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# Using Utah TRAPS for Weather Data and Pest Management

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**UTAH TRAPs**

Temperature Resource and Alerts for Pests



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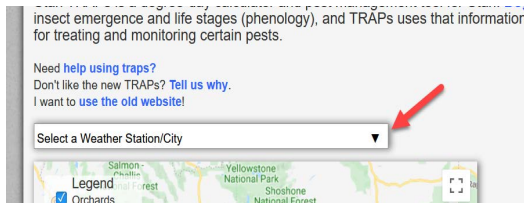
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# Navigating the Map Page

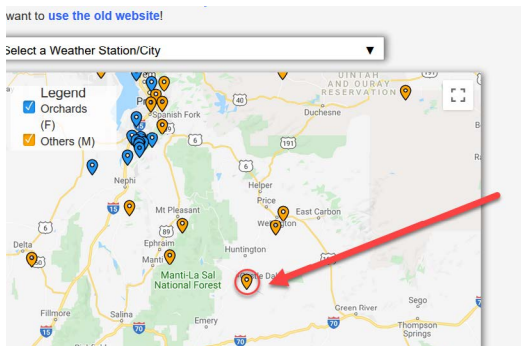
The Weather stations available in TRAPs represent two groups. One group is the USU-owned stations located within orchards, in the fruit-grower network called “FGNet”(F). The other group of stations, “MesoWest” (M), are located at airports, along highways, or on Federal, State, or private land.

## 1. Select a Station



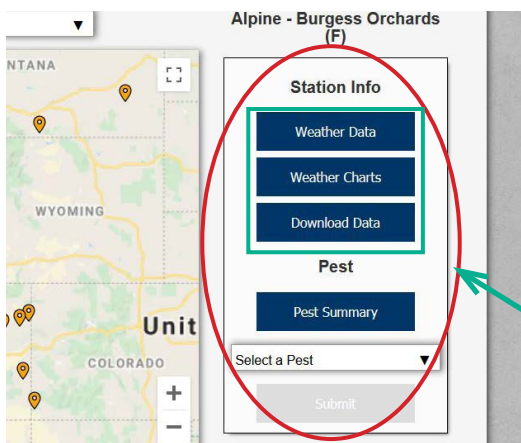
Select from the drop-down menu.

or



Click a station on the map.

## 2. Select Information



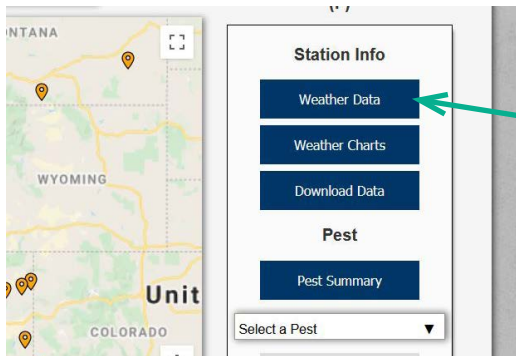
Once you have selected a station, select the type of information you want to know from the boxes on the right side of the map.

These links are only available for the FGNet stations (F).

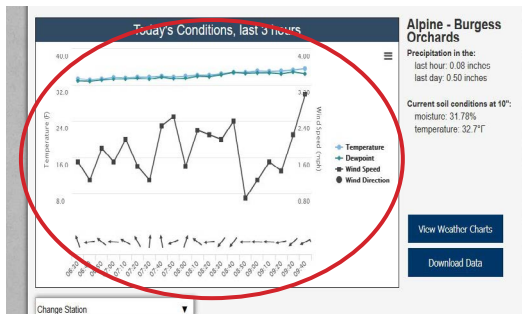
# Weather Data

The *Weather Data* page provides current weather conditions for the last 3 hours in a summary graph and the last 24 hours in a table with more information.

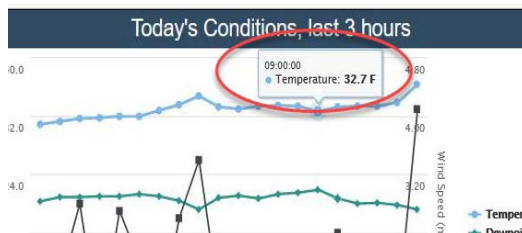
## 1. Current Conditions Graph



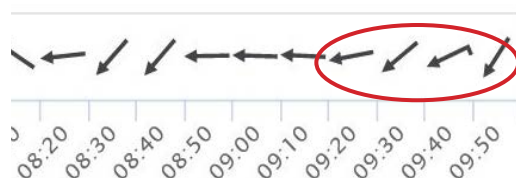
From the map page click on *Weather Data*.



The 3-hour summary graph shows: Temperature, Dewpoint, Wind Speed, and Wind Direction for the last three hours.



Hover over a point on one of the graph lines for more information.



