EXTENSION
UtahStateUniversity

Tree Fruit IPM Advisory

UTAH PESTS

Weekly Orchard Pest Update, Utah State University Extension, **July 29, 2015**

News/What to Watch For:

After tart cherry harvest, apply a spray of 1 to 1.5% oil in mid to late August to reduce powdery mildew spores and spider mite populations.

Now is a good time to collect foliage for nutrient analysis by the USU Analytical Lab (www.usual.usu.edu).

Keep peach and apple protected from internal caterpillars through harvest or until Sept. 15, whichever is earlier.

Watch apple and pear fruit for small white "pimples" with a purple halo; this is San Jose scale.

Updated Codling Moth and Peach Twig Borer Dates, and Residential Products, pgs 6-8.

JUST THE BASICS: Current Treatments

APPLE & PEAR

- Continue protecting fruit from *codling moth*.

PEACH/NECTARINE, APRICOT

- For *coryneum blight*, apply fungicide after each 4-hour rainfall (if disease is already present).
- Second generation of *peach twig borer* is underway and softer fruit is more susceptible. See page 7.

WALNUT

- *Walnut husk fly* peak emergence will occur in early to mid August. Keep nuts protected until a month before harvest.

Insect and Disease Information

: *information for residential settings* : *information for commercial orchards*

APPLE and PEAR

Pear Psylla

Hosts: pear

Pear psylla is a pest that occurs sporadically in Utah. Where present, its feeding causes scorching of the pear foliage and it produces large amounts of honeydew. These symptoms and signs would be clearly evident by now. If left unchecked, pear psylla can build to damaging levels and be difficult to manage.

Pear psylla is present all season, from April to October. At this time of year, a variety of life stages can be found, including the flying black adults, eggs, newly-hatched nymphs, and older nymphs. The nymphs are cream colored to brownish-red, and are found feeding on the undersides of leaves, sucking sap and excreting honeydew.

Pear psylla feeding can cause foliage to scorch

The best timing for treatment is in spring, but if necessary, there are some options to use now (see next page).

Insect and Disease Activity, continued

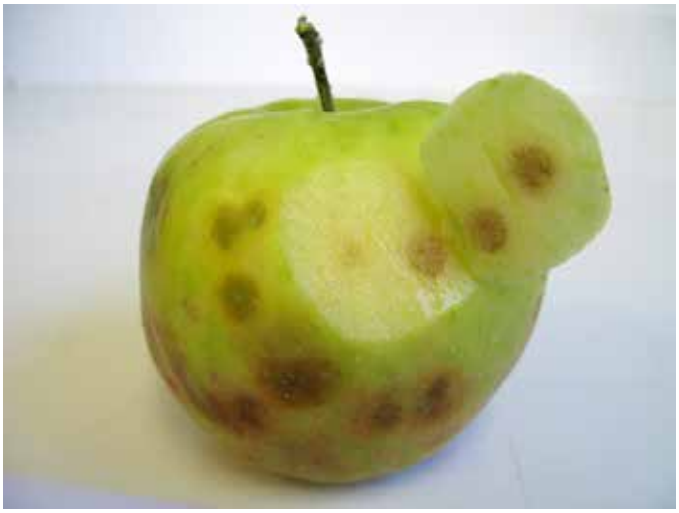
Commercial growers can use products listed in the 2015 Intermountain Tree Fruit Guide, page 86 of the pdf.

Backyard growers can use acetamiprid (Ortho Fruit and Vegetable Insect Control) or 1% oil (applied in the evenings when temperatures are below 85°F).

If the problem is severe, apply carbaryl (Sevin) plus 1% oil after harvest to reduce overwintering psylla.

Bitter Pit of Apple

Hosts: apple



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

Bitter pit usually occurs on trees with low fruit set, excessive vigor, irregular soil moisture, or on certain varieties. 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.

Calcium sprays (calcium chloride, calcium nitrate, STOP-IT, Nutri-Cal, Miracal, etc.) 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 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 80-85°F).

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. (Note that calcium chloride is corrosive to metal.)

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

- avoid wide fluctuations in soil moisture
- do not over-fertilize to avoid vigorous growth and over-sized 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 more prone to bitter bit

PEACH/NECTARINE, APRICOT, CHERRY

Peach Silver Mite

Hosts: peach

peach silver mite is a minor pest that rarely needs to be treated; it is microscopic and feeds on the under-sides of leaves, causing a silver hue (shown on top leaf)

Peach silver mite is a microscopic mite that feeds on the bottoms of leaves. Where it occurs, it is present all season, but only becomes noticeable in mid-summer when populations build to high numbers in the heat. Their feeding causes leaves to look silvery in appearance.

