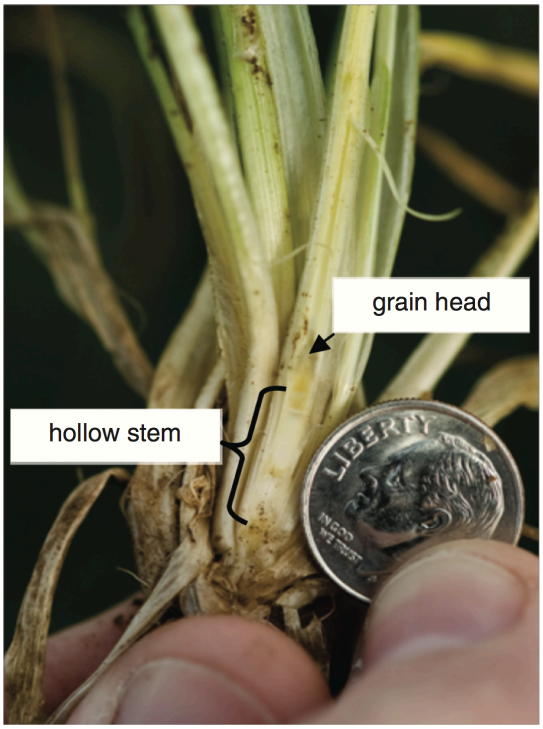
Mesonet First Hollow Stem Advisor



http://mesonet.org / Agriculture / **Crop / Wheat**
http://mesonet.org / Agriculture / **Livestock / Cattle**

Begin First Hollow Stem sampling (5% FHS probability):
- Early FHS category: 576 soil heat units
- Middle FHS category: 731 soil heat units
- Late FHS category: 539 soil heat units

Soil heat unit base temperatures and start dates:
- Early & Middle FHS categories: 31 degrees F - December 22
- Late FHS category: 34 degrees F - January 01

Wheat First Hollow Stem

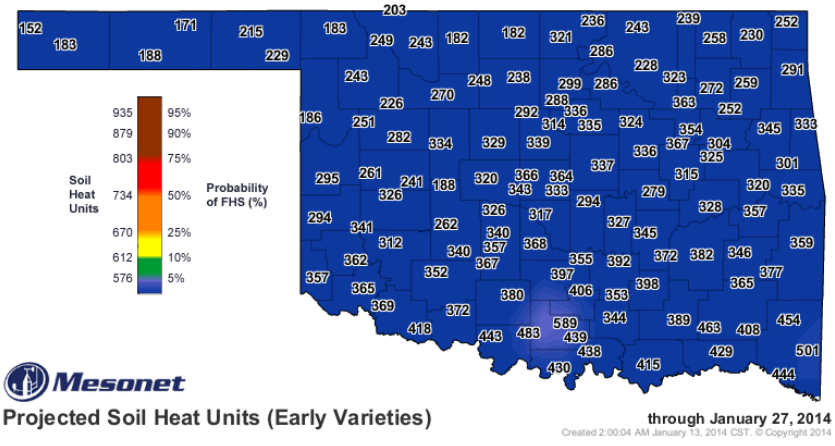
First Hollow Stem (FHS) is the optimal growth stage of wheat to remove cattle in order to optimize returns from the dual-purpose wheat production system. FHS occurs when stems of nongrazed plants begin to elongate, and the stem above the roots and below the developing head becomes hollow. The wheat plant is said to be at FHS when the hollow stem portion of the plant is 5/8 inch long (about the diameter of a dime). When FHS occurs depends on wheat variety, planting date, temperature, and precipitation.

Research has shown grazing past FHS can reduce grain yield by as much as 5% per day or as little as 1% per day, so grazing one week past first hollow stem could reduce grain yield by as much as 35%. Economic analysis has shown that the added cattle weight gains associated with grazing past first hollow stem are insufficient to offset the lost grain yield.

Mesonet First Hollow Stem Advisor

The Mesonet First Hollow Stem Advisor uses 4-inch Soil Temp Under Vegetative Cover to estimate probabilities for the date when FHS is expected to occur. Soil temperatures from December 22 at or above 31 degrees F are used for wheat varieties that are in early or middle FHS category groups. Late FHS category wheat varieties use data from January 1st and soil temperatures at or above 34 degrees F. Start dates, soil temperature thresholds and soil heat unit FHS probability thresholds were established by J.D. Carlson and Jeff Edwards during a ten-year research program, involving 17 years of FHS observations.

For a given FHS category, the date of 5% probability means that over a lengthy multi-year period wheat would be expected to reach FHS by this date in 5% of the years; in half of the years at the 50% probability date; and in 95% of the years at the 95% probability date.

