

SUGARBEET ROOT MAGGOT FLY MONITORING IN THE RED RIVER VALLEY – 2012

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A large network of sticky-stake traps (Blickenstaff and Peckenpaugh, 1976) were used to monitor sugarbeet root maggot (SBRM), *Tetanops myopaeformis* (Röder), fly activity at 42 grower field sites throughout the Red River Valley during the 2012 growing season. This was a collaborative effort between the North Dakota State University Entomology Department and agricultural personnel from the American Crystal Sugar Company and the Minn-Dak Farmers Cooperative. The project was jointly funded by the Sugarbeet Research & Education Board of Minnesota and North Dakota and American Crystal Sugar Company.

Root maggot fly activity typically begins in current-year beet fields in the Red River Valley around mid- to late-May and peaks near the second week of June. In 2012, the first SBRM flies captured on sticky stakes were observed on May 18, but it is likely that small numbers of flies had emerged three days to a week before that first detection. This onset of activity was fairly normal, but slightly ahead of average for the area. The main peaks in fly activity occurred at most sites between June 4 and 8, although the more northern areas (e.g., Cavalier) peaked a few days later on June 18. Interestingly, significant root maggot fly activity persisted for nearly three weeks (June 1-18) throughout much of the monitoring area. This included moderate, secondary peaks that occurred around June 18 at Auburn, Forest River, Reynolds, and St. Thomas, ND.

Overall, the highest levels of SBRM fly activity were observed in central and northern portions of the Red River Valley, especially in fields near Auburn, Forest River, Reynolds, and St. Thomas, ND. Moderate levels of fly activity were observed near Cavalier, Grafton, Johnstown, Minto, and Thompson, ND, as well as in the vicinity of Euclid, MN. Fly activity in most of the southern Valley was low. Figure 1 presents results from fly monitoring efforts at three representative monitoring sites (i.e., St. Thomas, Reynolds, and Forest River, ND) throughout the production area.

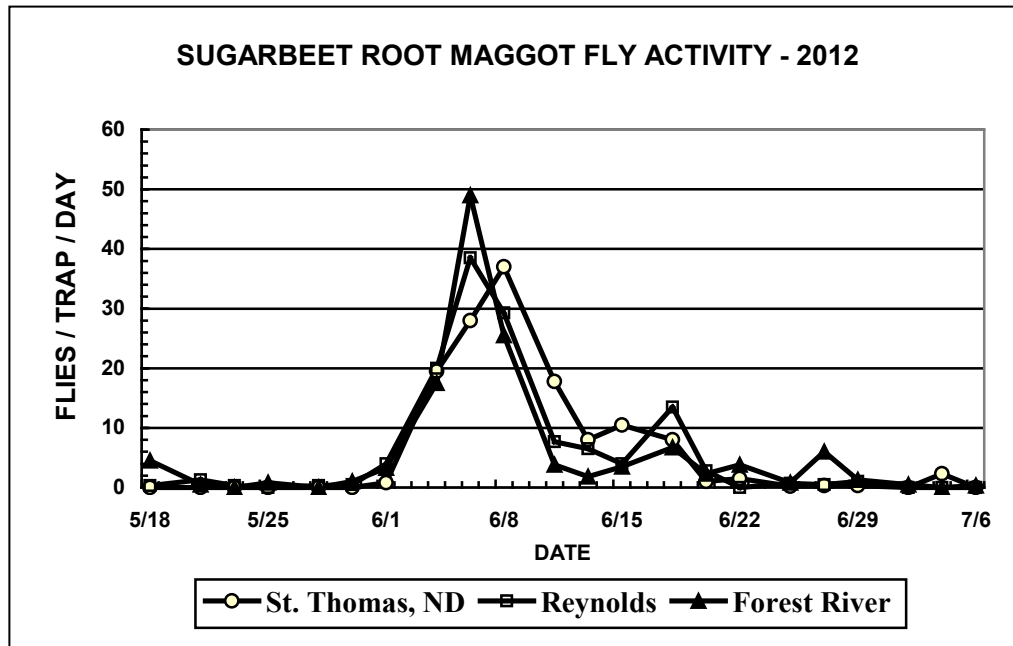


Fig. 1. Sugarbeet root maggot fly activity at selected sites in the Red River Valley, 2012 (counts represent flies captured on sticky stakes on a per-trap, per-day basis).

All sites monitored for fly activity were also assessed for maggot feeding injury after the larval feeding period was completed. This is carried out on an annual basis to determine whether fly outbreaks and resulting larval infestations were managed effectively. Sampling consisted of walking across the entire field in a zig-zag pattern, and stopping at randomly chosen locations within the field to collect roots for rating. In each field, 32 roots were dug, cleaned, and rated in accordance with the 0 to 9 root injury (RI) rating scale (0 = no scarring, and 9 = over $\frac{3}{4}$ of the root surface blackened by scarring or dead beet) of Campbell et al. (2000).

The highest levels of feeding injury were observed in fields near Reynolds and St. Thomas. However, those fields sustained only moderate levels of root maggot feeding injury (average: 1.78 to 4.37 on the 0 to 9 RI scale). Other areas in which low to moderate levels of feeding injury was observed included Johnstown (RI = 1.38), Minto (RI = 1.09), and Thompson (RI = 1.73). The overall observations of only low to moderate root maggot feeding injury throughout most of the production area, despite the occurrence of very high fly activity levels in many fields, suggests that root maggot control was effective in most of the fields that were rated. However, effective root protection during one year does not necessarily translate to low population levels during the following year. Therefore, careful monitoring will be critical in 2013 to detect unanticipated flare-ups of SBRM fly activity and to prevent economic loss. Vigilance in fly monitoring and effective SBRM management on a field-by-field basis by sugarbeet producers will continue to be important activities to help prevent the occurrence of economically significant root injury and associated yield loss.

References Cited:

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