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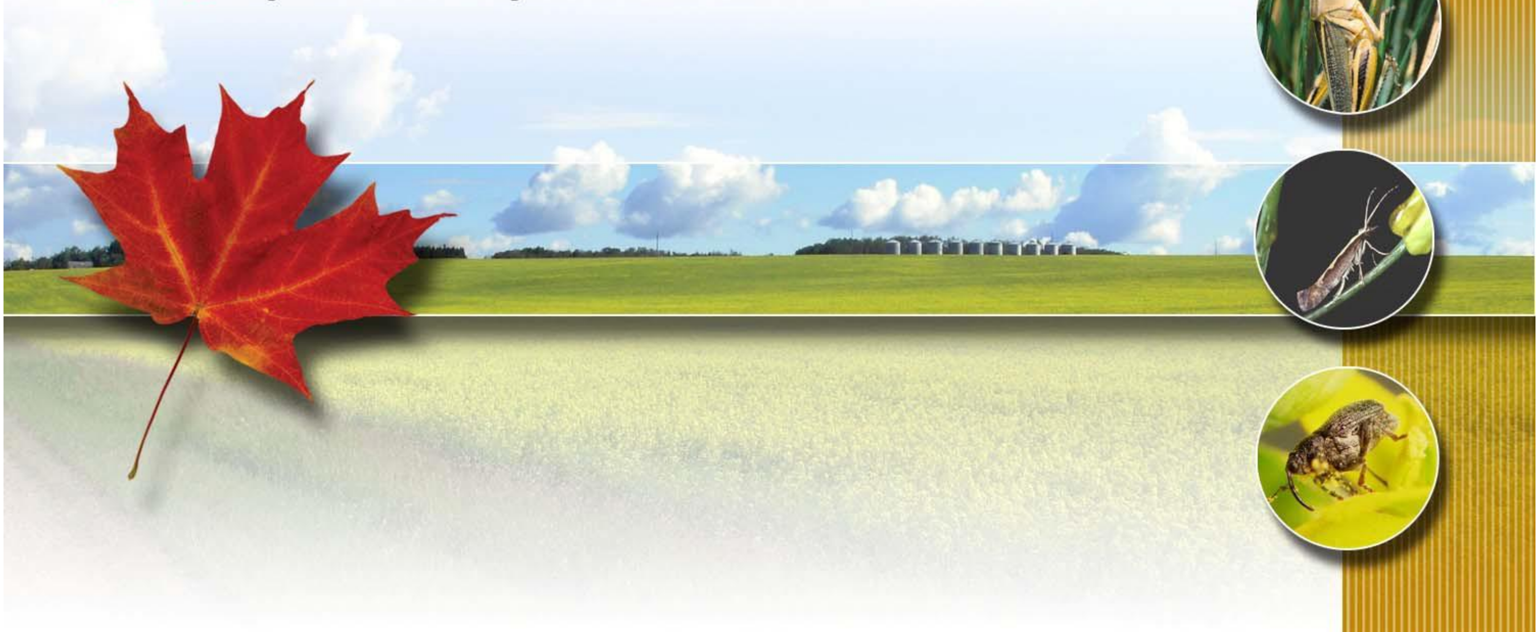

2015 Crop Variety Highlights and Insect Pest Updates

Melfort Research Farm

Scott Research Farm

Saskatoon Research Centre

Canada

Regional Testing of Cereal, Oilseed and Pulse Cultivars 2015
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 2015*. Seed quantities for new varieties listed herein may be limited for 2016.

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Table 1. Growing Season Precipitation (mm) at Scott, Glaslyn and Melfort in 2015

Month	Scott	Glaslyn	Melfort
May	4	25	7
June	19	43	55
July	46	30	150
Total	**69**	**95**	**212**
Long Term Average	158	161	174

Table 2. Average Yield of Crop Species on Fallow expressed as a % of hard red spring wheat (Carberry) 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	Carberry	100	(3634)	100	(4664)	100	(4428)
CPS Wheat	*AAC Crusader	126	(4564)	111	(5174)	122	(5033)
Hard White Wheat	AC Whitehawk	93	(3396)	85	(3962)	90	(3961)
Soft White	*Chiffon	148	(5394)	125	(5808)	142	(5883)
Durum Wheat	Strongfield	98	(3553)			104	(4615)
Barley – 2 row	AC Metcalfe	122	(4436)	114	(5323)	124	(5484)
Barley – 6 row	CDC Anderson	128	(4667)	118	(5526)	131	(5907)
Oat	CDC Dancer	139	(5047)	121	(5623)	133	(5898)
Flax	CDC Bethune	65	(2358)	42	(1961)	65	(2680)
Canola	5440	102	(3709)	67	(3121)	85	(3746)
Field Pea (yellow)	CDC Golden	68	(2463)	66	(3067)	130	(5770)
Field Pea (green)	CDC Striker	76	(2775)	66	(3066)	128	(5673)
Lentil – small red	CDC Maxim	49	(1766)			56	(2521)
Lentil – small green	CDC Imvincible	41	(1482)			59	(2604)
Canary	Cantate	50	(1833)			42	(1855)
Mustard (Juncea)	Cutlass	69	(2520)				

* Less than 5 years of data

Table 3. Yield of Flax Cultivars at Scott, Glaslyn and Melfort 2015

	2015 Yield (kg/ha)			Long Term Average Yield (% of CDC Bethune)					
Cultivar	Scott	Glaslyn	Melfort	Scott		Glaslyn		Melfort	
CDC Bethune	1648	2446	3822	100		100		100	
AAC Bravo	1595	2335	3804	89	*	83	*	109	*
CDC Glas	1665	2573	3890	99		96		116	
CDC Plava	1570	2368	3431	81	*	86	*	105	*
CDC Neela	1873	2557	3972	91		95		114	
Nulin VT50	1270	2201	3659	79	*	77	*	115	*
Prairie Sapphire	1565	2374	3536	75		88		103	
Westlin 71	1395	2188	3915	81		77		106	
Westlin 72	1680	2552	4270	98	*	92	*	116	*

