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FOR IMMEDIATE RELEASE
November 8, 2006

Drought Remains Severe in Northwest Oklahoma

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NORMAN - When soil moisture is low and no rain comes, crops fail. The year of 2006 started with dry soils. Then critically needed rain never materialized, and drought conditions intensified. Wheat growers saw the poorest wheat crop in fifty years. No summer pasture grew for livestock grazing. Virtually no hay was produced for winter-feeding. Mark Hodges, Executive Director for the Oklahoma Wheat Commission, estimates the farm loss in agricultural production in 2006 has been over \$500 million dollars.

While the southern two-thirds of Oklahoma received some drought relief from rains in mid October and early November, the northern one-third of Oklahoma remains in a severe drought condition. Ron Hays in the Oklahoma Farm Report noted that, "soils in northwest Oklahoma have the consistency of flour."

We can actually see the severity of the drought in northwest Oklahoma by viewing soil moisture products from the Oklahoma Mesonet. The Oklahoma Mesonet, a partnership between Oklahoma State University and the University of Oklahoma, maintains one of the world's densest and most comprehensive network of soil moisture sensors. The soil moisture sensors installed at Oklahoma Mesonet sites are positioned at 2, 10 and 24-inch depths, while a few Mesonet sites also have a 30-inch deep sensor.

The map in Figure 1 is a statewide view of 10-inch deep soil moisture as of November 7, 2006. The brown and tan areas are dry soil locations that received lower rainfall amounts. The green areas show wetter soils, where moderate to heavy amounts of rain were recorded during rainfall events in mid October and again in early November.

The Percentage of Normal Rainfall map in Figure 2 reveals that the state was divided by the variation in rainfall in October and November. The red and orange areas in Figure 2 received only a fraction of the rain experienced in the green and blue map areas of Oklahoma.

The sharp contrast between the various colors on both maps emphasizes the split in Oklahoma of wetter conditions in the south and east, while the north and west remains critically dry.

Adequate water is critical for quality, high yielding crops. Water stored in the soil acts as a reservoir of available water for plant use. When the soil profile has good soil moisture, crops can draw on this water to thrive longer between rain events without stress.

The Oklahoma Mesonet soil moisture is shown as a Fractional Water Index. This map represents a new index of soil moisture designed by scientists from the Agricultural Research Service at the Grazinglands Research Laboratory in El Reno. This index has a range from 0.0 to 1.0. At saturation, soils will have an index close to one. A powder-dry soil will have a Fractional Water Index near zero.

When the Fractional Water Index is between 1.0 to 0.8, excellent soil moisture exists. This creates an optimum growing environment for plants. From 0.8 to 0.5, plants experience limited growth, unless they are watered. When the Fractional Water Index dips below 0.5, soils are too dry for plant growth. Plant wilting and even death may occur with these low values of Fractional Water Index.

Soil moisture sensor use in the Oklahoma Mesonet is a melding of meteorological expertise at the University of Oklahoma and soil science from Oklahoma State University. This network of sensors routinely provides a statewide view of how Oklahoma rainfall impacts soil moisture well below ground level.

For access to Oklahoma Mesonet products and more information, visit the Oklahoma Agweather Web site at <http://agweather.mesonet.org>.

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Figure 1: 10-inch Fractional Water Index Map of Soil Moisture as of November 7, 2006

