

News/What to Watch For:

Hang codling moth traps within the week in most areas of northern Utah
Examine apple leaves for bright white powdery spores of powdery mildew
Green peach aphid, green and rosy apple aphid, black cherry aphid eggs hatching; white apple leafhopper eggs hatching soon
“More on GF-120 for Residential Growers”, “Using Surround for Organic Use,” page 4
Images of bud stages, page 5
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Bud Stages

The warm weather the past 5 days has really sped up bud development, but expect things to slow back down to “normal” in the next 10 days.

Davis, Box Elder, Salt Lake, Weber counties:

Apples: tight cluster - 1st pink
Apricots: petal fall
Cherries (sweet): first bloom -bloom
Peaches: bloom
Pears: first bloom - full bloom

Cache County:

Apples: green tip - half-inch green
Cherries: green tip
Peaches: 1/4” green
Pears: Bud burst

Utah County:

Apples: 1/2” green - 1st pink
Cherries (tart): green tip
Peaches: bloom
Pears: first bloom

Grand County:

Apples: full bloom
Pears: petal fall

Insect and Disease Activity/Info

Specific spray information found on last two pages.

Powdery Mildew

Powdery mildew was observed on apples in Utah County, and on ornamental pears in Salt Lake County. Apple powdery mildew overwinters on twigs, and as new growth emerges, infections can occur early in the season due to the close proximity of the spores and the optimal weather we’ve been having. If powdery mildew is a problem in your apples or pears, apply fungicides starting at the open cluster stage.



Fire Blight

Pears are blooming in some areas, and with the recent warm weather, it is time to start thinking about fire blight. Each spring, we use a computer model called “Cougarblight” (developed by Tim Smith, WVSU) to estimate risk of fire blight infection of flowers. The model uses daily maximum and minimum temperatures to calculate a 4-day “degree hour” total. Using this model to determine whether or not to spray is tricky, and depends upon:

- 1. Are your trees in bloom?** If not, there is not a risk of blossom infection. The bacteria must be carried (or blown) to the flower stamens, and then water washes the bacteria down.
- 2. Is fire blight present in cankers in your orchard or neighborhood?** The fire blight bacteria is spread short distances by wind-driven rain or by pollinators. If your trees had blight last year, the risk of infections increases this year. If blight is not nearby, risk of infection decreases.
- 3. Is there moisture?** When bacteria lands or is carried to the flower stamens, moisture is needed to wash the bacteria into the flower, thus causing an infection. Moisture may come in the form of rain, sprinklers, or even 2 or more hours of a heavy dew. This is something you would have to gauge on a site-by-site basis.

Insect and Disease Information, continued from previous page

Look at the table on page 3 to see the risk of infection in your area. The following is an explanation of each rating word, provided by Tim Smith:

Low: Wetting of flowers has not led to new flower blight infections in past years.

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

High risk: If unprotected flowers are wetted, infection is possible. If flowers are numerous, 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.

If you see that you do have a risk for infection, note that you have a 24-hour window in which to apply an antibiotic. Most areas (except much of Utah County, which has resistance) can use streptomycin sprays (also available retail). Growers in Utah County should use oxytetracycline (Mycoshield).

You'll notice in the risk descriptions above the mention of "biological" products. These products use non-pathogenic bacteria (*Pantoea agglomerans*) that are antagonistic to or competitive of the fire blight bacteria. Bloomtime and Blightban are two examples. One way they work is to colonize the same area of the blossom as the fire blight bacteria so that there are no resources left for the pathogen. As such, they must be applied to the flowers several days in advance of a possible infection period. The recommendation is to apply at 15-20% bloom, and a second application at full bloom. Three applications is the maximum.

Biologicals for fire blight have not been shown to prevent infections on their own, but they can lessen the incidence of infections. In severely infested sites, they should be used in conjunction with an antibiotic. Several years of regular use can potentially reduce the amount of antibiotic sprays necessary to manage fire blight.

