Management of Lygus Bugs and Seedpod Weevil In Canola At The Farm Level

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Cabbage seedpod weevil (csw) has become a chronic problem for canola growers in areas south of highway 1 in Alberta and SW Saskatchewan. Lygus bugs, like the csw arrive to canola fields at bud and early flower, but they peak later at the early or mature pod stage. Researchers with AAFC led a four-year farm-scale study to determine the impact of spraying insecticide for csw at early flower on abundance of lygus bugs at early pod stage in commercial farms, canola yield and the impact of weather-related factors. Research results show that spraying insecticide at the early flower stage for csw reduced the abundance of lygus bugs at the pod stage in most cases. But the results also show that if numbers of csw have not reached threshold levels at early flower, there is no yield benefit from spraying for potential other future pests.

Cabbage seedpod weevil (csw) has become a chronic exotic pest problem for canola growers in areas south of highway 1 in Alberta and SW Saskatchewan. Weevils arrive in canola fields starting at the bud stage and into flowering to feed on buds, flowers and young pods. Lygus bugs are native pests that attack many crops including canola throughout Canada. Like the csw, lygus bugs arrive to canola fields at bud and early flower, but they peak later at the early or mature pod stage.

Researchers with Agriculture and Agri-Food Canada (AAFC) in Lethbridge, Alberta led a four-year farm-scale study starting in 2010 to determine the impact of spraying insecticide for csw at early flower on abundance of lygus bugs at early pod stage in commercial farms. They also wanted to develop a predictive tool for lygus abundance at early pod and to develop recommendations for managing combinations of csw and lygus bug as a pest complex, including joint thresholds at the early flower stage from farm studies. Researchers also wanted to determine the role of seeding date and effects of local weather, rainfall and temperature on csw and lygus dynamics.

Over the four years of the study, cabbage seedpod weevils and lygus bugs were studied in more than 75 sites. Crop yield was collected from all of these sites and from farmer's combine monitors from 20 fields. Damage to pods by csw was determined in selected fields. Insect numbers of both csw and lygus were conducted and economic thresholds determined. Local rainfall during the growing season was measured with rain gauges on site.

Cabbage Seedpod Weevil

Photo Credit: E. Kokko. AAFC, Lethbridge.

Results showed that spraying weevils at the early flower stage reduced the abundance of lygus at the pod stage in most fields. Over all fields and years, spraying at early flower for weevils resulted in an average yield increase of around 1.5 bushels per acre compared to unsprayed fields. However, local results were highly variable for yield responses to insecticide spraying and in several cases unsprayed strips had similar or higher yields than those sprayed.

Lygus Keltoni

Photo Credit: H. Cárcamo. AAFC, Lethbridge.

Seeding period clearly influenced the abundance of weevils and lygus, but in different ways. Early seeding in April increased the risk of csw damage but reduced that of lygus. The opposite occurred in fields seeded in late May, where the risk of lygus increased, but csw decreased and those seeded at the normal time period in early May had intermediate pest abundances. There was no indication that having the two pests at moderate numbers increased the risk of higher yield losses compared to fields with only high numbers of csw. Local growing season rainfall using rain gauges should be used to estimate lygus populations rather than regional weather stations.

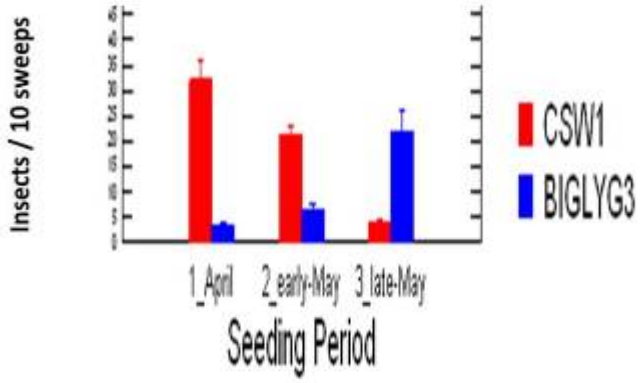

Fig. 27: Effect of seeding period on lygus (BIGLYG3= adults and juveniles at least 3rd instar) and weevils (CSW1= cabbage seedpod weevils in first collection). Period 1 = April; 2= first two weeks in May; 3 = last two weeks of May.

Research results show that spraying insecticide at the early flower stage for csw reduced the abundance of lygus bugs at the pod stage in most cases. Managing insect pests in a timely manner before they damage the crop can increase crop yields. Each of these pests can reduce yields by 10-20 % on their own if they surpass thresholds; therefore, growers can increase canola seed production on the same acreage of land.

From the results, researchers recommend using an economic threshold for lygus at one per sweep, and to keep the current 2-3 per sweep for csw, regardless of prices for canola. Using validated economic thresholds will allow farmers to avoid unnecessary crop spraying and thereby, reduce input costs and prevent harming beneficial insects.

Overall, the research results show that spraying insecticide at the early flower stage for csw reduced the abundance of lygus bugs at the pod stage in most cases. But the results also show that if numbers of csw have not reached threshold levels at early flower, there is no yield benefit from spraying for potential other future pests.