



Contact:

Marion Murray
435-797-0776
marionm@ext.usu.edu
www.utahpests.usu.edu/ipm

[click here](#) for archived advisories

Bud Phenological Stages

Development of buds on trees in northern Utah has continued to progress quickly. See last page for pictures.

Davis County, Box Elder County, Salt Lake County:

Apples: Half-inch green+
Apricots: Full bloom
Cherries: Bud burst
Peaches: First pink-first bloom
Pears: Bud burst

Cache County:

Apples: Silver tip - Green tip
Cherries: Swollen bud
Peaches: Swollen bud
Pears: Swollen Bud - Bud burst

Utah County:

Apples: Half-inch green+
Cherries: Barely bud burst
Peaches: First pink-first bloom
Pears: Bud burst

Weber County:

Apples: Half-inch green
Apricot: Bloom
Cherries: Bud burst
Peaches: First pink-first bloom
Pears: Bud burst

Upcoming Monitoring/Insect Activity

| | |
|------------------------|---|
| Codling Moth | Hang traps at 100 degree days (base 50) First flight at 190-260 DD |
| Rosy apple aphid | First egg hatch around 90 DD (base 50) |
| European red mite | First egg hatch around 135 DD (base 50) |
| Campylomma bug | Egg hatch begins at first pink (apples) |
| White Apple Leafhopper | Egg hatch begins at first pink (apples) |

[WSU Crop Protection Guide](#) (for commercial growers) is now posted online.

Degree Day Accumulations

Above average temperatures continued for a second week in a row. Cooler weather this week should slow this trend down.

March 1 - Wednesday, March 28

| County | Location | Base 40 | Base 50 |
|------------------|------------------|---------|---------|
| Box Elder | Perry | 208 | 90 |
| Cache | North Logan | 118 | 46 |
| | River Heights | 154 | 69 |
| Carbon | Price | 248 | 128 |
| Davis | Kaysville | 220 | 97 |
| Salt Lake | SLCC | 262 | 119 |
| | West Valley City | 234 | 102 |
| Utah | Alpine | 202 | 83 |
| | Genola | 251 | 123 |
| | Lincoln Point | 203 | 88 |
| | Payson | 190 | 86 |
| | Provo | 260 | 130 |
| | Santaquin | 210 | 92 |
| | West Mountain | 165 | 81 |
| Weber | Pleasant View | 234 | 110 |

“Base 40” and “base 50” refer to the lower temperature threshold at which certain insects develop. “Base 50” degree days applies to: codling moth, peach twig borer, and greater peachtree borer. “Base 40” degree days applies to: western cherry fruit fly and oblique-banded leafroller.

General Information

The last two advisories I discussed delayed-dormant applications to treat several insects. In most locations, however, it is too late for the horticultural oil treatment:

Apples: swollen bud - 1/4" green

Pears: swollen bud - cluster bud

Peaches and Nectarines: swollen bud
- pink bud

Weather Notice:

Lows did not get down as far as predict-

ed for Wednesday morning, but beware of cold temperatures for much of northern Utah Thursday morning. See the next page for a table on critical temperatures for flower and bud damage.

Orchardists use heaters if available, or turn on wind machines.

Homeowners, unfortunately, have few options. One is overhead irrigation, but this can be costly. The idea is to cover

the buds and blossoms with water that will freeze, forming an ice layer. Remember that water freezes at 32 degrees F, and a permanent, uninterrupted layer of ice throughout the frost period will insulate those flowers and buds. The ice must remain until the daytime air temperatures rise above freezing.

But only a 10% loss of a tree's flowers may be tolerable for some growers.

