

## News/What to Watch For:

First hatch of green peach aphids, rosy apple aphids, white apple leafhopper, and campyloomma bug; green apple aphid nymphs active; hang codling moth traps within the week in most areas of northern Utah

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## Bud Stages

### Davis, Box Elder, Salt Lake, and Weber Counties:

Apples: 1/4” - 1/2”

Apricots: Full bloom

Cherries (tart): Green tip

Cherries (sweet): First bloom

Peaches: Pink

Pears: Bud burst - green cluster

### Cache County:

Apples: Green tip

Cherries (tart): Green tip

Peaches: 1/4” green

Pears: Bud burst

### Grand County (Castle Valley):

Apples: Full bloom

Cherries (sweet): First bloom

Peaches: Full bloom - petal fall

Pears: Full bloom

### Utah County:

Apples: Green tip - 1/2” green

Cherries (tart): Green tip

Cherries (sweet): White bud - first bloom

Peaches: Pink

Pears: Bud burst - green cluster

## Insect and Disease Activity/Info

*Specific spray information found on last two pages.*

### Delayed dormant sprays

For most areas, delayed dormant sprays should already have occurred. If not, peaches up to first pink and apples/pears up to 1/2-inch green can be sprayed.

### Green peach aphid

Green peach aphid eggs will begin forming colonies during bloom, which will be happening in the next week or so. A delayed dormant application would have taken care of many eggs, but keep an eye out for growing colonies near shoot tips from now to shuck split stage to determine if later treatments might be necessary.

### Campyloomma bug (mullein plant bug)

Damage caused by the nymphs of this bug is somewhat rare, but important to recognize. Note that adults of campyloomma bugs are important predators in the orchard. Campyloomma bug overwinters as eggs under bark or bud scales of apple (primarily) and pear trees. Peak egg hatch occurs during bloom. Nymphs (right) feed on blossom calyxes and developing fruit up to about 1/2-inch in diameter, causing dimpling and fruit deformity. The injury at first looks like corky bumps (below), but as fruit grows, develops into large pits. Lighter-skinned apples are more susceptible.



*Treatment:* Do not control this insect if it is not a problem in your orchard; focus control on hot spots only. There are very few control options. Commercial growers can use lorsban at delayed dormant timing, or carzol or thiodan at petal fall timing.

### Codling Moth

It is time to hang monitoring traps (100 DD) now or toward the weekend in all areas of northern Utah except Cache County. It is important to hang them several weeks before moths start to fly to get an accurate biofix.

# Degree Day Accumulations and Insect Development

## Upcoming Monitoring/Insect Activity

By Insect (in order of appearance)	
Pear psylla (PP)	Egg-laying at 40-126 DD (base 41)
Rosy apple aphid (RAA)	First egg hatch around 90 DD (base 50)
Green peach aphid (GPA)	Egg hatch begins at first bloom (peach)
Black cherry aphid (BCA)	Egg hatch at bud break (cherry)
Campylomma bug (CB)	Egg hatch begins at first pink (apples)
White apple leafhopper (WALH)	Egg hatch begins at first pink (apples)
European red mite (ERM) (rare)	First egg hatch around 135 DD (base 50)
Codling moth (CM)	Hang traps at 100 degree days (base 50) First flight at 190-260 DD

By Host (see abbrev. at left)	
<b>Apple</b>	RAA, CM, ERM, CB, WALH,
<b>Apricot</b>	
<b>Cherry</b>	BCA
<b>Peach</b>	GPA
<b>Pear</b>	CM, ERM PP,

