

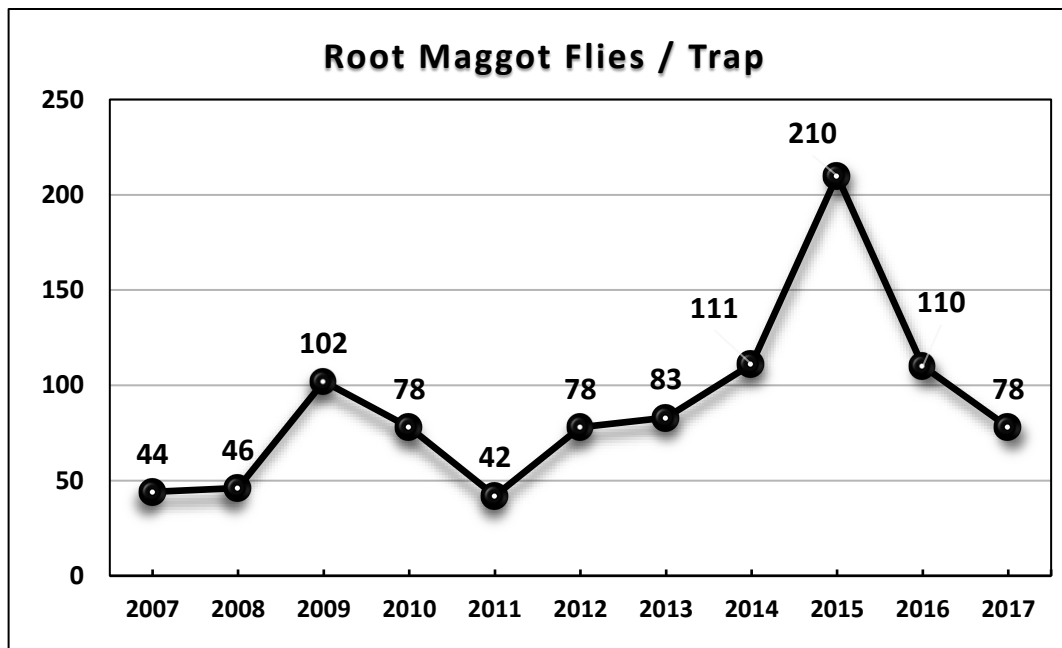
## SUGARBEET ROOT MAGGOT FLY MONITORING IN THE RED RIVER VALLEY IN 2017

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Sugarbeet root maggot (SBRM), *Tetanops myopaeformis* (Röder), fly activity was monitored at 36 grower field sites throughout the Red River Valley during the 2017 growing season. The monitoring program was a result of a collaborative effort between the North Dakota State University Entomology Department and the Minn-Dak Farmers Cooperative. Additionally, the project was jointly funded by the Sugarbeet Research & Education Board of Minnesota and North Dakota and the American Crystal Sugar Company.