***** Less than 3 years of data

Table 4. Yield of Durum Cultivars at Scott and Melfort 2015

Cultivar	2015 Yield (kg/ha)		Long Term Average Yield (% of Strongfield)		
	Scott	Melfort	Scott		Melfort
Strongfield	2539	2815	100		100
AAC Cabri	2556	2812	86	*	95
AAC Congress	2953	3151	83	*	112
AAC Current	2744	2886	94		96
AAC Durafield	2771	3396	95		103
AAC Marchwell VB	2565	2824	89		94
AAC Raymore	2426	2973	88		92
AAC Spitfire	2565	3618	87	*	106
CDC Alloy	2653	3451	75	*	123
CDC Carbide VB	2355	3204	85	*	107
CDC Desire	2667	2857	92		92
CDC Dynamic	2307	2942	65	*	105
CDC Fortitude	2493	3324	88		95
CDC Precision	2524	3281	71	*	117
CDC Vivid	2861	3070	97		98

* Less than 3 years of data

Table 5. Yield of Oat Cultivars at Scott, Glaslyn and Melfort 2015

Cultivar	2015 Yield (kg/ha)			Long Term Average Yield (% of CDC Dancer)					
	Scott	Glaslyn	Melfort	Scott		Glaslyn		Melfort	
CDC Dancer	3437	4653	5859	100		100		100	
AAC Justice	3461	4815	6556	104		99		110	
AC Stride	3275	4218	6458	115		101		120	
Akina	3502	4609	6901	69	*	82	*	118	*
Bia	3537	3449	7325	88	*	82	*	110	*
CDC Haymaker	3335	5097	5214	77		94		95	
CDC Ruffian	4054	4788	6843	105		101		117	
CS Camden	3509	4758	6668	111		102		125	
Kara	3388	4788	7071	67	*	85	*	121	*
Nice	3775	4624	7159	100	*	95	*	113	*
OT 3066	3455	4600	6845	98	*	92	*	105	*

* Less than 3 years of data

Table 6. Yield of Spring Wheat Cultivars at Scott, Glaslyn and Melfort 2015

Cultivar	2015 Yield (kg/ha)			Long Term Average Yield (% of Carberry)					
Hard Red	**Scott**	**Glaslyn**	**Melfort**	**Scott**		**Glaslyn**		**Melfort**	
Carberry	3015	4493	3387	100		100		100	
AC Bailey	2909	4154	3222	99		97		99	
AAC Brandon	3159	4564	3819	109		104		108	
AAC Cameron	3054	4634	4020	109	*	105	*	124	*
AAC Connery	2921	4508	2745	97	*	100	*	95	*
AAC Elie	3753	4903	3996	120		106		107	
AAC Jatharia	3035	4577	3994	105	*	105	*	120	*
AAC Prevail VB	3269	4076	3240	102		92		103	
AC Redwater	3165	4351	3329	106		95		98	
AAC Tradition	2759	4006	4003	76	*	86	*	118	*
AAC W1876	2657	4144	3462	103	*	99	*	98	*
Cardale	2992	4543	3348	100		97		103	
CDC Bradwell	2981	4374	3679	102	*	97	*	108	*
CDC Plentiful	3261	4278	3185	103		99		107	
CDC Titanium VB	3437	4235	3812	105	*	100	*	106	*
CDC VR Morris	2927	4437	3152	112		103		106	
Coleman	3009	3563	2767	100		88		88	
Go Early	3066	4081	3447	99	*	86	*	104	*
SY 433	2544	4173	2749	91		97		96	
SY 479	2808	4551	3639	97	*	97	*	114	*
SY 637	3217	4197	3172	109	*	100	*	104	*
Thorsby	2749	4534	2754	98	*	101	*	97	*
Vesper VB	2669	4092	3739	102		96		119	
5605 HR-CL	2653	4333	3440	102		103		103	
Hard White									
AAC Iceberg	2496	4201	3126	95		94		94	
AAC Whitefox	2907	4316	3045	107		100		98	
AAC Whitehawk	3144	4434	2931	93		85		90	
CDC Whitewood	2881	4229	2964	101		95		93	
CPS									
AAC Crusader	4199	4521	3839	117		112		129	
AAC Foray VB	4469	4427	4510	123		107		147	
AAC Penhold	4659	4330	3850	115		107		123	
AAC Ryley	3777	4969	3830	100		110		114	
AAC Tenacious VB	4755	5483	3290	108		104		107	
Enchant VB	4659	5765	4083	112		114		118	
HY537	3838	4690	4222	99	*	101	*	143	*
SY995	4813	5146	4557	118		112		135	

Table 6. (continued) - Yield of Spring Wheat Cultivars at Scott, Glaslyn and Melfort 2015

Cultivar	2015 Yield (kg/ha)			Long Term Average Yield (% of Carberry)					
General Purpose	**Scott**	**Glaslyn**	**Melfort**	**Scott**		**Glaslyn**		**Melfort**	
AAC Innova	4271	5257	4198	132		127		134	
AAC Proclaim	4573	5186	4281	111		109		134	
Elgin ND	4717	5001	4454	121	*	107	*	151	*
GP131	4180	4987	3679	108	*	107	*	125	*
NRG097	4238	4999	4573	119		115		142	
Pasteur	4377	4319	4470	123		124		137	
SY087	3406	4971	3860	100		112		127	
WFT603	4403	4435	4014	113	*	95	*	145	*

