Agweather Connection

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Wheat's nine lives

By Laura McKay and Jeff Edwards

Cultivated worldwide, wheat is the most important food grain to humans. More food is made with wheat than any other cereal grain. With its widespread popularity, it's a good thing wheat is so resilient and can be damaged many times before it dies.

Wheat is a hearty crop that can tolerate being trampled by herds of animals and being nipped to the ground by hungry cattle. Wheat also can survive freezing winters and broadcast applications of liquid nitrogen, which can burn leaves.

Many hardships threaten the endurance of wheat, so how does it survive? How is wheat different?

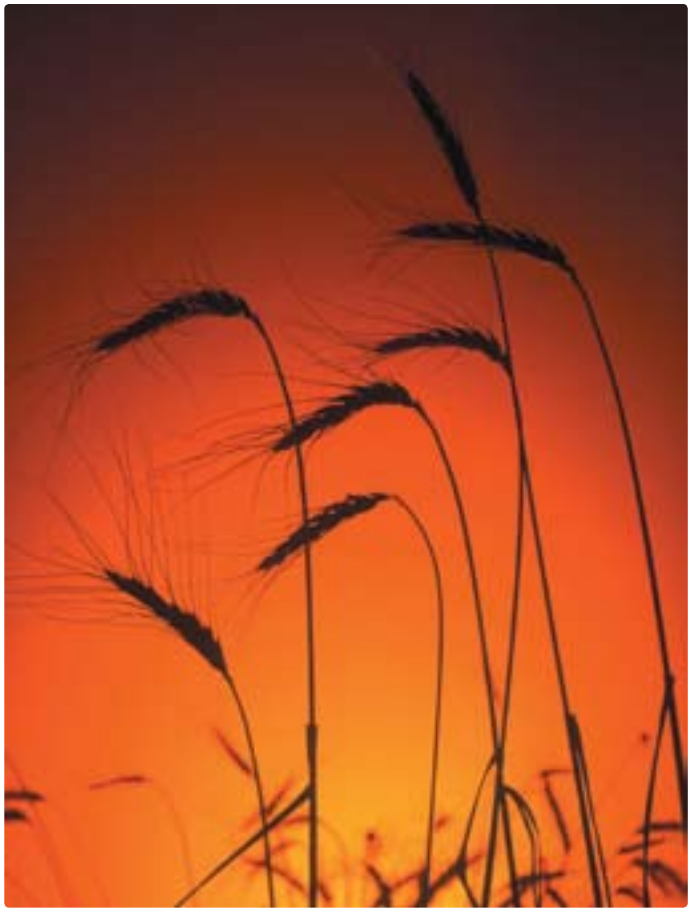
One thing that is unique to wheat is an extra-long juvenile phase. Unlike wheat, summer crops either do not have a juvenile phase or have a very short juvenile phase.

With wheat, the juvenile phase occurs from the time the wheat is sown until the wheat reaches the jointing stage in March. The jointing stage is characterized by a node just above the soil surface.

During the juvenile phase, the wheat plant is "preparing to be an adult" by establishing a good root system, building plant biomass and gathering nutrients. Similar to people, the wheat plant recovers from injury much more easily during the juvenile phase.

Wheat can be damaged numerous times throughout its juvenile phase. Producers should not give up on wheat that is damaged prior to jointing because the plant still might recover. Damage that occurs in the juvenile phase may or may not affect wheat grain yields.

Once wheat enters the adult phase, it is much more difficult to recover from injury. The older the plant gets, the less tolerant it is to stress damage. ▪



Because wheat has an extremely long juvenile phase, it has more time to recover from injuries than do other plants. After the juvenile phase, the wheat plant enters the adult phase and it is much more difficult for the plant to recover from injuries. Photo by Todd Johnson

INSIDE

Dr. Jeff Edwards is a small grains extension specialist at Oklahoma State University.

