

News/What to Watch For:

- No need to treat for codling moth or peach twig borer after September 15.
- Continue protecting peach trunks from greater peachtree borer through September.
- Spider mites numbers are peaking now.
- Commercial growers: Utah County Tree Fruit Tour, Tuesday, August 23

Insect and Disease Activity/Info

APPLE/PEAR

Peach Twig Borer

Most of the warmer northern Utah locations are within or nearing the end of the period of greatest egg hatch, when it is essential to keep the fruit protected. The end of the second generation will occur later in September. So for the first time in many, many years, most areas of northern Utah will not have a partial third generation. In the hot summer of 2007, these same areas had almost 4 full generations of codling moth.

In general, keep fruit protected up until September 15. The shorter days and cooler nights will prevent any successful egg hatch after that time.

Pear Psylla



Pear psylla is a pest that is around all season, from April to October. It is a sporadic pest of pear in Utah, but where present, it can be difficult to control if it gets out of hand. At this time of year, a variety of life stages can be found. Nymphs are cream colored to small and brown, and typically feed on the undersides of leaves, sucking sap and excreting honeydew. Heavy feeding can lead to necrotic lesions on pear leaves.

Treatment: Commercial growers can use Nexter (PHI 7 days) plus 0.5% oil. Imidacloprid (PHI 7 days) plus 0.5% oil will primarily target the youngest nymphs. Backyard growers can use acetamiprid (Ortho Max) or 1% oil. If the problem is severe, apply lime sulfur after harvest to reduce overwintering psylla.

Bitter Pit of Apple



Lack of calcium in apple fruits can result in a physiological disorder of the fruit where depressed, brown lesions form on the skin, known as bitter pit. The lesions are located mainly on the calyx end of the fruit and are circular in shape. Lesions become worse after storage, turning dark brown to black.

Bitter pit can usually be found throughout an orchard and is most common on trees with low fruit set, excessive vigor, irregular soil moisture, or a certain variety. Granny Smith, Golden Delicious, Mutsu, Gravenstein, Yellow Newtown, Jonathan, and Red Delicious are among the more susceptible varieties, although almost any young, extremely vigorous tree may exhibit symptoms.

Treatment: Calcium sprays have been shown to reduce bitter pit symptoms. Ideally, sprays should be spaced throughout the season, starting 1-2 weeks after bloom and continuing monthly until harvest. However, if bitter pit has been a nagging

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problem in your orchard and you have not applied calcium yet, consider 1-2 calcium sprays on expanding fruit before harvest (target the fruit, not the foliage). In some studies, calcium in the form of calcium nitrate has shown to work better when applied as late sprays (do not spray at temps above 80-85F). Avoid spraying Crispin and Golden Delicious with calcium nitrate, since fruit damage may result. After harvest, a 4% calcium chloride dip is also effective. (Store fruit immediately and wash before eating.) (Calcium chloride is corrosive to metal.)

For the best bitter pit prevention, an integrated approach of the following cultural practices is important to prevent bitter pit:

- during irrigation season, avoid wide fluctuations in soil moisture
- do not over-fertilize to avoid vigorous growth and oversized fruit
- do not over-prune
- try to prevent biennial bearing through proper thinning and pollination practices
- harvest at optimal timing because late harvested fruit is prone to bitter bit
- calcium sprays (calcium chloride, calcium nitrate, STOP-IT, Nutri-Cal, Miracal, etc.) should be applied monthly throughout the growing season only if the above practices do not alleviate the problem

San Jose Scale



If you have San Jose scale, you will have noticed small white pimples with a purple halo on your fruit by now. These are the immobile bodies of the scale insect, feeding sap from fruit, twigs, and scaffold limbs. This insect is best treated by targeting the newly hatched nymphs (crawlers), which are more susceptible to insecticides than the armored adults. Crawlers hatch at two different times during the growing season. One hatching occurred in June, and the second is occurring now. If you have an extremely high population, or did not treat for the first generation of crawlers, consider a single insecticide application according to the timing:

