April 1, 2016

NEW UNL CLIMATE TOOLS

Short-term weather and longer term climate data are an integral part of agricultural production in Nebraska, for both crop and livestock producers. These are a few examples of the weather and climate data currently being offered to Nebraska agricultural producers.

An example in June of last year, a Nebraska cattle comfort forecast was released the day before to allow livestock producers an opportunity to take measures to protect their animals. Another tool alerts livestock producers to when critical conditions might endanger animal health. For humans I like to call it misery index!

Soil temperatures can guide planting and fertilizer applications and precipitation and crop water use data can guide irrigation applications for optimal "crop for drop." Tools can also estimate plant growth stage and the likelihood plants will reach maturity before the first historical fall freeze for a given area. They can estimate temperature-based insect development (see common stalk borer forecast) and predict scouting and treatment windows or forecast periods conducive to increased outbreaks of plant disease.

For a sampling of Nebraska weather tools, visit the CropWatch weather page. For current soil temperatures go to: http://cropwatch.unl.edu/cropwatchsoiltemperature

Frost Free Dates Saline County: Wouldn't it be good to have a tool to predict with more certainty frost free dates for the year? The potential of a late spring freeze is of great concern to farmers, gardeners, nurserymen, and other plant growers. The most complete data set in Saline County, with long-term trends, is the official weather station at Doane College in Crete.

When looking at a light freeze (32°F), from 1981 to 2010 observations, there is only a 10% chance of a freeze after May 7 and last recorded was May 11. In the entire historical record at Crete, 07/01/1893 - 03/31/2012, the latest freeze (32°F) was May 29, 1947 and only a 10% chance of a 32°F after May 11.

In 2012, the anomaly year for heat and drought, our last freeze was April 11. In 2013, the last freeze was May 3. In 2014, there was a cold spell in May for a week and it hit 29°F May 6 and 32°F on May 16. Last year the last light freezes were April 22 and 23.

Light freezes are one thing versus hard freezes in the mid 20's. Weather stations record temperatures about 5 feet in the air above ground in ventilated boxes called instrument shelters. On clear, cold nights temperatures at ground level can be 5 to 10 degrees colder than measured in the instrument shelter. The river and creek valleys, waterways and low areas where cold area travels plays a role on calm nights. A change in agriculture is we can plant a lot of acres of corn in a 2 to 3 day window in April or early May with 16 and 24 row planters. We don't know until later if that was a good window of time for those fields.

On corn, the growing point stays in the ground a long time so leaf damage is usually what occurs and the growing point is protected by soil until the plants are 6 to 12 inches tall. A freeze at that time can severely damage the plant. With legumes the growing point of soybean and alfalfa is above the ground and often damaged if planted too early. A freeze of 28°F or lower can seriously damage newly emerged soybeans. A freeze of 20°F or lower is needed to seriously damage alfalfa seedlings.

With soybeans, Dr. James Specht at UNL has shown a yield advantage by planting soybeans early. Nebraska research demonstrated that for each day that soybean planting was delayed after May 1 the yield penalty per day was as much as 5/8 bu/ac in a "great" soybean year and still a substantive ¼ bu/ac in a "not so great" soybean year. Timing of late season rainfall on dryland soybean production at seed fill is crucial.

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