Arrows at the bottom show wind direction, and the tail of the arrow indicates speed.

# Weather Data

## 1. Current Conditions Graph (*Continued*)



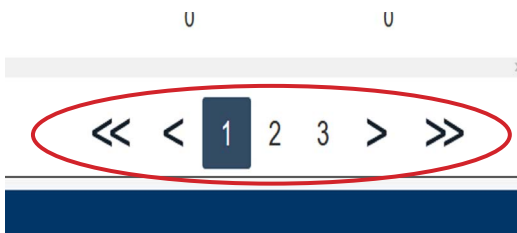
The links on this page for *Weather Charts* and *Download Data* are also available on the map page.

## 2. Table

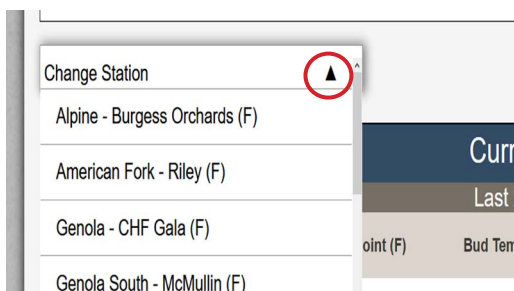
The screenshot shows a table titled 'Current Data Last 24 hours'. The table has columns for 'Date and Time', 'Air Temp (F)', 'Dewpoint (F)', 'Bud Temp (F)', 'RH (%)', 'Wind Speed (mph)', and 'Wind Dir (°)'. The data rows show hourly readings from 02:07:00 to 02:07:20. A red circle highlights the table content.

Date and Time	Air Temp (F)	Dewpoint (F)	Bud Temp (F)	RH (%)	Wind Speed (mph)	Wind Dir (°)
02:07:00 09:00:00	35.9	34.3	34.5	94	2	100
02:07:20 09:00:00	35.6	34.5	34.1	96	3	100
02:07:20 09:30:00	35.3	34.9	33.6	98	2	100
02:07:20 09:20:00	35.1	34.5	33.9	98	1	100
02:07:20 09:10:00	35.0	34.7	33.4	98	3	100
02:07:20 09:00:00	35.1	34.7	33.6	98	1	100
02:07:20 08:50:00	34.8	34.6	34.0	98	1	100
02:07:20 08:40:00	34.8	34.8	32.8	99	2	100
02:07:20 08:30:00	34.5	34.3	32.5	99	2	100
02:07:20 08:20:00	34.7	33.9	32.5	98	2	100

The table below the graph contains data for Temperature, Dewpoint, Bud Temperature, Relative Humidity, Wind Speed, and Leaf Wetness for the past 24 hours. To get an Excel file, go to the *Weather Charts* page or *Download Data* page.



Click arrows to view additional pages of the table.

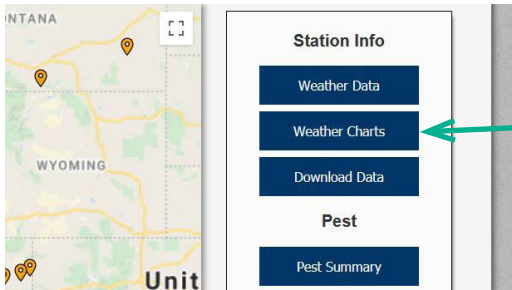


Above the table, click on the drop-down menu to change the location.

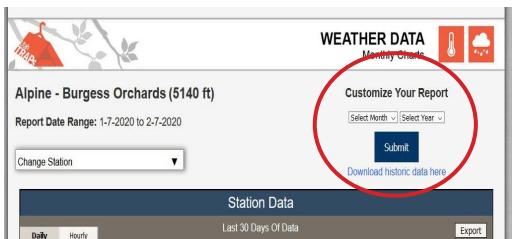
# Weather Charts

The *Weather Charts* page provides weather conditions for the last 30 days. Data can be viewed as hourly or daily data in tables and graphs.

## 1. Selecting Data

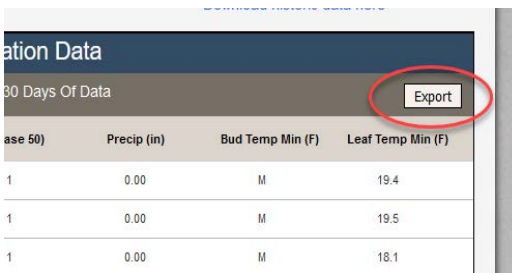


Click on *Weather Charts*.

