

SUGARBEET ROOT MAGGOT FLY MONITORING IN THE RED RIVER VALLEY IN 2024

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Sugarbeet root maggot (SBRM), *Tetanops myopaeformis* (Röder), fly activity was monitored at 128 grower field sites throughout the Red River Valley during the 2024 growing season. This effort was carried out as a collaborative effort between the NDSU School of Natural Resource Sciences, American Crystal Sugar Company, and the Minn-Dak Farmers Cooperative.

Fly activity during the 2024 growing season was unusual because activity levels on a Valley-wide basis, according to sticky trap capture rates was substantially lower than that recorded in the previous six years of monitoring this pest (Figure 1). The most intense SBRM fly activity observed in 2024 occurred in the central and northern Red River Valley.

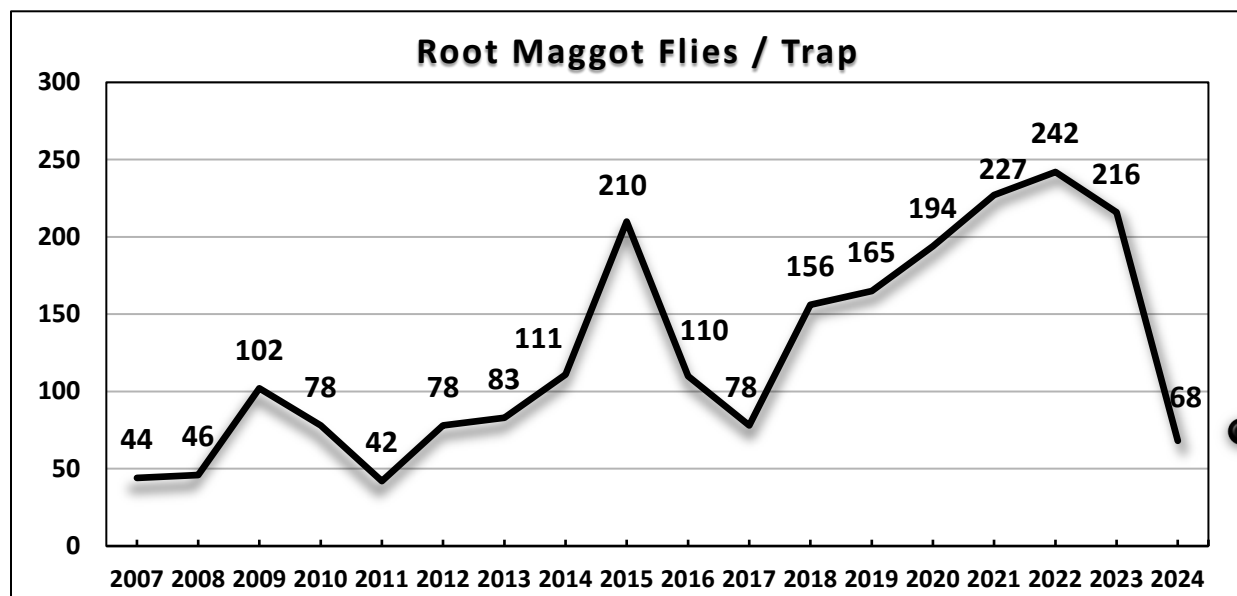


Figure 1. Yearly averages of sugarbeet root maggot flies captured on sticky-stake traps (Blickenstaff and Peckenpaugh, 1976) in the Red River Valley from 2007 to 2024.

High to severe levels of SBRM fly activity (i.e., cumulative captures of at least 200 flies per sticky stake) were observed in 2024 in fields near the following communities (cumulative flies per stake in parentheses): Auburn (361), Buxton (279), Cavalier (214), Crystal (243), Reynolds (406), and St. Thomas (201), ND, as well as Crookston, MN (278). Moderately high levels of activity (i.e., cumulative captures of between 43 and 199 flies per sticky stake) were also recorded near Ardoch, Cashel, Drayton, Grafton, Grand Forks, Hoople, Hensel, Leroy, Oakwood, Thompson, Vesleyville, and Warsaw, ND, and near Ada, Argyle, Borup, Bygland, Climax, Downer, East Grand Forks, Eldred, Euclid, Fisher, Glyndon, Kennedy, Lockhart, Oslo, Sabin, Sherack, Stephen, and Warren, MN. Fly activity was either considered economically insignificant or was undetectable in most other areas during 2024.

Figure 2 presents SBRM fly monitoring results from three representative sites (i.e., Ada and East Grand Forks, MN and St. Thomas, ND) during the 2024 growing season. Fly emergence began slightly later and at lower levels than what is considered normal, and the main Valley-wide peak in fly activity occurred on about June 16, which was about three days later than the historical average.

