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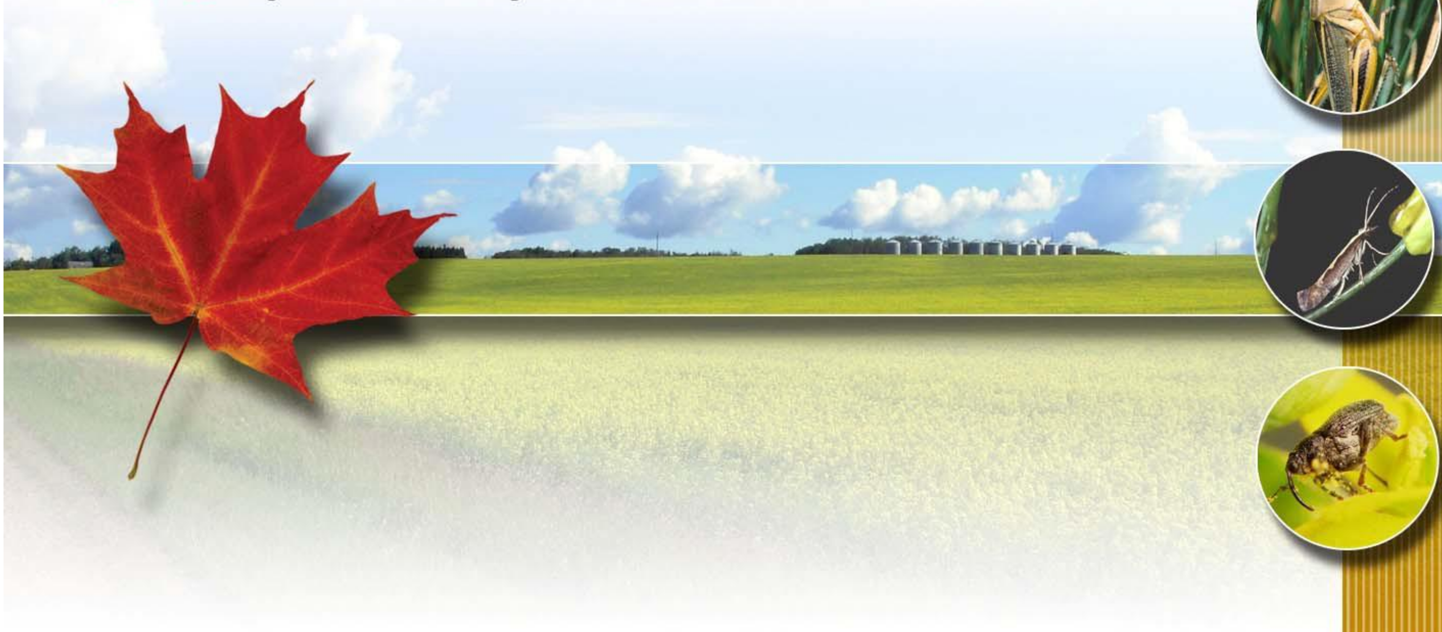


2014 Crop Variety Highlights and Insect Pest Updates

Melfort Research Farm

Scott Research Farm

Saskatoon Research Centre

Regional Testing of Cereal, Oilseed and Pulse Cultivars 2014
L.P. Nielsen and G.J. Moskal

Cultivars are tested regionally to determine their adaptation to the wide range of soil and climatic conditions in Saskatchewan. These tests are conducted at approximately 12 locations each year including two by Scott Research Farm staff (Scott and Glaslyn) and one at the Melfort Research Farm. Results form the basis of cultivar recommendations – yield data can help producers assess the performance of varieties in their area. However, data from a single location can be limited, particularly for new varieties. More comprehensive information is contained in the Saskatchewan Ministry of Agriculture publication, *Varieties of Grain Crops 2014*. Seed quantities for new varieties listed herein may be limited for 2014.

Table of Contents | **Page No.**

Table 1. Growing Season Precipitation (mm) at Scott, Glaslyn and Melfort in 2014

Month	Scott	Glaslyn	Melfort
May	23	35	24
June	60	62	167
July	128	61	51
Total	**211**	**158**	**242**
Long Term Average	158	161	187

Table 2. Average Yield of Crop Species on Fallow expressed as a % of hard red spring wheat (AC Barrie) at Scott, Glaslyn and Melfort and (kg/ha). For most crops, data presented is based on yields averaged over the past 5 years. An asterisk signifies data of less than 5 years

	Cultivar	Scott		Glaslyn		Melfort	
Hard Red Wheat	AC Barrie	100	(3381)	100	(4345)	100	(4635)
CPS Wheat	*AAC Crusader	109	(4747)	124	(5391)	125	(5431)
Hard White Wheat	AC Whitehawk	80	(3480)	88	(3844)	90	(4219)
Soft White	*Chiffon	127	(5505)	132	(5746)	141	(6203)
Durum Wheat	Strongfield	91	(3947)			107	(4969)
Barley – 2 row	AC Metcalfe	101	(4390)	117	(5067)	119	(5446)
Barley – 6 row	CDC Anderson	107	(4667)	127	(5526)	128	(5907)
Oat	CDC Dancer	128	(5541)	137	(5970)	131	(6022)
Flax	CDC Bethune	58	(2536)	45	(1962)	52	(2455)
Canola	5440	88	(3830)	69	(2993)	80	(3672)
Field Pea (yellow)	CDC Golden	56	(2453)	75	(3275)	120	(5496)
Field Pea (green)	CDC Striker	66	(2853)	81	(3536)	120	(5422)
Lentil – small red	CDC Maxim	50	(2157)			52	(2753)
Lentil – small green	CDC Imvincible	45	(1934)			49	(2554)
Canary	Cantate	47	(2032)			41	(1911)
Mustard (Juncea)	Cutlass	56	(2452)				

* Less than 5 years of data

Table 3. Yield of Flax Cultivars at Scott, Glaslyn and Melfort 2014

	2014 Yield (kg/ha)			Long Term Average Yield (% of CDC Bethune)					
Cultivar	Scott	Glaslyn	Melfort	Scott		Glaslyn		Melfort	
CDC Bethune	2630	1190	2028	100		100		100	
AAC Bravo	2593	877	2241	102	*	65	*	114	*
CDC Glas	2667	1023	2712	105	*	85	*	121	*
CDC Neela	2107	1207	2567	90	*	83	*	117	*
CDC Sanctuary	2253	793	2529	87	*	97	*	96	
Nulin VT50	2470	813	2722	97	*	41	*	134	*
Prairie Sapphire	2047	867	2517	74	*	77	*	106	*

2014 saw a poor year in Glaslyn for Flax

***** Less than 3 years of data

Table 4. Yield of Durum Cultivars at Scott and Melfort 2014

Cultivar	2014 Yield (kg/ha)		Long Term Average Yield (% of Strongfield)			
	Scott	Melfort	Scott		Melfort	
Strongfield	3999	4626	100		100	
AAC Current	3690	3923	92	*	93	*
AAC Durafield	3637	4470	93	*	95	*
AAC Marchwell VB	3038	4045	87	*	91	*
AAC Raymore	3523	3553	88	*	87	*
AAC Spitfire	3585	3889	91	*	84	*
CDC Cabri	3537	4125	90	*	89	*
CDC Carbide	3683	4646	93	*	100	*
CDC Desire	3313	3949	91	*	89	*
CDC Fortitude	3507	3741	87	*	84	*
CDC Vivid	3804	4145	94	*	94	*
DT 575	3720	4464	94	*	97	*
Transcend	4134	3998	95		97	