Trees can tolerate high populations. In Utah, we have never seen injury that is so bad that it warrants treatment (wilted leaves and early leaf drop). These mites, in fact, are serving as an important food source for predatory mites and for the predator, Stethorus lady beetle, both of which also feed on spider mites, which are a much more severe pest.

Insect and Disease Activity, continued

Peach Twig Borer

Hosts: peach/nectarine, apricot

Most locations in northern Utah are at the beginning, or in the midst, of 2nd generation egg hatch (see page 7). At this time of year, twig borer larvae will seek out soft fruit, and tunnel inside to feed. Early peaches and apricots can be infested in areas of high population.

Our monitoring traps, which are located in commercial orchards in Box Elder and Utah counties, have had low captures of moths, probably due to the cooler nights. However, it is important to base your decision on whether to treat, on your own experience. If you had infested fruit in the past, consider at least one application (if not applied already), especially if you have early peaches.

If harvest has begun, select a material that has a shorter pre-harvest interval, such as Assail (or Ortho Fruit, Flower and Vegetable), Belt, Intrepid (all can be applied up to 7 days before harvest), or Entrust (or backyard spinosad products) (1 day).

Western Cherry Fruit Fly

Hosts: cherry

Research out of Michigan State University has shown that cherry fruit fly flight peaks after harvest, and untreated fruit left on the trees are prime targets for infestation. Their research also shows that the majority of flies infesting trees or orchards originate from within the site.

The bottom line is: untreated fruit that remain on the tree after harvest represents a source for infestation the following season.

MSU Entomologist Larry Gut, has shown that a post-harvest application of imidacloprid (Admire, or generics) within seven days after harvest, has the potential to reduce fly populations for the following year, especially in orchards with high post-harvest catches. Dimethoate is another option.

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.

Backyard growers should remove and destroy all fallen fruit, and if possible, pick your cherry trees clean to remove egg-laying sites for late-emerging fruit flies. Please play your role in keeping your trees clean of this pest that can devastate a commercial growers' crop.

Earwigs

Hosts: primarily peach; all fruit can be affected

Earwigs cause a small but deep pit in the surface of fruits, usually surrounded by black frass pellets (excrement).

The wet May has resulted in very high populations of earwigs throughout northern Utah. While the fruit is still hard, earwigs feed on leaves or other insects, and many have been observed in peach trees in Utah and Box Elder counties.

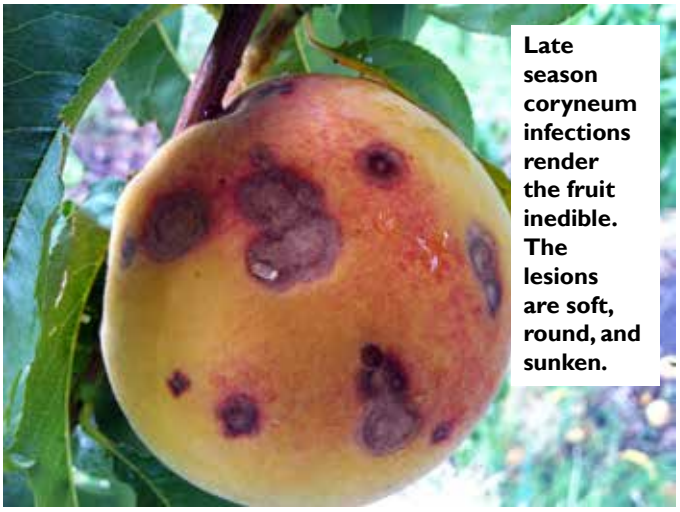
Once the fruit softens, they will enter not only through existing openings, but will chew their own holes, leaving deep pits. Earwig damage is usually easy to diagnose because they leave behind black dots of excrement on the fruit surface.

Controlling adults can be difficult due to their limited exposure to surface applied insecticides. Carbaryl or spinosad have both shown good control for earwigs. Either product should be applied just before the peach fruits start to soften.

Insect and Disease Activity, continued

Coryneum Blight

Hosts: peach/nectarine, apricot



Late season coryneum infections render the fruit inedible. The lesions are soft, round, and sunken.

Coryneum blight is a disease that can be seen season-long: on buds, twigs, leaves, and fruit. Protection against late season infections on ripening fruit is particularly important where there is a history of this disease. During the three to four weeks before harvest, growers should be diligent about monitoring their fruit, and apply a protection where rainfall is forecasted. At least 4 hours of rainfall at 70 F to 80°F are optimal conditions for infections.

