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GRAND FORKS COUNTY AG ALERT

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SUGARBEET ROOT MAGGOT: PEAK FLY IS HERE!

Sugarbeet root maggot (SBRM) flight activity began substantially earlier than average this year; however, recent cool and wet weather has resulted in a few days of relatively low activity throughout much of the Valley. The very unusual spring weather (persistent cold in April, followed by periods of extremely warm temperatures in May) that has occurred thus far makes 2018 a nearly unprecedented year with regard to predicting peak fly activity.

Peak fly activity typically coincides with the first rain-free, warm (about 80°F), low-wind (≤ 10 mph) day at the accumulation of 650 degree-day (DD) units. The current forecast for four representative RRV locations is presented in Table 1.

According to SBRM degree-day (DD) accumulations, fly activity levels in the central and far southern reaches of the insect's range within the Red River Valley (RRV) should have already peaked. Tuesday's stormy weather and the subsequent windy conditions on Wednesday suggest that, both the Grand Forks/Thompson/ Reynolds areas, as well as the Grafton, St. Thomas, and Cavalier areas, will probably peak Thursday, June 7; however, activity will probably not abruptly cease in these areas, due to anticipated windy conditions on Friday.

Table 1. Degree-day (DD) based predictions for timing of high SBRM fly activity periods and peak fly activity in the Red River Valley

Location	Total DD (as of June 5)	High Fly Activity Period	Maximum Likelihood Peak Fly Date*
Fargo, ND		May 31-June 1 (low activity expected)	Peak reached
Ada, MN		June 3-4 (+80°F, dry, and low winds)	Peak reached
Grand Forks, ND	667	June 6-8 (+80°F, dry, and low winds)	June 7
St. Thomas, ND	654	June 9-10 (+80°F, dry, and low winds)	June 7

*Maximum likelihood for peak fly activity is based on extended weather forecasts for wind speed, air temperature, and precipitation. Peak fly in current-year beets usually coincides with the first rain-free, calm/low-wind day to reach 80°F after 650 DD are accumulated.

Root maggot fly counts. The highest numbers of SBRM flies captured on sticky stake traps has occurred in rural East Grand Forks (Sullivan TWP), Grand Forks (Grand Forks TWP), St. Thomas (S. St. Thomas TWP), and Thompson (Brenna TWP). Moderately high activity has also been observed near Auburn, Bathgate, and Crookston. Growers in areas of high activity should be ready to apply additive postemergence insecticide applications if fly activity in their areas increases (or resurges) to at least 45 flies per sticky stake or 0.5 flies per plant within a field. Fly counts from the NDSU trapping network can be viewed online. NOTE: fly counts for each field are cumulative totals from 2 stakes.

Postemergence SBRM Control. Growers in high-risk areas for damaging SBRM infestations should plan on applying a postemergence insecticide for additive protection, especially if an insecticidal seed treatment or a low to moderate rate of a granular insecticide was used at planting. Fields in which heavy rainfalls (≥ 3 inches) occurred within two to three days after at-plant or postemergence insecticides were applied also may need additional postemergence protection.

The best control option this time is a sprayable liquid insecticide application, which can either be applied by ground-based equipment or aircraft. Postemergence liquid insecticides perform best if applied close to (within 2-3

days of peak fly; either on, before or after peak). Treated fields should be monitored closely after a postemergence application to determine if fly activity resurges. Some fields could require retreatment if subsequent infestations reach or exceed 0.5 flies per plant.

IMPORTANT: If a chlorpyrifos-containing liquid spray (e.g., Lorsban 4E, Lorsban Advanced, or any generic chlorpyrifos product) is applied, 10 days must pass before another chlorpyrifos liquid can be made to the same field. If retreatment is necessary within 10 days of the initial chlorpyrifos application, an insecticide containing a different active ingredient must be used. For more information, consult the "Insect Control" section of this year's Sugarbeet Production Guide. Always remember to READ, UNDERSTAND, and FOLLOW the label of your insecticide product – it's the law.

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FALLOW SYNDROME AFTER SUGARBEET

In the Grand Forks area and north, there are fields of corn planted into 2017 sugarbeet fields that are experiencing fallow syndrome symptoms (see figure).

Fallow syndrome symptoms in corn (D. Eisinger image).

Fallow syndrome is so-called because the condition, which is stunting with a purple leaf/stem color especially early in the growing season and subsequent yield loss, was historically seen after black fallow. Mycorrhiza is a symbiotic fungi that extends the effective root system of a supportive plant by means of its root-like hyphae strands. Mycorrhiza is important for corn to gather the phosphorus (P) it requires most efficiently. Black fallow, and the cultivation of non-mycorrhizal crops in the Cruciferae (mustard) and Chenopodiaceae (lambsquarter) plant families result in low mycorrhiza survival into the next crop year. Our Cruciferae crops are canola, mustard, and forage radish. Our Chenopodiaceae family crop is sugar beet. Crops particularly susceptible to fallow syndrome are flax and corn.

Fallow syndrome is not uncommon after sugarbeet, but it has been at least 15 years since I have seen symptoms this severe. I think that over that time our May seasons have been relatively cool, and the above-ground corn growth has been suppressed by the temperatures, allowing time for the mycorrhizal populations to increase before rapid demand of P by the corn occurred. This year, our very warm temperatures have increased early demand for P, and that is why I think we see such severe symptoms.

An additional factor for the severity of symptoms is that most P taken up by sugarbeet is returned to the soil during harvest leaf mowing. The leaf tissue rapidly decomposes and much P is returned to the next crop in an organic P form. This year, the northern Valley experienced a series of severe dust storms. Significant soil was lost from many areas, which is also the soil containing much of the organic P from the sugarbeet leaves. In past years, with not as much soil loss, the organic P remaining may have decreased the P deficiency caused by fallow syndrome to corn, while this year much of the organic P probably left the field for places much farther east.

In the future, it would be best for corn growers not to follow sugarbeet with corn. I think that some growth drag also occurs with soybean and small grain after sugarbeet, but it is small and no symptoms are ever seen. If corn is to be grown, the only remedy is to apply 150 pounds per acre of 11-52-0 (MAP) or equivalent P rates of other fertilizers in a 2X2 inch band. Any safe rate of fertilizer in furrow is not enough to overcome the lack of mycorrhiza and provide early season P nutrition to corn. No P fertilizer was applied at planting in the field pictured.

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