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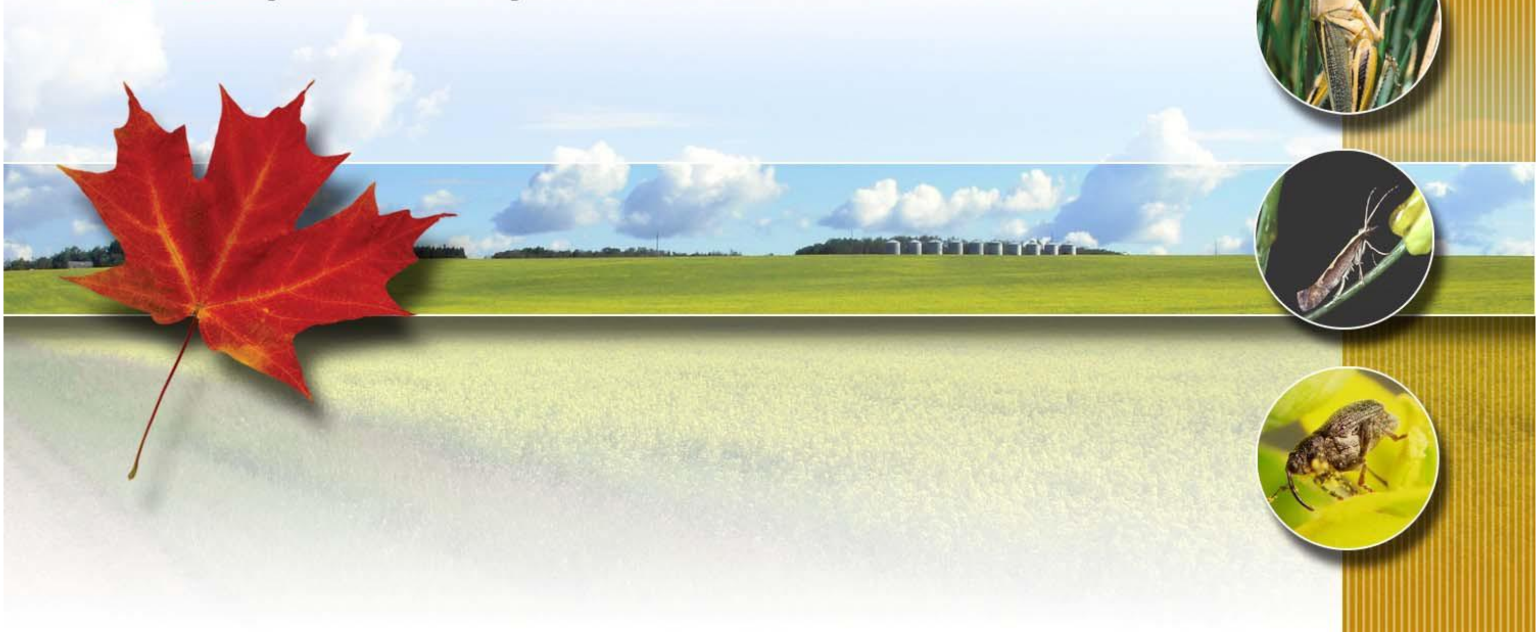

2013 Crop Variety Highlights and Insect Pest Updates

Melfort Research Farm

Scott Research Farm

Saskatoon Research Centre

Canada

Regional Testing of Cereal, Oilseed and Pulse Cultivars 2013
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.

