

**MINNESOTA TURF SEED COUNCIL
NEWSLETTER
May 28, 2019**

RYEGRASS GROWING DEGREE DAYS (GDD)

Ryegrass GDD will be tracked for the 2019 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, after snow has melted from ryegrass fields, to the current calendar date.

- Year to date, GDD = 622 (Table1)
- Average GDD accumulation for end of May = 175 (25/day)
- Actual GDD for fourth third week of May = 139 (19.9/day)
- Fourth week of May in 2019 was cooler than average by -5.1/day
- Projected 10-day GDD = 292 (29.2/day)
- Average GDD accumulation for first week of June = 177 (25.3/day)
- Current 10 day forecast projects warmer than average temperatures (+3.9 GDD/day)

Table 1. Growing degree days (GDD), March - May 2013 to March - May 2019 near Roseau MN.

Year	2019	2018	2017	2016	2015	2014	2013	2019 vs. 18
March	0	0	90	38	119	0	0	0
April	211	184	458	263	367	159	80	+27
May		815	679	765	659	654	640	
May 1-26	411							
Total	622	999	1,227	1,066	1,145	813	720	
*May 27- June 5	292							

* Forecasted GDD at Roseau for the next 10 days.

GENERAL CROP CONDITION

The current 10-day forecast projects warmer than average temperatures with an accelerated accumulation of GDD's. May of 2019 has been cooler than average for most of the month with approximately 275 fewer GDD's accumulated that May of 2018. May of 2018 was one of the warmest on record while, May of 2019 was cooler than the long-term average. With the recent rain and projected warmer than average temperatures look for ryegrass to enter a period of rapid growth. With above average temperatures in the 10-day forecast, look for ryegrass to enter the jointing stage of growth and development.

CROP MANAGEMENT

A tissue tests can give an indication of current nutrient status in ryegrass. The results in Table 2 was research conducted in 2018 in cooperation with Rice Farms. Ryegrass samples were taken on June 1, 2018 and sent to AGVISE Labs for processing. Critical level for nitrogen was in the 3.5% range and didn't appear to be for ryegrass growth and development. However, at this site sulfur was a limiting factor to plant growth and development. This data would suggest that a N:S ratio of greater than 24:1 could result in ryegrass seed reductions. The AMS treatment had more S, K and Mg than field rate of urea, or the added 26-0-0 to account for the nitrogen in the AMS. This data suggest that tissue analysis can be used to help diagnose nutrient deficiencies in perennial ryegrass seed production.

Table 2. Ryegrass Seed Yield and Tissue Analysis in 'Evolution' Perennial Ryegrass in 2018.

Treatment	Yield	N	P	K	S	Ca	Mg
	#/ac	-----%					
26-0-0-30s	1,660	3.6	0.42	3.1	0.38	0.53	0.50
26-0-0	1,342	3.4	0.40	2.6	0.14	0.48	0.42
Field applied Nitrogen, 110-0-0	1,325	3.3	0.40	2.8	0.14	0.45	0.44
LSD (0.05)	139	NS	NS	0.4	0.07	NS	0.08

Farmer cooperators: Brian and Sheldon Rice

If a nitrogen deficiency is suspected in ryegrass, can liquid nitrogen be used to supplement nutritional requirements in ryegrass? This question is being asked due to potential nitrogen losses from surface applied urea with limited rainfall after application. The following data was from research conducted at the U of MN Magnusson Research Farm in 2014.

Table 2. Liquid nitrogen (28%UAN) applied at various timings in 'Arctic Green' in 2014.

Treatment Ω	Seed Yield (#/acre)	Lodging (1-9 scale*)	RCI (Index)	Color (1-9 scale*)
None	1441	3.0	188	4.5
28% @ 12 gpa**	1570	4.8	229	7.5
28% @ 24 gpa**	1686	7.3	256	8.0
28% @ 12 Gpa + 12 gpa water \wedge	1488	5.0	235	7.0
28% @ 12 Gpa+12 gpa water $\#$	1437	6.0	210	7.5
LSD (0.05)	170	2	95	2

Ω Liquid 28%UAN= 3#N/gallon (12gpa=36#N per acre, 24gpa=72#N/acre)

* 1-9 scale – 1= no lodging and light green color; 9 = flat on ground and deep green color

**Applied 6/10/14 to 3-4 node ryegrass. 28% nitrogen only.

\wedge Applied 6/13/14 to 3-4 node ryegrass. A 50/50 mix of 28% and water.

$\#$ Applied 6/20/14 to ryegrass that was 60% headed. A 50/50 mix of 28% and water.

All treatments were applied with flat fan nozzles delivering 12 or 24gpa. Ryegrass, at the time of application, didn't show visible signs of nitrogen stress. Fertility program for this trial 30-30-30-5s applied in the fall and 100-0-0 applied in the spring. Results from this trial indicate:

- Perennial ryegrass was tolerant to 28% nitrogen up to 24 gpa, some leaf burn was observed but seed yields were equal to or better than untreated plots
- 28% applied early 6/10 appeared to be more beneficial, to improved seed yield, than 28% applied later, 6/13 or 6/20
- 28% nitrogen diluted 50/50 with water gave similar seed yield as untreated, but caused more lodging and a greener plant (delayed maturity)
- Results suggest 28% is an option for supplemental nitrogen applications, especially if applied prior to ryegrass heading

Next week's newsletter will be released on June 4th, 2019.