Pest Monitoring and Decision Support Systems Help Sugarbeet Growers Fight Root Maggot Outbreaks

The Situation
Over 50,000 acres of sugarbeet in the Red River Valley (RRV) are annually at risk of damaging sugarbeet root maggot infestations. In 2014 and 2015, RRV maggot populations were some of the highest observed in the area in nearly two decades. Root maggot injury can reduce yields by 45% and cause revenue losses of $260 per acre without effective control. As such, these population increases threatened the profitability of many RRV producers. This is a follow-up to a previous report on this issue.

Extension Response
In 2015 and 2016, NDSU monitored root maggot fly activity in over 40 growers’ fields. Areawide GPS maps and individual field counts were posted online three days weekly for near-real-time updates on root maggot hotspots.

The NDSU Sugarbeet Root Maggot Model application was used to forecast peak fly activity and determine effective timing for insecticide applications. The model is publicly available on NDSU’s North Dakota Agricultural Weather Network (NDAWN) website. It is also available as a mobile app in cooperation with American Crystal Sugar Company.

Root maggot control training was provided at several Extension winter grower seminars, as well as in three NDSU Extension publications: 1) the Sugarbeet Production Guide; 2) the North Dakota Field Crop Insect Management Guide; and 3) the “Crop & Pest Report” newsletter. Critical updates during the growing season were shared through mass media outlets such as radio, television, and an optional “text alert” system for sugarbeet growers.

Impacts
• Improved root maggot control in the most problematic areas increased grower revenues by $4-6 million per year in 2015 and 2016.
• Surveys indicated a 256% increase in use of the Root Maggot Model mobile app and a 34% increase in use of the NDAWN Root Maggot Model from 2015 to 2016.
• Surveys also showed that 98% of respondents achieved good to excellent satisfaction from NDSU-recommended at-plant control tools and 100% good to excellent satisfaction from postemergence root maggot control efforts!
• Grower use of Extension recommendations contributed to a 48% reduction in root maggot fly activity from 2015 to 2016 and a 56% reduction in maggot feeding injury in the most problematic areas from 2014 to 2016.

Feedback
“The model was once again spot-on! Way to go!” Sugar Company Agriculturist
“Thank you, this is exactly what I was looking for. Perfect.” Winter Grower Seminar Attendee

Public Value Statement
Insect pest monitoring and decision supports assist growers by determining: 1) where pest outbreaks are occurring; 2) if control measures are needed; and 3) what the most effective timing will be to optimize control success.

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