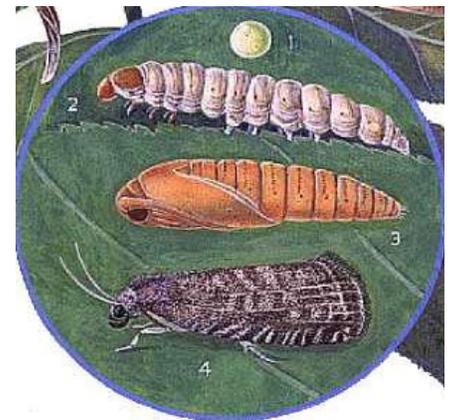
Insect Activity

Codling moth traps should be hung from your apple trees around 100 DD, which has been surpassed for some locations. Hang traps as high as you can comfortably reach (6-7'). Find a sturdy branch and make sure trap openings are not obstructed (hang 2 traps minimum; or 1 trap per 5 acres). Check traps every few days for moths.



For commercial growers planning to use **Pheromone Mating Disruption** for either codling moth or peach twig borer, purchasing the dispensers now will allow you to deploy them as soon as you reach biofix.

Has anyone seen **Oriental fruit moth** (egg, larva, pupa, and adult shown below) in your peaches? If so, please email me at marionm@ext.usu.edu, or call 435-797-0776. Traps should go up at approximately the same time as the codling moth traps.



Disease Activity

Coryneum Blight (Peach Shothole): Peach growers should thoroughly examine trees at this time to look for cankers. Most of these infections probably occurred in the fall and have developed over the winter. A canker may look like a dark patch with reddish borders, and are often centered at buds (shown below). Dead, unopened, gummy buds on year-old wood are fairly diagnostic of coryneum blight in spring. Prune out and destroy all such cankers to reduce the number of spores that are spread by spring rains. A shuck-split spray of Bravo (Daconil for home use), Abound, Captan, Ziram, or Pristine may be necessary in orchards where fall or delayed-dormant fungicide applications were **not made**.

The shuck-split application should provide protection for the newly set fruit. If you had a



problem with this pathogen last year, hopefully you have already applied your delayed-dormant application (see prior advisories).

Fire Blight: Continue to scout your apple and pear trees for overwintered cankers. Often they will be stems or twigs with last year's leaves still attached. Prune them out 8 - 12" below the canker. If they aren't pruned out, they will become an inoculum source for infections this spring. Fire blight bacteria are spread by rain, flies, and pollinators throughout the orchard. More in the next few advisories about treatments.



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) |
|-----------------------|----------------------|---------------|---------------|
| Apple | 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 |
| Peaches | Swollen bud | 18 | 1 |
| | ½-inch green | 25 | 15 |
| | Pink | 26 | 21 |
| | Bloom | 27 | 24 |
| | Petal fall | 28 | 25 |
| Pears | Swollen bud | 15 | 0 |
| | Bud burst | 20 | 6 |
| | Green cluster | 24 | 15 |
| | White bud | 25 | 19 |
| | Bloom | 28 | 24 |
| | Petal fall | 28 | 24 |
| Sweet Cherries | Swollen bud | 17 | 5 |
| | Bud burst | 25 | 14 |
| | Tight Cluster | 26 | 17 |
| | White bud | 27 | 24 |
| | Bloom | 28 | 25 |
| | Petal fall | 28 | 25 |
| Tart Cherries | Swollen bud | 15 | 0 |
| | Bud burst | 26 | 22 |
| | Tight cluster | 26 | 24 |
| | White bud | 28 | 24 |
| | Bloom | 28 | 24 |
| | Petal fall | 28 | 24 |
| Apricots | Swollen bud | 15 | --- |
| | Calyx red | 20 | 0 |
| | First white | 24 | 14 |
| | First bloom | 25 | 19 |
| | Full bloom | 27 | 22 |
| | Post bloom | 27 | 24 |

Additional Information for Backyard Orchardists

Degree Days Demystified

I've had a few questions about degree days, so thought I'd provide a short explanation here.

A degree day (DD) is a measurement of heat units for a given base temperature over time. (A simplified way to calculate degree days is $(\text{daily maximum temperature} + \text{daily minimum temperature})/2 - \text{baseline temperature (50)}$). The actual mathematical calculation is much more complicated than that, though).