***** Less than 3 years of data

Table 7. Yield of Barley Cultivars at Scott, Glaslyn and Melfort 2015

Cultivar	2014 Yield (kg/ha)			Long Term Average Yield (% of AC Metcalfe)					
TWO ROW	**Scott**	**Glaslyn**	**Melfort**	**Scott**		**Glaslyn**		**Melfort**	
AC Metcalfe	5366	5399	5227	100		100		100	
AC Synergy	5801	5912	5924	121		114		110	
Canmore	5801	5999	5662	124		120		112	
CDC Clear	4605	5015	5302	100		96		101	
CDC Maverick	5148	4304	5331	99		95		98	
CDC PlatinumStar	5783	5817	5316	113		99		101	
CDC PolarStar	5566	4959	4785	113	*	102	*	101	*
TR10214	6121	5339	5563	127		113		111	
TR11127	5881	5729	5314	124	*	108	*	102	*
TR12135	5373	5422	5944	121	*	102	*	114	*
TR12733	6299	6058	6032	125	*	107	*	103	*
TR12735	5230	6029	6370	107	*	104	*	111	*
TR13740	5455	6334	5585	123	*	119	*	107	*
SIX ROW									
Amisk			5752	124	*	146	*	101	*
BT596				143	*	129	*	87	*
Breton				115		128		105	
CDC Anderson				106		109		109	
Celebration				120		108		105	
Muskwa				95	*	114	*	102	*

There was not a Regional 6 Row Barley Trial in 2015

* Less than 3 years of data

Table 8. Yield of Lentil Cultivars at Scott and Melfort 2015

Cultivar	2015 Yield (kg/ha)		Long Term Average Yield (% of CDC Maxim CL)			
	Scott	Melfort	Scott		Melfort	
CDC Maxim CL	1109	1461	100		100	
Extra Small Green						
CDC Asterix	1313	2009	87		104	
Small Green						
CDC Imvincible	1143	2032	84		107	
CDC Kermit	1186	2590	92		129	
3674-30	1235	2743	93		148	
Large Green						
CDC Greenstar	1218	1876	86		83	
CDC Impower	850	997	61		50	
IBC 586 (QG-3)	924	489	52	*	28	*
IBC 768	1254	1302	71	*	89	*
IBC 839 (QG-4)	1078	1864	61	*	128	*
IBC 937	1102	2031	62	*	139	*
IBC 1006	1063	1086	60	*	74	*
IBC 1006-7	840	1262	48	*	86	*
08M-2	1152	1751	71	*	120	*
French Green						
CDC Marble		1553		*	112	*
CDC QG-2		962		*	86	*

* Less than 3 years of data

Table 8 (continued). Yield of Lentil Cultivars at Scott and Melfort 2015

Cultivar	2015 Yield (kg/ha) Scott	2015 Yield (kg/ha) Melfort	Long Term Average Yield (% of CDC Maxim CL) Scott		Long Term Average Yield (% of CDC Maxim CL) Melfort	
CDC Maxim CL	1109	1461	100		100	
Extra Small Red						
CDC Impala	935	990	97		68	
CDC Rosie	959	1670	80		100	
Roxy	1124	2418	89		136	
IBC 978	1205	1575	68	*	108	*
Small Red						
CDC Dazil	1206	2082	88		111	
CDC Imax CL	1144	1098	72		67	
CDC Maxim CL	1109	1461	100		100	
CDC Proclaim	1196	1630	96		105	
CDC Redmoon	1277	1738	122		100	
CDC Scarlet	1469	2654	100		134	
IBC 929R	1316	3789	74	*	259	*
IBC 975	1313	1582	74	*	108	*
3674-15	1113	2673	113		148	
3923-9	1388	2318	100	*	159	*
Medium Red						
CDC KR-2	1071	891	89		69	
Impulse	1367	1591	99		80	
Large Red						
CDC KR-1	753	817	79		75	
Spanish Brown						
CDC SB-3	1148	1878	80		105	
IBC 929	1126	2786	64	*	191	*
3674-17	1247	1132	124		85	
Black						
Indianhead	1428	972	81	*	67	*

* Less than 3 years of data

Table 9. Yield of Pea Cultivars at Scott, Glaslyn and Melfort 2015

Cultivar	2015 Yield (kg/ha)			Long Term Average Yield (% of Golden)					
Yellow	**Scott**	**Glaslyn**	**Melfort**	**Scott**		**Glaslyn**		**Melfort**	
CDC Golden	2544	2697	5557	100		100		100	
AAC Ardill	2585	3215	6797	133	*	128	*	128	*
AAC Lacombe	2822	3491	7137	115	*	114	*	129	*
Abarth	2490	2841	6524	137	*	121	*	118	*
AC Earlystar	2265	3103	6622	122	*	134	*	125	*
Agassiz	2935	3166	6192	120		130		110	
CDC Amarillo	3533	3188	6974	125		123		122	
CDC Inca	2760	2919	7050	137	*	129	*	125	*
CDC Meadow	2538	2932	6968	98		103		114	
CDC Saffron	2365	2946	6038	99		103		115	
CDC 2936-7	2883	3267	6862	117	*	107	*	129	*
CDC 3094-5	2194	3444	7128	89	*	112	*	127	*
CDC 3360-7	2370	2725	7027	96	*	89	*	126	*
CDC 3525-9	2800	3359	7516	114	*	110	*	135	*
CDC 3760-15	2581	3086	6340	105	*	101	*	114	*
CM3404	2515	2823	6430	102	*	92	*	119	*
LN 4236	2348	2775	6291	95	*	90	*	113	*
Green									
AAC Radius	1630	2399	6158	66	*	78	*	103	*
AAC Royce	2656	2747	6200	108	*	90	*	112	*
CDC Greenwater	2648	2935	6763	115		96		115	
CDC Limerick	2252	2883	6339	101		104		105	
CDC Patrick	2380	3176	6015	98		117		98	
CDC Raezer	2910	2559	5654	105		98		103	
CDC Striker	2777	2679	5806	113		100		99	
CDC Tetris	2610	2503	6150	103		106		110	
CDC 3007-6	2796	2667	6934	114	*	87	*	122	*
CDC 3422-8	2512	3253	6654	102	*	106	*	120	*
Red									
CDC 2710-1	2385	2838	5870	138	*	119	*	107	*
CDC 2799-3	3140	2891	6101	127	*	94	*	109	*
Dun									
CDC Dakota	2401	2986	6892	121		116		119	
Maple									
AAC Liscard	2387	2844	5947	97	*	93	*	116	*
CDC 3012-1LT	2819	3337	5938	115	*	109	*	107	*

* Less than 3 years of data

Insect Pest Updates

Bertha Armyworm in Western Canada in 2015

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

The coordinated program for monitoring bertha armyworm (*Mamestra configurata*) throughout the prairie region was implemented again in 2015. 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.