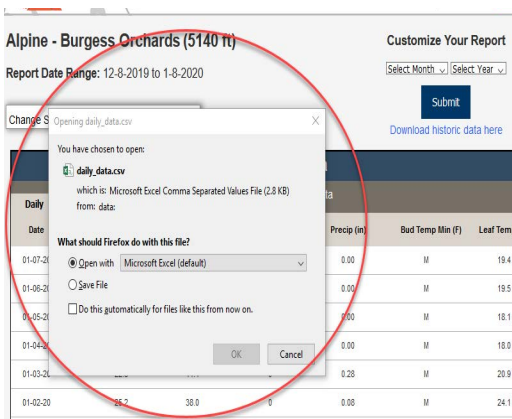


The current view shows data for the last 30 days. Customize your view by selecting a different month and/or year.

## 2. Export Data



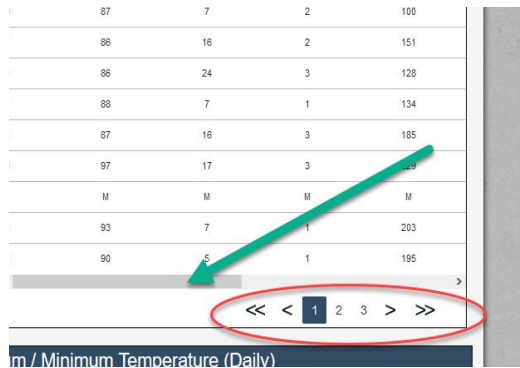
Generate an Excel file of the data in the table by clicking Export.



In the Export dialogue menu, choose which program you would like to use to open the file. To download more data at a time go to the *Download data* page (see page 9).

# Weather Charts

## 3. Navigating the Table

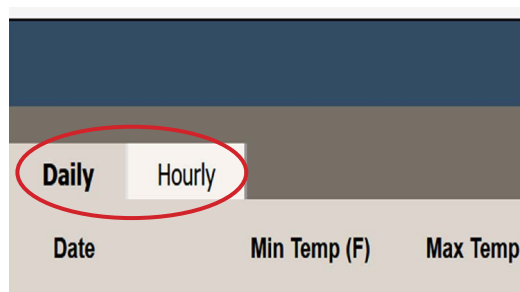


The screenshot shows a table with four columns of numerical data. A green arrow points to the vertical scroll bar on the right side of the table. Below the table, there is a pagination bar with the text '<< < 1 2 3 > >>'. The number '1' is highlighted in a red circle, indicating the current page.

87	7	2	100
86	16	2	151
86	24	3	128
88	7	1	134
87	16	3	185
97	17	3	149
M	M	M	M
93	7	1	203
90	5	1	195

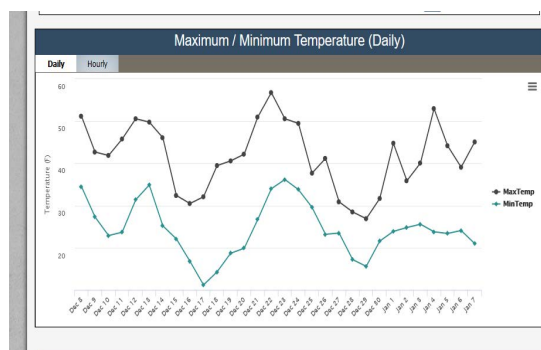
m / Minimum Temperature (Daily)

Use the bar at the bottom of the table to scroll to the right or left to view more data columns. Click on the page numbers or arrows to tab forward.



Switch between the daily and hourly table by clicking on the tabs.

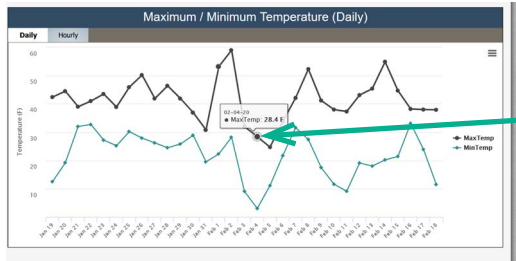
## 4. Navigating the Graphs



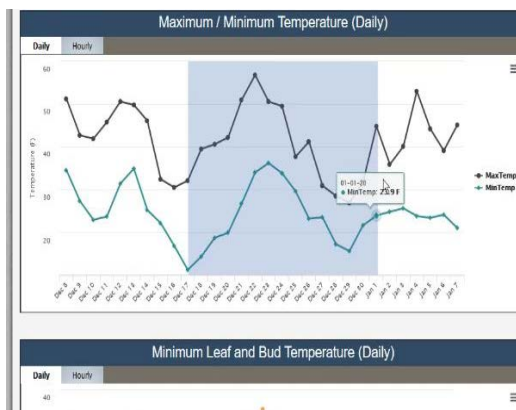
Several graphs of individual data (Temperature, Bud Temperature, Precipitation, Wind Speed, and Evapotranspiration) are located below the table.

