (*Bryobia rubrioculus*) was once thought to be a tree fruit biotype of the clover mite (*Bryobia praetiosa*), but was declared to be a distinct species in the 1950s.

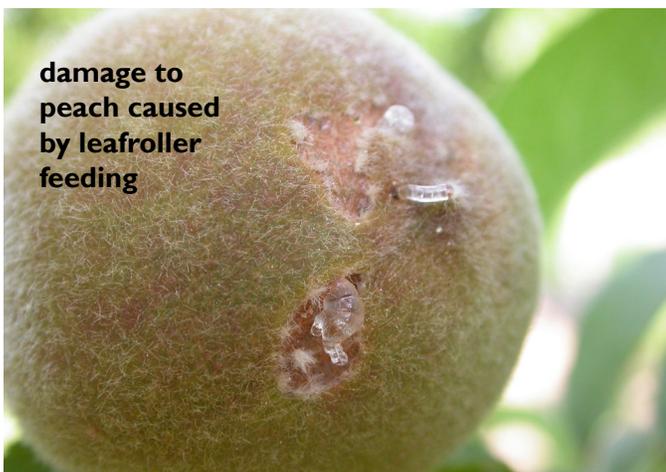
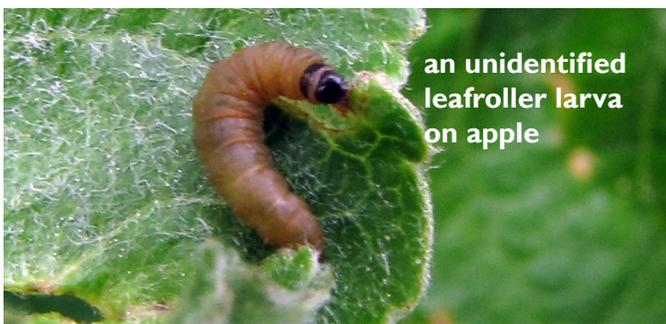
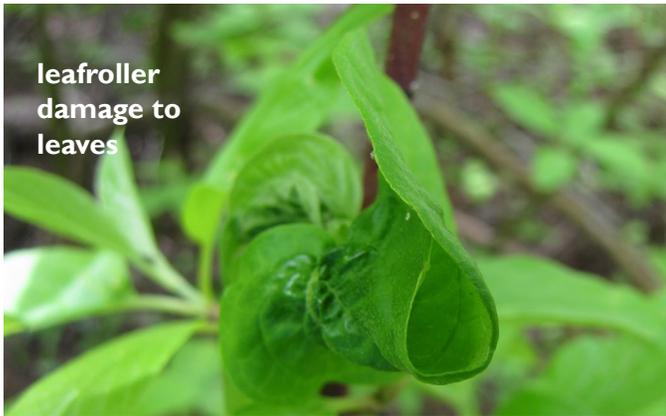
This mite overwinters as an egg that looks similar to the European red mite, and can occur on all fruit tree species. They are thought to feed at night, and hide on twigs during the day. There are at least 3 generations per season. Damage is similar to two-spotted spider mites: stippled leaves.

This pest is best managed at the pink stage, but any miticide will work.

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Leafrollers



Several lepidopteran pests were seen on fruit trees this past week, including fruitworm (more on this pest in the next advisory) and leafrollers. There are several different leafroller species that occur in Utah orchards, including the fruittree, European, and obliquebanded. They all cause the same type of damage: curled, chewed leaves, and surface feeding on fruit that later causes deep scarring as the fruit grows.

The European and fruittree leafrollers overwinter as eggs, and have just one generation in the summer. The obliquebanded leafroller overwinters as larvae, and has two generations. Most leafroller larvae are controlled when codling moth sprays are applied. Early damage to fruit usually causes it to drop.

Fire Blight

The table below shows the fire blight risks for northern Utah. This applies to trees that have open flowers only. Remember that even at a high risk, at least two hours of moisture are necessary for infection to occur. Monitor moisture in your own orchard/trees. If wetting occurs during this time, AND flowers are open, apply an antibiotic (streptomycin, oxytetracycline) within 24 hours before or after wetting event. Because of resistance, growers in Utah County should not use streptomycin.

For trees where fire blight is currently active (i.e., you had fire blight infections in your trees last year):

County	Risk Potential
Box Elder	up to May 16: CAUTION; May 17 - 22: HIGH to EXTREME
Cache	up to May 16: CAUTION; May 17 - 21: HIGH to EXTREME; May 22: CAUTION
Davis	up to May 15: CAUTION; May 16 - 22: EXTREME
Utah	May 13 - 22: HIGH to EXTREME
Weber	up to May 16: CAUTION; May 17 - 22: HIGH to EXTREME

Remember that you may choose not to spray, but you should watch your trees for new infections (they show up within 7-14 days), and prune them out immediately.