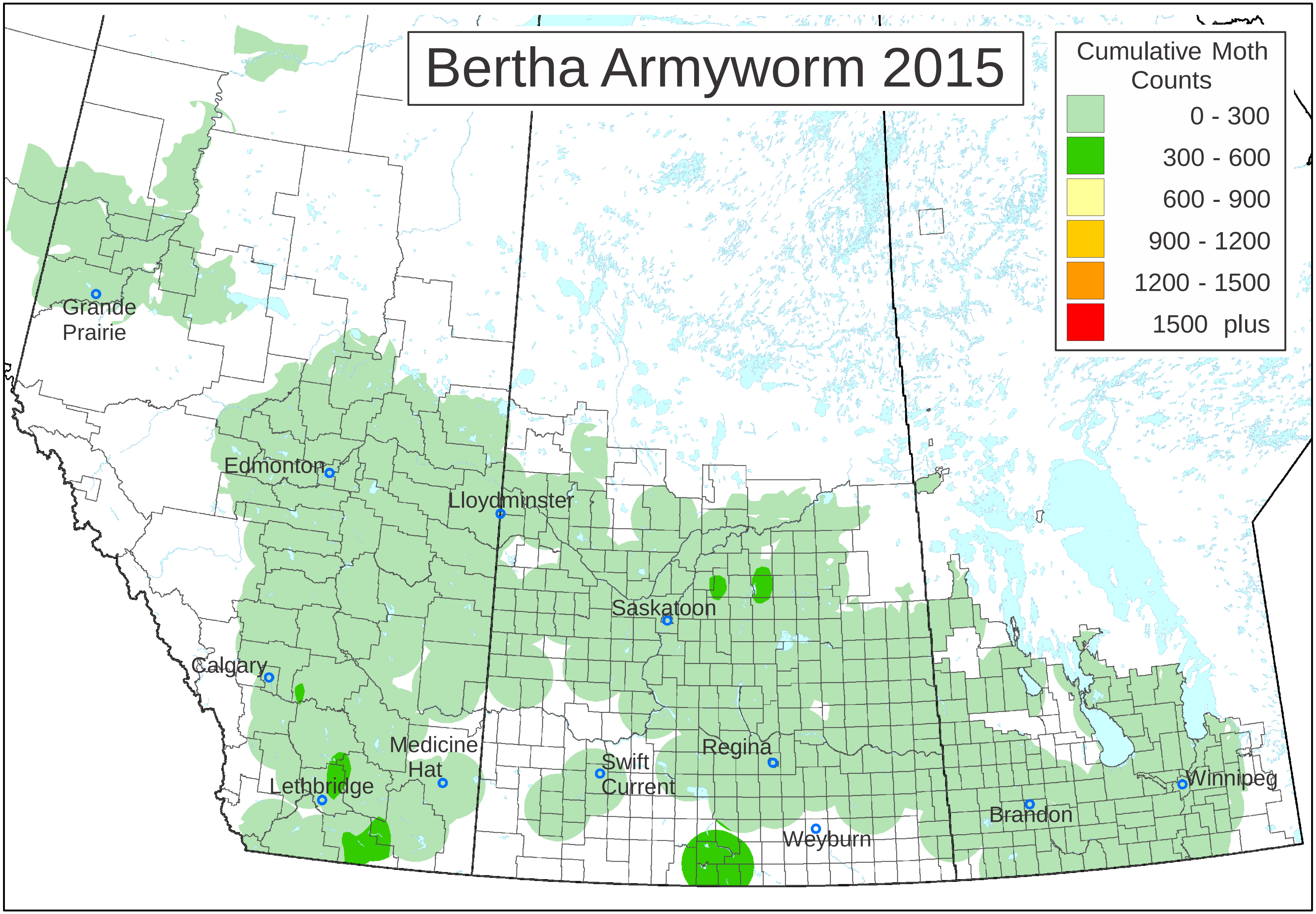
The traps indicated that populations decreased again from the previous year in much of the prairie region (Figure 1). The reports of diseases and parasitism of berth armyworm larvae during the 2014 growing season have likely resulted in further decrease in their populations in 2015. As a result, pesticide 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 2015
Cumulative Moth Counts
0 - 300
300 - 600
600 - 900
900 - 1200
1200 - 1500
1500 plus
Grande Prairie
Edmonton
Lloydminster
Saskatoon
Calgary
Medicine Hat
Lethbridge
Swift Current
Regina
Weyburn
Brandon
Winnipeg