What makes wheat grow

By Laura K. McKay

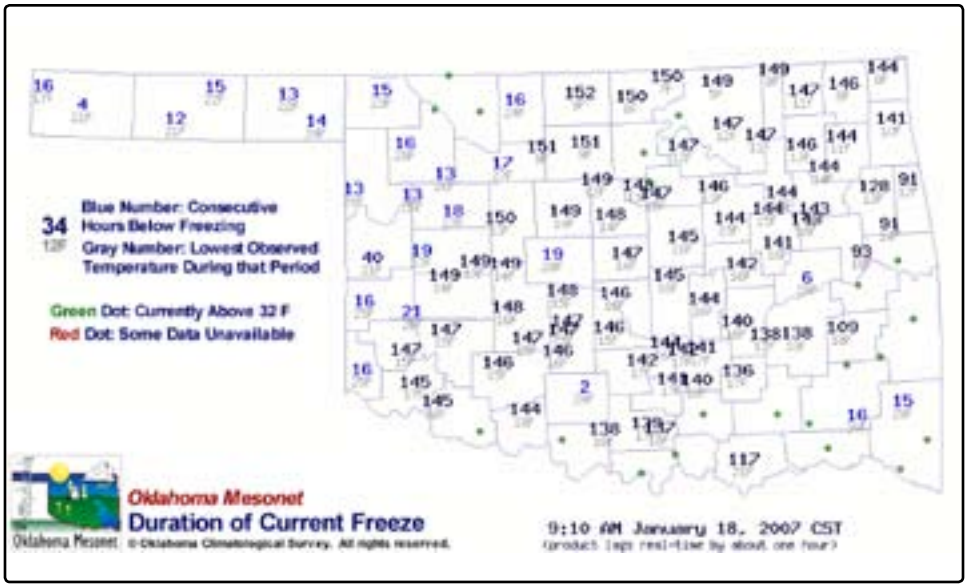
Throughout the fall, Oklahoma farmers drill wheat into fields across the state. Wheat is a grass that needs space, nutrients and sunlight. With the right weather, wheat germinates quickly and grows fast. However, as temperatures decline, the plant's ability to absorb water also declines.

To view temperature and soil moisture, you can utilize several weather tools found on the free Agweather Web site at http://agweather.mesonet.org. Agweather is a Web site that features data from the Oklahoma Mesonet, a statewide weather network supported by OSU and OU.

To help you get started, step-by-step directions are listed below. If you have any questions or need more information, call (405) 325-3126 or send e-mail to laura.k.mckay@okstate.edu or albert.sutherland@okstate.edu.

Free download

Start at http://agweather.mesonet.org/. Be sure to download the WxScope Plugin. It's safe and free, and allows you to view all of the resources that Agweather offers.



Hours below freezing

From the Agweather home page at http://agweather.mesonet.org/, choose the "Crops" button. Then select "Wheat" and finally "Hours Below Freezing."

The blue numbers indicate how many consecutive hours that location has been below freezing. The gray number is the coldest temperature measured during all those hours below freezing.

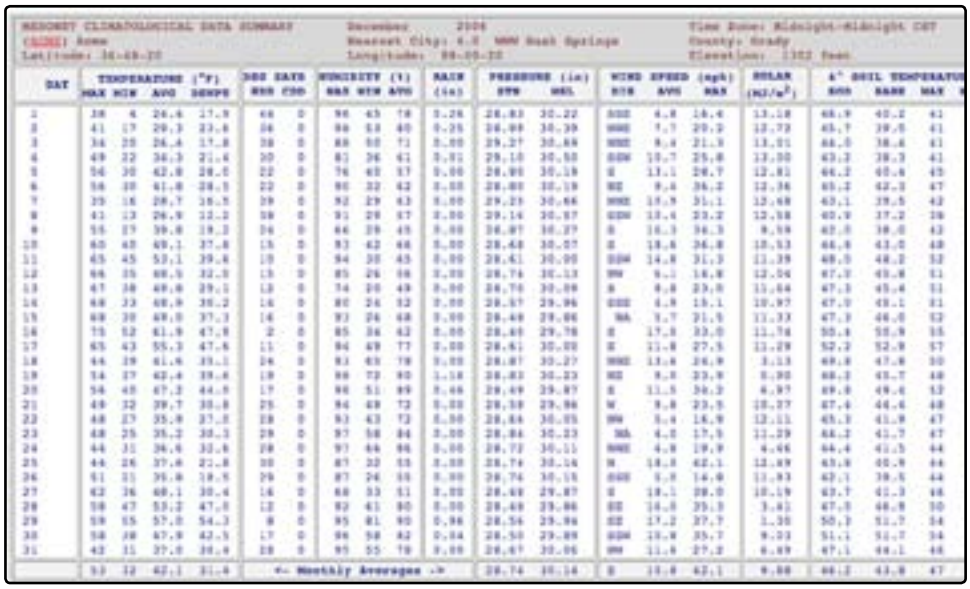
A green dot means it is not currently below freezing. A red dot means the data is temporarily unavailable.