New infections are visible on maturing fruit in a matter of 2 to 5 days. They produce sunken, brownish spots up to half-inch in diameter, rendering the fruit unsalable. New infections can rapidly spread within an individual tree.

Commercial growers can see options below; residential growers can use Spectracide Immunox or Captan.

Brown Rot

Hosts: peach

Brown rot lesions usually begin at small areas of injury (from insects, hail), but can quickly consume the fruit.

The disease brown rot (caused by the fungus *Monilinia*) thrives in warmer temperatures, but needs frequent rains during the pre-harvest period (when fruit has begun to soften) to cause disease. It has been found sporadically in Utah's commercial and backyard orchards, and when present and left untreated, can wipe out a crop.

As fruit begins to ripen, it becomes susceptible to infection, and the risk increases each day closer to harvest. Fruit infections are at first firm and brown, with white-gray spores. The fruit then completely decays in just a few days, becoming a wrinkled "mummy". Spores produced on these fruit can then disperse and infect additional healthy fruit.

Where rains are predicted and there is a history of this disease, fungicide applications should begin 2 to 3 weeks before predicted harvest. A second application would occur 9 days later, and a final application the day before or between pickings. See below for options.

Fungicide	Group	PHI	Also Controls	Efficacy	Resistance Risk
Topsin M (thiophanate-methyl)	1	1	powdery mildew	excellent	High
Elite (tebuconazole)	3	0	powdery mildew	excellent	High
Indar (fenbuconazole)	3	0	powdery mildew	excellent	High
Rally (myclobutanil)	3	0	powdery mildew	good	High
Spectracide Immunox (myclobutanil)	3	0	powdery mildew, coryneum blight	good	High
Orbit (propiconazole)	3	0	powdery mildew	excellent	High
Fontelis (penthiopyrad)	7	0	powdery mildew, coryneum blight	good	High
Vangard (cyprodinil)	9	2	---	good	High
Gem (trifloxystrobin)	11	1	powdery mildew, coryneum blight	good	High
Adament (tebuconazole + trifloxystrobin)	3/11	1	powdery mildew	excellent	Medium
Quilt Xcel (propiconazole + azoxystrobin)	3/11	0	powdery mildew, coryneum blight	excellent	Medium
Pristine (boscalid + pyraclostrobin)	7/11	0	powdery mildew, coryneum blight	excellent	Medium
Captan (captan)	M4	0	coryneum blight	fair	Low

Insect and Disease Activity, continued

Update on Fruit Invasives: Brown Marmorated Stink Bug and Spotted Wing Drosophila

Lori Spears, USU Cooperative Agriculture Pest Survey Coordinator, leads a trapping program for invasive pests of fruits in Utah. Her team has installed dozens of traps for both brown marmorated stink bug and spotted wing drosophila in orchards and backyards in Utah.

Brown Marmorated Stink Bug (BMSB)

Commercial sites: no BMSB have yet been found in 2015.

Backyard/Urban sites: dozens have been found in catalpa trees in Salt Lake County, and a new recording in Davis County.

Gary Bernon, USDA APHIS, bugwood.org

BMSB (*Halyomorpha halys*) is an invasive insect that is native to Asia and is a severe threat to fruits, vegetables, and some field crops (e.g., corn). It was first detected in Utah in 2012 and has since been collected in Salt Lake and Utah Counties.

The Utah CAPS team has placed traps in residential settings, commercial orchards, and corn fields in northern Utah. In addition to the traps, they have also been scouting for BMSBs using beating trays (shaking limbs over a cloth tray to dislodge the insects in the tree or plant).

The beating trays have proven to be a far better monitoring tool than the traps, and the team has found many BMSB's, primarily in catalpa trees, including dozens of nymphs and a few egg masses. Most of these finds have been in the origin of discovery, Salt Lake County, but this year, BMSB was also found in Davis County, also in catalpa trees.

Please note that there are other stink bugs in our region that can be mistaken for BMSB, some of which are beneficial predators. If you find a stink bug adult or nymph that you suspect might be a BMSB, place the insect into a spill-proof vial containing alcohol (rubbing or other) or white vinegar. Indicate on the bottle or accompanying letter where and when you collected the insect, and include your contact information in case we have follow-up questions.