The Prairie Grasshopper Forecast for 2016

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

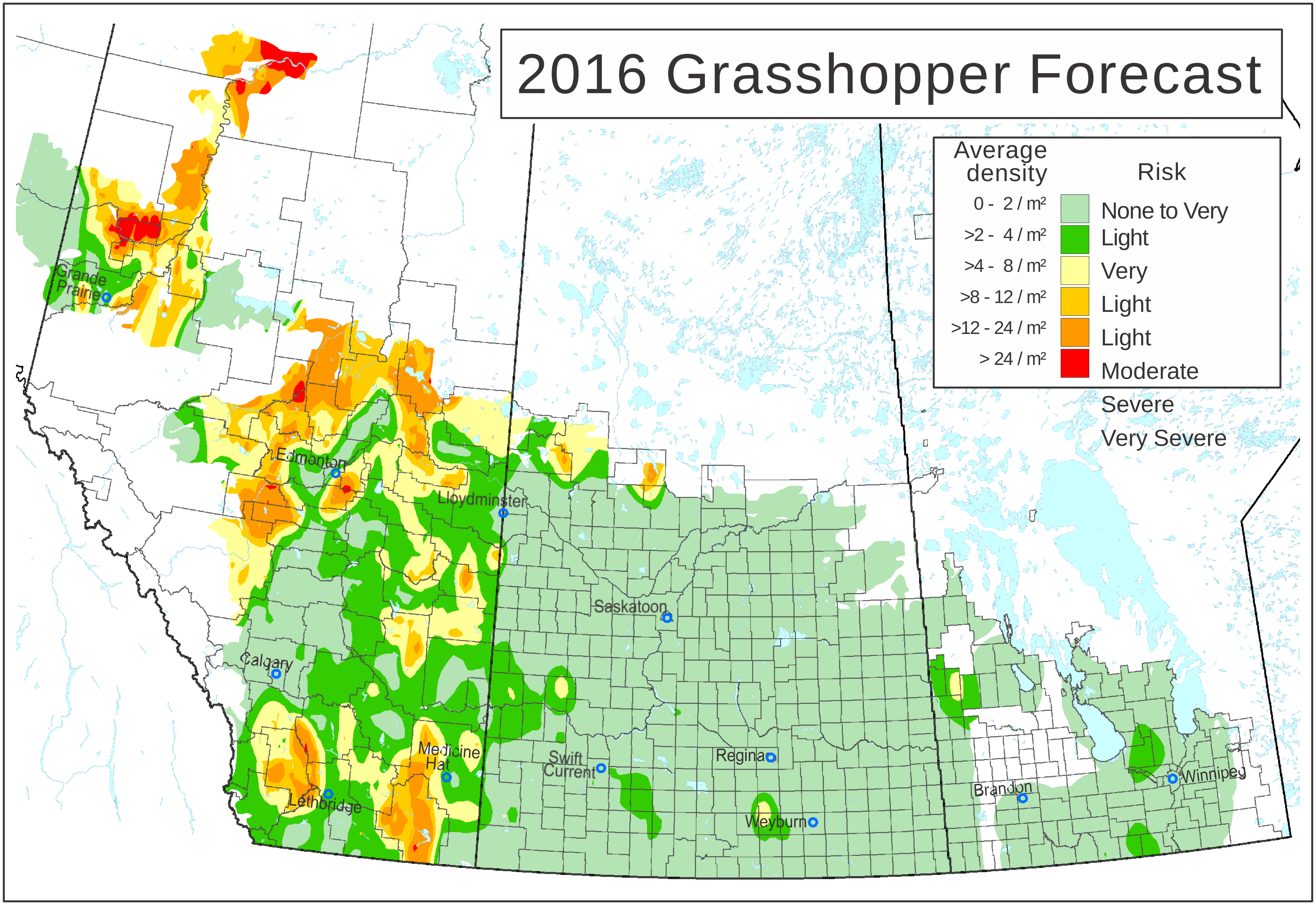
Grasshopper forecasts are based on estimates of adult grasshopper density obtained from an annual survey taken in the fall of the previous year, as well as on weather and biotic factors that affect grasshoppers. The fall survey estimates the number of adult grasshoppers that are capable of producing 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.

Saskatchewan – Light populations were recorded in a few pockets in central Saskatchewan and in the Meadow Lake area. There were very few reports of grasshopper control required. *Manitoba* – Manitoba also reported very few pockets of light grasshopper populations. *Alberta* – The risk of significant grasshopper populations is predicted to increase in parts of southern and northern Alberta, and especially in the Peace River area in 2016.

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.


2016 Grasshopper Forecast
Average density
Risk
0 - 2 / m²
>2 - 4 / m²
>4 - 8 / m²
>8 - 12 / m²
>12 - 24 / m²
> 24 / m²
None to Very
Light
Very
Light
Light
Moderate
Severe
Very Severe
Grande Prairie
Edmonton
Lloydminster
Saskatoon
Calgary
Medicine Hat
Swift Current
Regina
Lethbridge
Weyburn
Brandon
Winnipeg

The Wheat Midge Forecast in Saskatchewan and Alberta for 2016

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

The larval cocoon survey last fall indicated that economic infestations in 2016 are predicted to more of an issue in Saskatchewan than in Alberta. The distribution of wheat midge, as illustrated in the 2016 Forecast map (Figure 3), is based on non-parasitized cocoons present in soil samples collected in a 2015 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 2016. Climatic conditions - mainly temperature and moisture - will ultimately determine the extent and timing of midge emergence during the growing season.

