

**MINNESOTA TURF SEED COUNCIL
NEWSLETTER
May 30, 2023**

PERENNIAL RYEGRASS GROWING DEGREE DAYS (GDD)

Perennial ryegrass GDD's will be tracked in the 2023 growing season with comparisons to the previous six years. The accumulation of GDD's will begin after the snow has melted from the perennial ryegrass fields and continue through swathing. A base temperature of 32 degrees F is used for perennial ryegrass (T-Base = 32 F).

- Year to date GDD = 935 (Table 1)
- GDD last week (May 22-28) = 248; Long term average = 175
- GDD projected in next 10 days = 407 or 40.7/day (Table 1)
- Average GDD end of May = 177 or 25.3/day
- The ten-day forecast suggests warmer than average temperatures for the first week of June. Projected GDD is 40.7/day compared to the long-term average of 25.9/day.

Table 1. Growing Degree Days (GDD), March - May 2017 to March - May 2023 near Roseau MN.

Year	2023	2022	2021	2020	2019	2018	2017	2023 vs. 2022
March	0	0	131	30	0	0	90	0
April	93	95	236	183	211	184	458	-2
May 1-28	842							
May		649	640	600	548	815	679	
Total		744	1,007	813	759	999	1,227	
*May 29-June 7	407							

* Forecasted GDD at Roseau for the next 10 days.

GENERAL CROP CONDITION

April of 2023 was cooler than average. However, temperatures in May have been 5 to 14 GDD/day above average. Perennial ryegrass fields with healthy crowns are in the jointing stage and will soon be in the early heading stage. The new 10-day forecast suggests a continuation of the above average temperatures with the projected GDD accumulation of 40.7/day compared to the long-term average of 25.9/day. With the forecast warm temperatures look for spring seeded perennial ryegrass fields to be in the boot stage to early heading stage as the calendar changes to June.

CROP MANAGEMENT

With ryegrass jointing in spring seeded ryegrass fields, growth regulator timing is right around the corner. U of MN research has indicated that a surfactant and nitrogen source with Apogee has given increased seed yields compared to surfactant alone. With Palisade a single additive is recommended as the double additive can cause ryegrass injury, especially at the high rate of Palisade. The following conclusions are based on U of MN small plot replicated research with growth regulators in perennial ryegrass over the last decade:

- The application of a growth regulator will result in increased perennial ryegrass seed yield of 150-300 pound/acre compared to the untreated
- Growth regulators will reduce plant height by 2 to 8 inches compared to the untreated

CROP MANAGEMENT CONTINUED

- Growth regulators reduce lodging and keep plants upright which improves seed set during pollination.
- Previous research in MN has indicated that plant growth regulators should be applied to perennial ryegrass seed production fields when the main stem is in the late boot to early heading stage.
- Palisade performance will be reduced if the weather turns cool. Palisade performance is enhanced when ryegrass is in a period of rapid growth.
- Apogee rate of 6-8 oz/acre and Palisade at 1 to 1.5 pt/acre are recommended with a full ryegrass stand. Ryegrass with thin line growth reduce growth regulator by 20-40%
- A single additive, nonionic surfactant at 0.25% v/v is recommended with Palisade.
- With Apogee a double additive, a nonionic surfactant at 0.25% v/v and nitrogen either 28%, or AMS at 2.5% v/v
- A double additive is not recommended with Palisade as crop injury may result in certain environmental conditions (hot, dry)

U of MN Research Reports are available on the web: <https://turf.umn.edu/seed-production-newsletters>.

PEST MANAGEMENT

In 2023, the first armyworm moth flights into northern MN were detected over the weekend of May 19-21. A total of 43 armyworm moths were captured at six locations. The short-term forecast for the end of May into June projects southerly winds which may bring more moths into the area. Armyworm moth traps will be monitored through the end of June. Research in Ontario suggests an average of two weeks for the eggs to hatch into larvae. The data in Table 2 lists the number of days and forage consumption of armyworm larvae at various instar stages. Based on the first moth capture of May 19, this data would suggest that armyworm larvae may be in the 5th instar stage the week of June 21st. Field scouting will determine if armyworms in northern MN develop at the same rate as the research from Ontario. Armyworm eggs are tolerant to an insecticide treatment, so it is important to wait to apply an insecticide until the eggs have hatched into worms.

Table 2. Average number of days, corn foliage consumption and percent of total consumption of armyworm larvae at various instar stages.

Larval stage and size in (mm)	Number of days	Foliage consumption (mg)	% total foliage consumed
1 st instar- 1.7	4.8	1	0.1
2 nd instar- 3.5	3.3	1.5	0.2
3 rd instar- 6.4	3.3	6	1.2
4 th instar-10	3.8	21	4.2
5 th instar-17.2	4.4	75	14.9
6 th instar-34.2	10.3	400	79.3
Total	29.9		

¹After Guppy, J.C. 1951. Three-year average in an Ontario, Canada environment (1957-1959).

²Adapted from Mukerji, M.K. and J.C. Guppy (1970) Estimated individual instar values determined from measurement of the manuscript's graphic data.

Next week's newsletter will be released on June 6th.