Monthly high and low temps

From the home page located at http://agweather.mesonet.org/, select the "Weather" icon. Then choose "Monthly and Climate," then "Monthly Climate Data."

Then, choose the desired month, and your location. You can also pick in which format you would like the data displayed.

This table lists the high and low temperatures of each day of the month. It also includes various other weather parameters.

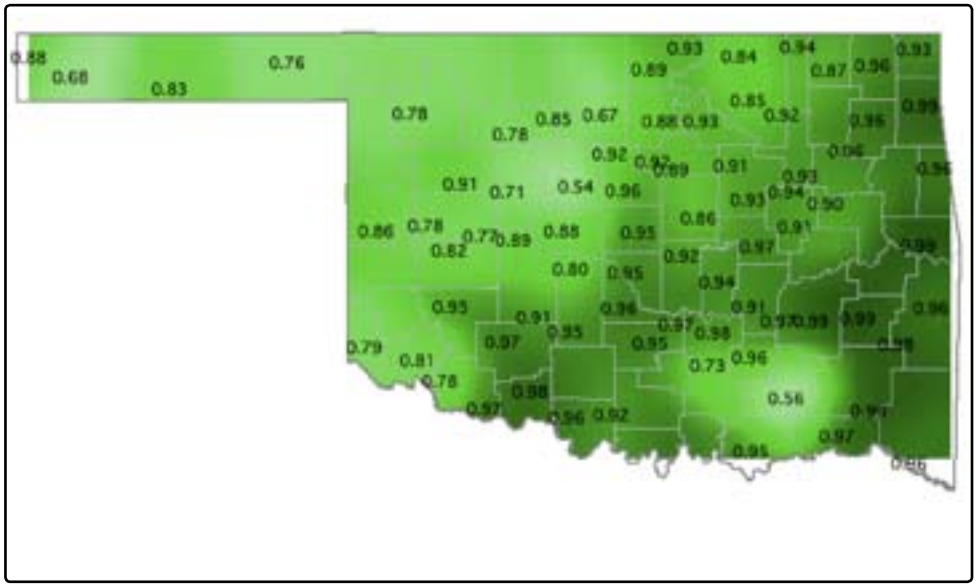


Soil Moisture

From the home page located at http://agweather.mesonet.org/, select the "Soil" icon.

Then, select "Soil Moisture" and you will see four depths for looking at the "Fractional Water Index;" 5cm, 25cm, 60cm and 75cm. The 25-cm Water Index is shown to the right.

Green, or 1, is wet and brown, or 0, is dry. The closer the number is to 0, the drier the area.

