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Insecticide Screening in Red Clover

Julie Soroka and Larry Grenkow,

Saskatoon Research Centre

107 Science Place, Saskatoon, SK, S7N 0X2

Insecticide Screening in Established Red Clover

Objective: To determine the efficacy of the insecticides Cygon, Decis and Sevin XLR for the control of lesser clover leaf weevil in established red clover.

Methodology: Eight spray treatments, four replicates, plot size 36m². Spray dates - all three insecticides were sprayed June 6, when clover was in early vegetative stage (early spray). On June 23, when clover was budding, Decis and Sevin XLR were sprayed on previously unsprayed plots (late spray), and on plots previously sprayed on June 6 (early and late spray).

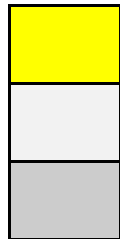
Application rates - Cygon 480 - 0.40 L/acre, Decis 5EC – 0.10 L/acre, Sevin XLR Plus – 1.09 L/acre.

Conclusions: The Decis two-spray treatment plots had the lowest number of lesser clover leaf weevils at all three sites, although the number of weevils at the Carrot River site were considerably lower than at the other two sites. Foliar injury was lowest in the Decis two-spray plots in the Arborfield plots, while differences in clover foliar damage were not found among treatments at Carrot River. Highest seed yields were found in Decis two-spray and Decis late spray plots at Arborfield. Sevin XLR early spray plots had higher seed yields than did Control or Decis early spray plots in the second year field at Carrot River. Cygon does not appear to be effective in controlling lesser clover leaf weevil.

SITE 1. Location: Arborfield - first year double cut red clover

Treatment	No. lesser clover leaf weevils per five shoots					Seed yield (kg/ha)
	June 13	June 20	June 26	July 4	July 12	
Control	13.0 a	18.5 a	17.8 a	9.8 ab	4.8 ab	168 bc
Cygon	9.8 ab	11.0 ab	13.5 a	12.5 ab	8.2 a	140 c
Decis early spray	2.8 b	2.2 c	5.0 a	5.8 bc	4.5 ab	286 ab
Decis late spray	7.5 b	11.8 ab	11.0 a	3.8 cd	1.8 bc	367 a
Decis early & late	4.2 b	5.8 bc	4.0 a	2.8 d	0.5 c	366 a

Sevin XLR early	8.2 ab	10.0 ab	9.5 a	11.5 ab	4.0 b	187 bc
Sevin XLR late	5.8 b	15.5 ab	13.2 a	13.2 a	5.5 ab	171 bc
Sevin XLR early & late	8.8 ab	11.2 ab	6.8 a	8.8 abc	3.5 bc	215 bc
LSD (P=0.05)	8.0	9.8	10.1	8.0	4.8	132
CV	72.5	61.8	68.1	64.1	79.4	37.7



Plots unsprayed

Plots sprayed once

Plots sprayed twice

Measurement of foliar damage - damage ranked from highest to lowest:

	Leaf damage (ranked 1-8, highest - worst)				
Treatment	June 13	June 20	June 26	July 4	July 12
Control	8 a	8 a	6 a	7 ab	6 ab
Cygon	3 a	7 a	4 a	5 ab	7 a
Decis early spray	2 a	3 a	5 a	2 c	4 c
Decis late spray	6 a	6 a	8 a	4 ab	2 c
Decis early & late	1 a	1 a	1 a	1 c	1 c
Sevin XLR early	4 a	2 a	3 a	6 ab	3 c
Sevin XLR late	7 a	4 a	7 a	8 a	8 a
Sevin XLR early & late	5 a	5 a	2 a	3 bc	5 bc
P _≤	0.49	0.57	0.68	0.003	0.0006