Stone Fruits Oozing in Spring

We have had a few inquiries about apricot, peach/nectarine, or cherry trees oozing. Now is the time of year when these trees start to show these symptoms. Here are some possibilities:

1. Fungal- or bacterial-caused canker called cytospora, or bacterial canker, respectively. Gumming from cytospora is dark amber, gumming from bacterial canker can be similar in color, or a creamy color. Management for both of these is similar: prune out affected limbs; sterilize tools with 10% bleach between cuts; do not prune in wet weather; remove severely affected trees; keep trees healthy with optimal watering, mulching, nutrition, etc.; apply fixed copper in the fall (for bacterial canker); use white tree wrap or watered latex paint to prevent winter injury.
2. Wounds (frost crack, bark injury, etc.) may exude gum in spring. Gummosis not caused by a pathogen will run somewhat clear in color (but will dry to amber).
3. Greater peachtree borer. If you see gumming at the base of the tree (no higher than 8-12"), the gumming may be caused by this borer, and is not a canker. Peachtree borers attack the crown of the tree, and healthy trees can withstand attack. Tree can be protected with a properly timed insecticide (more information in future advisories).
4. Other climatic or physiological problems such as planting too deep, excessive irrigation, severe pruning from April - August, or over-bearing have all been cited as possible causes of abiotic gummosis.

Degree Day Accumulations and Insect Development

Upcoming Monitoring/Insect Activity

By Insect (in order of appearance)		Host
Rosy apple aphid	First egg hatch around 90 DD (base 50)	Apple leaves and fruit
Black cherry aphid	Egg hatch at cherry bud break	Cherry leaves
Green peach aphid	Egg hatch at full bloom	Peach leaves; Nectarine fruit
Campylomma bug	Egg hatch begins at first pink (apples)	Apple fruit
White apple leafhopper	Egg hatch begins at first pink (apples)	Apple leaves
Codling moth	Hang traps at 100 degree days (base 50) First flight at 190-260 DD	Apple fruit

Degree Day Accumulations

March 1 - Wednesday, April 22

County	Location	Codling Moth, Peach Twig Borer (Base 50)	Western Cherry Fruit Fly (Base 41)	Fire Blight Warning (see page 2)
Box Elder	Perry	122	331	April 23: HIGH if blight nearby
Cache	North Logan	80	226	
	Providence	86	223	
	Smithfield	77	230	
Carbon	Price	98	296	
Davis	Kaysville	120	328	April 23-25: HIGH if blight nearby
Grand	Castle Valley	212	545	April 23-26: EXTREME if blight nearby
Salt Lake	Holladay	151	418	April 23-25: EXTREME to HIGH
	West Valley City	125	416	
Tooele	Erda	128	358	
	Grantsville	128	338	
	Tooele	126	411	
Utah	Alpine	101	283	April 25 - LOW
	Genola	152	352	April 23-25: EXTREME to HIGH
	Lincoln Point	117	298	
	Orem	131	361	April 23-25: EXTREME to HIGH
	Payson	135	292	April 23-24: HIGH if blight nearby
	Provo	152	426	April 23-24: HIGH if blight nearby
	Santaquin	132	320	April 23-24 - HIGH if blight nearby
Weber	Pleasant View	114	275	April 23-24: CAUTION to HIGH

“Base 41” and “base 50” refer to the lower temperature threshold at which certain insects develop. For example, no codling moth development occurs below 50 degrees.

Production Information

Residential Orchardists: GF-120, revisited

After the GF-120 article in the last advisory, many residential growers asked if this product is available to them. I have to give a disappointing, yes and no. Yes, you can purchase the product (Steve Regan carries it or can order it in), BUT it is expensive (around \$144), and only sold in a one gallon size or larger.

One option is to go in with your neighbors or friends and divide the gallon up. It will go a long way. According to a representative from Dow, GF-120 could be used an additional 2 years after the first season (3 total) if protected from ex-

treme cold or hot temperatures in storage.