# Weather Charts

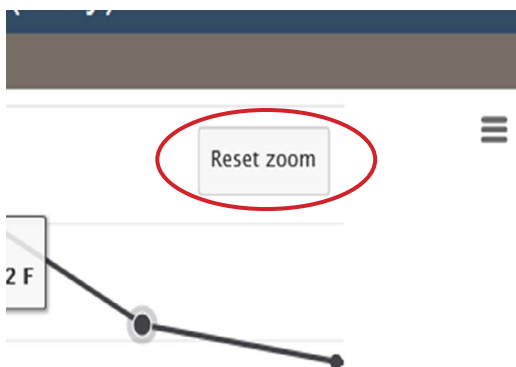
## 4. Navigating the Graphs (*Continued*)



Hover over a graph point for more information.



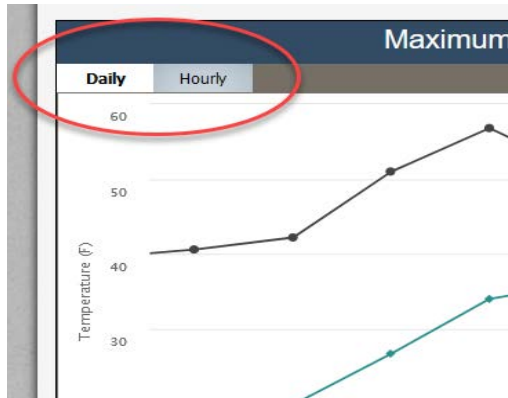
Click and drag to zoom in on the graph. (This feature is available for all graphs on the website).



When zoomed in, click on the reset button to return zoom to normal.

# Weather Charts

## 4. Navigating the Graphs *(Continued)*



Switch between the daily and hourly data by clicking on the tabs.



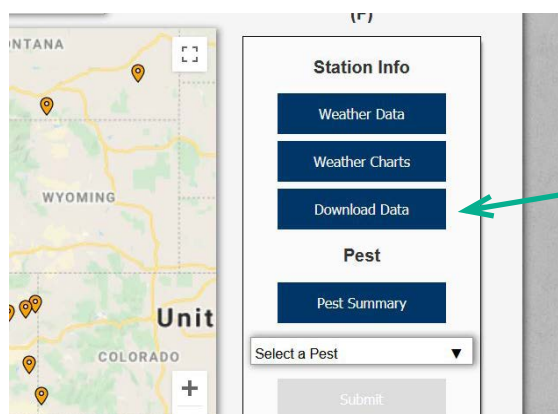
Click on the menu icon (three lines) at the top right of each graph for options to print or download the graph.



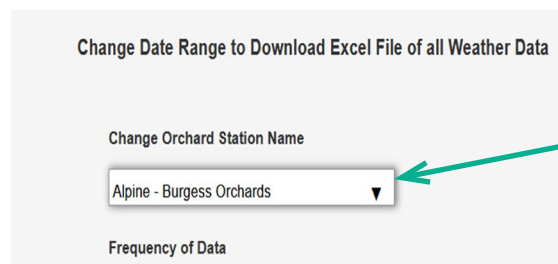
# Download Data

The *Download Data* page allows for you to download 12 months of weather data to Excel.

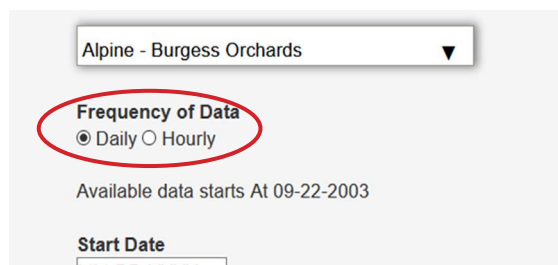
## 1. Downloading Data



Click on *Download Data*.



Click on the drop-down menu to change stations.



Choose between daily or hourly data.

# Download Data

## 1. Downloading Data

Change Date Range to Download Excel File of all Weather Data

Change Orchard Station Name

Alpine - Burgess Orchards ▼

Frequency of Data  
☒ Daily ☐ Hourly

Available data starts At 09-22-2003

Start Date  
MM-DD-YYYY

This information shows when weather station data begins.

Alpine - Burgess Orchards ▼

Frequency of Data  
☒ Daily ☐ Hourly

Available data starts At 09-22-2003

Start Date  
MM-DD-YYYY

February 2020

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

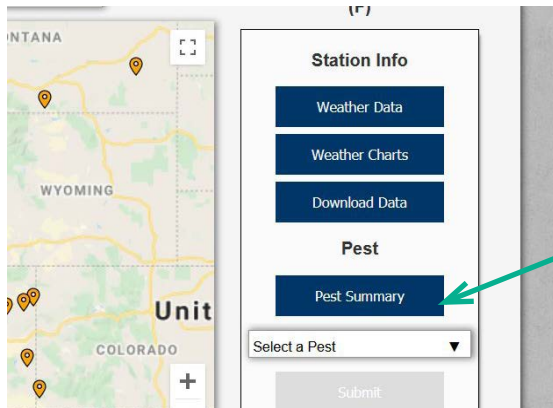
New Features | Terms and Uses | Feedback | Contact Us | Help

Select the start and end date. The maximum amount of data that can be downloaded each time is 365 days.