Secure the sample using packing material to avoid breakage or damage, and mail the sample to:

Lori Spears
Utah Plant Pest Diagnostic Laboratory
5305 Old Main Hill
Logan, UT 84322

For more information about BMSB, check out USU's Brown Marmorated Stink Bug website.

Spotted Wing Drosophila (SWD)

Commercial sites: no SWD have yet been found in 2015.

Backyard sites: a single fly found in Davis County in late July.

Martin Hauser, California Dept. of Agriculture

SWD (*Drosophila suzukii*) is a vinegar fly that is able to lay eggs inside ripening fruit. In other U.S. states where this pest occurs, SWD has become established in commercial fruit sites, requiring extensive insecticidal treatments. So far, Utah is fortunate in that SWD *larvae* have not yet been found in commercial fruit.

The Utah CAPS team has placed SWD traps in Rich, Cache, Box Elder, Weber, Davis, and Utah counties in commercial fruit orchards, residential settings (backyard gardens), and in wild host habitats. So far in 2015, only a single male has been found, reported from Davis County in late July.

SWD adults were first found in Utah in Davis County in 2010 (and adults have been found in that county every year since). In 2014, SWD adults were found for the first time in Rich, Cache, Box Elder, Weber, and Utah Counties, and their abundances have increased (a total of 3,582 flies were found in 2014, as compared to fewer than 100 flies per year in previous years). The greatest number of flies were captured from August to early fall.

For more information about SWD, check out USU's Spotted Wing Drosophila website.

Spray Timing Information - Codling Moth

Please check this table at each advisory as the information may change as the dates get closer. The forecasts use the average temperature for each site. Fruit should remain protected through each generation according to interval provided on your pesticide label. Many more locations can be viewed on the Utah Climate Center TRAPs website (select location; select codling moth).

Codling Moth, Second and Third Generation

The "period of greatest egg hatch" is the time when 75% of all eggs for the first generation will hatch. Use this information to time your treatment applications. There is very little gap between 2nd and 3rd generations, so keep fruit protected until Sept. 15.

County	Location	2nd Gen. Period of Greatest Egg Hatch	2nd Gen. End of Egg Hatch	3rd Gen. Start of Egg Hatch
Box Elder	Perry	passed	Aug 11	Aug 14
	Tremonton	July 17 - July 29	Aug 14	Aug 17
Cache	Logan Airport	Aug 3 - 15	not yet known	not yet known
	River Heights	July 28 - Aug 9	Aug 28	not yet known
Carbon	Price Airport	July 27 - Aug 8	Aug 29	not yet known
Davis	Kaysville	passed	Aug 8	Aug 13
Grand	Moab	passed	July 29	July 31
Iron	Cedar City Airport	July 28 - Aug 9	Aug 30	not yet known
Salt Lake	Benches/Cooler sites	July 23 - Aug 6	Aug 15	Aug 18
	Most areas	passed	Aug 3	Aug 6
Sevier	Monroe	July 16 - July 29	Aug 15	Aug 19
Tooele	Erda Airport	passed	Aug 13	Aug 16
	Grantsville	passed	Aug 10	Aug 13
Uintah	Vernal Airport	July 30 - Aug 13	not yet known	not yet known
Utah	Alpine	July 21 - Aug 7	Aug 26	Aug 29
	American Fork	passed	Aug 14	Aug 16
	Genola (CHF)	passed	Aug 8	Aug 11
	Lincoln Point	passed	Aug 16	Aug 19
	Orem (Lindon)	passed	Aug 13	Aug 16
	Payson	passed	Aug 11	Aug 14
	Provo Airport	passed	Aug 16	Aug 19
	Provo Canyon	July 17 - Aug 6	Aug 22	Aug 24
	Santaquin (South Ridge)	passed	Aug 15	Aug 18
	Tickville (Oak Springs)	July 29 - Aug 11	Aug 30	not yet known
	West Mountain (Wall)	passed	Aug 16	Aug 19
Weber	Ogden Airport	passed	Aug 11	Aug 14
	Pleasant View	passed	Aug 4	Aug 7
Wasatch	Heber City	Aug 8 - Aug 22	not yet known	not yet known
Washington	New Harmony	July 19 - Aug 1	Aug 18	Aug 21
Wayne	Torrey	passed	Aug 8	Aug 11

Spray Timing - Peach Twig Borer

Peach Twig Borer, Second and Third Generations

Apply at least one application per generation, or two in high population areas. For areas that will have a third generation hatch, apply one treatment to protect fruit to harvest. Use the earlier spray date if you had PTB damage last year and the later date if you had very little damage.