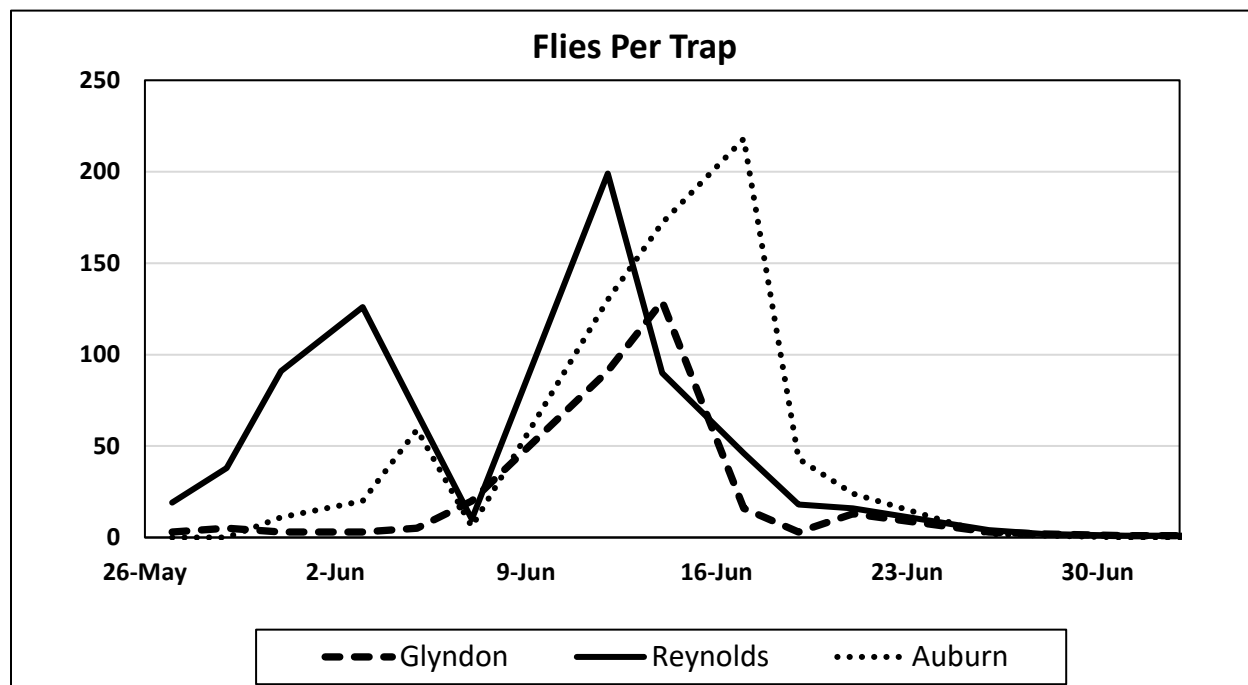


Fig. 2. Sugarbeet root maggot flies captured on sticky-stake traps at selected Red River Valley sites, 2024.

In late-August and early September of 2024, after the sugarbeet root maggot larval feeding period had ended, 41 of the fly monitoring sites were rated for SBRM feeding injury in accordance with the 0-9 scale of Campbell et al. (2000) to assess whether fly outbreaks and larval infestations were managed effectively. Two additional fields near Borup were also rated due to concerns about extremely high SBRM activity in the area in 2024. A total of 40 roots from each field sampled were rated for SBRM injury. The resulting data was subsequently overlaid with corresponding fly count data to develop the root maggot risk forecast map for the subsequent growing season (the SBRM risk forecast for next year is presented in the report that immediately follows this one).

Root maggot feeding injury, averaged across all RRV fields that exceeded the generalized economic threshold (43 cumulative flies per trap), averaged 2.99 on the 0 to 9 rating scale, which amounted to a 62% decrease over the same figure recorded in 2023. A list of RRV locations where the highest average root injury ratings were observed is presented in Table 1. Cumulative SBRM fly activity in those fields ranged from 70 flies/trap near Forest River, ND to 634 flies/trap near Crystal, ND.

Nearest City	Township	State	Flies/stake	Average Root Injury Rating ^a
Borup	Rockwell	MN	n/a	7.75
Ada	Pleasant View	MN	47	5.03
Cashel	Martin	ND	61	4.45
Crookston	Crookston	MN	38	4.33
Sabin	Elmwood	MN	54	4.05
Borup	Rockwell	MN	n/a	3.90
Vesleyville	Ops	ND	175	3.83
Auburn	Farmington	ND	361	3.6

^aSugarbeet root maggot feeding injury rating based on the 0 to 9 root injury rating scale (0 = no scarring, and 9 = over ¾ of the root surface blackened by scarring or dead beet) of Campbell et al. (2000).

The relatively high root injury ratings observed at a few of the locations listed in Table 1 are of concern, and somewhat unusual, given that relatively low levels of SBRM fly activity were observed in those fields. This suggests two very important things for consideration. First, weather conditions were frequently characterized by persistently moderate to high winds during the week leading up to peak SBRM fly activity and into the following week. Those conditions could have resulted in SBRM adults flying at very low heights and spending an unusually high amount of time near or on the ground surface as they moved into sugarbeet fields to mate and, in the case of

females, lay eggs. That behavioral response to the windy conditions could have resulted in falsely low capture rates on sticky stake traps used to monitor the flies. However, the moderately high to even severe levels of SBRM larval feeding injury observed on roots in several fields suggests that fields planted to sugarbeet in 2024 that are located in the immediate vicinity of such fields will likely experience high to severe SBRM fly activity and, consequently, larval feeding pressure.

Careful monitoring of fly activity in moderate- and high-risk areas (see Forecast Map [Fig. 1] in subsequent report) will be critical to preventing economic loss in 2025. Vigilant monitoring and effective SBRM management on an individual-field basis by sugarbeet producers could also help prevent significant population increases from one year to another, because even moderate levels of root maggot survival in one year can be sufficient to result in economically damaging infestations in the subsequent growing season.

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