## Degree Day Accumulations

March 1 - Tuesday, April 22

County	Location	Codling Moth, Peach Twig Borer (base 50)	Western Cherry Fruit Fly (base 41)
<b>Box Elder</b>	Perry	70	235
<b>Cache</b>	North Logan	43	173
	Providence	46	138
	Smithfield	46	166
<b>Carbon</b>	Price	64	235
<b>Davis</b>	Kaysville	78	258
<b>Grand</b>	Castle Valley	236	540
<b>Salt Lake</b>	SLC	97	304
	West Valley City	97	304
<b>Tooele</b>	Erda	97	314
	Grantsville	118	341
	Tooele	97	313
<b>Utah</b>	Alpine	72	237
	Genola	103	292
	Lincoln Point	---	---
	Orem	82	245
	Payson	89	253
	Provo	110	296
	Santaquin	86	253
	West Mountain	101	280
<b>Weber</b>	Pleasant View	88	284

“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

### Frost Damage

Well, the big news is not insects and diseases but rather recent frost damage. Fruit trees in Utah have been hit hard with several frosts in April, on the 1st, 3rd, 8th, 16th and 17th, and the 22nd. The coldest was April 1, where temperatures dipped down to 13-19°F across northern Utah. And then on April 15, some areas experienced a double whammy of a cold blowing snow late in the day that covered buds, combined with nighttime temperatures ranging from 23-28°F.

Cherries and apricots seem to have been hit hardest. The cold spring has thankfully kept the buds at earlier stages or the damage could have been worse. Tart cherries were at green tip stage, sweet cherries at first bloom, and apricots in full bloom. Some commercial growers in Utah County are reporting 30-80% flower bud kill on tart cherries, and up to 50% loss on sweet cherries. Apricots in Box Elder County were affected with possibly a 50-70% loss.

Apples and pears seem to have been spared, and although peaches were affected earlier in the season, a small loss of flower buds is not as damaging on these trees.

The only good side is that the “weaker” flowers have been killed, and materials applied for thinning may not be as necessary. Also, loss of flowers due to frost on apples, pears, apricots, or peaches may not mean losses in yield as these trees need about 25% of flowers to have acceptable yields. Cherries, however, provide the best yields with a heavy crop of healthy, pollinated flowers.

This story of crop loss has happened throughout localized regions of the upper western US in apricots, peaches, cherries, and apples. Some areas that were projecting a boon in this year's crop will unfortunately now see a loss. We won't be able to tell the full extent of the damage in Utah until fruit set.

To learn more about bud injury, Michigan State University, Van Buren County, has some very useful information at: <http://web1.msue.msu.edu/vanburen/frost.htm>, with images associated with critical temperatures (also listed on next page) as well as images of frost damage.

Note critical temperatures for bud damage on the following page.



*Side flower bud of peach injured by frost*



*Frost damage to apricot. Note the brown anthers.*



*Terminal flower and leaf buds of peach injured by frost*

# Critical Temperatures for Frost Damage on Fruit Trees

From: Penn State University and  
Michigan State University

	Stage of Development	10% Kill (°F)	90% Kill (°F)
<b>Apple</b>	Silver tip	15	2
	Green tip	18	10
	½-inch green	23	15
	Tight cluster	27	21
	First pink	28	24
	First bloom	28	25
	Petal fall	28	25
<b>Peaches</b>	Swollen bud	18	1
	½-inch green	25	15
	Pink	26	21
	Bloom	27	24
	Petal fall	28	25
<b>Pears</b>	Swollen bud	15	0
	Bud burst	20	6
	Green cluster	24	15
	White bud	25	19
	Bloom	28	24
	Petal fall	28	24
<b>Sweet Cherries</b>	Swollen bud	17	5
	Bud burst	25	14
	Tight Cluster	26	17
	White bud	27	24
	Bloom	28	25
	Petal fall	28	25
<b>Tart Cherries</b>	Swollen bud	15	0
	Bud burst	26	22
	Tight cluster	26	24
	White bud	28	24
	Bloom	28	24
	Petal fall	28	24
<b>Apricots</b>	Swollen bud	15	---
	Calyx red	20	0
	First white	24	14
	First bloom	25	19
	Full bloom	27	22
	Post bloom	27	24