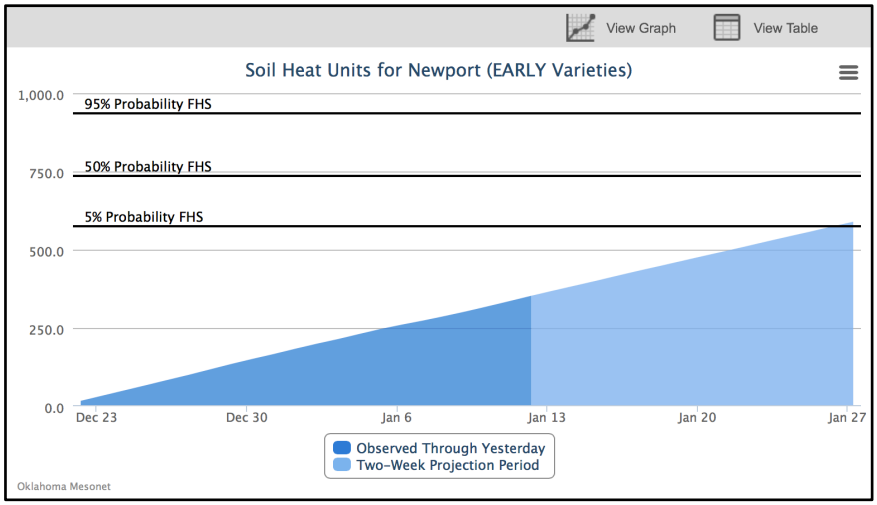


Sampling for FHS is recommended to begin when the FHS probability reaches 5%. The process of hollow stem development can dramatically speed up once the 5% probability level is reached. For growers who do NOT scout, it is recommended that cattle be removed by the 50% probability date.

Mesonet First Hollow Stem Maps, Graphs and Tables

Wheat varieties fall into one of three FHS categories, Early, Middle, or Late. The FHS category is selected in the "Choose FHS Category" section, displayed after selecting a map or local Mesonet site. A list of varieties in each FHS category is available by clicking the **"Look up category by specific wheat variety"** link.

The Mesonet First Hollow Stem Advisor uses maps to show statewide FHS soil heat units at all Mesonet sites. Three maps are available for each FHS category. They include a current map of observed soil heat unit accumulations since start date, projected one-week soil heat unit totals and projected two-week soil heat unit totals. Soil heat unit projection maps are based on fourteen-year averages for the next seven or fourteen days from today's date. The map color contours are based on soil heat unit totals associated with a percent probability of FHS. Blue map areas indicate that the 5% FHS probability has not been reached. Sampling for FHS is recommended to begin when field locations fall in green colored map areas. Cautionary colors at FHS probabilities above 10% indicate increasing likelihood that wheat plants may soon reach, have reached, or be past FHS.



First Hollow Stem Advisor soil heat units can be viewed as a graph or table for each Mesonet site. Horizontal graph lines indicate 5%, 50% and 95% percent FHS probability. Accumulated soil heat units calculated from measured Mesonet data are shown by the solid-fill blue graph line. Projected FHS accumulated soil heat units from 14-year averages are shown by the solid-fill light blue graph line. Scrolling over the graph will show a data window with accumulated FHS heat units.

Use the "View Table" top menu bar option to view daily data in a table format. In the table view, clicking "View Graph" will switch back to a graph view. Clicking the small set of three lines in the upper right graph corner will bring up a menu list to print or save the graph as a PNG or JPG image.

Checking for First Hollow Stem

To check for first hollow stem, go to a nongrazed area, and pull four to five plants. Plants must be dug up to check for hollow stem, because much of the hollow stem present at this time is still below the soil surface. Hollow stem must be measured from a nongrazed area in the same field because grazing delays stem elongation and when first hollow stem occurs. Good places to find areas of nongrazed wheat are field corners or nongrazed areas, just outside of the electric fence. Select the largest tillers on the plants. Split the stems open lengthwise starting at the base. A sharp razor or box cutter will make this job easier. If there is an average of 5/8 inch (1.5 cm) of hollow stem below the developing wheat head, the wheat is at first hollow stem.

(Ver: 01/14/14)

For More Information

First Hollow Stem: A Critical Wheat Growth Stage for Dual-purpose Producers. OSU Fact Sheet #PSS-2147. Jeff Edwards and Gerald Horn. Jan 2010.

The Effect of Grazing Past First Hollow Stem on Wheat and Stocker Profits. OSU Fact Sheet #AGEC-265. E.A. DeVuyst, F.M. Epplin, K.W. Taylor, G.W.Horn, J.T. Edwards. Feb 2011.

Support from Oklahoma Wheat Research Foundation and USDA National Institute Food and Agriculture AFRI Project #2012-02355 Regional Approaches for Adaptation to and Mitigation of Climate Variability and Change