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Table 1. Growing Season Precipitation (mm) at Scott, Glaslyn and Melfort in 2013

Month	Scott	Glaslyn	Melfort
May	65	14	23
June	124	109	97
July	28	53	103
Total	**217**	**176**	**223**
Long Term Average	158	161	188

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**	
Bread Wheat	AC Barrie	100	(3587)	100	(4422)	100	(4063)
Soft White	Sadash	145	(5207)	137	(6062)	158	(6430)
Durum Wheat	Strongfield	113	(4039)	---		116	(4722)
Barley	AC Metcalfe	129	(4626)	127	(5604)	118	(4807)
Oat	CDC Dancer	149	(5346)	140	(6208)	125	(5090)
Field Pea (yellow)	Cutlass	65	(2348)	81	(3601)	110	(4465)
Field Pea (green)	CDC Striker	77	(2765)	81	(3590)	104	(4221)
Lentil	CDC Maxim	65	(2344)	---		70	(2721)
Canary	Cantate	48	(1716)	---		57	(2296)
Canola	5440	*117	(4216)	*55	(2432)	98	(3965)
Mustard (Juncea)	Cutlass	*65	(2328)	---		---	
Flax	CDC Bethune	*74	(2661)	*49	(2172)	51	(2061)

* Less than 5 years of data

Table 3. Yield of Flax Cultivars at Scott, Glaslyn and Melfort 2013

	2013 Yield (kg/ha)			**Long Term Average Yield (% of CDC Bethune)**					
Cultivar	**Scott**	**Glaslyn**	**Melfort**	**Scott**		**Glaslyn**		**Melfort**	
CDC Bethune	2726	1735	3806	100		100		100	
CDC Glas	2679	1887	3882	101	*	91	*	115	*
CDC Neela	2469	1877	3624	93	*	84	*	112	*
CDC Sanctuary	2521	1765	3466	83	*	105	*	88	
CDC Sorrel	2337	1999	3008	99	*	99	*	91	
FP2308	2351	1590	3680	88	*	80	*	115	*
Prairie Sapphire	1700	1468	3021	64	*	84	*	100	
Westlin 70	1678	1641	3624	63	*	88	*	97	*
Westlin 71	2077	1420	3246	78	*	65	*	85	*

***** Less than 3 years of data

Table 4. Yield of Spring Wheat Cultivars at Scott, Glaslyn and Melfort 2013

Cultivar	2013 Yield (kg/ha)			Long Term Average Yield (% of AC Barrie)					
Hard Red	**Scott**	**Glaslyn**	**Melfort**	**Scott**		**Glaslyn**		**Melfort**	
AC Barrie	3410	4509	5160	100		100		100	
AC Bailey	4008	4798	5429	104	*	102		95	
AAC Brandon	4515	5123	5986	126	*	116	*	108	*
AAC Elie	4570	5206	6129	127	*	112	*	107	*
AC Redwater	3954	4607	5467	110	*	98	*	97	*
Carberry	3860	4972	5482	115		105		95	
Cardale	3878	4666	5822	108	*	101		102	
CDC Kernen	3882	4259	5521	106	*	101		104	
CDC Plentiful	3929	4802	5657	110	*	105	*	108	
CDC Stanley	4012	4755	6308	113		95		105	
CDC Thrive	3889	4383	5519	110		95		104	
CDC Utmost VB	4086	4413	6278	109		96		108	
CDC VR Morris	4135	5006	5907	112	*	109		108	
Glenn	3826	4577	5364	111		107		100	
Muchmore	4152	5071	5878	113		106		95	
Shaw VB	4055	4656	6289	116		107		112	
Stettler	4505	4783	5753	114		108		106	
SY 433	3661	4728	5574	95	*	102		101	
Vesper VB	3981	4235	6045	107	*	101		116	
WR859 CL	3705	4436	5039	110		104		95	
5604 HR-CL	3612	4541	5182	102		94		93	
5605 HR-CL	3646	5020	5797	102	*	114	*	112	*
Hard White									
AAC Iceberg	3874	4676	5258	108	*	93	*	96	*
AAC Whitefox	3763	4842	5241	105	*	106	*	102	*
AAC Whitehawk	3494	3938	4227	92	*	79		81	
CDC Whitewood	3813	4773	5314	106	*	100	*	99	*
Soft White									
Chiffon	5997	5721	8706	185	*	125	*	136	*
Sadash	5747	6238	7489	164	*	136	*	122	
CPS									
AAC Crusader	4705	4956	6840	139	*	120	*	124	*
AAC Ryley	4247	5173	6464	126	*	117	*	110	*
Conquer VB	4665	5281	7782	123	*	131	*	134	
Enchant	4123	4986	5671	122	*	119	*	103	
General Purpose									
AAC Innova	5600	6145	7499	138		172		124	
AAC Proclaim	4573	4615	6912	107	*	142	*	119	*
CDC NRG003	5014	5054	6760	120		125		115	
Pasteur	5211	5995	7802	143		138		127	
Minnedosa	4569	4873	6307	141		106		109	

