

agweather connection

<http://agweather.mesonet.org/> • Volume 2, Issue 7, August 07

Growing days

DID YOU KNOW the growth of many crops and insects can be predicted by merely tracking air temperature?

Each crop or insect has its own lower air temperature threshold and upper air temperature threshold. It is assumed that no growth occurs outside of this range. This temperature range varies for each plant.

Growing degree day units are calculated by using the maximum daily air temperature, the minimum daily air temperature and the crop's lower temperature threshold. Agweather offers maps that automatically calculate growing degree days, which are available for a variety of crops and insects.

Growing degree day units are used by farmers and gardeners to predict the date that a flower will bloom or a crop will reach maturity. In the absence of extreme conditions such as unseasonable drought or disease, plants grow in a cumulative stepwise manner, which is strongly influenced by the ambient temperature.

For example, corn develops faster when temperatures are warmer and more slowly when temperatures are cooler. A string of warmer than normal days in late spring will encourage faster leaf development than normal.

Below is a chart that lists growing degree day units for some crops and pests. It is important to keep in mind that different varieties reach maturity at different growing degree day units. To find the growing degree day units of a particular variety, contact your seed dealer. ■

Crop	GDD Units to maturity
Alfalfa	250 to 275
Corn	2,300 to 3,000
Cotton	1,700 to 2,100
Peanut	2,000 to 2,600
Sorghum	3,700 to 4,000
Alfalfa Weevil	250 to 300



