

April 27, 2012

### **FROST FREE DATE SALINE COUNTY**

The potential of a late spring freeze is of great concern to farmers, gardeners, nurserymen, and other plant growers. From a climatological perspective, it is interesting to review spring freeze events. 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 7th and last recorded was May 11th. In the previous 30 years before that (1971-2000) there is only a 10% chance of a freeze after May 8th and last recorded was May 11th. In the entire historical record at Crete, July 1, 1893 – March 31, 2012, the latest freeze (32° F) was May 29, 1947 and only a 10% chance of a 32° F after May 11th.

Freezes are generally classified as light, moderate, or heavy. A light freeze occurs when the minimum temperature falls within the range of 32° F to 29° F; a moderate freeze when the minimum temperature falls within the range of 28° F to 25° F; and a heavy freeze when the minimum temperature falls to 24° F or below.

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 what was measured in the instrument shelter. Topography plays a key role in river and creek valleys, gullies, waterways, etc. The cold air essentially will drain into those areas often on clear, calm nights.

The biggest risk we have with freeze on wheat this year is during heading and pollination stage. Temperatures on the wheat heads of a 28 to 30° F can kill pollen and prevent fertilization. The growing point on corn stays in the ground along 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. Milo, one to three weeks old, have recovered from a freeze as low as 25° F but well advanced crops can be damaged slightly below freezing.

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 beans. 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 1st, the yield penalty per day was as much as 5/8 (0.63) bu/ac in a “great” soybean year (like 2004), and still a substantive ¼ (0.25) bu/ac in a “not so great” soybean year (like 2005).

Multiplying these yield penalties by the current soybean price provides a clear indication of the importance of planting date. In my opinion, this is most true with irrigated soybeans and sometimes not as crucial with dryland soybeans. Timing of late season rainfall on dryland soybean production at seed fill is crucial.

So it appears our crops will be in early this year and we are hoping for no late, hard freezes. In our entire historical record at Crete the hardest freezes in May (28° F and colder) are summarized below.



Hard Freeze Data for Crete in May:

1909: 23° F (5/1), 26° F (5/2)  
1907: 25° F (5/3), 27° F (5/15)  
2004: 26° F (5/3)  
1976: 26° F (5/3)  
1961: 26° F (5/2)  
1945: 26° F (5/2)  
1994: 27° F (5/1)  
1967: 27° F (5/2), 28° F (5/3)  
1944: 27° F (5/6)  
1954: 28° F (5/3)  
1953: 28° F (5/14)  
1911: 28° F (5/2)

Randy Pryor, Extension Educator

University of Nebraska-Lincoln Extension in Saline County

306 West 3<sup>rd</sup> Street, Wilber, NE 68465

Phone (402) 821-2151 . Fax (402) 821-3398 . e-mail: [randy.pryor@unl.edu](mailto:randy.pryor@unl.edu)