Box Elder County: September 12

Cache, Wasatch counties: no second generation

Carbon, Uintah counties: no second generation

Davis County: September 7

Salt Lake County: Aug. 31

Utah County: Sept. 3 (Payson) Sept. 10 (Orem) - Sept. 22 (American Fork)

Weber County: Sept. 6

Stink Bugs in Apple

Late season stink bug damage on apples appears as sunken spots on the skin that are green to brown. The flesh underneath the injury is corky and light colored. When you slice into the flesh, the damaged area forms a conical shape, with the widest area near the skin. Damage mostly occurs near the top third of the apple, and on fruits near the orchard borders or near natural areas.

Stink bugs will continue to move into orchards for the next month, feeding up until harvest, where they are present.

Treatment (commercial growers): Danitol is one option, but keep in mind that it will kill beneficial mites. Beleaf (flonicamid) is another option and has a PHI of 21 days.

Shothole Borer



The second generation of shothole borer (*Scolytus* sp.) is active now through September. This bark beetle attacks scaffold limbs of all tree fruits, preferring weakened or wounded trees. Adults lay eggs on the bark surface and hatched larvae tunnel through the bark to tunnel through and feed on the cambium. Entrance holes will be tiny, and require a hand lens to detect. On stone fruits, sometimes a small amount of sap will ooze out of entrance holes.

Treatment: Control of shothole borer with insecticides is not very effective, but options for commercial growers include Diazinon 50WP (R) or Thiodan 50WP or permethrin or carbaryl residential. The best management strategy is to keep trees healthy, and remove dead or dying trees immediately.

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STONE FRUITS

Peach Twig Borer



Like codling moth, you do not need to spray after September 15. If you have recently (within 1-2 weeks) made an application for the second generation, you are probably all set for the season. But continue to check ripening fruit for larval entries (which look like codling moth entries, with sawdust-like frass).

Greater Peachtree Borer



We are still catching high numbers of peachtree borer in all areas of northern Utah. Maintain protection of the lower trunk of peach/nectarine and apricot (where necessary) through September.

Sometimes larvae enter the tree below the soil-line, so successful attacks may not be obvious. Determine the success of your control program by examining a select amount of trees this fall. Remove dirt from around the base of the tree down to about 4 inches. Look for oozing gum mixed with frass. Where you see entries, you will know that you need to improve your control program for next year.

There's not much you can do about successful entries unless you want to carefully search for the larva under the bark. Cut a small amount of bark away (vertically) to find the larva, or insert a strong but thin wire into the borer hole. Take care in using these methods and do not damage the tree more than a single borer would.

Post-Harvest Tart Cherry Spray

Harvest of tart cherries continues this week, but that does not mean the end of the cherry fruit fly. Adult flies will continue (even increase) emergence for the next month, and any fruit left on the trees will be prime real estate for their larval babies. Washington State University recommends a spray (to dripping) no more than 7-10 days after harvest to reduce the overwintering populations of fruit flies. Options include Dimethoate 400 (1/4 - 1/2 pint per 100 gallons or 2 pints/acre) or Provado (6-8 oz/acre).

If you combine this spray with 1% oil (200 gal/acre), you will also reduce the formation of overwintering powdery mildew inoculum (cleistothecia) as well as spider mites.

Stink Bugs, Leaf-footed Plant Bugs, Boxelder Bugs on Peaches



Late-season feeding by these sap-feeding insects can cause depressed lesions that become watersoaked. Also, their feeding may introduce fruit rot. Adults are moving into orchards now, and activity will escalate through the end of August and into early September. In Utah, we have several species of stink bugs (green and brown) and have not yet detected the introduced brown marmorated stink bug.

Treatment: Insecticides for stink bug management in commercial orchards include Asana, Baythroid, Danitol, Lannate, Leverage, Proaxis, Voliam Xpress, Vydate, and Warrior. Surround (organic, kaolin clay) may provide some repellent activity. Start with treatment of the border rows only. Avoid using a pyrethroid if you have spider mites, as this could make the problem worse.