FEATURED PRODUCTS

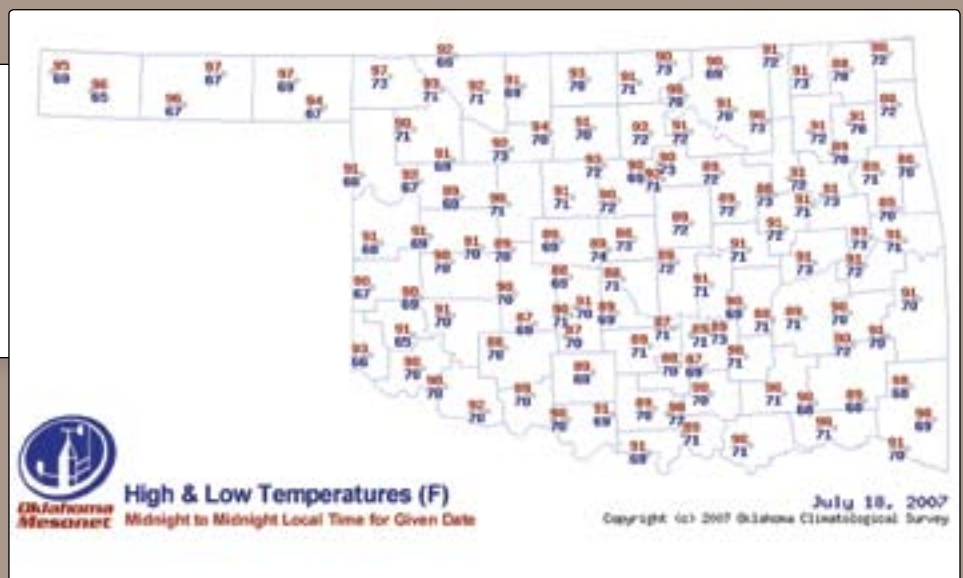
by Laura Martin

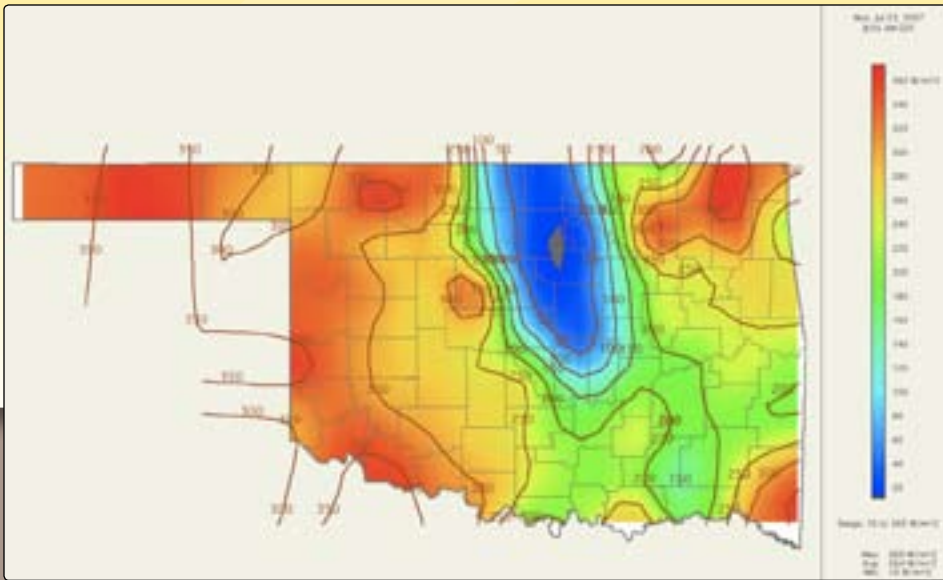
Free download

- Go to <http://aqweather.mesonet.org/>
- Download the WxScope Plugin
- For slow Internet connections, call (405) 325-3126 for a free CD
- [Click here for the Windows software.](#)
- [Click here for the Macintosh software.](#)

Yesterday's high and low temperature

- Go to <http://aqweather.mesonet.org/>
- Click on "Weather"
- Select "Current Weather"
- Click "Air Temperature"
- Choose "Yest. High and Low Temps"





Solar radiation

- Go to <http://aqweather.mesonet.org/>
- Click on "Weather"
- Select "Atmosphere"
- Choose "Sunlight"
- Select "Contour Solar Radiation Map"

The Oklahoma Mesonet uses the "Cutoff Method" to calculate degree-day values, based on the following formula:

$$\text{Degree-days} = (\text{Maximum Daily Air Temp} + \text{Minimum Daily Air Temp})/2 - \text{Base Temp}$$

where, the Base Temp is equal to the crop's lower temperature threshold.

When the maximum daily air temperature is above a crop's upper temperature threshold, the maximum daily air temperature is set to the upper temperature threshold. When the degree-day value is negative, the degree-day value is set to zero.

The following are the lower and upper temperature thresholds for agronomic crops listed on the Oklahoma Mesonet AgWeather web site.

Crop	Lower Temperature Threshold	Upper Temperature Threshold
Alfalfa	41°F (5°C)	86°F (30°C)
Corn	50°F (10°C)	86°F (30°C)
Cotton	60°F (15.5°C)	100°F (37.8°C)
Peanut	55°F (12.8°C)	95°F (35°C)
Sorghum	55°F (12.8°C)	95°F (35°C)
Soybean	50°F (10°C)	95°F (35°C)
Wheat	32°F (0°C)	86°F (30°C)

References:

Degree-days and Phenology Models, University of California, Statewide Integrated Pest Management Program, <http://www.ipm.ucdavis.edu/WEATHER/ddconcepts.html>

Temperature thresholds

- Go to <http://aqweather.mesonet.org/>
- Click on "Weather"
- Select the "Info" button in the top right
- Choose the "Degree Day Calculator" link



Corn degree days

- Go to <http://aqweather.mesonet.org/>
- Click on "Crops"
- Select "Corn"
- Choose "Degree day calculator"
- Enter a start and end date, and click "Get Map"

rainy day **BLUES**

By Derek Arndt, Oklahoma Climatological Survey

Cloudy!

Through July 24th, the state has seen its least sunny year-to-date during the Mesonet Era (since 1994). We have observed about 14 percent less sunlight than the same period last year.

Stillwater

The Stillwater Mesonet station has recorded the Mesonet's most rainfall so far this year at 45.08 inches. Stillwater's normal rainfall for the entire year is 36.71 inches.

Fewer degree day units

Last year, (January 1 through July 31, 2006) the Mesonet averaged 3,266 corn degree day units. This year, (January 1 through July 31, 2007) the Mesonet has averaged just 2,749 corn degree day units.

Rainy days

At least one Mesonet station recorded measurable precipitation on 179 of the year's first 207 days.

Wettest

This has been the wettest year-to-date for central Oklahoma (38.2 inches).