MINNESOTA TURF SEED COUNCIL
NEWSLETTER
July 1, 2014

RYEGRASS GROWING DEGREE DAYS (GDD)

Ryegrass GDD will be tracked for the 2014 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 year to the current calendar date. To date in 2014, we have accumulated 1,696 GDD as of June 30th (Table1).

The ten day forecast near Roseau projects average high and low temperatures of 76 and 59 F, respectively. If this forecast holds, accumulated GDD for the year will be 1,898 by the end of the 4th of July weekend.

Table 1. Growing degree days (GDD) for March to June, near Roseau, MN in 2009-2014.

Year	2014	2013	2012	2011	2010	2009	2014 vs. 13
March	0	0	304	7	137	30	0
April	159^	80	370	278	476	247	-2
May	654	640	726	639	707	515	+14
June	964	975	979	898	911	860	-11
July 1-7*	245						
July**	1,116	1088	1230	1162	1174	943	
Total***	2,812	2,783	3,609	2,984	3,405	2,595	

^ -78 GDD after majority of snow drifts melted
* - Forecasted GDD at Roseau for the next 7 days
** - Projected GDD for July based on an average of 36 GDD/day
*** - Total for 2014 includes projected GDD for July

GENERAL CROP CONDITION

Ryegrass fields seeded in the spring of 2013 are heading and shedding pollen. The 2014 growing season, thus far, has been cooler than average. Daily high temperatures have been below average every month from March-June of this year. In fact, average daily high temperatures have been -8, -8, -4 and -2 below average for March, April, May and June, respectively.

Soil temperatures in the spring of 2014 have been slow to warm up. The data in Table 2 compare soil temperatures of turf and bare ground conditions in a warm spring (2012) compared to a cool spring (2014). The biological process of breaking down organic matter is largely driven by soil microbes. A soil temperature of 50 F, is a good benchmark for the biological processes involved in the mineralization of organic matter. In 2014, the average 50 F in turf conditions was not reached until June. With the cool soil temperatures in the spring of 2014, the rate of soil mineralization is slow compared to a warmer spring. Further, the cool wet spring of 2014, most likely, contributed to nitrogen losses not available to the ryegrass plant. Previous research at the U of MN has shown benefits from liquid nitrogen applied with fungicide applications in ryegrass. Research at the U of MN has indicated 3 gallons of 28% UAN applied with a fungicide can improve ryegrass seed yield (seed weight). One caution, in a trial in 2014, significant ryegrass injury occurred from a 12 gallons rate of 28% UAN. More research needs to be done to determine how much 28% UAN is too much in ryegrass seed production.

Table 2. Soil temperatures in degrees F, from bare ground and turf conditions, in March, April, May and June near Roseau, MN in 2014 compared to 2012. Source of data: NDAWN

	March		April		May		June	
	Turf	Bare	Turf	Bare	Turf	Bare	Turf	Bare
2014	28.5	28.1	32.5	32.6	46.7	54.6	60.9	67.8
2012	32.2	40.5	39	49.9	51.1	61.2	61	77.2
Difference	-3.7	-12.4	-6.5	-17.3	-4.4	-6.6	-0.1	-9.4

CROP MANAGEMENT

Rust in ryegrass

Most spring seeded ryegrass fields in the region are heading and shedding pollen. The GDD model indicates we are soon into the time frame when leaf and stem rust historically has been observed in ryegrass fields (1,900 GDD). By the end of the 4th of July weekend, GDD projections suggest we will be in the window for potential expression of leaf and stem rust in perennial ryegrass.

Strategies for rust control in ryegrass post heading are:

1) Scout ryegrass fields for rust every two- to- three days. In favorable environmental conditions rust can increase rapidly and this fungal pathogen can "explode" in just a few days.
2) If a fungicide has been applied with a previous trip across the field, apply a fungicide when the first fungicide is about to "run out". The number of days the fungicide will provide disease protection will depend upon the fungicide used and product rate.
3) Spray a fungicide after the accumulation of 1900 GDD. Historically, we have first observed leaf and stem rust at approximately 1,900 GDD. A full rate of a fungicide will provide rust protection for 21 to 28 days. A fungicide applied at 1,900 GDD should provide disease protection until ryegrass swathing (approximately 2800 GDD).

What are the management considerations for ryegrass seed production in the post heading stage of growth? Bullet points below are based on data collected by U of MN researchers, local experience and individual grower trials. See web site below for specific trial results.

- Fungicides applied post heading in ryegrass have shown a positive seed yield response.
- In years of low disease pressure, all fungicides evaluated, over 4 site years, gave a positive seed yield response compared to the untreated.
- In years of heavy disease pressure, premium fungicides are needed to control leaf and stem rust in ryegrass. Talk to your agronomist for specific product recommendations.
- The addition of 3 gallons of 28% UAN, with the fungicide application, has provided increased ryegrass seed yield in many locations, primarily due to increased ryegrass seed weight.
- To maximize seed yield, the ryegrass plant must be protected from leaf and stem rust infections until ryegrass plant begins the dry down phase prior to swathing.

U of MN Grass Seed Research Reports

Research reports from 1967 to the present are available at the web address below.
http://www.mnturfseed.org/html/progress_reports.html

The next newsletter will be released July 8, 2014.