* Less than 3 years of data

Table 5. Yield of Oat Cultivars at Scott, Glaslyn and Melfort 2014

Cultivar	2014 Yield (kg/ha)			Long Term Average Yield (% of CDC Dancer)					
	Scott	Glaslyn	Melfort	Scott		Glaslyn		Melfort	
CDC Dancer	5623	4913	6957	100		100		100	
AAC Justice	6131	6100	6817	112	*	100	*	109	*
AC Stride	6954	5551	7623	116		101		122	
Bia	5367	5755	6663	97	*	96	*	96	*
CDC Big Brown	6591	5987	7074	106		105		108	
CDC Haymaker	3688	5765	5680	75	*	90	*	98	*
CDC Nasser	6033	5720	7177	106		97		113	
CDC Ruffian	5867	6043	7498	104	*	103	*	118	*
Nice	6340	6017	7190	114	*	101	*	103	*
OT 3066	6421	5787	6492	116	*	97	*	93	*
OT 4001R	6615	6013	8763	121	*	105	*	130	*
Souris	6698	4998	7298	110		94		122	

* Less than 3 years of data

Table 6. Yield of Spring Wheat Cultivars at Scott, Glaslyn and Melfort 2014

Cultivar	2014 Yield (kg/ha)			Long Term Average Yield (% of AC Barrie)					
Hard Red	**Scott**	**Glaslyn**	**Melfort**	**Scott**		**Glaslyn**		**Melfort**	
AC Barrie	3395	5003	3608	100		100		100	
AC Bailey	4072	4889	3866	114		106		98	
AAC Brandon	4247	5086	3796	130	*	113		107	
AAC Elie	4711	4884	3460	137	*	114		103	
AAC Prevail VB	4068	5033	4333	124		102		110	
AC Redwater	4407	4733	3562	124	*	103		98	
Carberry	4223	4869	3619	119		108		96	
Cardale	4337	4659	3728	113		104		103	
CDC Kernen	4187	4676	4109	116		104		105	
CDC Plentiful	3989	4883	4038	117	*	109		109	
CDC Stanley	5294	4953	4135	129		100		107	
CDC Thrive	4524	5017	3859	121		101		104	
CDC Titanium VB	4201	5083	3654	124	*	117	*	105	*
CDC Utmost VB	4631	5059	4374	121		101		110	
CDC VR Morris	5309	5178	3848	132		113		108	
Glenn	5155	5011	3618	125		105		100	
Muchmore	4214	4920	2855	117		105		93	
Shaw VB	4157	4927	5298	121		105		118	
SY 433	3795	5078	3285	105		107		99	
Thorsby	4373	4865	4099	129	*	112	*	114	*
Vesper VB	4487	4891	4466	120		105		117	
5604 HR-CL	4049	4379	3487	111		96		94	
5605 HR-CL	4807	5098	3720	125	*	116	*	108	*
Hard White									
AAC Iceberg	3969	4745	3281	116	*	102		94	
AAC Whitefox	4972	4857	3880	129	*	112	*	105	*
AAC Whitehawk	3826	4511	4234	103		88		90	
CDC Whitewood	4298	4371	3179	120	*	104		95	
CPS									
AAC Crusader	4789	5421	4900	124	*	124		123	
AAC Foray VB	4775	5435	5258	120	*	120	*	131	*
AAC Penhold	4352	5713	4255	122	*	122	*	110	*
AAC Ryley	3602	4967	3906	118	*	118	*	106	
AAC Tenacious VB	3715	5068	4016	104	*	104	*	100	*
Enchant VB	4267	4817	4766	118	*	118	*	107	
HY995	4283	5353	4419	120	*	120	*	117	*
SY985	4595	5604	4165	121	*	121	*	113	

Table 6. (continued) - Yield of Spring Wheat Cultivars at Scott, Glaslyn and Melfort 2014

Cultivar	2014 Yield (kg/ha)			Long Term Average Yield (% of AC Barrie)					
General Purpose									
AAC Chiffon	5013	5770	5760	176	*	132	*	139	
AAC Innova	5071	5405	5196	173		140		125	
AAC Proclaim	3766	5461	5405	134	*	117		125	
GP087	3624	5392	4465	132	*	123	*	115	*
NRG097	4518	5552	4256	154	*	128	*	106	*
Pasteur	4663	6129	5149	157		142		127	

***** Less than 3 years of data

Table 7. Yield of Barley Cultivars at Scott, Glaslyn and Melfort 2014

Cultivar	2014 Yield (kg/ha)			Long Term Average Yield (% of AC Metcalfe)					
TWO ROW	**Scott**	**Glaslyn**	**Melfort**	**Scott**		**Glaslyn**		**Melfort**	
AC Metcalfe	3582	4345	5362	100		100		100	
AC Synergy	5272	5973	5787	119		120		108	
ABI Voyager	4671	4745	5740	120	*	109	*	114	*
Canmore	5149	6137	6452	121	*	130	*	113	*
CDC Clear	4175	4773	4609	100		101		101	
CDC Kindersley	4837	5283	5464	116		109		106	
CDC Maverick	4103	5365	6002	95		105		98	
CDC PlatinumStar	4219	4753	5329	96	*	94	*	99	*
CDC PolarStar	4572	5312	5822	111		110		103	
Gadsby	3985	5257	4855	120		117		106	
HB623	4295	4942	5507	98	*	98	*	103	*
Taylor	4254	4122	4511	80		66		96	
TR10214	4747	5890	5788	123	*	126	*	113	*
TR11127	5096	5720	5459	116	*	113	*	102	*
TR12733	4797	5343	4853	109	*	105	*	91	*
TR12735	4251	5064	5335	97	*	100	*	100	*
SIX ROW									
Amisk	5487	7239	3249	124	*	146	*	96	*
BT596	6287	6531	4684	143	*	129	*	87	*
Breton	5835	6746	5158	115		128		105	
CDC Anderson	4247	5763	4708	106		109		109	
Celebration	5819	5560	4877	120		108		105	
Muskwa	5087	6557	3968	95	*	114	*	102	

* Less than 3 years of data

Table 8. Yield of Lentil Cultivars at Scott and Melfort 2014

	2014 Yield (kg/ha)		Long Term Average Yield (% of CDC Maxim CL)	
Cultivar	**Scott**	**Melfort**	**Scott**	**Melfort**
CDC Maxim CL	1605		100	100
Extra Small Green				
CDC Asterix	1516		74	
Small Green				
CDC Imvincible	931		90	
03M-5	1529		71 *	*
3592-13	2041		85 *	*
3674-30	1499		86 *	*
3907-105	1384		64 *	*
3954-105	1624		75 *	*
Large Green				
CDC Greenstar	1001		74	
CDC Impower	821		72	
IBC 590	1056		49 *	*
08M-2	1352		63 *	*
French Green				
CDC Marble	1943		90 *	*
CDC QG-2	1210		66 *	*
CDC QG-3	823		40 *	*
CDC QG-4	1822		84 *	*

* Less than 3 years of data

Lentil data was not available in 2014 for Melfort

Table 8 (continued). Yield of Lentil Cultivars at Scott and Melfort 2014

	2014 Yield (kg/ha)		Long Term Average Yield (% of CDC Maxim CL)	
Cultivar	**Scott**	**Melfort**	**Scott**	**Melfort**
CDC Maxim CL	1605		100	100
Extra Small Red				
CDC Rosie	1779		72	
02M-12	1537		71 *	*
3959-6	1567		84 *	*
Small Red				
CDC Dazil	1447		76	
CDC Imax CL	867		75	
CDC Scarlet	2148		87	
IBC 550	1698		91 *	*
IBC 719	1758		82 *	*
14M-12	2007		93 *	*
3646-4	2482		121 *	*
3674-15	2630		113 *	*
3923-9	2159		100 *	*
3969-104	1777		82 *	*
4283-2	1841		85 *	*
4371-4	2341		109 *	*
Medium Red				
CDC KR-2	1553		85 *	*
IBC 479	1796		90 *	*
Large Red				
CDC KR-1	1447		79 *	*
Spanish Brown				
CDC SB-3	2037		71 *	*
3674-17	2699		124 *	*

