

**MINNESOTA TURF SEED COUNCIL
NEWSLETTER
May 2, 2017**

PERENNIAL RYEGRASS GROWING DEGREE DAYS (GDD)

Ryegrass GDD will be tracked for the 2017 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 calendar year to the current date. Thus far in 2017, we have accumulated 375 GDD as of April 30th (Table1). In 2017, April temperatures have been on a roller coaster! In first couple weeks of April, above average temperatures and GDD accumulation were recorded; while last week temperatures were well below normal. For the month of April, the recorded GDD was 285 compared to the long term average of 209. The current 7 day forecast suggests an accumulation of 133 GDD (19 GDD/day) which is warmer than the long term average of 104 GDD (14.9 GDD/day) for the first week of May.

Table 1. Growing degree days (GDD), March - May 2011 to March & April 2017 near Roseau MN.

Year	2017	2016	2015	2014	2013	2012	2011	2017 vs. 16
March	90	38	119	0	0	304	7	+52
April	285	263	367	159	80	370	278	+22
May		765	659	654	640	726	639	
Total	375	1,066	1,145	813	720	1,400	924	
May 1-7*	133							

* Forecasted GDD at Roseau for the next 7 days.

GENERAL CROP CONDITION

The Roseau area had two snow fall events on April 24 and 26, 2017. This snow coupled with a 5 day stretch of daily highs in the mid-to-low thirty's with low temperatures in the high-to-low twenty's resulted in recorded soil temperatures below 40 degrees. In the spring of 2017, soil temperatures broke 40 degrees on March 30 in bare ground and April 13th in turf conditions (Table 2). The cold snap during the last week of April had soil temperatures below 40 degrees for 5 days in bare soil and 6 days in turf conditions. It's unusual to have soil temperatures dip back below 40 degrees in late April. Will these cold temperatures in the 20's have an impact on ryegrass growth and development? The good news, most ryegrass was covered with a blanket of snow which helped to insulate the crown from these cold temperatures. With the recent moisture and the forecasted warm weather, ryegrass plants will enter a rapid growth phase in the next couple weeks. This will aid the decision making with ryegrass stand assessments.

Table 2. Calendar date of 40F soil temperature, in black ground and sod conditions, near Roseau in 2008 to 2017.

	2017*	2017^	2016^	2015	2014	2013	2012	2011	2010	2009	2008
Black	4-29	3-30	4-14	3-31	4-19	5-4	3-12	4-8	3-30	4-14	4-15
Sod	4-30	4-13	4-15	4-15	5-9	5-7	3-23	4-23	4-13	4-29	4-18
Difference	1	15	1	16	20	3	11	15	14	15	3

* After two snow fall events on 4/24/17 & 4/26/17

^ After initial snow melt in early April

CROP MANAGEMENT

When should nitrogen be applied in perennial ryegrass grown for seed production? That answer will depend upon production practices, labor and equipment constraints, field conditions and the source of nitrogen applied. However, perennial ryegrass goes through three distinct phases in the uptake and utilization of nitrogen from the soil.

- **Phase 1 - Slow nitrogen uptake**
- **Phase 2 - Rapid nitrogen uptake**
- **Phase 3 - Nitrogen redistribution, slow or no uptake (movement within the plant)**

Phase 1 takes place in the fall and early spring when perennial ryegrass plants are in the vegetative to the early tillering stage. Research in Oregon indicates less than 20% of the total above ground biomass is produced prior to tillering. In Minnesota conditions, perennial ryegrass will be in Phase 1 from green-up to the beginning of jointing (up to the annual accumulation of **700 GDD**).

Phase 2 is a time of rapid nitrogen uptake and perennial ryegrass will be in the jointing to early heading stage. In Minnesota environmental conditions, perennial ryegrass jointing begins after the accumulation of approximately **700 GDD** to the beginning of early heading **1,200 GDD**. In phase 2, research from Oregon has documented ryegrass plants removing soil nitrogen at a rate of 2 to 4 pounds of nitrogen/day! This rapid uptake of nitrogen is completed by head emergence which is 6 weeks, or more, prior to harvest. To maximize perennial ryegrass seed production, it's critical to have adequate nitrogen in the root zone during this period of rapid nitrogen uptake.

Phase 3 occurs during heading to mature seed set > **1300 GDD**. By this time, the majority of the nitrogen has been taken up by the ryegrass plant. Plant nitrogen needs are redistributed from lower leaves and tillers to the upper parts of the plant. Nitrogen applied at this time is of limited utility for ryegrass seed yield, but may influence seed quality. The exception may be foliar feeding, which will be a topic in a future newsletter.

With projected increase in daily temperatures and field conditions beginning to firm up, now would be a good time to talk to your grass seed fieldman and agronomists to determine a timeline for plant food applications in ryegrass. The U of MN scientists have conducted nitrogen fertility research in perennial ryegrass for several years. Grass Seed Research reports can be found on the web at the link below.

U of MN Research Reports

Grass Seed research results are available on the web. Research reports from 1967 to the present are available at the web address below.

http://www.mnturfseed.org/html/progress_reports.html

Next week's newsletter will be released on May 9th, 2017.