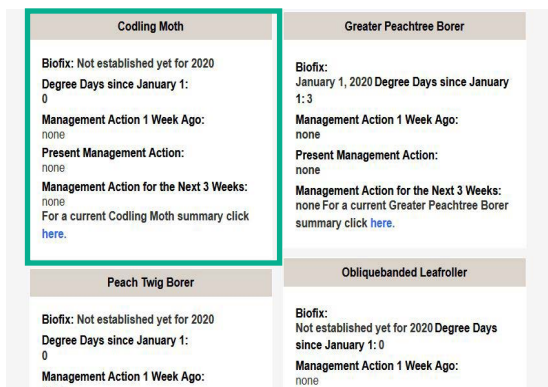
# Pest Summary

The *Pest Summary* page provides an overview of a variety of pest information.

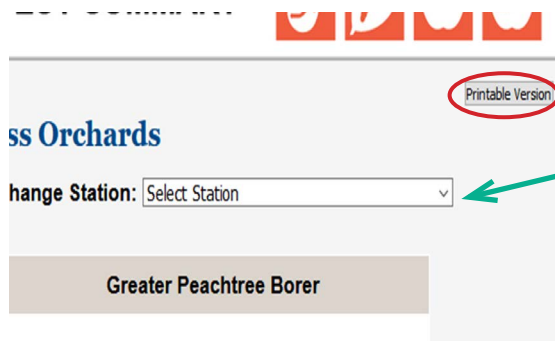
## 1. Layout of *Pest Summary* Page.



Click on *Pest Summary*.



Each box shows a synopsis of a pest.

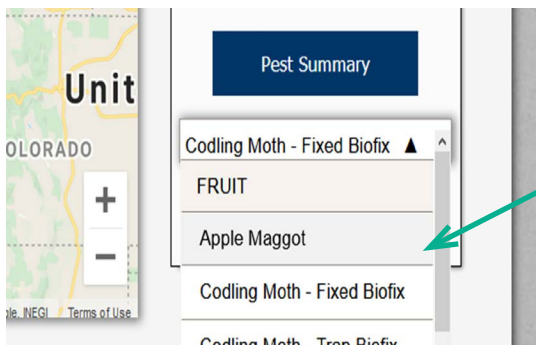


At the top of the page you can access a printable version or change the weather station.

# Pest Pages

After choosing a Pest from the drop-down menu on the map page, management actions will display for that pest and that time of year.

## 1. Example - Apple Maggot



After selecting a weather station on the map page, select a pest from the drop-down menu.

A screenshot of the 'Pest' page for 'Alpine - Burgess Orchards (5140 ft)'. It shows a 'Report Date Range' of 01/01/2020 to 02/10/2020 and a 'Change Pest' dropdown. Below is a table titled 'Degree Day (DD) and Mangagment Actions Report'. The table has columns: Date, Max F, Min F, DD, Source, and Action. The row for 02-10-20 is highlighted in orange. A green arrow points from the text on the right to this highlighted row.

Date	Max F	Min F	DD	Source	Action
02-09-20	41	19	14		
02-10-20	34	14	14	Forecast	
02-11-20	34	19	14	Forecast	
02-12-20	39	20	14	Forecast	

The Pest page opens with the station name and a table of data. On the table, the current date is highlighted in orange.

A screenshot of the same 'Pest' page, but with the table headers 'Max F', 'Min F', and 'DD' circled in red. A green arrow points from the text on the right to the table.

Date	Max F	Min F	DD	Source	Action
02-09-20	41	19	14		
02-10-20	34	14	14	Forecast	
02-11-20	34	19	14	Forecast	
02-12-20	39	20	14	Forecast	

The table shows: Temperatures, Degree Days (DD), and Management Actions.

# Pest Pages

## 1. Example - Apple Maggot (Continued)

Day (DD) and Management Actions (✓) Report

Export

Max F	Min F	DD	Source	Action
91	49	1190		<input checked="" type="checkbox"/>
90	53	1218		<input checked="" type="checkbox"/>
89	52	1245		<input checked="" type="checkbox"/>
82	49	1267		<input checked="" type="checkbox"/>

Depending on the time of season, the table will show management actions on certain dates. Click on the with the orange check box. ✓

06-27-19	89	63	1302
06-28-19	91	54	1330
06-29-19	91	57	1360

**Management Actions**

**Date:** 06-23-19

**Degree Days:** 1200-1300

**Action:** Set out sticky traps

For more information, view the [Fact Sheet](#).

Thresholds: 44.1° F, none  
Calculation Method: Single Sine  
Cutoff: Horizontal

Set Traps 1200 DD after January 1  
Start Date/Biofix:

Model Authors:  
Phenology of ap

After clicking on the orange check box, information will show up in the Management Actions box at the bottom of the page.