* Less than 3 years of data

Lentil data was not available in 2014 for Melfort

Table 9. Yield of Pea Cultivars at Scott, Glaslyn and Melfort 2014

Cultivar	2014 Yield (kg/ha)			Long Term Average Yield (% of Golden)					
Yellow	**Scott**	**Glaslyn**	**Melfort**	**Scott**		**Glaslyn**		**Melfort**	
CDC Golden	1431	2846	5518	100		100		100	
AAC Ardill	1422	3049	6660	82	*	117	*	131	*
AAC Lacombe	1814	3272	7102	55	*	100	*	129	*
Abarth	1996	3769	6610	95	*	128	*	118	*
AC Earlystar	1494	3477	6303	80	*	131	*	128	*
Agassiz	1668	2978	6820	116		123		109	
CDC Amarillo	1385	3171	7400	104		115		122	
CDC Meadow	1895	3439	6784	103		109		112	
CDC Saffron	1656	3147	6378	102		107		116	
CDC 2847-21	2175	3824	6737	94	*	134	*	125	*
CDC 2950-19	1830	3466	6745	102	*	124	*	116	*
CDC 2936-7	1773	3697	7413	54	*	113	*	134	*
CDC 2942-4	1508	3913	7750	46	*	119	*	140	*
CDC 2949-20	1622	3882	7105	50	*	119	*	129	*
CDC 3094-5	1840	3421	6911	56	*	104	*	125	*
CDC 3100-4	1896	3656	6116	58	*	112	*	111	*
CM3404	1960	4199	6698	60	*	128	*	121	*
Green									
CDC Greenwater	1623	3046	5782	102		91		112	
CDC Limerick	1529	2712	5809	94		96		103	
CDC Patrick	1594	3092	5542	101		115		96	
CDC Raezer	2158	3147	5317	95	*	98	*	103	
CDC Striker	2448	3520	5621	116		108		92	
CDC Tetris	1684	3121	6034	104		111		110	
CDC 3007-6	1721	3547	6586	70	*	108	*	119	*
CDC 3519-8	1664	3523	5767	68	*	108	*	105	*
MP1867	1287	2749	5224	52	*	84	*	95	*
Red									
CDC 2710-1	1230	2610	6093	86	*	108	*	107	*
CDC 2799-3	1314	2648	5950	40	*	81	*	108	*
Dun									
CDC Dakota	1782	3191	6770	115		110		118	
Maple									
P0609-08	1520	2884	6846	62	*	88	*	124	*

* Less than 3 years of data

Insect Pest Updates

Bertha Armyworm in Western Canada in 2014

O. Olfert, S. Meers, S. Hartley, J. Gavloski , J.Otani

The coordinated program for monitoring bertha armyworm (*Mamestra configurata*) throughout the prairie region was implemented again in 2014. The monitoring program provides an early warning of the risk of armyworm populations reaching a level of economic importance in the current growing season. Pheromone traps were installed by provincial agriculture departments on farms and were maintained by grower co-operators throughout the period of moth flight to determine the density and distribution of the adults.

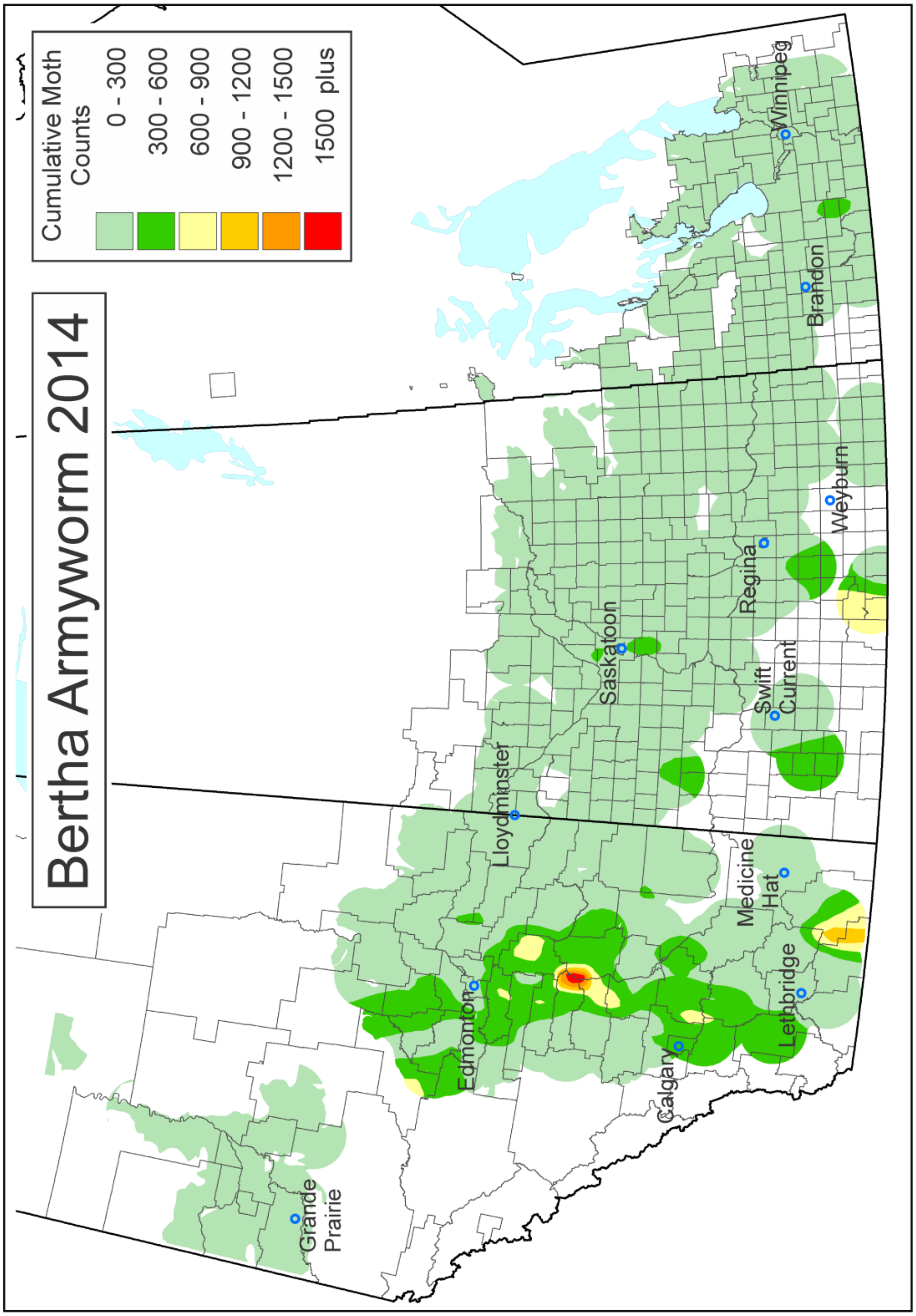
The traps indicated that populations decreased again from the previous year in much of the prairie region (Figure 1). The late spring delayed the emergence of bertha armyworm moths somewhat. In addition, there were more reports of diseases and parasitism of berth armyworm larvae during the 2014 growing season. As a result, pesticide applications were less frequently required than in the previous two years. Although a cumulative moth count of 0 - 600 is considered a low risk category, actual larval density within the crop is typically very sporadic, which may cause large variations in infestations between fields.