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Pests That Enter Ripening Peaches



This season looks similar to last season in that the moist spring and dryer summer leads to fruit with split pits or soft sutures. The smallest openings (which would occur at the stem end in the case of split pits) or overripe fruit are invitations for sap beetles, comb-clawed beetles (*Hymenorus* sp.), and earwigs to enter and feed.

Sap beetles are tiny, brown to black beetles that feed on overripe fruit. When the fruit is handled, the beetles will scurry out. Comb-clawed beetles normally feed on organic matter, but there were reports of this insect invading apricots and peaches last year. During harvest, baskets and totes can become infested with beetles, moving from one fruit to another.

Earwigs will not only enter fruit through openings, but feed on soft fruit, leaving deep holes with small openings. Earwig damage is usually easy to tell because they leave behind black dots of excrement on the fruit surface.

Insects that are able to travel in and out of fruit will introduce saprophytic (not disease-causing) fungi into the fruit, causing it to decay. Nothing is worse than a customer biting into a fruit that has penicillium spores on the inside!

Controlling adults can be difficult due to these insects' limited exposure to surface applied insecticides. Carbaryl or spinosad have shown good control for earwigs, and a pyrethroid could be used (if necessary) for other opportunistic insects. The best control measure for sap beetles and other opportunistic insects is good sanitation. Any damaged, splitting, or overripe fruit should be pulled from the tree and dropped to the ground immediately. On smaller farms or where possible, remove the fruits from the orchard.

Spider Mites



Spider mites (two-spotted and McDaniel) are peaking now in tart cherry, peach, and apple orchards now due to the prolonged hot, dry weather. Use of broad-spectrum pesticides early in the season (pyrethroids, carbaryl) will also contribute to spider mite activity because they kill predatory mites. Starting in early September, mites will change over to their overwintering adult forms, which are orange in color, and migrate to groundcover.

View the undersides of leaves with a hand lens to see if a treatment is necessary. In general, a late-season threshold for most fruits would be an average of 10-30 mites per leaf (or when symptoms are seen on outer leaves) and for peaches, about 30 per leaf. Pear leaves infested with mites will turn black, and newer foliage may become distorted.

The best option for treatment is 1% horticultural oil, sprayed to dripping. A second application 10-14 days later may be required for heavy infestations. Overwintering forms are resistant to oil.

Walnut Husk Fly

Walnut husk flies will be actively flying and laying eggs through October. Some areas are trapping large numbers (more than 100/week), so those who wish to treat their walnuts should continue treatments until one month before harvest. (However, if you do not mind the extra work in removing the damaged husk, treatment of backyard trees is not always necessary.)

Degree Day Accumulations and Insect Development

Upcoming Monitoring/Insect Activity

Pest	Host(s)	DD/Monitoring Action
Spider mite	all fruit trees	Populations will continue to build, and then decline in September
Codling moth	apple fruit	No third generation in northern Utah
Coryneum blight	peach, apricot	New infections occur on fresh leaf scars in the fall
Peach twig borer	peach, nectarine, apricot	No third generation in northern Utah
Peach powdery mildew	peach	Look for powdery lesions (peach powdery mildew) or rust-colored lesions (apple powdery mildew)
Cherry powdery mildew	cherry	Treat powdery mildew before fall to prevent formation of overwintering fruiting bodies (cleistothecia)
Western cherry fruit fly	cherry	Adult flies continue laying eggs through September (on unharvested fruit)

Degree Day Accumulations and Pest Phenology, through July 28

Click [here](#) for information about degree days.