For more information, view the [Fact Sheet](#).

Thresholds: 44.1° F, none  
Calculation Method: Single Sine  
Cutoff: Horizontal

Set Traps 1200 DD after January 1  
Start Date/Biofix:

For more information about apple maggot, click on the Fact Sheet link.

**Customize Your Report** ?

Enter new start date (after 09-22-03)  
01/01/2020 2020 ▾

Enter a new end date (in same year)  
02/19/2020

**Submit**

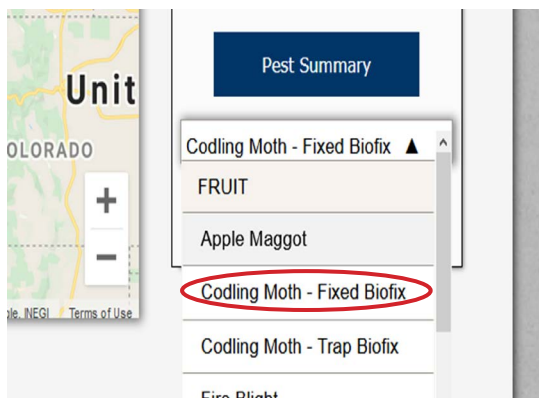
Biofix dates from previous years.

At the top of the page, customize the date range to view past data, or to select a different pest.

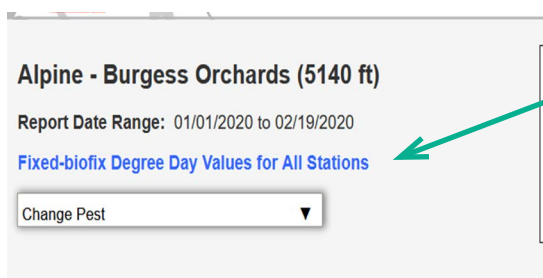
# Pest Pages

In the pest menu on the map page, there are two codling moth choices. The difference between the two is based on how biofix is determined.

## 2. Example - Codling Moth Fixed Biofix



“Fixed Biofix” means that each station has a pre-determined “fixed” biofix, and once the accumulated degree-day value matches the “fixed” value, the codling moth biofix date is set for that station. USU has researched this method, and found it to be as effective as using a trap-based biofix date.



(Optional) After the pest page loads, click on the link to see the fixed degree-day values for all stations, which will open in a pop-up window.

Alpine - Burgess Orchards (5140 ft)  
Report Date Range: 01/01/2020 to 02/10/2020  
Fixed-biofix Degree Day Values for All Stations  
Change Pest

Customization for Moth is cu

Degree Day (DD) and Management Actions Report					
Date	Max F	Min F	% Moth Flight	% Egg Hatch	DD
02-10-20	34	14	0.0	0.0	3
02-11-20	34	19	0.0	0.0	3
02-12-20	39	20	0.0	0.0	3
02-13-20	43	27	0.0	0.0	3
02-14-20	42	22	0.0	0.0	3

A green arrow points from the text on the right to the first row of the table, which is highlighted in orange.

On the Pest page results table, the current date is highlighted in orange.

# Pest Pages

## 2. Example - Codling Moth Fixed Biofix (Continued)

report date range: 01/01/2020 to 01/01/2021

Fixed-biofix Degree Day Values for All Stations

Change Pest

Moth is currently unavailable.

Biofix dates from previous years.


Degree Day (DD) and Management Actions Report

Date	Max F	Min F	% Moth Flight	% Egg Hatch	DD	Source	Action
01-09-20	37	20	0.0	0.0	1	Forecast	
01-10-20	31	19	0.0	0.0	1	Forecast	

This table shows: Temperatures, Degree Days (DD, and Management Actions. Moth Flight and Egg Hatch data are displayed after biofix is set.

Management Actions Report

Min F	% Moth Flight	% Egg Hatch	DD	Source	Action
55	NBE	NBE	1384		<input checked="" type="checkbox"/>
56	NBE	NBE	1402		<input checked="" type="checkbox"/>

Depending on the time of the season, the table will show management actions on certain dates. Click on the row with the orange check box. 

09-29-19 56 32 NaN NaN 2224

Management Actions

Date: 09-28-19

Degree Days: 2160-2220

Action: Third Generation start of egg hatch.

Continue to keep fruit protected through approximately September 15, and you can stop after that time, even if fruit has not been harvested. By mid-September, there is not enough day length to "signal" any eggs on the fruit to hatch.

For more information, view the Fact Sheet.

Thresholds: 50° F, 88° F  
Calculation Method: Single Sine  
Cutoff: Horizontal

Start Date/Biofix: Fixed, site-specific value  
Once this degree day value is reached (after March 1), the model begins. No need

After clicking on the orange check box, information will show up in the Management Actions box at the bottom of the page.