Site-specific interpretation of trap counts can be difficult because they are based on male moth counts, while it is the female moth that selects where the eggs are laid. However, moth counts are generally a good estimate of the risk of an infestation in the following year because bertha armyworm pupae overwinter in the soil. In most years, bertha armyworm populations are controlled by natural control factors such as unfavourable weather, parasites, predators and diseases. As a result, outbreaks of bertha armyworm in western Canada have occurred at varying intervals. Increased canola production has coincided with an increase in the regularity of outbreaks which occur regionally about 8-10 years apart. These localized outbreaks rise, peak and generally subside over a three-year period. Outbreak peaks are not usually synchronized across the entire prairies with the last extensive outbreak occurring in 1994-1996.

The damage potential of bertha armyworm larvae is influenced by larval density & age, plant growth stage, and temperature. In areas where bertha armyworm is reported, and particularly in areas with higher populations of adults, growers should begin monitoring their crops about two weeks after peak trap catches to determine larval numbers. Monitoring should continue until the crop is sprayed or swathed. An insecticide application is recommended when the economic threshold of larvae in the crop is reached.

Additional information on the biology, monitoring, economic thresholds and control methods for the bertha armyworm can be found in Growing for Tomorrow - Bertha Armyworm Fact Sheet from government agencies and provincial extension personnel, or at:
http://www.agriculture.gov.sk.ca/Default.aspx?DN=defc273b-db17-48fd-a341-32a7c541fbe0

Funding for the surveys was provided by the WGRF, SaskCanola, AB Wheat Commission, MB Canola Growers, SK Pulse Growers and SaskFlax. The network of pheromone traps was implemented and monitored by Alberta Agriculture, Food & Rural Development; Saskatchewan Ministry of Agriculture; Manitoba Agriculture, Food & Rural Initiatives; and Agriculture & Agri-Food Canada. The map was prepared by AAFC - Saskatoon.


Bertha Armyworm 2014
Cumulative Moth Counts
0 - 300
300 - 600
600 - 900
900 - 1200
1200 - 1500
1500 plus
Winnipeg
Brandon
Weyburn
Regina
Saskatoon
Swift Current
Lloydminster
Medicine Hat
Lethbridge
Edmonton
Calgary
Grande Prairie

The Prairie Grasshopper Forecast for 2015

O. Olfert, S. Hartley, J. Gavloski, S. Meers, D. Giffen J. Otani

Grasshopper forecasts are based on estimates of adult grasshopper density obtained from an annual survey taken in the fall of the previous year, as well as on weather and biotic factors that affect grasshoppers. The fall survey estimates the number of adult grasshoppers that are capable of producing eggs prior to winter (Figure 2). Grasshopper populations tend to be higher in the warmer zones of the prairies. Heat in late summer and fall encourages mating and egg-laying. A warm, dry fall enhances egg development and a warm, dry spring increases survival of the hatchlings and the potential for subsequent damage to crops. Producers should be aware that actual levels of infestation in field crops may differ from those predicted because of variations in the climatic factors.

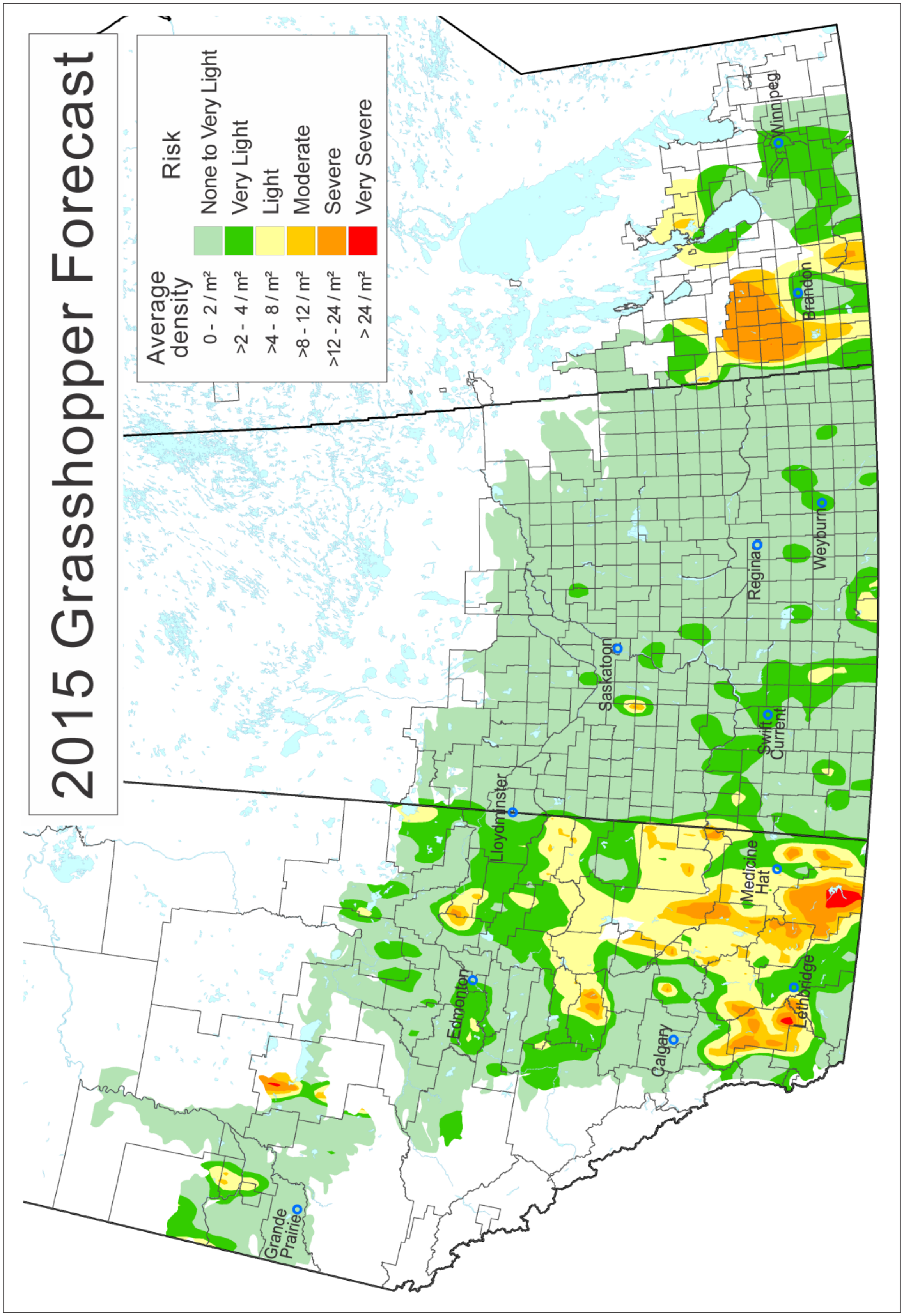
The extended winter and cool spring in 2014 slowed grasshopper hatch and development of the nymphs. As a result, the impact of grasshopper infestations was sluggish to develop. The more normal temperatures during summer encouraged growth and development, and the warmer October allowed for some egg-laying and development prior to freeze-up.

Saskatchewan – Light populations were recorded in pockets in the south and to the west of Swift Current, along the Alberta border. *Manitoba* – The risk of significant grasshopper numbers is predicted to increase in west central Manitoba for 2015. In 2014, grasshopper populations were moderate to severe in some locations, as a result a number of fields were treated with an insecticide. *Alberta* – The risk of significant grasshopper populations is predicted to increase in parts of southern Alberta, but lessen in central Alberta and Peace River area in 2015. There are a number of areas of moderate and severe risk of grasshopper in southern Alberta in the Counties of Fourty Mile and Willow Creek.