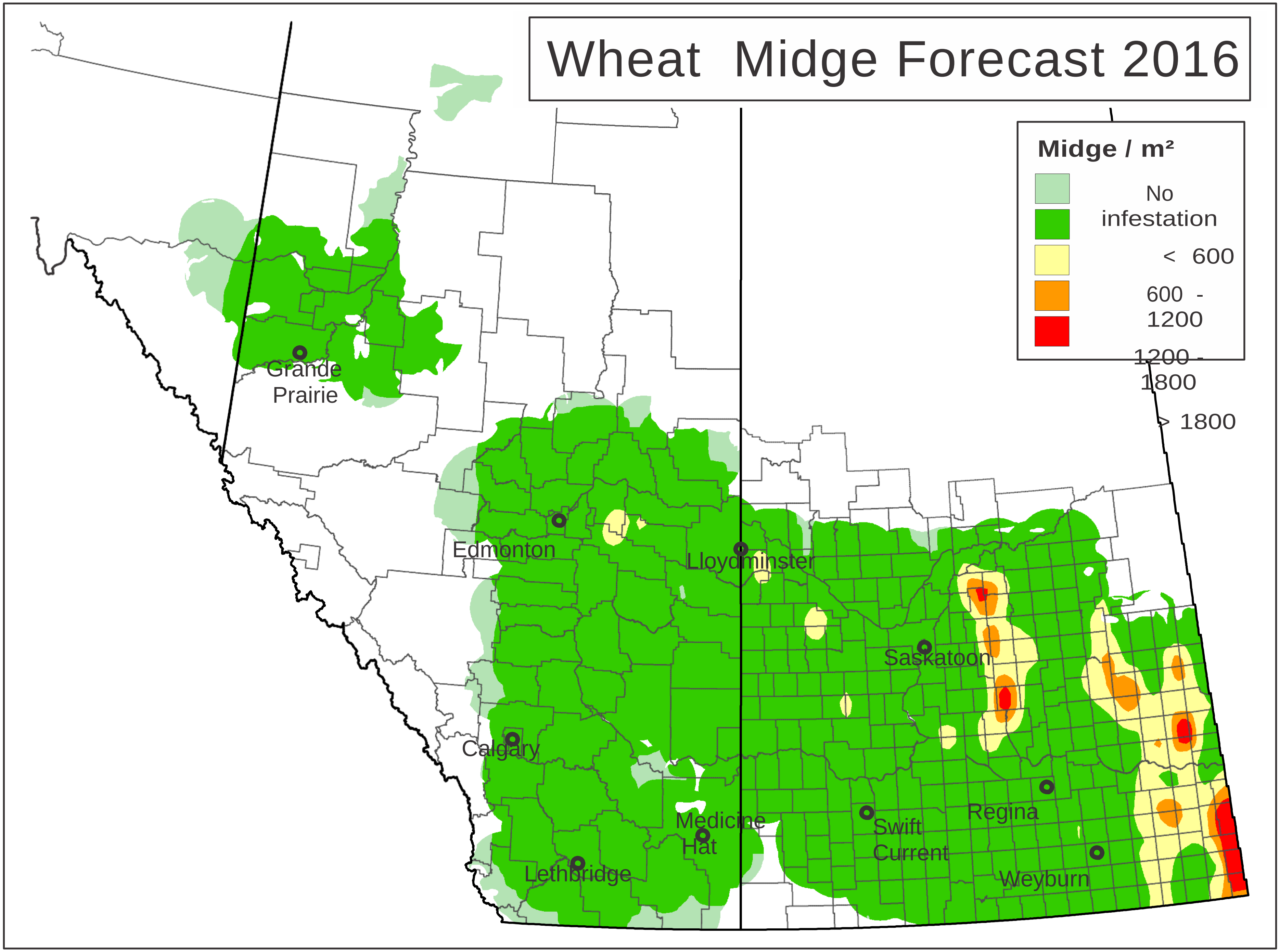
In Saskatchewan, the most severe midge population levels are predicted to occur in eastern Saskatchewan, however, the area of infestation decrease significantly from 2014. *In Alberta*, with the exception of a small pocket east of Edmonton, midge pressure is predicted to be low in
2016. Of note was the 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*, the very low level population of wheat midge, recorded for the first time in 2014, was not detected in 2015.

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 2016
Midge / m²
No infestation
< 600
600 - 1200
1200 - 1800
> 1800
Grande Prairie
Edmonton
Lloydminster
Saskatoon
Calgary
Medicine Hat
Swift Current
Regina
Lethbridge
Weyburn

Cabbage Seedpod Weevil in Alberta and Saskatchewan in 2015
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 2015 (Figure 4).