For more information, view the [Fact Sheet](#).

Thresholds: 50° F, 88° F  
Calculation Method: Single Sine  
Cutoff: Horizontal

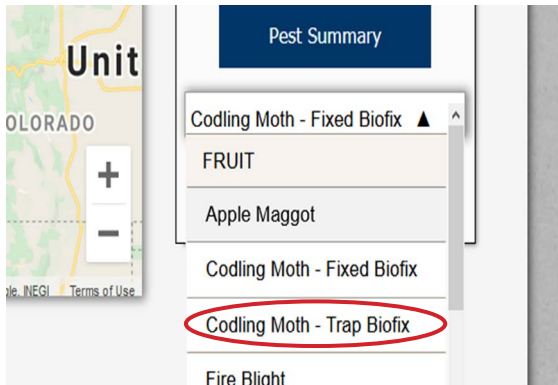
Start Date/Biofix: Fixed, site-specific value based on the location's latitude and elevation  
Once this degree day value is reached (after March 1), the model begins. No need

For more information about codling moth, click on the Fact Sheet link.



# Pest Pages

## 3. Example - Codling Moth Trap Biofix



The second codling moth choice in the pest menu is “Trap Biofix”. Trap Biofix means that a biofix date for each station is manually entered by the Utah Climate Center, based on a trap catch date for that location.

Min F	% Moth Flight	% Egg Hatch	DD	Source	Action
33	NBE	NBE	1301		
55	NBE	NBE	1384		<input checked="" type="checkbox"/>
56	NBE	NBE	1402		<input checked="" type="checkbox"/>

Depending on the time of the season, the table will show management actions on certain dates. Click on the row with the orange check box.

**Management Actions**

Date: 03-12-19  
Degree Days: 5-5  
Action: Hang mating disruption dispensers (where applicable) before biofix (which typically occurs during full bloom of Red Delicious).  
Use pheromone monitoring traps with CM-DA lure.

For more info:  
Thresholds: 50° F  
Calculation Method: Single Sine  
Cutoff: Horizontal  
Set Traps: 150 D  
Start Date/Biofix: trap; input by use  
Model Authors: B  
For Timing Spray  
Hosts: Apple and  
Study Location: L

After clicking on the orange check box, information will show up in the Management Actions box at the bottom of the page.

0.0 0.0 4 30YR Normal

For more information, view the [Fact Sheet](#)

Thresholds: 50° F, 88° F  
Calculation Method: Single Sine  
Cutoff: Horizontal  
Start Date/Biofix: Fixed, site-specific value based on the location's latitude and elevation.

For more information about codling moth, click on the Fact Sheet link.



# Pest Pages

## 4. Example - Fire Blight

Information about the fire blight model only applies when apples or pears are in bloom.



After selecting a weather station on the map page, select a pest from the drop-down menu.

Report Date Range: 01/01/2020 to 02/10/2020

Check your orchard for flowers, including the secondary flowers that develop in May on apples, or into June on pears. If there are no flowers, this model does not apply.

Change Pest

From the drop down menu below, select the fire blight status of your orchard

01/01/2020  
Enter a new end date (in same format)  
02/10/2020  
Submit

Biofix dates from

Degree Day (DD) and Management Actions (🔴) Report						
Fire blight cankers are actively oozing						
Date	Max F	Precip	Max RH	4 Day Risk Value	Blight Potential	Source
02-10-20	34	0.00	63	0	DOES NOT APPLY	Forecast
02-11-20	34	0.00	74	0	DOES NOT APPLY	Forecast
02-12-20	39	0.00	73	0	DOES NOT APPLY	Forecast
02-13-20	41	0.00	77	0	DOES NOT	Forecast

On the Pest page results table, the current date is highlighted in orange.

# Pest Pages

## 4. Example - Fire Blight (Continued)

Degree Day (DD) and Mangagment Actions (🔴) Report				
Fire blight cankers are actively oozing ▲				
Fire blight cankers are actively oozing				
Fire blight was in or around your orchard last season				
No fire blight in or near your orchard last season				
02-19-20	36	0.00	74	0

Select a scenario from the drop-down menu that applies to your orchard.

Change Pest ▼

From the drop down menu below, select the fire blight status of your orchard

Biofix dates from previous years.

Degree Day (DD) and Mangagment Actions (🔴) Report

Fire blight cankers are actively oozing ▼ Export

Date	Max F	Precip	Max RH	4 Day Risk Value	Blight Potential	Source	Action
02-10-20	34	0.00	63	0	DOES NOT APPLY	Forecast	DOES NOT APPLY
02-11-20	34	0.00	74	0	DOES NOT APPLY	Forecast	DOES NOT APPLY
02-12-20	39	0.00	73	0	DOES NOT	Forecast	DOES NOT

This table shows: Temperature, Precipitation, Relative Humidity, and Management Actions.