Field margins, roadsides and crops grown on stubble must be watched closely when hatching begins in the spring. Action thresholds for grasshoppers on most crops are when populations reach 8 - 12 grasshoppers/m^2, but in lentils, two or more grasshoppers/m^2 at flowering and podding stages can cause losses. Studies also indicate that two-striped grasshoppers feed preferentially on lentil pods thus causing direct and significant yield loss at a lower threshold.

When using broad spectrum insecticides, take note of precautions regarding user safety, correct use, presence of beneficial insects, *e.g*. honey bees, and proximity to environmentally sensitive areas, *e.g*. water, and to wildlife. Keep in mind that the objective is to sensibly protect the crop, and not to achieve 100% removal of grasshoppers. Updates of the current status of grasshopper populations in the Prairie region will be available in the spring.

Funding was provided by the WGRF, SaskCanola, AB Wheat Commission, MB Canola Growers, SK Pulse Growers and SaskFlax. The surveys were implemented and monitored by Alberta Agriculture, Food & Rural Development; Saskatchewan Ministry of Agriculture; Manitoba Agriculture, Food & Rural Initiatives; and Agriculture & Agri-Food Canada (AAFC). The map was prepared by AAFC - Saskatoon.


2015 Grasshopper Forecast
Average density
Risk
0 - 2 / m²
None to Very Light
>2 - 4 / m²
Very Light
>4 - 8 / m²
Light
>8 - 12 / m²
Moderate
>12 - 24 / m²
Severe
> 24 / m²
Very Severe
Winnipeg
Brandon
Weyburn
Regina
Saskatoon
Swift Current
Lloydminster
Medicine Hat
Lethbridge
Calgary
Edmonton
Grande Prairie

The Wheat Midge Forecast in Saskatchewan and Alberta for 2015
O. Olfert, S. Hartley, S. Meers, J. Otani, B. Elliott

The larval cocoon survey last fall indicated that economic infestations in 2015 are predicted to more of an issue in Saskatchewan than in Alberta. The distribution of wheat midge, as illustrated in the 2015 Forecast map (Figure 3), is based on non-parasitized cocoons present in soil samples collected in a 2014 fall survey. Although a number of factors influence over-wintering survival of the midge, the survey and map provide a general picture of existing densities and the potential for infestation in 2014. Climatic conditions - mainly temperature and moisture - will ultimately determine the extent and timing of midge emergence during the growing season.

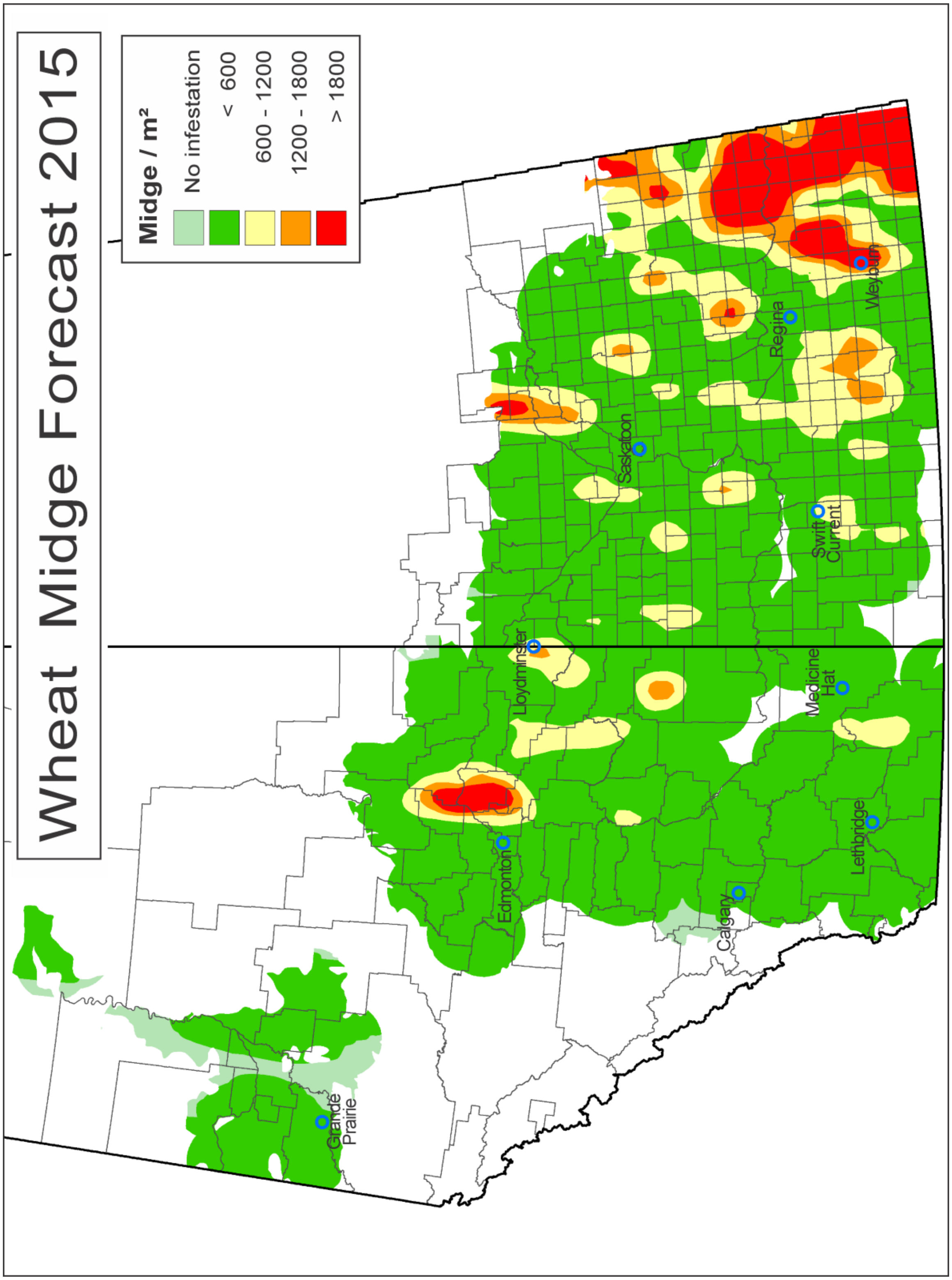
In Saskatchewan, the most severe midge population levels are predicted to occur in south eastern Saskatchewan. Several smaller pockets of high populations in the soil were also recorded in the eastern half of the province from Moose Jaw up to Prince Albert. *In Alberta*, with the exception of the area east of Edmonton, midge pressure is predicted to be low in 2015. Small pockets in southern and central regions recorded moderate midge populations. Of note was the collapse of high midge populations in the Peace River area. Caution is recommended in interpreting these results due to the fact that these northern populations have not responded to degree-day accumulations relative to southern prairie populations. *In British Columbia*, a very low level population of wheat midge was recorded for the first time in 2014. Fortunately, the parasitoid *Macroglenes penetrans* was also present.

Wheat midge larvae feeding on kernels can affect grain yield, grade and quality. Severely damaged kernels that are lost during threshing will lower yield whereas moderately damaged kernels that are harvested will reduce the grade. All areas, even those indicating less than 600 midge per square metre, are susceptible to significant crop damage. Growers in all areas where wheat midge is present are urged to monitor wheat fields during the susceptible period (emergence of the wheat head from the boot until flowering begins) and while midge are flying.