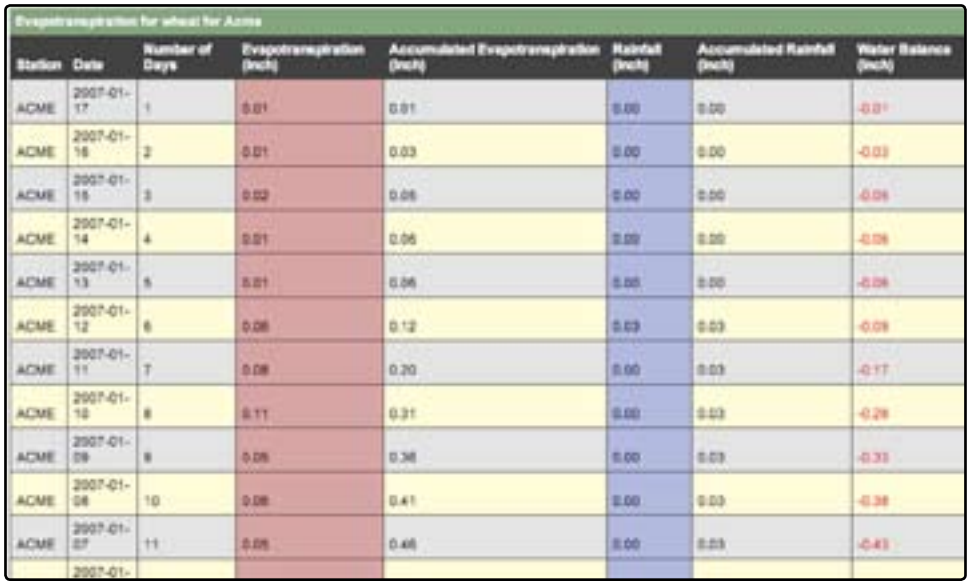


Water balance

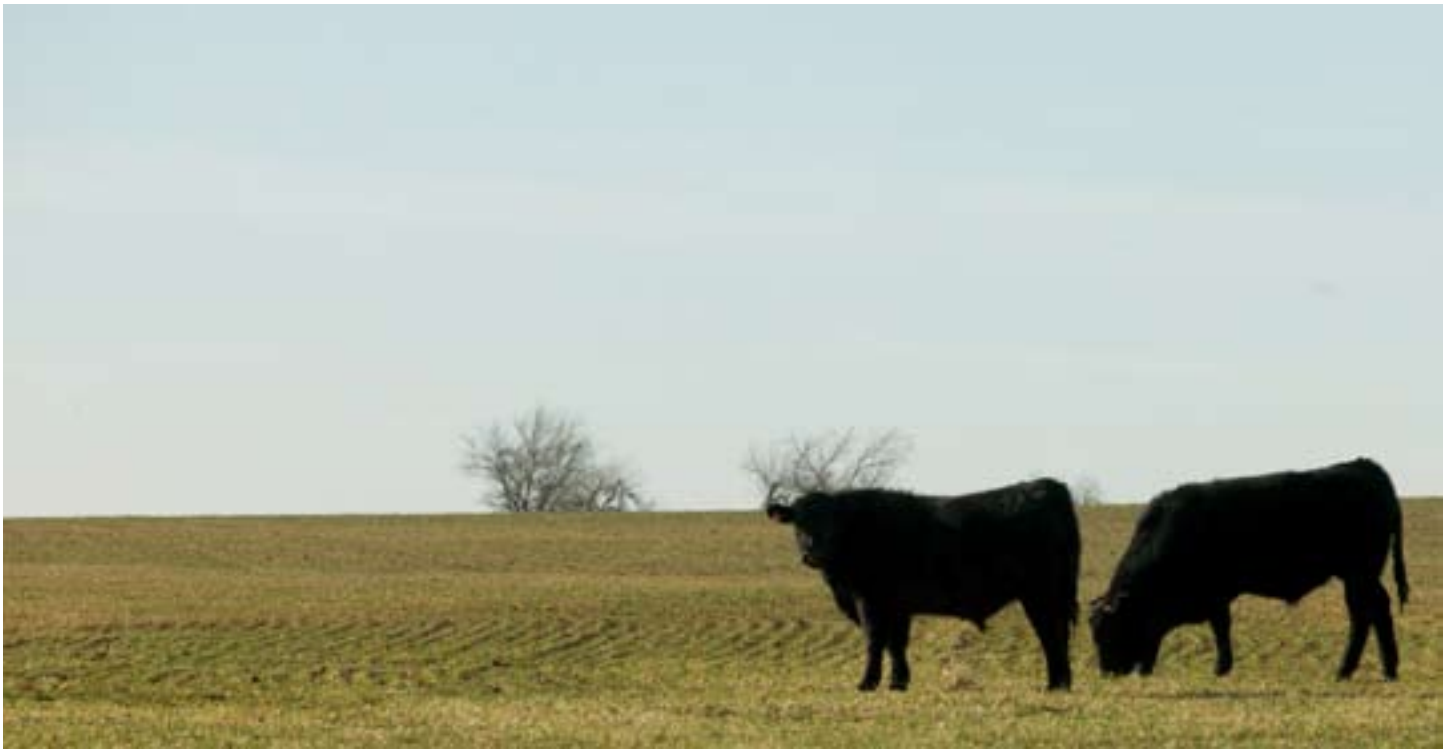
From the Agweather home page found at http://agweather.mesonet.org/, select the "Crops" icon. Then select "Wheat," and then choose "Evapotranspiration."

