

DEGREE-DAY MODELING TO FORECAST PEAK ACTIVITY OF SUGARBEET ROOT MAGGOT FLIES

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The sugarbeet root maggot (SBRM), *Tetanops myopaeformis* Röder is the most damaging insect pest of sugarbeet in the Red River Valley growing area. It is also a significant threat to the crop in western beet-producing states and the Canadian province of Alberta. Infestations of this pest are occasionally so severe that postemergence rescue insecticides are required to avoid major economic loss. Postemergence control of the SBRM mostly involves a spray application of a liquid insecticide formulation to kill adult flies and also provide additional management of neonate larvae as they begin to establish on young sugarbeet plants. The performance of these applications is optimized by applying the spray(s) as close to peak fly activity as possible. This project involved compiling 15 years of root maggot fly activity data and correlating it with temperature accumulation data obtained from the North Dakota Agricultural Weather Network (NDAWN) Center. The data set involved 119 sampling sites, each of which was comprised of four months (April through July) of temperature accumulations. The result was a simple degree-day (DD) developmental model, which helps growers, Extension personnel, sugar company agriculturists, and other crop advisors to anticipate the timing of root maggot colonization of sugarbeet fields in their respective areas. The model is now available online as an interactive application on the NDAWN website for site-specific DD monitoring by growers, crop advisors, and extension personnel. The site also includes links to results of the North Dakota State University root maggot fly monitoring program and to a “help sheet” that includes latitude-based recommendations to optimize control intervention timing based on sugarbeet root maggot development stage. Additionally, the model’s output is now linked to a voluntary text-messaging system that alerts growers as degree-day accumulations approach levels at which insecticide applications should be made.