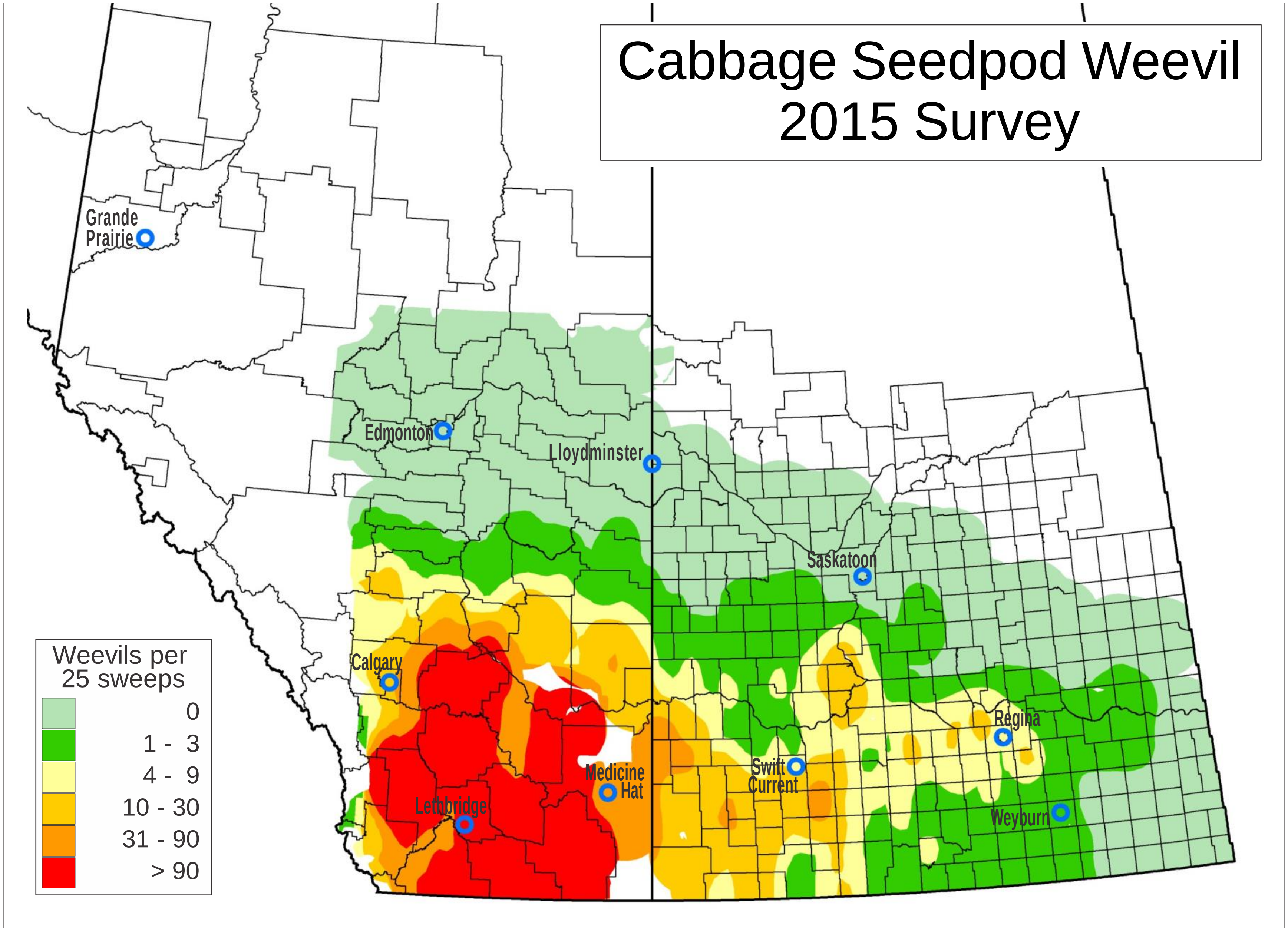
In Saskatchewan, a total of 413 fields were sampled in 2015. The population in Saskatchewan hit a peak in 2013; the numbers declined in 2014 but still were some of the highest in the last ten years of survey. The numbers have continued to decline in 2015. The average number of weevils per 25 sweeps at positive sites in 2015 was 8.8 with the number collected ranging between 1 and 83 weevils per 25 sweeps. The highest densities were found in south central Saskatchewan, from Moose Jaw west to the Alberta border. *In Alberta,* the 2015 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 Calgary) with a some increases in severity relative to last year. No weevils were recorded in the Alberta and BC Peace River Regions.

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
2015 Survey
Weevils per
25 sweeps
0
1 - 3
4 - 9
10 - 30
31 - 90
> 90
Grande
Prairie
Edmonton
Lloydminster
Saskatoon
Calgary
Regina
Medicine
Hat
Swift
Current
Lethbridge
Weyburn

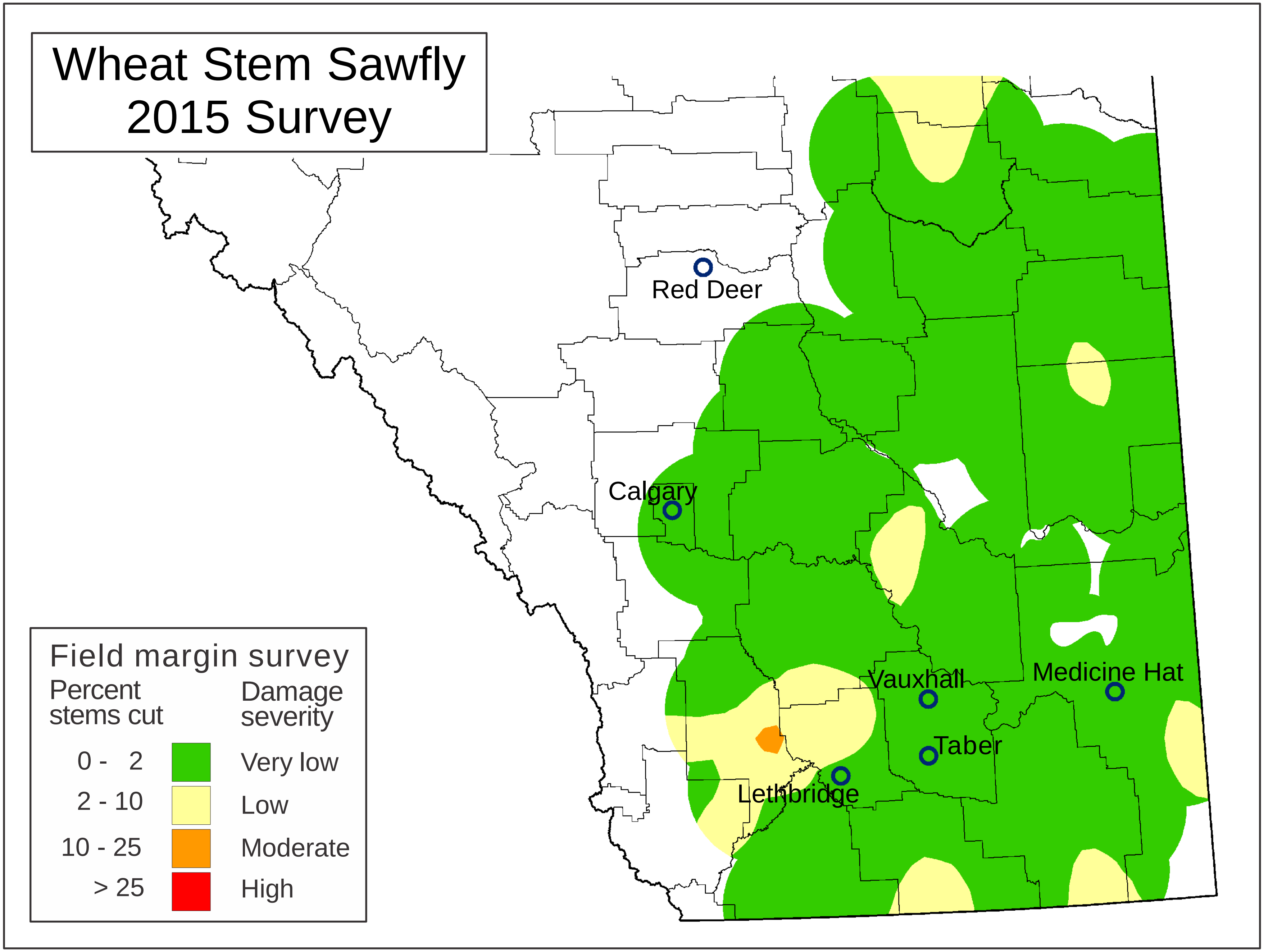
Wheat Stem Sawfly in Alberta in 2015
O. Olfert, S. Meers, H. Carcamo