For individual trees, GF-120 could be sprayed with a backpack or hand sprayer. It is recommended to use a 4:1 or 3:1 dilution ratio. As for commercial applicators, the product should be mixed in a large bucket (5 gallons) using a drill and mixer bit (purchase at any home improvement store) prior to placing in the sprayer. Turn the nozzle to the coarsest spray (for the largest droplets), and apply to the crown of the tree. Again, full coverage is not necessary.

Using Surround (kaolin clay) for Organic Insect Suppression

Surround is an organically-registered product that has shown some effectiveness against a few orchard pests, notably for Utah, codling moth and pear psylla. Surround is made from kaolin clay, and when applied, serves as a particle film on the plant tissues. It does not kill insects, but deters their feeding and egg-laying by acting as a barrier, and by irritation. Its drawback is that it also repels beneficials, so should not be used late in the season.

Codling Moth

Washington State University found that 3 applications of Surround per generation will suppress codling moth damage by 50-60%. It reduces adult egg-laying, as well as larval feeding.

For Surround to be effective, it must be thickly applied by petal fall. This is done by spraying two to three applications, one after another. For commercial growers, 50 lb/acre, and for residential, 1/2 lb/gallon in a sprayer. A single application does not provide enough coating to deter pest activity. Each spray should be applied to the point of run-off, and the addition of a spreader-sticker is not necessary. (Adding oil may decrease effectiveness.)

After the initial sprays at petal fall, maintain coverage weekly for first generation codling moth, and change to another product for the second generation.

Pear Psylla

Many growers have incorporated Surround into their pear psylla management plan. It is most effective against adults, by preventing egg-laying either through repellency, or by preventing the psylla from "finding" suitable sites. The optimal time is the prebloom period. Two to three applications of Surround,

applied from dormant or delayed dormant through bloom, has been demonstrated to be the most effective way to reduce pear psylla densities.

Petal fall applications are also effective, but like codling moth control, full coverage is essential. Keep in mind that as the plant and fruit grow, new applications must be made. According to Washington State University, once psylla have survived into later instars, Surround does not appear to be effective and other tactics must be applied.

Drawbacks

Repeated use of Surround has been shown to cause mite flareups. Predatory mites do not occur in the presence of Surround. Other generalist predators such as lacewings are also repelled by Surround. Stick to using Surround early in the season to maintain your local biological control environment.

Another reason for using Surround early in the season only is that scrubbing off the residues at harvest can be problematic. The residue is not harmful (it is found in toothpaste and Kaopectate), but it might be considered unsightly by consumers. The residue is not a problem for processing fruit.

Cost/Availability

Surround is similar in cost to many commonly used broad-spectrum insecticides such as organophosphates or pyrethroids. For residential growers:

Seven Springs Farm: 25 lb bag for \$30

Peaceful Valley Farm & Garden Supply: 25 lb bag for \$30

Gardens Alive: 5 lb for \$25

Bud Phenological Stages

Apple

1/2" green



Tight cluster



First pink



Pear

Green cluster



First bloom



Peach

Pink



First bloom



Bloom



Cherry

Swollen bud



First white



Bud burst



Spray Materials - Commercial Applicators

Target Pest	Host	Chemical	Example Brands	Amount per acre	REI	Comments
Thrips	light-skinned apples, nectarines	endosulfan spinosad	Thionex Success	4 lb 4-8 oz	24 h 4 h	apply just before bloom 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	apply starting at open cluster stage
Fire blight	apple, pear	streptomycin oxytetracycline	Agri-mycin Mycoshield	check label		apply within 24 h of a wetting event only if fire blight was present last year

Spray Materials - Residential Applicators

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

Target Pest	Host	Chemical	Example Brands	Comments
Thrips	nectarine	spinosad	Bonide, Ferti-Lome, Green Light	may require 2 applications 7 days apart; pre-bloom
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 oxytetracycline	<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

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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Editor: Marion Murray, marion.murray@usu.edu
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