Select your location and planting date. Then hit "Get Wheat Data."

A chart will appear. The far right column displays the water balance. If the numbers are red, there is a water deficit. If the numbers are in blue, there is more water than the wheat plant needs.



Station	Date	Number of Days	Evapotranspiration (inch)	Accumulated Evapotranspiration (inch)	Rainfall (inch)	Accumulated Rainfall (inch)	Water Balance (inch)
ACME	2007-01-17	1	0.01	0.01	0.00	0.00	-0.01
ACME	2007-01-16	2	0.01	0.03	0.00	0.00	-0.03
ACME	2007-01-15	3	0.02	0.05	0.00	0.00	-0.05
ACME	2007-01-14	4	0.01	0.06	0.00	0.00	-0.06
ACME	2007-01-13	5	0.01	0.06	0.00	0.00	-0.06
ACME	2007-01-12	6	0.06	0.12	0.03	0.03	-0.09
ACME	2007-01-11	7	0.08	0.20	0.00	0.03	-0.17
ACME	2007-01-10	8	0.11	0.31	0.00	0.03	-0.28
ACME	2007-01-09	9	0.05	0.36	0.00	0.03	-0.33
ACME	2007-01-08	10	0.05	0.41	0.00	0.03	-0.38
ACME	2007-01-07	11	0.05	0.46	0.00	0.03	-0.43
	2007-01-						



Wheat first hollow stem is when a hollow stem can be identified above the root system and below the developing head. When cattle graze wheat after this growth stage, grain yields can be reduced dramatically. To maximize profitability, cattle should be removed when first hollow stem occurs. For more information, go to www.wheat.okstate.edu. Photo by Todd Johnson

What is wheat first hollow stem?

By Jeff Edwards

Wheat first hollow stem is the growth stage when cattle should be removed from wheat pasture. Several factors affect when first hollow stem occurs, but the most important factors are planting date, location and variety.

The earlier wheat is sown, the earlier first hollow stem will occur. Likewise, wheat generally reaches the first hollow stem stage in southern OK earlier than in northern OK. Varieties can differ by as much as two weeks in occurrence of first hollow stem.

For these reasons, first hollow stem must be checked on a field by field basis. Growers should check for first hollow stem by digging up eight to 10 plants in a non-grazed area of the field (usually just outside of the hot wire or fence). Split the stems open and look for hollow stem just below the growing point. When approximately one-half of an inch of hollow stem is present below the developing head, the plant is at the first hollow stem growth stage and cattle should be removed from the wheat pasture.

The OSU small grains variety testing program will be checking for first hollow stem at Stillwater and El Reno, and this information will be published in upcoming issues of the Wheat Production Newsletter, found at www.wheat.okstate.edu.

A map with an approximate "rule of thumb" date for first hollow stem can be found at http://agweather.mesonet.org/wxml/hs.html.

Remember that first hollow stem can vary by as much as three weeks from year to year, so you should begin checking fields two to three weeks before the date on the map. ▪

Agweather
LOCAL. RELIABLE. FREE.

Agweather is a product of the Oklahoma Mesonet.
http://agweather.mesonet.org/

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