Typically, an insecticide application is recommended when adult midge density reaches one per 4-5 heads during the period when the wheat head emerges from the boot leaf until the initial stages of anthesis (*i.e*. when the yellow anthers appear). However, in areas where growing conditions are favourable to production of No. 1 Grade wheat, insecticide should be used if the adult midge population reaches one per 8-10 heads during the susceptible period. By anthesis, the wheat develops resistance to the midge larvae and insecticides are not cost-effective since larvae would have already entered the florets and caused damage, and the late-hatching larvae are poorly developed and therefore not a significant threat to the crop. Late applications should also be avoided due to the adverse effect on biological control agents such as parasitic wasps.

Parasitism of midge larvae by small wasps can keep midge populations below the economic threshold. Parasitism rates can range from 0 to 90%. Midge densities on the forecast maps represent populations of non-parasitized larvae. Agriculture and Agri-Food Canada will monitor degree-day conditions during 2015 to determine the expected emergence and flight of wheat midge adults. Updates of current conditions and wheat midge emergence will be provided during the growing season.

The surveys were conducted by Sharon Nowlan (SK), Alberta Agriculture, Food & Rural Development and Agriculture & Agri-Food Canada. The surveys were funded by Saskatchewan Crop Insurance; Alberta Agriculture, Food & Rural Development; and by WGRF, SaskCanola, AB Wheat Commission, MB Canola Growers, SK Pulse Growers and SaskFlax. The forecast was prepared by AAFC- Saskatoon.


Wheat Midge Forecast 2015
Midge / m²
No infestation
< 600
600 - 1200
1200 - 1800
> 1800
Grande Prairie
Edmonton
Lloydminster
Calgary
Lethbridge
Medicine Hat
Saskatoon
Swift Current
Regina
Weyburn

Cabbage Seedpod Weevil in Alberta and Saskatchewan in 2014

O. Olfert, S. Meers, S. Hartley, J. Otani

Due in part to suitable moisture conditions in some areas of Alberta and Saskatchewan, cabbage seedpod weevil (*Ceutorhynchus assimilis)* populations remained prominent and increased in abundance in parts of the prairies in 2014 (Figure 4).

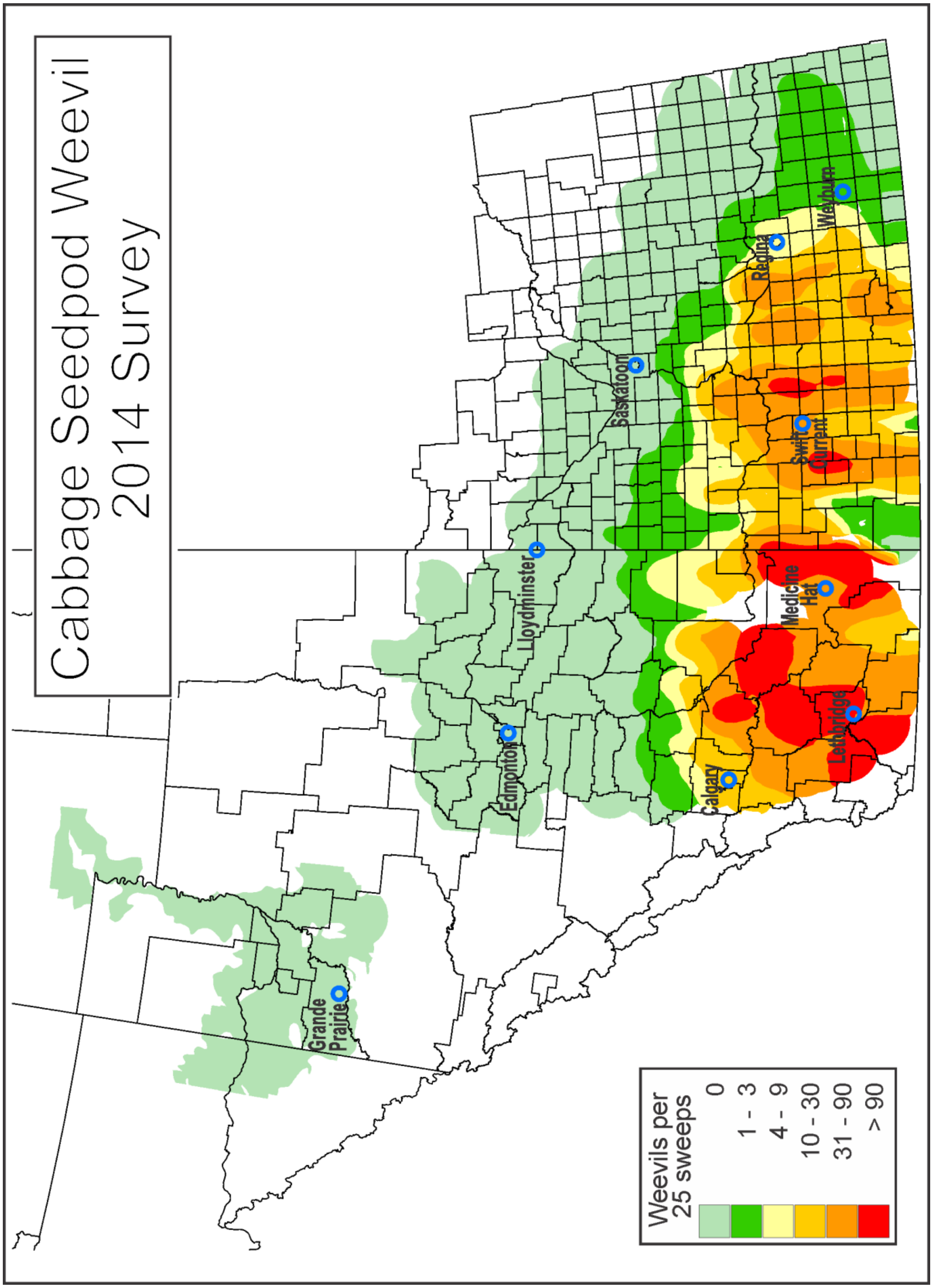
In Saskatchewan, a total of 332 fields were sampled in 2014, this number down somewhat due to the extensive flooding in the south east. Weevils were collected in 142 fields and with populations the highest in the last ten years of survey. The average number of weevils per 25 sweeps at these sites was 12.5, with a range of 1 to 155 per/25 sweeps. The highest densities were found in south central Saskatchewan, from Moose Jaw west to the Alberta border. Of note is that the populations are continuing their northward distribution, almost up to North Battleford. *In Alberta*, the 2014 survey encompassed all the canola growing areas including 290 fields in 49 Counties. Generally, economic population levels were still only found in southern Alberta (south of Red Deer) with a slight decrease in severity relative to last year. No weevils were recorded in the Peace River Region.

Both types of canola (Polish and Argentine) are susceptible to weevil damage. Brown mustard (*Brassica juncea*) is also at risk. White mustard (*Sinapis alba*), because of its hairy seedpods, and non-cruciferous crops (wheat, barley, corn, potatoes, sugar beet) are resistant to cabbage seedpod weevil.

Crop losses from cabbage seedpod weevil infestations can occur in several ways. Adults feeding on flower buds cause them to die off (bud-blasting). Larvae infested pods are prone to shattering even after the crop has been swathed. If humid conditions exist after larvae bore exit holes into canola pods, the pods can be invaded by fungal spores that germinate and destroy more seeds within the pods. Feeding by adults can also cause severe damage to late-seeded canola. When new generation adults emerge late in the season, they feed on seeds within green pods to build up fat stores for overwintering. This can be very destructive to the crop.