	Stipule damage (ranked, highest - worst)				
Treatment	June 13	June 20	June 26	July 4	July 12
Control	8 a	8 a	5 a	5 a	6 ab
Cygon	1 a	7 a	8 a	8 a	7 ab
Decis early spray	5 a	1 a	1 a	2 a	4 bc
Decis late spray	6 a	5 a	3 a	7 a	2 c
Decis early & late	3 a	3 a	2 a	1 a	1 c
Sevin XLR early	7 a	6 a	4 a	4 a	5 bc
Sevin XLR late	4 a	4 a	7 a	3 a	8 a
Sevin XLR early & late	2 a	2 a	6 a	6 a	3 bc
P _≤	0.99	0.26	0.38	0.06	0.01

	stem damage (ranked, highest - worst)				
Treatment	June 13	June 20	June 26	July 4	July 12
Control	8 a	8 a	2 a	3 a	4 abc
Cygon	7 a	2 a	6 a	8 a	7 ab
Decis early spray	3 a	1 a	1 a	2 a	5 abc
Decis late spray	1 a	4 a	4 a	6 a	1 c
Decis early & late	6 a	5 a	5 a	1 a	2 c
Sevin XLR early	2 a	3 a	8 a	7 a	6 abc
Sevin XLR late	4 a	7 a	3 a	4 a	8 a
Sevin XLR early & late	5 a	6 a	7 a	5 a	3 bc
P≤	0.58	0.74	0.52	0.20	0.04

Site 2: Arborfield - double cut first year seed harvest

Treatment	No. lesser clover leaf weevils per five shoots					Seed yield (kg/ha)
	June 13	June 20	June 26	July 4	July 12	
Control	8.0 abcd	8.0 abc	5.3 a	9.0 ab	6.0 ab	196 bc
Cygon	8.0 abcd	15.5 ab	8.5 a	10.0 ab	10.0 a	184 c
Decis early spray	2.3 d	1.3 c	4.5 a	4.5 bc	3.0 b	285 abc
Decis late spray	13.8 a	12.0 abc	9.3 a	4.3 bc	1.5 b	327 ab
Decis early & late	4.0 cd	4.7 bc	7.3 a	1.5 c	1.0 b	367 a
Sevin XLR early	7.5 bcd	16.0 a	2.0 a	8.0 abc	8.5 a	176 c
Sevin XLR late	8.5 abc	7.3 abc	6.3 a	11.3 a	10.0 a	176 c
Sevin XLR early & late	11.3 ab	5.3 abc	8.7 a	7.3 abc	5.0 ab	255 abc
LSD (P=0.05)	6.0	10.8	9.7	6.6	5.1	135
CV	51.5	83.6	102.1	63.9	61.2	37.5

	Leaf damage (ranked, highest - worst)				
Treatment	June 13	June 20	June 26	July 4	July 12
Control	3 bc	7 a	4 a	8 a	7 ab
Cygon	1 c	4 a	6 a	3 a	6 ab
Decis early spray	4 bc	3 a	1 a	2 a	1 c
Decis late spray	7 a	8 a	7 a	4 a	2 c
Decis early & late	5 abc	1 a	2 a	1 a	3 bc
Sevin XLR early	2 bc	6 a	5 a	5 a	5 bc
Sevin XLR late	6 ab	5 a	8 a	7 a	8 a
Sevin XLR early & late	8 a	2 a	3 a	6 a	4 bc
P _≤	0.0146	0.5140	0.3168	0.1262	0.0166

	Stipule damage (ranked, highest - worst)				
Treatment	June 13	June 20	June 26	July 4	July 12
Control	4 a	4 a	3 a	8 a	5 a
Cygon	1 a	7 a	4 a	7 a	6 a
Decis early spray	2 a	1 a	1 a	1 a	1 a
Decis late spray	5 a	8 a	6 a	3 a	2 a
Decis early & late	3 a	3 a	2 a	2 a	4 a
Sevin XLR early	6 a	6 a	7 a	4 a	7 a
Sevin XLR late	8 a	5 a	8 a	6 a	8 a
Sevin XLR early & late	7 a	2 a	5 a	5 a	3 a
P _≤	0.4962	0.1924	0.7596	0.1182	0.4012

	stem damage (ranked, highest - worst)				
Treatment	June 13	June 20	June 26	July 4	July 12
Control	4 abc	1 a	1 a	8 a	5 a
Cygon	7 ab	5 a	7 a	7 a	4 a
Decis early spray	2 bc	3 a	2 a	1 a	2 a
Decis late spray	5 abc	4 a	4 a	3 a	1 a
Decis early & late	3 abc	2 a	8 a	6 a	7 a
Sevin XLR early	8 a	6 a	6 a	2 a	6 a
Sevin XLR late	1 c	8 a	5 a	5 a	8 a
Sevin XLR early & late	6 ab	7 a	3 a	4 a	3 a
P _≤	0.0769	0.9402	0.7720	0.1201	0.7872

