

**MINNESOTA TURF SEED COUNCIL
NEWSLETTER
July 5, 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 = 1,796 (Table 1)
- Last week (June 27 - July 3) accumulated GDD = 219; the long term average = 225
- Projected GDD for the next 10 days = 391, or 39.1/day (Table 1)
- Average GDD for the second week of July = 243, or 34.7/day
- The 10 day forecast suggests warmer than average temperatures for the second week of July as the projected GDD is 39.9/ day vs the long term average of 34.7/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 1-3	93							
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 4-13	391							

* 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 perennial ryegrass, weeds, diseases and insects. Ryegrass pollen was observed being shed in many fields last week and will continue this week.

CROP MANAGEMENT

Now that perennial ryegrass is nearing full seed head extension it's important to protect the entire seedhead with a fungicide. Perennial ryegrass, treated with a growth regulator, produce plants with an upright growth habit which leads to more efficient pollination compared to plants without a growth regulator. How about seed weight? Research conducted by Tretheway et.al., evaluated seed weight (thousand seed weight) produced from various parts of the perennial ryegrass plant at full head extension. Ryegrass plant parts were covered during the seed filling period. The results of this research (Table 2) indicate the lowest seed weight was from plants that had the entire ryegrass seed head covered. Plant diseases on the seed head reduce the photosynthetic area. This research highlights the importance of a fungicides to protect the ryegrass seedhead from full head extension through physiological maturity.

One of the conclusions of this research was over 60% of the energy required to produce ryegrass seeds came from the seedhead and associated plant structures (spikelet's, glumes, and peduncle).

Table 2. Influence of ryegrass 1,000 seed weight by shading various portions of the ryegrass plant (Tretheway et. al.).

<u>Treatment</u>	<u>TSW (grams)</u>
Stems wrapped	2.95
Heads wrapped	2.55
Flag leaf removed	3.06
Flag leaf attached	3.10
Unlodged tiller	3.10
LSD (0.05)	0.28

PEST MANAGEMENT

Armyworms

Field scouting has identified low levels of armyworm larvae of various stages from <1/8 inch to 3/4 inches long. Why do we see worms of various sizes? The data in Table 3 lists the number of days for armyworms to move through the six instar stages. It takes approximately 7-10 days for mating and eggs to hatch. In 2022, three distinct flights of moths have been documented (end of May, the second and third week of June). Depending upon when eggs were laid we can predict the size of worms. If eggs were laid over Memorial Day weekend the worms would be in the 3/4 inch range. Remember, insect growth and development is driven by temperature, so if recorded temps are warmer than averages the development will be faster than what's reported in Table 3. Thus far in 2022, low levels of armyworm larvae have been observed from field scouting.

Table 3. Average number of days, corn foliage consumption and percent of total consumption of armyworm larvae at various instar stages. (Guppy et.al 1951)

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		

Grasshoppers

Last week, field scouting identified several perennial ryegrass fields with low levels of grasshoppers. Grasshoppers were a significant challenge in 2021, however thus far in 2022, grasshopper infestations have been light and sporadic. A tell-tale sign is seagulls in perennial ryegrass, or adjacent fields as seagulls feed on young grasshoppers. It appears grasshoppers are more common in no-till fields, volunteer ryegrass fields and fields with light textured soils.

Next week's newsletter will be released on July, 12th