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 2015 indicated that the area at risk of economic sawfly populations has decreased and will be limited to only a very few areas (Figure 5). There are reports of a resurgence of populations west of Lethbridge.

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
2015 Survey
Red Deer
Calgary
Vauxhall
Medicine Hat
Taber
Lethbridge
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 2015
O. Olfert, S. Meers, H. Carcamo, S. Hartley

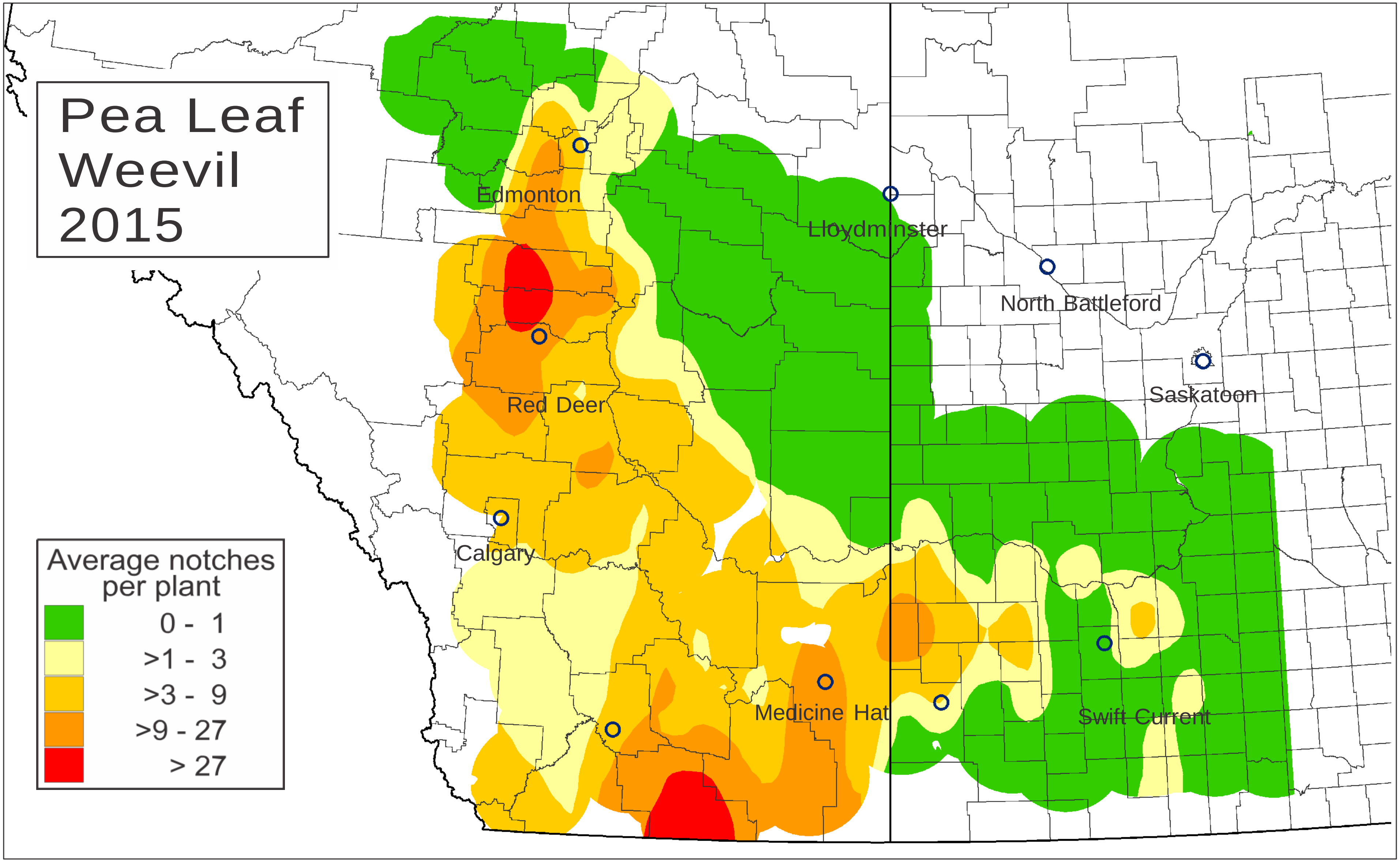
Native to Europe, pea leaf weevil (*Sitona lineatus*) has recently become an economical insect pest of field peas in southern Alberta. The known distribution of pea leaf weevil on the prairies is currently limited to central Alberta and southwest Saskatchewan. Feeding by the adults produces
a characteristic 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 2015 (Figure 6). *In Saskatchewan*, the severity of damage to pea crops increased slightly in 2015; damage was recorded from east of Swift Current across the south to the Alberta border. *In Alberta*, damage estimates in 2014 were significantly lower than in 2015. 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
2015
Average notches
per plant
0 - 1
>1 - 3
>3 - 9
>9 - 27
> 27
Edmonton
Lloydminster
North Battleford
Saskatoon
Red Deer
Calgary
Medicine Hat
Swift Current