County	Location	Codling Moth (1st Generation)			Peach Twig Borer (1st Generation)		
		DD (post biofix)	% Moth Flight	% Egg Hatch	DD (post biofix)	% Moth Flight	% Egg Hatch
Box Elder	Perry	1698	92	70	1465	94	51
	Tremonton	1441	66	27	---	---	---
Cache	River Heights	1416	62	23	1080	19	1
	Smithfield	1355	52	15	1027	12	0
Carbon	Price	1575	82	48	1269	63	12
Davis	Kaysville	1493	76	34	1297	70	15
Grand	Castle Valley	2585	77	36	2184	45	8
Iron	Cedar City	1554	80	44	1404	88	37
Salt Lake	Holladay	1665	90	64	1476	95	55
	West Valley City	1836	98	86	1646	99	86
	West Jordan	1722	93	71	---	---	---
Tooele	Erda	1635	87	56	1539	98	69
	Tooele	1761	95	76	1690	0	91
Uintah	Vernal	1593	84	51	1349	79	24
Utah	Alpine	1396	59	19	1021	27	1
	American Fork	1568	82	47	1407	89	41
	Genola	1735	93	72	1378	84	32
	Goshen	1115	14	1	868	1	0
	Lincoln Point	1656	90	62	1523	97	65
	Lindon	1673	90	64	1417	89	41
	Provo	---	---	---	1528	98	67
	Payson	1597	85	53	---	---	---
	Santaquin-West	1583	83	50	1155	35	3
West Mountain	1529	78	41	---	---	---	
Weber	Pleasant View	1710	92	70	1503	96	61
Wasatch	Heber City	1208	27	3	---	---	---
Wayne	Capitol Reef	1464	70	31	---	---	---

Spray Timing

Codling Moth - Continue to apply your chosen material(s) at the interval provided on the label. until Sept. 15.

County	Location	Period of Greatest Egg Hatch: 2nd Generation (1320-1720 DD)
Box Elder	Perry	past
	Tremonton	Aug 11 - Aug 29
Cache	River Heights	Aug 12 - Sept 2
	Smithfield	Aug 14 - Sept 4
Carbon	Price	Aug 5 - Aug 25
Davis	Kaysville	Aug 5 - Aug 25
Grand	Castle Valley	past
Iron	Cedar City	Aug 5 - Aug 24
Salt Lake	Holladay	Aug 1 - Aug 18
	West Valley City	past
	West Jordan	past
Tooele	Erda	Aug 3 - Aug 19
	Tooele	past
Uintah	Vernal	Aug 3 - Aug 23
Utah	Alpine	Aug 12 - Sept 1
	American Fork	Aug 5 - Aug 22
	Genola	past
	Goshen	Aug 25 - Sept 16
	Lincoln Point	Aug 2 - Aug 19
	Lindon	past
	Payson	Aug 4 - Aug 24
	Santaquin	Aug 5 - Aug 22
	West Mountain	Aug 5 - Aug 24
Weber	Pleasant View	past
Wasatch	Heber City	Aug 22 - Sept 23
Wayne	Capitol Reef	Aug 9 - Aug 26

Peach Twig Borer - The second generation egg hatch will end after mid-September for most locations. You do not need to apply an insecticide after Sept. 15.

County	Location	Start sprays, 2nd Generation (1200 DD)
Box Elder	Perry	past
Cache	River Heights	Aug 21
	Smithfield	past
Davis	Kaysville	past
Grand	Castle Valley	past
Iron	Cedar City	past
Salt Lake	Holladay	past
	West Valley City	past
Tooele	Erda	past
	Tooele	past
Uintah	Vernal	past
Utah	Alpine	Aug 24
	American Fork	past
	Genola	past
	Goshen	Aug 31
	Lincoln Point	past
	Lindon	past
	Provo	past
	Santaquin	past
Weber	Pleasant View	past

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 + chlorantraniliprole	4-7 oz	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+ chlorantraniliprole	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	
Stink Bugs	apple, peach	Asana	esfenvalerate	see label	12 h	apply as needed after scouting; Asana PHI: 14 d peach, 21 d apple Beleaf PHI: 14 d peach, 21 d apple
		Beleaf	flonicamid	2-2.8 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	<i>Conventional</i>		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	
		<i>Soft/organic</i>		
		hort. oil (1%)	Many products	
	spinosad	Green Light, Gardens Alive Bull's Eye		
Peach twig borer	peach, nectarine	<i>Conventional</i>		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	
		<i>Soft/organic</i>		
		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	
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	

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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