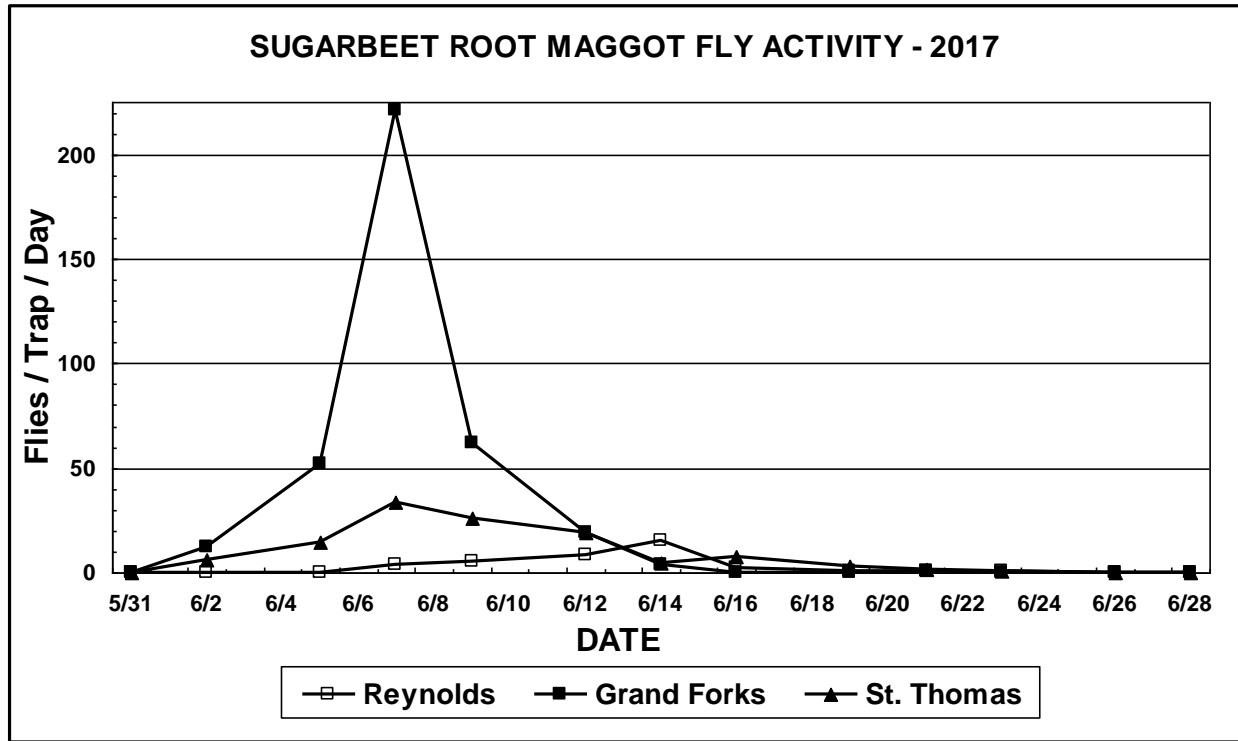
For the second consecutive year, fly activity in 2017 were significantly lower than those in 2015, which was the third-highest activity year in the past decade (Figure 1). Valley-wide fly counts for the whole season were about 63% lower than in 2015. This may suggest that control efforts between 2015 and 2017 were effective in reducing overall population levels throughout the Valley. However, it should be noted that a severe hailstorm occurred just two days before expected peak fly activity at South St. Thomas Township (TWP), which usually has some of the highest fly activity levels in the region. The storm is estimated to have killed 40 to 60% of the SBRM fly population at that sampling site and in the surrounding area within the path of the storm. This severe weather event likely contributed to the overall reduction in SBRM fly counts shown in Fig. 1.



**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 2017.**

The highest levels of SBRM fly activity were observed near Merrifield/Grand Forks, St. Thomas, and Thompson, ND, as well as Euclid and East Grand Forks, MN. Moderately high levels of activity were recorded near Auburn, Bathgate, Glasston, and Reynolds, ND, and also near Crookston, MN. Fly activity in most of the southern portion of the Valley remained at relatively low or undetectable levels throughout the growing season.

Figure 2 presents SBRM fly monitoring results from three representative sites (i.e., Reynolds, St. Thomas, and Grand Forks [Merrifield], ND). The onset of root maggot fly activity began a few days later than average, with the first captures of flies on sticky stakes occurring on June 2. Significant increases in fly activity occurred during the second week of June, with main peaks in activity occurring between June 7<sup>th</sup> and 11<sup>th</sup> in most sites.



**Fig. 2. Sugarbeet root maggot flies captured on sticky-stake traps at selected sites in the Red River Valley.**

After the larval feeding period ended in August, all 36 fly monitoring sites were rated for sugarbeet root maggot feeding injury in accordance with the 0-9 scale of Campbell et al. (2000). This is carried out on an annual basis as a means of determining whether fly outbreaks and larval infestations were managed effectively.

Root maggot larval feeding injury in most fields was again lower than that observed in the past few years. The highest root injury ratings were observed near Grand Forks (Grand Forks TWP), Merrifield (Brenna TWP), Thompson (Walle TWP), St. Thomas (S. St. Thomas TWP), and Auburn (Martin TWP), ND, with respective average damage ratings of 2.7, 2.0, 1.5, 1.3, and 1.2. Areas where low to moderate feeding injury levels were observed, but still could produce isolated damaging infestations next year included Glasston and Reynolds, ND, and Argyle, Crookston, E. Grand Forks, and Euclid, MN. Feeding injury observed in all other sampled fields was very low. The nearly universal low root injury in those fields, despite the occurrence of moderate to high fly activity levels earlier in the season, suggests that control efforts were effective at managing SBRM infestations in 2016 and 2017. Careful monitoring of fly activity in moderate- and high-risk areas (see Forecast Map [Fig. 1] in subsequent report) will be critical in 2018 to detect unanticipated flare-ups of SBRM fly activity and to prevent economic loss. Vigilant monitoring and effective SBRM management on an individual-field basis by sugarbeet producers may 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 populations in the following year.

**References Cited:**

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**Blickenstaff, C.C., and R.E. Peckenpaugh. 1976.** Sticky-Stake traps for monitoring fly populations of the sugarbeet root maggot and predicting maggot population and damage ratings. *J. Am. Soc. Sugar Beet Technol.* 19: 112–117.