Site 3: Carrot River - second year red clover seed field, heavy trash cover from previous year, uneven stand density.

Treatment	No. lesser clover leaf weevils per five shoots					Seed yield (kg/ha)
	June 13	June 20	June 26	July 4	July 12	
Control	5.0 ab	4.5 b	2.7 ab	4.0 ab	2.0 a	191c
Cygon	4.7 ab	6.8 ab	4.5 ab	4.7 ab	3.7 a	211abc
Decis early spray	3.3 b	2.5 b	6.7 a	5.5 a	2.3 a	196 bc
Decis late spray	4.3 b	2.7 b	3.7 ab	1.5 b	0.3 a	269 ab
Decis early & late	5.0 ab	4.5 b	6.0 ab	1.5 b	1.5 a	240 abc
Sevin XLR early	2.0 b	4.3 b	2.0 b	2.5 ab	1.3 a	279 a
Sevin XLR late	10.0 a	10.0 a	5.3 ab	6.3 a	3.5 a	226 abc
Sevin XLR early & late	6.5 ab	5.0 b	5.0 ab	4.8 ab	4.0 a	225 abc
LSD (P=0.05)	5.6	4.4	4.7	3.8	3.8	76.0
CV	75.2	59.3	71.3	67.3	112.3	22.5

	Leaf damage (ranked, highest - worst)				
Treatment	June 13	June 20	June 26	July 4	July 12
Control	4 a	1 a	6 ab	5 a	5 a
Cygon	7 a	3 a	3 bc	8 a	8 a
Decis early spray	1 a	6 a	8 a	7 a	4 a
Decis late spray	2 a	5 a	2 bc	3 a	2 a
Decis early & late	6 a	8 a	7 ab	2 a	1 a
Sevin XLR early	3 a	2 a	1 c	1 a	3 a
Sevin XLR late	8 a	7 a	5 ab	6 a	7 a
Sevin XLR early & late	5 a	4 a	4 abc	4 a	6 a
P _≤	0.2082	0.3590	0.0359	0.1163	0.4965

	Stipule damage (ranked, highest - worst)				
Treatment	June 13	June 20	June 26	July 4	July 12
Control	2 c	4 a	4 a	5 abc	3 a
Cygon	1 c	5 a	3 a	7 ab	8 a
Decis early spray	5 abc	3 a	7 a	8 a	7 a
Decis late spray	3 bc	2 a	2 a	3 bc	2 a
Decis early & late	4 bc	6 a	8 a	2 c	1 a
Sevin XLR early	8 a	7 a	1 a	1 c	4 a
Sevin XLR late	7 a	8 a	5 a	6 ab	6 a
Sevin XLR early & late	6 ab	1 a	6 a	4 abc	5 a
P _≤	0.0402	0.4733	0.2102	0.0474	0.6925

	stem damage (ranked, highest - worst)				
Treatment	June 13	June 20	June 26	July 4	July 12
Control	2 bc	5 a	3 a	4 a	2 a
Cygon	5 bc	7 a	4 a	8 a	8 a
Decis early spray	1 c	3 a	7 a	7 a	5 a
Decis late spray	3 bc	1 a	1 a	3 a	4 a
Decis early & late	4 bc	6 a	6 a	2 a	1 a
Sevin XLR early	6 abc	4 a	2 a	1 a	6 a
Sevin XLR late	7 ab	8 a	5 a	6 a	7 a
Sevin XLR early & late	8 a	2 a	8 a	5 a	3 a
P _≤	0.0635	0.2234	0.7036	0.3454	0.8476