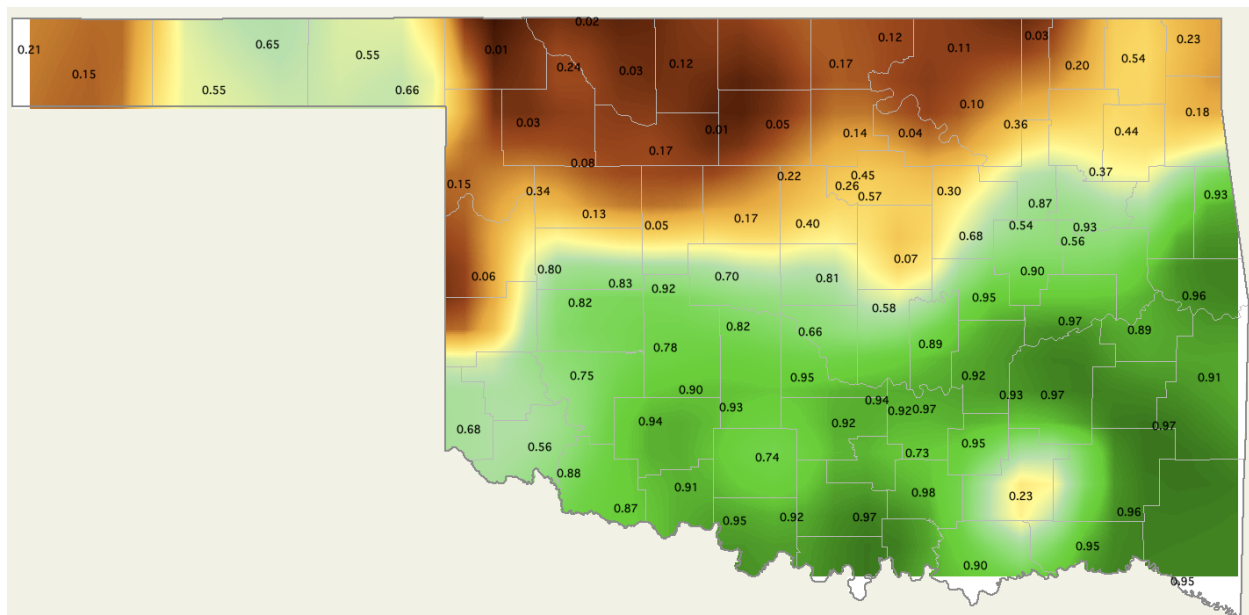
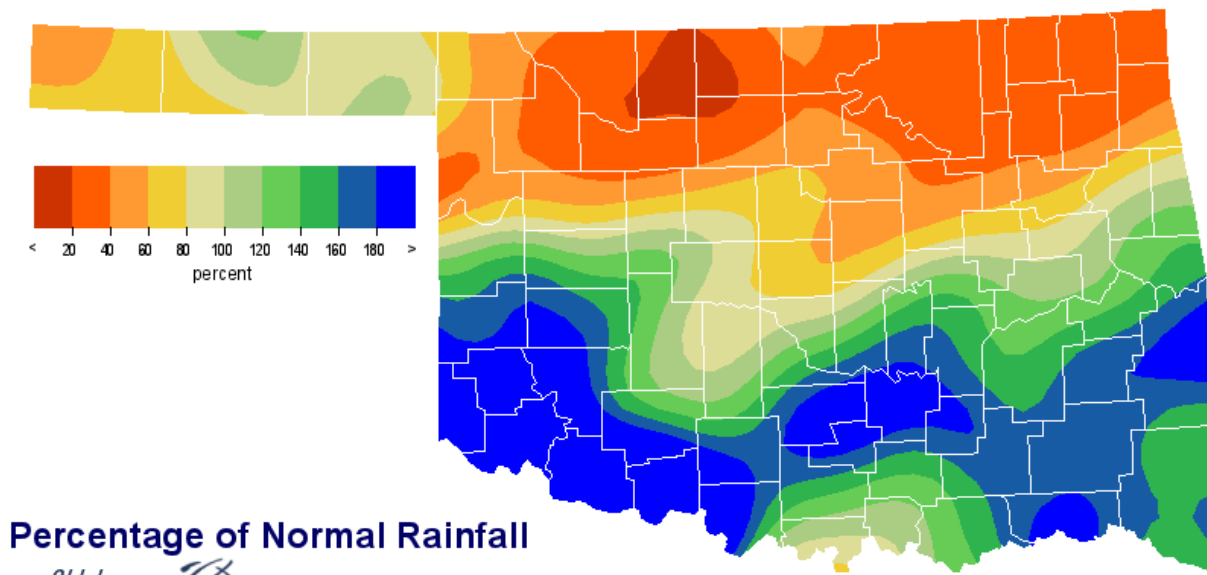


Figure 2: Percentage of Normal Rainfall from October 9 to November 7, 2006



Percentage of Normal Rainfall



Web Request
Oct 9, 2006 through Nov 7, 2006

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map created 12:23 CST Nov 9, 2006