The cabbage seedpod weevil produces a single generation each year. Adults are ash-grey, 3 to 4 mm long, with a prominent curved snout typical of the weevil family of beetles. In winter, they remain dormant beneath leaf litter in areas like shelter belts. When spring air temperatures reach 10°C, they take flight in search of cruciferous plants like wild mustard, volunteer canola, flixweed and stinkweed. Adults are attracted to canola fields when the crop reaches the bud to early flowering stage. Female weevils lay eggs individually into recently formed seed pods. Canola and brown mustard fields should be monitored regularly from the bud stage until the end of flowering when weevil populations are highest. The best monitoring tool is a standard insect sweep net. Adult weevil counts should be made from a sample of ten, 180° sweeps taken at ten different locations within a field. The "rule of thumb" threshold weevil population that can cause economic damage is 3 - 4 weevils per sweep. Early in the invasion of a field, weevils may be more abundant on field edges; at least half of the samples should be taken more than 200 feet into the field from the field's edge to determine the weevil distribution within the field. Insecticides have now been registered for control of cabbage seedpod weevil: please check for details in the 2015 Crop Protection Guide at: http://www.agriculture.gov.sk.ca/Guide_to_Crop_Protection

The surveys were conducted by Alberta Agriculture, Food & Rural Development; Saskatchewan Ministry of Agriculture; and Agriculture & Agri-Food Canada. Funding was provided by the WGRF, SaskCanola, AB Wheat Commission, MB Canola Growers, SK Pulse Growers and SaskFlax. The map was prepared by AAFC - Saskatoon.


Cabbage Seedpod Weevil
2014 Survey
Weevils per
25 sweeps
0
1 - 3
4 - 9
10 - 30
31 - 90
> 90
Grande Prairie
Edmonton
Lloydminster
Saskatoon
Calgary
Medicine Hat
Lethbridge
Swift Current
Regina
Weyburn

Wheat Stem Sawfly in Alberta in 2014

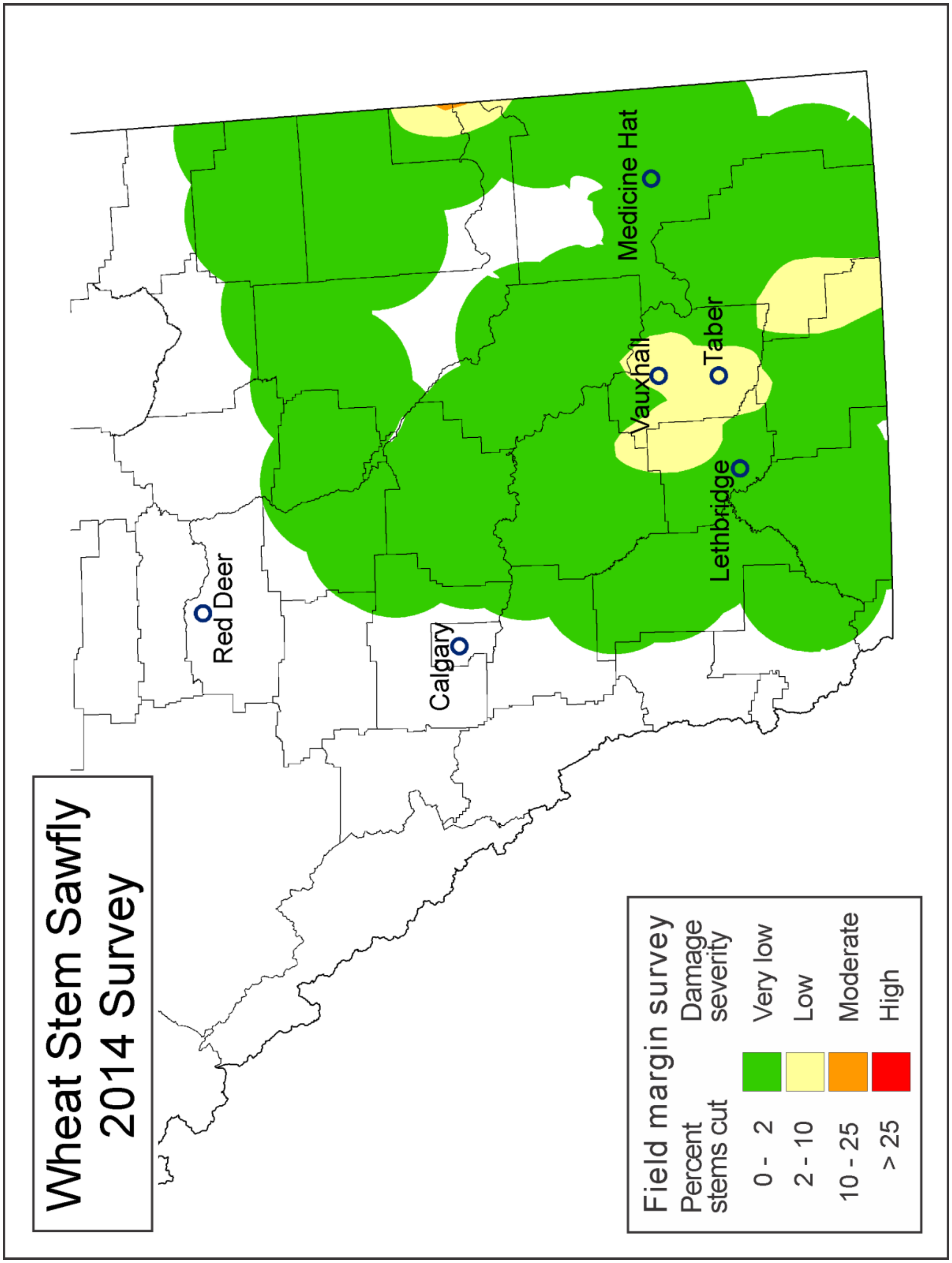
O. Olfert, S. Meers, H. Carcamo

Wheat stem sawfly (*Cephus cinctus*), has long been an agricultural pest of wheat in Canada and has recently become a major problem due in large part to the warm and dry summers in the last few years. The adult is not a very strong flier so warm, sunny, calm weather following spring rains supports the dispersal of the insect. Excessively wet conditions tend to be detrimental to both sawfly and parasite populations and activity. The primary hosts for the wheat stem sawfly are cultivated cereal crops with the preferred hosts being spring and durum wheat although rye, triticale and barley can also be affected. All broadleaf crops such as canola, flax and alfalfa are not susceptible to wheat stem sawfly. Sawfly damage presented in the map is based on cut stem counts sampled in the fall.

A survey of Alberta wheat fields (75 fields in 16 counties) conducted in 2014 indicated that the area at risk of economic sawfly populations has decreased and will be limited to only a very few areas (Figure 5). This continued downward trend is likely the result of the use of solid stem wheat together with naturally-occurring parasitoids.

Sawfly damage may result in economic losses due to reductions in yield and/or lower quality. Many producers consider the wheat stem sawfly to be a problem only in field margins. Although crop injury by the wheat stem sawfly is usually more prevalent within the first 20 metres of the field edges, the survey showed that damage is not confined to the margins. In extreme cases entire fields have been affected, some with estimates of more than 50 per cent damage. As there are no insecticides registered for control of wheat stem sawfly; management is primarily through agronomic and cultural practices. The most effective strategy is that of planting resistant cultivars and/or crops. If wheat is in the current rotation, solid stem wheat varieties (AC Lillian, AC Eatonia, AC Abbey) should be grown as they are significantly more resistant to sawfly than hollow-stem cultivars. Producers are encouraged to consider management strategies if 10 - 15 per cent of stems suffered damage the previous year.