Check out the fire blight model on the Utah Climate Center TRAPs site: climate.usu.edu/pest.php.

Caution: Wetting at this point is not likely to lead to infection, except within a few yards of an actively oozing canker.

High: If unprotected flowers are wetted, infection is possible. You may choose to protect every 2 – 3 days with a biological product during the HIGH risk period. Or, apply antibiotic within 24 hours before or after the infection (wetting) event.

Extreme: Outbreak may occur if blossoms are wetted, no matter the blight history of your orchard. Apply antibiotic within 24 hours before or after the wetting event. If used, biological products should already be present on flowers and may not work as well if only applied at this risk period.

STONE FRUITS

Peach leaf curl

Growers in Box Elder and Weber counties have reported peach leaf curl. It has also been known to occur in Davis

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David Green, Brigham City

County. Peach leaf curl is a fungal-caused disease that affects peach and nectarine. We are seeing it this year due to the prolonged periods of cool, wet weather we have had this spring. Infection occurs just as the leaves are opening, and causes puckering and distortion of the leaves. The affected area is pink at first, and then turns green, then brown. Leaves will drop. Because of typical (and quick!) changeovers from "spring" weather to "summer" weather (i.e., cool and moist to HOT and DRY!), further infections of leaves and fruit will not occur (infections only occur when temperatures are below 79 F).

If you see these infections, note that there are no fungicides that can be applied at this time. The best treatment is a single application of a fixed copper applied at leaf fall.

For now, maintain tree vigor of infested trees by thinning more fruit than normal, reducing drought stress with irrigation, and applying extra nitrogen fertilizer.

Coryneum blight



Coryneum blight (also known as shot hole) infections are showing up in orchards now, and in some areas, are worse than usual due to the cool, wet spring. Coryneum blight is caused by a fungus that overwinters in buds, causing small gummy cankers. From there, it spreads to leaves and later, to developing fruit. Infections on the leaves cause small round holes, with the center of the lesion sometimes barely attached. On fruit, lesions vary from dark colored warts to sunken lesions (depending on time of infection). Look for developing lesions (holes in the leaves) and treat if necessary to protect fruit for later in the season.

Peaches in most areas are at shuck-split stage, and at this timing, growers can use Bravo (chlorothalonil, Daconil for residential use), Abound, Captan, Ziram, or Pristine.

An application of copper at 50% leaf drop in the fall is an excellent option for control of coryneum blight.

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
Apple powdery mildew	apple	Look for small white lesions on new foliage
Green peach aphid	peach, nectarine	Look for colonies on peach and nectarine
Black cherry aphid	cherry	Watch terminals for leaf-curling and feeding
White apple leafhopper	apple	Look for nymph activity
Codling moth	apple, pear	Egg-hatch begins at 220 DD (after biofix)
San Jose scale	apple mostly	Crawler emergence at 300-400 DD after biofix Treat at 600-700 DD

Degree Day Accumulations

March 1 - Wednesday, May 13

County	Location	Base 50	Codling Moth			San Jose Scale (base 51)	Western Cherry Fruit Fly (base 41)
			DD (post biofix)	% Moth Flight	% Egg Hatch		
Box Elder	Perry	266	26	2	0	24	576
Cache	North Logan	141	---	---	---	---	394
	Providence	149	---	---	---	---	401
	Smithfield	135	---	---	---	---	348
Carbon	Price	252	---	---	---	---	552
Davis	Kaysville	246	---	---	---	---	568
Grand	Castle Valley	529	235	47	1	220	967
Salt Lake	Holladay	271	7	1	0	6	600
	West Valley City	299	9	1	0	8	644
Tooele	Erda	245	---	---	---	---	547
	Grantsville	400	---	---	---	---	787
	Tooele	244	11	1	0	10	544
Utah	Alpine	256	8	1	0	7	561
	Genola	314	64	7	0	59	654
	Lincoln Point	262	---	---	---	---	579
	Orem	253	59	7	0	54	589
	Payson	278	54	7	0	50	571
	Provo	369	10	1	0	10	705
	Santaquin	230	9	1	0	51	515
Weber	Pleasant View	231	17	2	0	15	530

“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

Please check this chart each week for updated dates. These dates are forecasted using the average temperature for each site. Most residential growers should start sprays at the “traditional start date,” unless you choose to use horticultural oil at 200 DD. Fruit should remain protected through each generation according to interval provided on pesticide label.

