

**MINNESOTA TURF SEED COUNCIL  
NEWSLETTER  
April 26, 2015**

**RYEGRASS GROWING DEGREE DAYS (GDD)**

Ryegrass GDD will be tracked for the 2015 growing season with comparisons to the previous five 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 2015, we have accumulated 393 GDD as of April 26 (Table1). Last week was a return to cold temperatures as 7.7 GDD/day were accumulated compared to the long term average of average 12 GDD/day. Projected forecast for the next ten days indicates above average temperatures and below normal precipitation. The current forecast suggests an accumulation of 246 GDD or 24.6/day! This is well above the average of 12 GDD/day).

Table 1. Growing degree days (GDD) for March 2010 to April 2015 near Roseau MN.

<b>Year</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>	<b>2011</b>	<b>2010</b>	<b>2015 vs. 14</b>
March	119	0	0	304	7	137	+119
April		159	80	370	278	476	
April 1-26	274						
Total	393	159	80	674	285	613	
April 27 to May 6*	246						

\* Forecasted GDD at Roseau for the next 10 days.

**GENERAL CROP CONDITION**

Assessment of winter survival the 2015 ryegrass crop continues to be a challenge. The early snow melt (mid-March) left the plants exposed to cold temperatures in early April. Low temps in April 2-5 were in the mid teen and averaged 27.4 F from April 6-10. These 9 days of freezing temps were followed by 8 days of high temps in the mid 60's to low 70's with windy conditions. Weather conditions in early April resulted in ryegrass leaf and crown desiccation. Due to weather conditions this April, an adjustment in GDD will be made for 2015.

U of MN researchers conducted two ryegrass stand assessment trials in 2009 and 2010. Result of this research indicates that respectable seed yields can be obtained from low populations of perennial ryegrass (Table 2 and 3).

Table 2. Perennial ryegrass 'Arctic Green' yields influenced by plant stands at Magnusson Research Farm in 2010.

<b>Ryegrass Plant Stand (plants/square foot)</b>	<b>Ryegrass Stand (%)</b>	<b>Seed Yield (#/acre)</b>
0.5	15	838
1.0	33	1010
2.0	50	1118
>4.0	100	1186
LSD (0.05)		299

Table 3. Perennial ryegrass ‘Quest’ yields influenced by plant stands near Roseau in 2009.

Ryegrass Plant Stand (plants/square foot)	Ryegrass Stand (%)	Seed Yield (#/acre)
1.2	39	553
2.1	56	1048
3.0	73	1066

The results from these two trials suggest ryegrass plant stands of 1 (33% of full stand) and 2.1 plants/square foot (56% of full stand) produced similar yields compared to >4 and 3 in 2010 and 2009, respectively. Additional time will be required to make an accurate assessment of ryegrass winter survival in 2015.

### **CROP MANAGEMENT**

When should nitrogen be applied in ryegrass? The ryegrass plant 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 ryegrass plants are in the vegetative to the early tillering stage. Research in Oregon indicates less than 20% of the above ground biomass is accumulated prior to tillering. In Minnesota conditions, ryegrass will be in Phase 1 from the vegetative to the beginning of jointing (accumulated GDD up to **700 GDD**).

Phase 2 is a time of rapid nitrogen uptake in ryegrass which corresponds to jointing to early heading stage. In Minnesota environments ryegrass jointing begins at approximately **700 GDD** to the beginning of early heading **1,250 GDD**. In phase 2, research from Oregon has documented ryegrass plants can take up 2 to 4 pounds of nitrogen/day. This rapid uptake of nitrogen is completed at head emergence which is 6 weeks or more prior to harvest. It’s essential to have applied nitrogen in the root zone during this period of rapid nitrogen uptake

Phase 3 occurs during heading to mature seed set > **1300 GDD**. 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. The exception may be foliar feeding, which will be a topic in a future newsletter.

Thus far in 2015, we have accumulated 393 GDD. However, as mentioned above, an adjustment in GDD will have to be due to ryegrass leaf desiccation. With the extensive leaf desiccation, GDD’s accumulated prior to April (272 GDD’s) may have to be adjusted to the overall total for the year. More on this next week. However, in general terms, if 100% of nitrogen is spring applied, fertilizer must be in the root zone earlier (250-450 GDD) than if nitrogen is applied in a split application program (fall and spring) program (up to 800 GDD). .

Next week’s newsletter will be released on May 5, 2015.