

**MINNESOTA TURF SEED COUNCIL
NEWSLETTER
May 21, 2024**

PERENNIAL RYEGRASS GROWING DEGREE DAYS (GDD)

Perennial ryegrass GDD's will be tracked in the 2024 growing season with comparisons to the previous seven 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 = 690 (Table 1)
- GDD last week (May 13 - 19) = 156; Long term average = 151
- GDD projected in next 10 days = 232 or 23.2/day (Table 1)
- Average GDD for the fourth week of May = 175 or 25/day
- The ten-day forecast suggests cooler than average temperatures for the fourth week of May. Projected GDD is 23.7/day compared to the long-term average of 25/day.

Table 1. Growing Degree Days (GDD), March - May 2017 to March - May 2024 near Roseau MN.

| Year | 2024 | 2023 | 2022 | 2021 | 2020 | 2019 | 2018 | 2017 | 2024 vs. 2023 |
|------------|------|-------|------|-------|------|------|------|-------|---------------|
| March | 0 | 0 | 0 | 131 | 30 | 0 | 0 | 90 | 0 |
| April | 296 | 93 | 95 | 236 | 183 | 211 | 184 | 458 | +203 |
| May 1-19 | 394 | | | | | | | | |
| May | | 959 | 649 | 640 | 600 | 548 | 815 | 679 | |
| Total | | 1,052 | 744 | 1,007 | 813 | 759 | 999 | 1,137 | |
| *May 20-29 | 232 | | | | | | | | |

* Forecasted GDD at Roseau for the next 10 days.

GENERAL CROP CONDITION

Perennial ryegrass that had healthy crown this spring are in the late tillering to jointing stage of growth. When ryegrass enters the jointing stage, the plants will begin to exhibit more of a vertical growth pattern and will soon overtop the wheat stubble. Perennial ryegrass plants that experienced crown injury range from dead plants to plants that are beginning to tiller from the crown region.

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 applied when the main stem is in the late boot to early heading stage. 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.
- 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)

PEST MANAGEMENT

In the 2024 season an armyworm moth pheromone trapping project will be conducted at six locations in perennial ryegrass seed production fields. Over the weekend of May 17-19, a total of 128 armyworm moths were captured from the six sites in Roseau County. These armyworm moth traps will be monitored through the end of June. Research in Ontario suggests that it takes 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 by the week of the 17th of June. Field scouting will determine if armyworms in northern MN develop at the same rate as the research from Ontario.

A couple thing to remember, 1) just because moths are caught doesn't guarantee a worm outbreak, (field scouting will determine the actual infestation level) and, 2) 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 May 28th.