

**MINNESOTA TURF SEED COUNCIL
NEWSLETTER
July 12, 2022**

PERENNIAL RYEGRASS GROWING DEGREE DAYS (GDD)

Perennial ryegrass GDD's (from snow melt to swathing) will be tracked in the 2022 growing season with comparisons to the previous six years. A base temperature, T-Base = 32 degrees F, will be used for perennial ryegrass.

- Year to date GDD = 2,055 (Table 1)
- Last week (July 4-10) accumulated GDD = 259; the long term average = 230
- Projected GDD for the next 10 days = 416, or 41.6/day (Table 1)
- Average GDD for the third week of July = 239, or 34.1/day
- The 10 day forecast suggests warmer than average temperatures for the third week of July as the projected GDD is 41.6/ day vs the long term average of 34.4/day.

Table 1. Growing Degree Days (GDD), March - July 2016 to March - July 2022 near Roseau MN.

Year	2022	2021	2020	2019	2018	2017	2016	2022 vs. 2021
March	0	131	30	0	0	90	38	-131
April	95	236	183	211	184	458	263	-141
May	649	640	600	548	815	679	765	+9
June	959	1,007	995	919	1,007	917	945	-48
July 1-10	352							
July		1,174	1,179	1,067	1,100	1,095	1,123	
Total		3,188	2,987	2,745	3,106	3,239	3,233	
*July 11-20	416							

* Forecasted GDD at Roseau for the next 10 days.

GENERAL CROP CONDITION

The ten day forecast indicates a continuation of the warming trend of the last couple weeks. Projected GDD of 40/day and will promote growth and development of plants, weeds, diseases and insects.

CROP MANAGEMENT

The textbook definition of physiological maturity is **maximum seed dry matter accumulation**.

Physiological maturity occurs when seeds reach maximum dry weight, germination and vigor. When does physiological maturity occur in perennial ryegrass? A paper published in Grass & Forage Science authored by M.J. Hill and B.P Watkins in 1975 titled: 'Seed Production Studies in Perennial Ryegrass, Timothy and Prairie Grass'. This paper considers the sequence of seed development by measurement and observation of the changes in seed moisture content, weight, color, endosperm consistency, germination capacity and yield. Summary of results.

- Seed moisture content was high (60–70%) after anthesis and declined at different rates, depending on the species and the weather.
- Maximum seed dry weight (maturity) was reached approximately 30 days after peak anthesis
- Color changes in the seedhead and endosperm solidification proved unsatisfactory as measures of maturity.
- Endosperm solidification was reached 4, days before maximum seed dry weight in ryegrass

- Seeds removed from the ryegrass plant, 7 days after anthesis germinated if dormancy was broken; but they did not retain viability after 3 months storage.
- Maximum viability of ryegrass seed tested immediately after harvest occurred 30 days after anthesis, compared to 17 when germination testing was delayed for 3 months.
- The use of ‘drying curves’ for the prediction of correct cutting time of seed crops is suggested for grass seed crops.

Perennial ryegrass plants have been shedding pollen for a couple weeks. One of the challenges with the 2022 ryegrass crop is many fields had a fully developed main stem (mother stem), while the development and maturity of the tillers is delayed due to cold temperatures this spring. This will create a dilemma on when to swath ryegrass. The following ryegrass swathing ‘drying curve’ research was conducted at the U of MN Magnusson Research Farm and at Rice Farms in 2014 (Table 2). The swathing decision is a balancing act, if ryegrass is cut too early (high seed moisture content) will shorten the seed filling time which leads to immature seeds and reduced seed size and weight. However, cutting too late (lower seed moisture) will reduce seed yield due to increased shatter in the swathing and harvesting operations. The data in Table 2 suggest that seed moisture content in the mid-30’s was the optimum seed moisture to swath ryegrass. Significant seed yield losses occurred when ryegrass was swathed when the seed moisture content was over 40% or, when seed moistures dropped into the high 20’s.

Table 2. Ryegrass seed yield, seed moisture and test weight influenced by cutting date average over two small plot locations (Rice Farms and U of MN Mag Farm in 2014).

Sample Date	Seed Yield*	Seed Moisture**	Test Wt.***
	(% of the mean)	(%)	(#/bu)
7/30	96.9	46	28.5
8/1	93.8	43	29.2
8/3	107.5	40	29.3
8/5	110.2	38	29.9
8/7	121.7	34	30.1
8/9	93.9	28	31
8/12	88.8	26	31
LSD (0.05)	6.2		

*Mean seed yield U of MN Mag Farm = 1,368#/acre and Rice Farms 1,348#/acre

** Seed moisture determined by microwave oven

*** Clean seed test weights corrected to 12.5% moisture

PEST MANAGEMENT

Recent armyworm moth traps counts suggest a fourth recorded flight into the ryegrass production area in 2022. With the recent warm weather (daily lows in the 60’s) armyworm larvae development will move through the instar stages at a faster pace than a few weeks ago. Field scouting will determine population levels and instar stage. Remember, worms tend to “hide” at ground level during the heat of the day and move up the plant in the early morning and evenings. If populations warrant an insecticide treatment, control of ¼ to ½ inch worms is more effective than if worms are ¾ inch or larger.

Next week’s newsletter will be released on July, 19th