Export						
Precip	Max RH	4 Day Risk Value	Blight Potential	Source	Action	
0.00	84	23	CAUTION		🟡	
0.00	83	69	CAUTION		🟡	
0.00	74	216	EXTREME		🔴	
0.00	77	356	EXCEPTIONAL		🔴	
0.00	73	446	EXCEPTIONAL		🔴	
0.88	95	428	EXCEPTIONAL		🔴	
0.27	94	278	EXTREME		🔴	
0.37	96	133	HIGH		🔴	

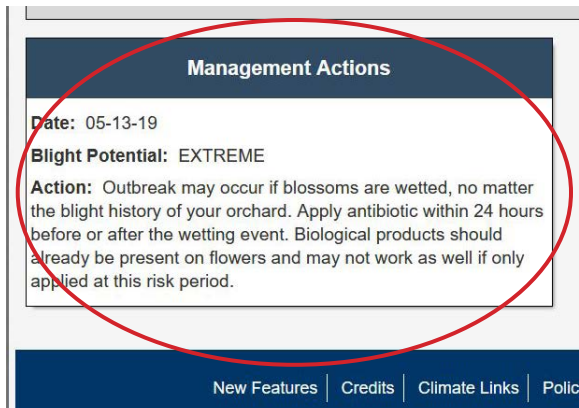
Management actions are determined by a four-day risk value which gives the Blight Potential.

Export						
Precip	Max RH	4 Day Risk Value	Blight Potential	Source	Action	
0.00	77	356	EXCEPTIONAL		🔴	
0.00	73	446	EXCEPTIONAL		🔴	
0.88	95	428	EXCEPTIONAL		🔴	
0.27	94	278	EXTREME		🔴	

Depending on the time of the season, the table will show management actions on certain dates. Click on a row with an action icon.

# Pest Pages

## 4. Example - Fire Blight (Continued)



**Management Actions**

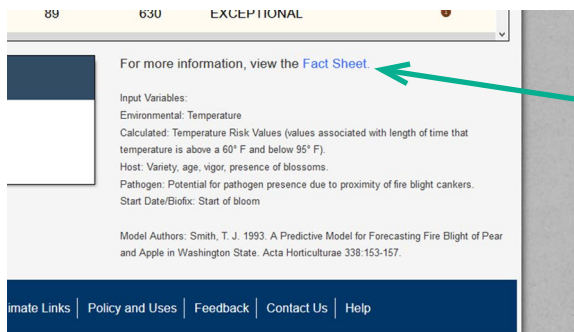
Date: 05-13-19

Blight Potential: EXTREME

Action: 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. Biological products should already be present on flowers and may not work as well if only applied at this risk period.

New Features | Credits | Climate Links | Policy

After clicking on the row, information will show up in the Management Actions box at the bottom of the page.



89 630 EXCEPTIONAL

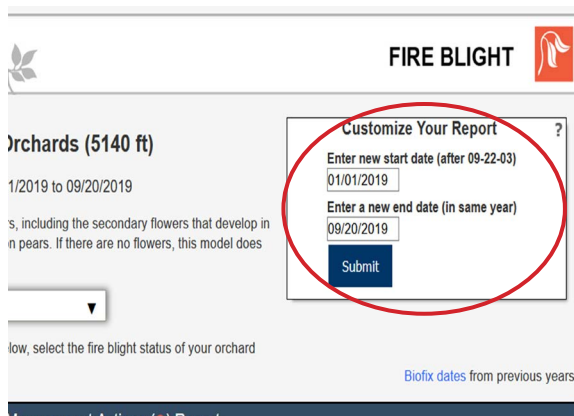
For more information, view the [Fact Sheet](#).

Input Variables:  
Environmental: Temperature  
Calculated: Temperature Risk Values (values associated with length of time that temperature is above a 60° F and below 95° F).  
Host: Variety, age, vigor, presence of blossoms.  
Pathogen: Potential for pathogen presence due to proximity of fire blight cankers.  
Start Date/Biofix: Start of bloom

Model Authors: Smith, T. J. 1993. A Predictive Model for Forecasting Fire Blight of Pear and Apple in Washington State. Acta Horticulturae 338:153-157.

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For a description of the model and the blight potential values, click on the Fact Sheet link.



**FIRE BLIGHT**

Orchards (5140 ft)

1/2019 to 09/20/2019

s, including the secondary flowers that develop in n pears. If there are no flowers, this model does

low, select the fire blight status of your orchard

Biofix dates from previous years.

Management Actions Report

**Customize Your Report**

Enter new start date (after 09-22-03)  
01/01/2019

Enter a new end date (in same year)  
09/20/2019

Submit

(Optional) At the top of the page, customize the date range to view past data, or to select a different pest.