

**MINNESOTA TURF SEED COUNCIL
NEWSLETTER
May 3, 2016**

RYEGRASS GROWING DEGREE DAYS (GDD)

Ryegrass GDD will be tracked for the 2016 growing season with comparisons to the previous six years. A base temperature of 32 degrees F will be used for ryegrass (T-Base = 32 F)

Reported GDD are based on the total accumulation from the beginning of the year to the current calendar date. Thus far in 2016, we have accumulated 317 GDD, as of May 1st (Table 1). The ten day forecast, for the first week of May, suggests above average temperatures of 26.1 GDD/day compared to the long term average of 16.8 GDD/day. The projected GDD for week at Roseau is 188 (26.8/day).

Table 1. Growing degree days (GDD), March - May 2010 to March -May 2016 near Roseau MN.

| Year | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 | 2010 | 2016 vs. 15 |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------------|
| March | 38 | 119 | 0 | 0 | 304 | 7 | 137 | -81 |
| April | 263 | 367 | 159 | 80 | 370 | 278 | 476 | -104 |
| May | | 659 | 654 | 640 | 726 | 639 | 707 | |
| May 1 | 16 | | | | | | | |
| Total | | 1,145 | 813 | 720 | 1,400 | 924 | 1,320 | |
| | | | | | | | | |
| May 2-11* | 261 | | | | | | | |

* Forecasted GDD at Roseau for the next 10 days.

GENERAL CROP CONDITION

What a difference a year can make in ryegrass winter survivability! Last year, area ryegrass stands were very erratic with the subsequent ryegrass growth and development much less than normal which lasted all season long. However, thus far in 2016, it appears that mother nature has been very kind as ryegrass stands, for the most part, have limited observed winterkill. With the similarity of snow melt in March of 2015 and 2016 coupled with similar temperatures patterns during March and April of 2015 and 2016, the question is why did we see significant ryegrass winterkill in 2015 and not in 2016?

Several factors can play a role in ryegrass winterkill including: timing and length of snow cover, time of ryegrass seeding, ryegrass health going into the winter, ice sheeting, soil moisture, soil temperature and genetic variability. It appears that soil temperature is a primary factor in the differential response of perennial ryegrass winter survivability in 2016 and high winter kill expression in 2015. See Figure 1 & 2 on next page.

U of MN Winter Hardiness Ryegrass Trial

Each year the U of MN conducts a ryegrass winter hardiness trial at the U of MN Magnusson Research Farm near Roseau. The objective of this trial is twofold; 1) assess the winter kill potential for perennial ryegrass, and 2) evaluate genetic variability of various perennial ryegrass varieties when established in the late summer into fallow ground with no cover. In 2015, all ryegrass lines died (didn't survive the winter) which is an indication of a severe winter. However, in 2016 it appears all ryegrass lines will survive, even the annual ryegrass, which is an indication of a very mild winter. The good news for 2016, limited winterkill expression in perennial ryegrass!

Figure 1: Soil temperatures from October 1, 2014 to April 16, 2015, NDAWN Roseau site.