County	Location	2nd Gen. Treatment Start Date Range	Keep Fruit Protected Up To:	3rd Gen. Treatment Start Date Range
Box Elder	Perry	passed	Aug 12	Aug 24 - 30
	Tremonton	passed	Aug 15	Aug 25 - 30
Cache	All Locations	July 28 - Aug 1	Aug 28	none
Carbon	Price Airport	July 28 - 30	Aug 28	none
Davis	Kaysville	passed	Aug 11	Aug 20 - 25
Grand	Moab	passed	July 28	Aug 6 - 9
Iron	Cedar City Airport	July 26 - 30	Aug 28	none
Salt Lake	Benches/Cooler sites	July 13 - 17	Aug 15	Aug 25 - 30
	Most areas	passed	July 31	Aug 8 - 12
Sevier	Monroe	passed	Aug 12	Aug 24 - 30
Tooele	Erda Airport	passed	Aug 11	Aug 20 - 25
	Grantsville	passed	Aug 8	Aug 17 - 21
Uintah	Vernal Airport	July 25 - 29	Aug 27	none
Utah	Alpine	July 22 - 30	Aug 26	none
	American Fork	passed	Aug 14	Aug 24 - 29
	Genola (CHF)	passed	Aug 10	Aug 20 - 25
	Lincoln Point	passed	Aug 16	Aug 26 - 31
	Orem (Lindon)	passed	Aug 5	not yet known
	Payson	passed	Aug 13	Aug 23 - 28
	Provo Airport	passed	Aug 12	Aug 22 - 27
	Provo Canyon	July 22 - 25	Aug 20	Aug 31 - Sept 3
	Santaquin	passed	Aug 16	Aug 26 - 31
	Tickville (Oak Springs)	July 23 - 31	Aug 26	none
	West Mountain	passed	Aug 16	Aug 27 - 31
Washington	New Harmony	passed	Aug 16	Aug 28 - 31
Weber	Pleasant View	passed	Aug 6	Aug 15 - 19
Wayne	Torrey	passed	Aug 22	Sept 3 - 6

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 carbaryl gamma-cyhalothrin malathion *Soft/organic* codling moth virus spinosad	 Ortho Max Flower, Fruit, and Veg. Sevin, Bonide Fruit Tree Spray, etc. Spectracide Triazicide Bonide products, Malathion Cyd-X Green Light, Gardens Alive Bull's Eye, Monterey	**acetamiprid**: every 14 days **carbaryl**: every 14 - 21 days **malathion**: every 7 days; check label carefully as some brands do not apple or pear **gamma-cyhalothrin**: every 14 days **spinosad**: every 7 days **codling moth virus** can only be purchased online
Coryneum blight	peach, apricot	*Conventional* captan myclobutanil	 Captan Spectracide Immunox	**captan**: use as a preventive before a rain **Immunox**: may be applied after a rain
Peach twig borer	peach, nectarine	*Conventional* acetamiprid carbaryl gamma-cyhalothrin malathion permethrin *Soft/organic* kaolin clay spinosad	 Ortho Max Flower, Fruit, and Veg. Sevin, Bonide Fruit Tree Spray, etc. Spectracide Triazicide Bonide products, Malathion Hi-Yield Lawn, Garden, and Livestock Insect Control Surround see 'codling moth' above	see comments under Codling Moth **permethrin**: peaches only; every 14 days; this ingredient is becoming less available in stores and may cause spider mite outbreaks **Surround**: every 3-5 days; works to repel, not kill insects; only moderate control; must purchase online
Walnut husk fly	walnut, peach (rarely), apricot (rarely)	*Conventional* acetamiprid carbaryl gamma-cyhalothrin malathion *Soft/organic* pyrethrin spinosad	 Ortho Max Flower, Fruit, and Veg. Sevin, Bonide Fruit Tree Spray, etc. Spectracide Triazicide Bonide products, Malathion Concern Multi-Purpose see above	start applications when fruit in sunniest locations develops a salmon blush **spinosad**: every 7 days **malathion**: check label carefully as some brands do not list cherry
Earwigs	all, especially peach	*Conventional* carbaryl *Soft/organic* spinosad	 Sevin, Bonide Fruit Tree Spray, etc. see 'codling moth' above	one to two treatments when fruit starts to soften
Spider mites	all	*Soft/organic* oil (1%) insecticidal soap	 Many products, EcoSmart Safer's, Bayer Natria, Bonide	**oil and soap**: allow 4 hours-time for application to dry before temps reach 85F or above.

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