Codling Moth, First Generation

County	Location	<i>If using early ovicide option</i>			Traditional Start Date (1% egg hatch)	
		<i>Apply early ovicide*</i> (50-150 DD)	OR	<i>Apply Oil</i> (200 DD)		<i>Apply delayed 1st cover</i> (350 DD)
Box Elder	Perry	May 16 - May 25		May 29	June 8	May 31
Grand	Castle Valley	----		---	---	May 13
Salt Lake	Holladay	May 18 - May 26		May 28	June 9	June 1
	West Valley City	May 17 - May 24		May 27	June 8	May 31
Tooele	Tooele	May 16 - May 23		May 26	June 7	May 30
Utah	Alpine	May 18 - May 28		June 1	June 12	June 3
	Genola	May 12 - May 22		May 26	June 6	May 28
	Orem	May 13 - May 21		May 25	June 4	May 27
	Payson	May 13 - May 24		May 29	June 9	May 31
	Provo	May 17 - May 25		May 29	June 7	May 31
	Santaquin	May 13 - May 23		May 28	June 9	May 30
Weber	Pleasant View	May 16 - May 23		May 29	June 8	May 30

*Ovicides include: Altacor, Intrepid, Rimon, and Esteem (for commercial growers only)

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
Campyloomma	apple	acetamiprid	Assail	1.7-3.4 oz	12 h	
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 lable 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"> works on eggs only ensure good coverage for effective control virus must be applied every 7 days has shown to have good efficacy
Rosy apple aphid	apple	acetamiprid clothianidin flonicamid imidacloprid thiacloprid	Assail Clutch Beleaf Provado Calypso	1.7 oz 2-3 oz 2-2.8 oz 4-8 oz 2-4 oz	12 h 12 h 12 h 12 h 12 h	apply post bloom
Thrips	light-skinned apples, nectarines	endosulfan spinosad	Thionex Success	4 lb 4-8 oz	24 h 4 h	<ul style="list-style-type: none"> apply just before bloom or during bloom at dusk or dawn Thionex will also control lygus and campyloomma; toxic to bees
Powdery mildew	apple	potassium bicarbonate myclobutanil trifloxystrobin 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	apply starting at open cluster stage
Fire blight	apple, pear	streptomycin oxytetracycline	Agri-mycin Mycoshield	check label check label		apply within 24 h of a wetting event only if fire blight was present last year
Green peach aphid	peach, nectarine	acetamiprid imidacloprid	Assail Provado	8 oz 4-8 oz	12 h 12 h	
Lygus bug	peaches	azadirachtin beta-cyfluthrin cyfluthrin pyrethrin	Aza-Direct Baythroid Tombstone Pyganic	1-2 pints 2-2.4 oz 2-2.4 oz 4.5-18	4 h 12 h 12 h 4 h	OMRI certified organic restricted use product restricted use product OMRI certifiec organic
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
Brown mite	all fruit trees	abamectin acequinocyl bifenazate etoxazole fenpyroximate pyridaben spiroadiclofen	Agri-Mek Kanemite Acramite Zeal Fujimite Nexter Envidor	10-20 oz 21-31 oz .75-1 lb 2-3 oz 32 oz 3.5-10 oz 16-18 oz	12 h 12 h 12 h 12 h 12 h 12 h 12 h	<p>best used before mid-June</p> <p>only one application/season two applications/season one application/season</p>

Spray Materials - Residential Applicators

Note that these treatments are only recommended if you know you have the particular pest in your trees.

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

Target Pest	Host	Chemical	Example Brands	Comments
Codling moth	apple, pear	azadirachtin carbaryl malathion pyrethrin spinosad codling moth virus	Azatin Sevin, Bonide Fruit Tree Spray Malathion Concern Multi-Purpose Green Light Virosoft, Cyd-X	<ul style="list-style-type: none"> • Rotate among chemical classes to prevent resistance. • Most are applied every 7 days, but read the label. • codling moth virus is an organic option, but can only be purchased online.
Rosy apple aphid	apple	carbaryl bifenthrin malathion neem oil permethrin	Bayer Advanced Ortho Bug-B-Gone Bonide, Malathion Green Light Lilly Miller	start with a single application
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
Fire blight	apple, pear	biological streptomycin oxytetracycline	Blightban, Bloomtime Ferti-Lome Mycoshield	<ul style="list-style-type: none"> • Biologicals should be applied at 15-20% bloom and again at full bloom • Do not use antibiotic unless necessary; apply within 24 h of a wetting event only if fire blight was present last year
Green peach aphid	peach, nectarine	malathion pyrethrin	Bonide, Malathion Pyganic	start with a single application
Coryneum blight	peach, nectarine, apricot	captan chlorothalonil ziram	Captan Daconil Ziram	one application should be enough unless cool, wet weather continues

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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