The survey was conducted by Alberta Agriculture, Food & Rural Development; Agricore United; Chinook Applied Research Association; County of Lethbridge; United Farmers of Alberta . The map was prepared by AAFC - Saskatoon.


Wheat Stem Sawfly
2014 Survey
Medicine Hat
Taber
Vauxhall
Lethbridge
Red Deer
Calgary
Field margin survey
Percent stems cut
Damage severity
0 - 2
Very low
2 - 10
Low
10 - 25
Moderate
> 25
High

Pea Leaf Weevil in Alberta and Saskatchewan in 2014

O. Olfert, S. Meers, H. Carcamo, S. Hartley

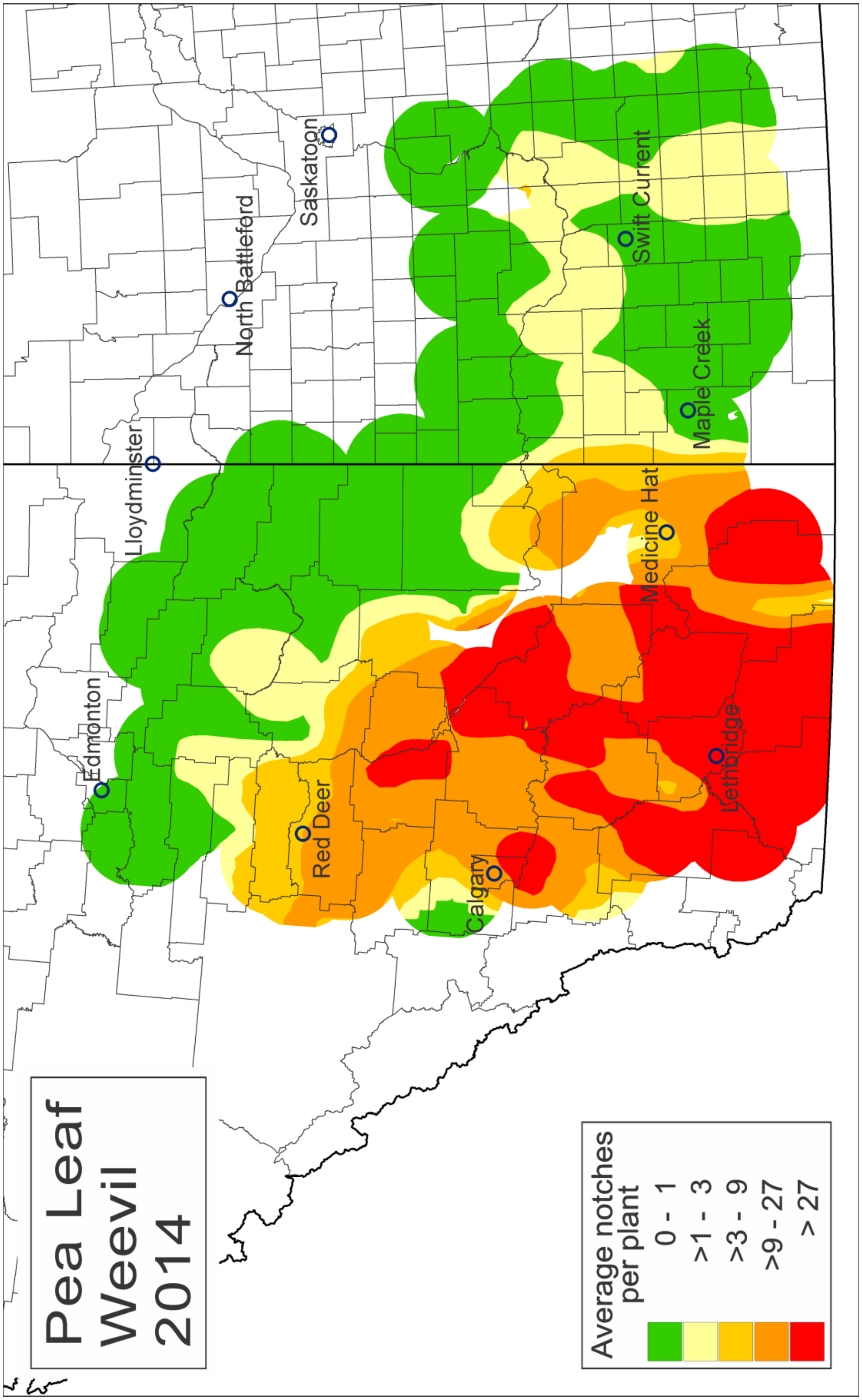
Native to Europe, pea leaf weevil (*Sitona lineatus*) has recently become an economical insect pest of field peas in southern Alberta. The known distribution of pea leaf weevil on the prairies is currently limited to central Alberta and southwest Saskatchewan. The weevil was first recorded attacking peas near Lethbridge in 2000 and was found in southwest Saskatchewan in 2007. Feeding by the adults produces a characteristic notched appearance on leaves. The survey is conducted when field peas are in the two to three node stage by determining the average number of leaf notches per plant.

The distribution of pea leaf weevil damage to field peas remained relatively unchanged in 2014 (Figure 6). *In Saskatchewan*, the severity of damage to pea crops was less in 2014; damage was recorded from east of Swift Current across the south to the Alberta border. *In Alberta*, damage estimates in 2014 were significantly higher than last year. As in the past, the area of highest risk is primarily to the region south of Highway #1.

Host plants include a range of cultivated and wild legumes. Field peas and Faba beans are the major crops at risk in southern Alberta and Saskatchewan. Although adults feed on leaf tissue, larval feeding on nitrogen-fixing nodules results in greater economic losses for producers. However, in extreme cases adult feeding on leaves and growing points of seedlings can also result in significant plant damage. In western Canada, pea leaf weevil produces one generation per year. Adults overwinter in alfalfa or other perennial legumes. Females can lay up to 1500 eggs in the soil near or on, younger plants in May through June. Upon hatching, larvae migrate to plant nodules and begin to feed, resulting in minor or significant inhibition of nitrogen fixation by the plant. Mature larvae pupate in the soil and emerge as adults later in the growing season (late July through August). Adult beetles feed on leaf margins and growing points of legume seedlings. Pea leaf weevil feeds on a number of plant species and because they are small and cryptic in habit, they can easily be transported in host-plant material.

Adults can also be present in sheltered areas on non-host plants next to or in farm buildings and equipment. Adults will generally only fly when temperatures are above 17 °C. Literature suggests that relatively few of newly emerged adults leave the crop by flight, preferring to remain in the soil or walk to overwintering sites. Flight however could be one avenue of spread, especially with prevailing winds. Although the greater damage is caused by larval feeding, soil treatment for larvae is not practical. Management of this pest is best achieved by controlling adults before egg-laying commences, using a foliar-applied insecticide. Therefore, it is important to apply insecticides when the pea plant is very young. The action threshold is to spray at the 2 to 3 node stage when 30% of the pea seedlings have one or more feeding notches on the most recently emerged leaves (clam leaf). If feeding damage is evident only on the lower leaves and not on the clam leaf, the adults have probably already laid eggs and there is no point in spraying. Producers experiencing severe damage to field peas this past year may also wish to consider using seed treatment in 2015 to reduce the impact of pea leaf weevil.

The survey was conducted by Alberta Agriculture, Food & Rural Development and the Saskatchewan Ministry of Agriculture. The map was prepared by AAFC - Saskatoon.


Pea Leaf
Weevil
2014
Average notches
per plant
0 - 1
>1 - 3
>3 - 9
>9 - 27
> 27
Edmonton
Lloydminster
North Battleford
Saskatoon
Swift Current
Maple Creek
Medicine Hat
Lethbridge
Red Deer
Calgary