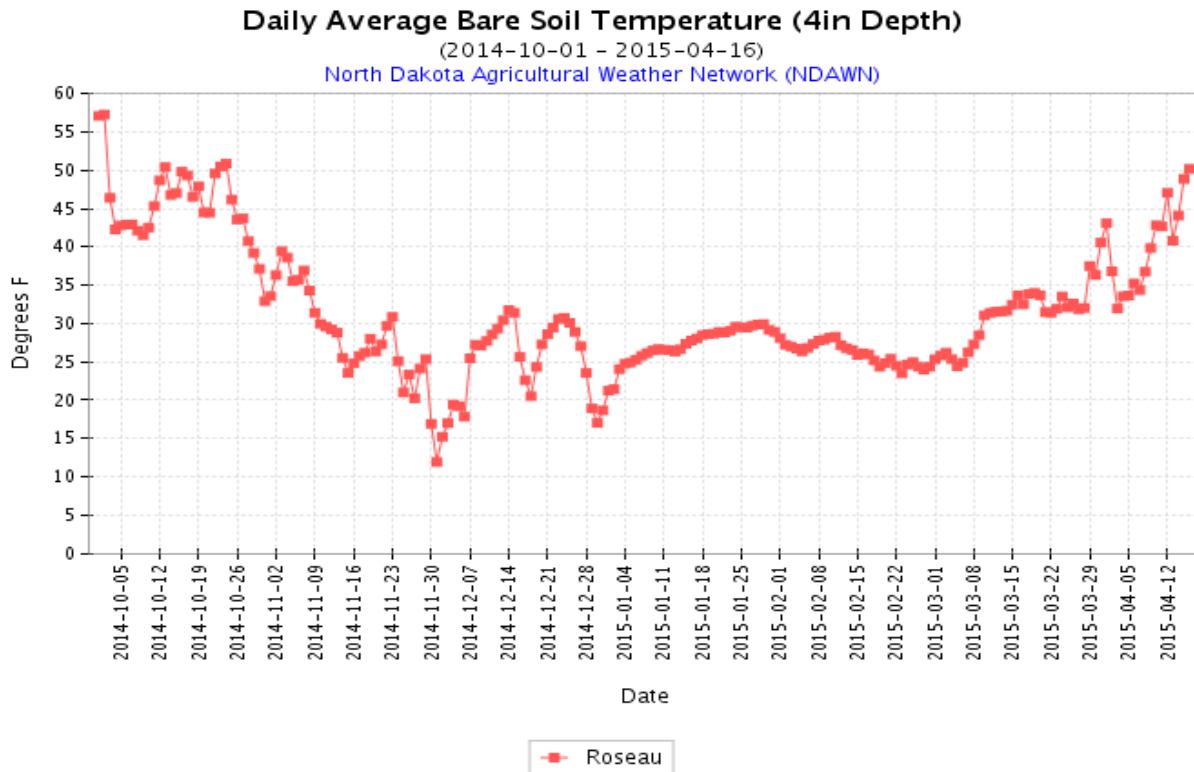
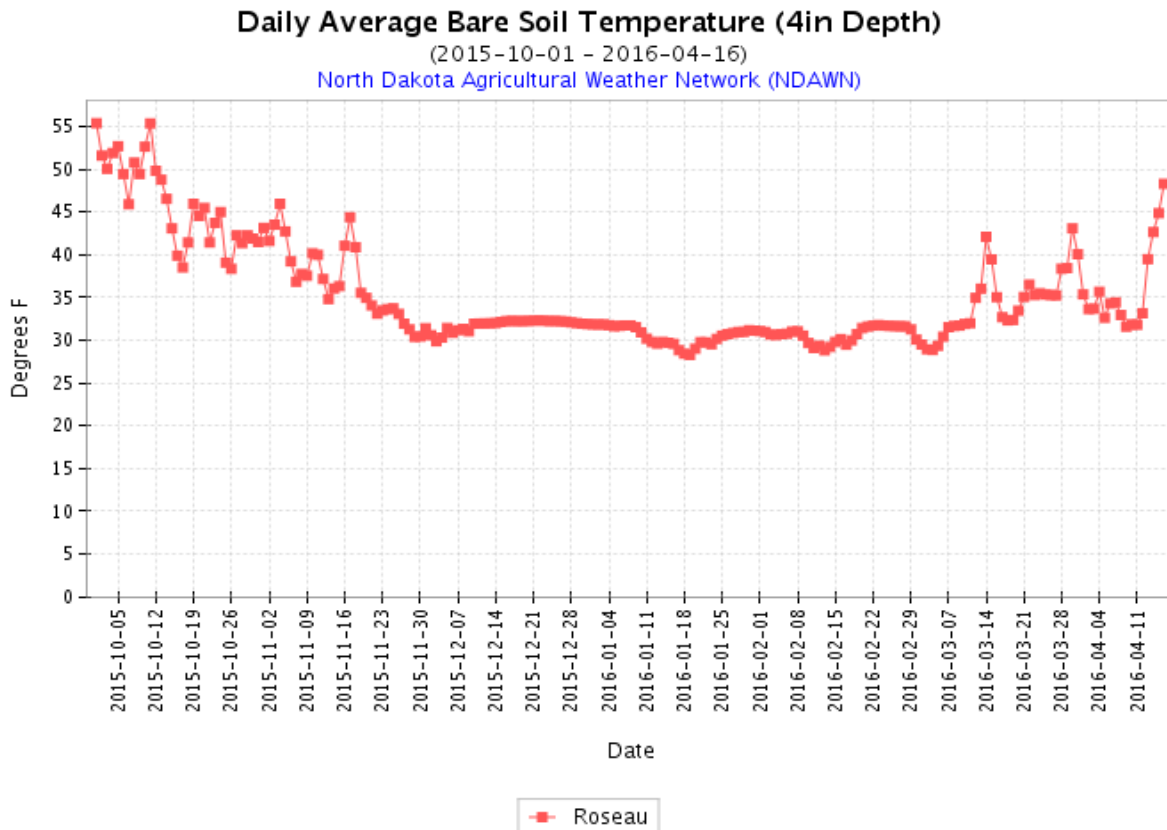


Figure 2: Soil temperature from October 1, 2015 to April 16, 2016, NDAWN Roseau site.



Figures 1 and 2 are soil temperature data from the NDAWN station located north of Wannaska, called Roseau on the map. The first graph, Figure 1, is from Oct., 1st 2014 to April 16th, 2015 (last year) and the second, Figure 2, is from the same calendar dates from Oct., 1st 2015 to April 16th, 2016 (this year). Even though the air temperature from late March into the first couple weeks of April are very similar from 2015 and 2016, the soil temp tell a much different story!

The first chart, Figure 1, is the bare ground soil temperature from Oct., 2014 to April 2015 (last year). Bare soil temperature went below 30 F on Nov 09 and pretty much remained below 30 F until March 10th. Further, in the period from Nov 11 to Jan 25th several peaks and valleys of temperatures were observed with the coldest recorded soil temp of 12 F on Dec 1st. In 2014, ryegrass crowns were under extreme cold temperature stress for an extended period of time and experienced several periods of cold and colder soil temperatures. The soil temperatures in 2014-15 are much colder than normal which, most likely, was due to either: 1) limited snow cover and 2) dry soil conditions or a combination of the two. The fall of 2014 was quite dry compared to the fall of 2015 which many fields were at soil saturation going into winter.

Soil temperatures in the fall of 2015 and spring of 2016 (this year) shows a much different graph as soil temperatures, didn't get much below 30 F all winter, Figure 2. If the 2016 ryegrass crop makes it through the winter with limited winterkill, we may be able, in the future, to utilize soil temperature data to help predict winterkill potential of perennial ryegrass.

Next week's newsletter will be released on May 10th, 2016.