# Bud Phenological Stages

## Apple



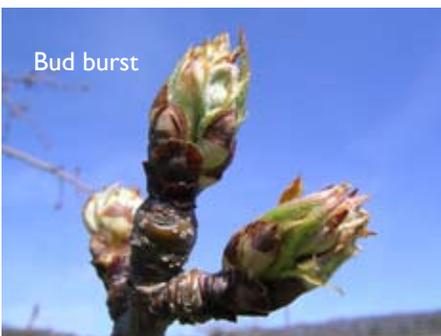
## Cherry



## Peach



## Pear



## Apricot



## Spray Materials - Commercial Applicators

*For delayed dormant timing (too late in some areas; peaches up to pink and apples/pears up to 1/2" green)*

Target Pest	Host	Chemical	Example Brands	Amount per acre	REI	Comments
San Jose scale	pome and stone fruits	hort. oil alone or with: lime sulfur pyriproxyfen methidathion	Esteem Supracide	6-12 gallons	varies 12 h 2-14 d	good coverage essential; re-search has shown good results with Esteem and oil
Aphids	apple, cherry, peach	hort. oil alone or with: chlorpyrifos	Lorsban	6 gal 4 pints	varies 4 d	good coverage essential
Peach twig borer	peach, nectarine, apricot	hort. oil plus: esfenvalerate spinosad spinetoram	Asana Success Delegate	6-8 oz 4-8 oz 3-7 oz	12 h 4 h 4 h	
Pear psylla	pear	hort. oil with: esfenvalerate lime sulfur kaolin clay permethrin lamda-cyhalothrin	Asana  Surround Ambush, Pounce Warrior	4-6 gallons 3 qts 1 pint 11 gal see label 2.5-5 oz	varies 12 h  4 hr 12 hr 1 day	good coverage essential  Surround (organic) must be applied up to 3 times before first bloom.
Pearleaf blister mite	pear	hort. oil with: carbaryl	Sevin	4 gal 4 pints	4 h 12 h	
Coryneum blight (shot-hole)	stone fruits	copper sulfate fixed copper chlorothalonil ziram	COCS, Kocide, etc. Bravo, Echo Ziram	varies varies 3-4 pints 6-8 lbs	1 d 1 d 12 h 48 h	copper can be injurious to plant tissues; fixed copper less so. Do not use after green tip stages. Be sure tank is always agitated during sprays.
Fire blight	apple, pear	fixed copper	many	varies	1 d	do not apply copper after green tip stage because fruit russetting may result

## Spray Materials - Residential Applicators

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

**For delayed-dormant timing (too late in some areas; peaches up to pink and apples/pears up to 1/2" green)**

Target Pest	Host	Chemical	Example Brands	Comments
San Jose scale, aphids	pome and stone fruits	hort. oil alone or with: esfenvalerate malathion permethrin	Ortho bug-b-gone, Ortho Max, etc. Malathion Bug Stop, Spectracide, etc.	
Pear psylla	pear	hort. oil with: esfenvalerate kaolin clay malathion permethrin	Ortho bug-b-gone, Ortho Max, etc. Surround Malathion Bug Stop, Spectracide, etc.	Best to treat before egg-laying and when adults are detected.  Surround (organic) must be applied up to 3 times before first bloom.
Peach twig borer	peach, nectarine, apricot	hort. oil plus: esfenvalerate carbaryl malathion spinosad	Ortho bug-b-gone, Ortho Max, etc. Sevin Malathion Green Light	
Pearleaf blister mite	pear	hort. oil with: carbaryl lime sulfur	Sevin variety	Only a single application is needed
Coryneum blight (shot-hole)	stone fruits	copper sulfate fixed copper	Basic Copper, Microcop COCS, Kocide, etc.	copper can be injurious to plant tissues; fixed copper less so. Do not use after green tip stages.
Fire blight	apple, pear	fixed copper	many	do not apply copper after green tip stage because fruit russetting may result

**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.

### Tree Fruit IPM Advisory

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