In order for us to calculate DD, we need daily maximum and minimum temperatures for a given location. We are able to get this information from sophisticated weather stations and simple thermometers. USU Extension's IPM program manages several weather stations that have been placed within orchards across northern Utah, and several individuals collect max/min temperatures at their homes and send us the information weekly.

The degree days we provide to you are used to predict what insects may be occurring. Since temperature controls the development rate of insects (and flowers), degree days are a useful tool. Scientists have studied many insects (as well as flowers) and compared their development with the amount of degree days. So for example, if I tell you that 200 degree days have accumulated in your area, we'd know that is about the time when the codling moths begin to fly. Basically degree days is a useful TOOL for predicting insect development. The table at the right shows two examples of **insect degree day models**.

What about this "baseline" temperature? Some insects begin their development when temperatures reach 50 degrees or more (codling moth, for example) while other insects begin their development when temperatures are just 40 degrees or more (western cherry fruit fly, for example). For this reason, degree days are different when referring to these two different insects. The "50 degrees" or "40 degrees" is considered the "baseline" development temperature. (Hence the two columns on the advisory on page 1.)

So not only do you need to know what the current degree days are, you need to know what insects to look for at that particular degree day range, as well as the baseline (or lower temperature threshold) for that insect (which we will provide).

Using degree days and an insect model are very important in an IPM program, so that sprays are timed accurately for the insect stage we are targeting, whether it be the eggs, larvae, or adults.

Next week: Information about getting BIOFIX, and what this means.

DEGREE-DAY ACCUMULATIONS REQUIRED FOR EACH STAGE OF DEVELOPMENT

Western Cherry Fruit Fly

| START DATE: March 1 | DD (F) |
|------------------------------|--------|
| First adult spring emergence | 832 |
| Beginning of egg laying | 974 |
| Egg hatch | 1069 |
| 50% Adult spring emergence | 1136 |
| Peak egg laying | 1233 |
| Pupation | 1431 |

Codling Moth

| START DATE: March 1 | DD (F) |
|------------------------------|--------|
| 3% Egg hatch (1ST GEN) | 250 |
| 20% Egg hatch (1ST GEN) | 360 |
| 50% Egg hatch (1ST GEN) | 484 |
| 75% Egg hatch (1ST GEN) | 610 |
| 95% Egg hatch (1ST GEN) | 800 |
| 5% Adult emergence (2ND GEN) | 1000 |
| 7% Egg hatch (2ND GEN) | 1260 |
| 30% Egg hatch (2ND GEN) | 1460 |
| 50% Egg hatch (2ND GEN) | 1580 |
| 75% Egg hatch (2ND GEN) | 1750 |
| 95% Egg hatch (2ND GEN) | 2000 |

Bud Phenological Stages

Apple



Cherry



Peach



Pear



Apricot



Precautionary Statement: All pesticides have benefits and risks, however following the label will maximize the benefits and reduce risks. Pay attention to the directions for use and follow precautionary statements. Pesticide labels are considered legal documents containing instructions and limitations. Inconsistent use of the product or disregarding the label is a violation of both federal and state laws. The pesticide applicator is legally responsible for proper use.

Utah State University is committed to providing an environment free from harassment and other forms of illegal discrimination based on race, color, religion, sex, national origin, age (40 and older), disability, and veteran's status. USU's policy also prohibits discrimination on the basis of sexual orientation in employment and academic related practices and decisions. USU employees and students cannot, because of race, color, religion, sex, national origin, age, disability, or veteran's status, refuse to hire; discharge; promote; demote; terminate; discriminate in compensation; or discriminate regarding terms, privileges, or conditions of employment, against any person otherwise qualified. Employees and students also cannot discriminate in the classroom, residence halls, or in on/off campus, USU-sponsored events and activities. This publication is issued in furtherance of Cooperative Extension work. Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Noelle Cockett, Vice President for Extension and Agriculture, Utah State University.