* Less than 3 years of data

Table 5. Yield of Durum Cultivars at Scott and Melfort 2013

Cultivar	2013 Yield (kg/ha)		Long Term Average Yield (% of Strongfield)			
	Scott	Melfort	Scott		Melfort	
Strongfield	3873	5501	100		100	
AAC Current	3540	5327	88	*	98	*
AAC Marchwell	3845	5245	95	*	95	*
AAC Raymore	3445	4721	85	*	92	*
CDC Desire	3831	4592	95	*	91	*
CDC Vivid	3651	4559	90	*	97	*
CDC Fortitude	3393	4766	84	*	87	*
DT 832	3671	5083	91	*	92	*
Enterprise	3782	5245	94		98	
Transcend	3553	5506	88	*	100	

* Less than 3 years of data

Table 6. Yield of Oat Cultivars at Scott, Glaslyn and Melfort 2013

Cultivar	2013 Yield (kg/ha)			Long Term Average Yield (% of CDC Dancer)					
	Scott	Glaslyn	Melfort	Scott		Glaslyn		Melfort	
CDC Dancer	5327	6393	6867	100		100		100	
AAC Justice	6226	5817	8259	116	*	94	*	120	*
AC Stride	6823	6122	9567	117		100		126	
Bradley	5859	5735	8606	109		92		115	
CDC Big Brown	5985	6354	7588	105		102		110	
CDC Haymaker	4571	5036	7838	85	*	81	*	114	*
CDC Nasser	6278	5109	8055	109		94		115	
CDC Ruffian	6908	6279	8734	129	*	101	*	127	*
CDC Seabiscuit	5564	6101	8270	109		102		115	
Souris	6124	5274	8171	111		93		127	
Summit	6665	6187	9034	116		100		113	

* Less than 3 years of data

Table 7. Yield of Barley Cultivars at Scott, Glaslyn and Melfort 2013

Cultivar	2013 Yield (kg/ha)			Long Term Average Yield (% of AC Metcalfe)					
TWO ROW	**Scott**	**Glaslyn**	**Melfort**	**Scott**		**Glaslyn**		**Melfort**	
AC Metcalfe	4626	6631	6308	100		100		100	
AC Synergy	5781	6967	7264	112	*	110	*	109	*
ABI Voyager	5881	6329	7658	127	*	113	*	121	*
Brahma	6099	7107	7471	117		111		118	
Busby	5187	6498	7119	111		111		108	
Canmore	5498	7008	6639	119	*	125	*	105	*
CDC Carter	5494	5308	7210	108		95		105	
CDC Clear	4627	5273	6814	96		94		105	
CDC ExPlus	3711	4385	6880	89		75		103	
CDC Kindersley	6064	6954	6813	112		100		107	
CDC Maverick	4553	6034	6359	90	*	95	*	93	
CDC PolarStar	5105	6224	6462	107		101		101	
Cerveza	6030	6529	7355	139		107		120	
Gadsby	6004	6694	6487	121		109		110	
Major	6021	6801	7507	128		111		120	
Taylor	2105	2471	5964	70		56		99	
TR07728	6099	7107	7471	117		111		118	
TR10214	6071	6847	7387	131	*	122	*	117	*
TR10694	5498	7008	6639	119	*	125	*	105	*
TR11698	5637	7037	7256	122	*	126	*	115	*
SIX ROW									
Amisk	5357	7569	8309	116	*	135	*	132	*
Breton	5199	7329	6466	100	*	114	*	110	*
CDC Anderson	4511	6620	6924	103		98		114	
Celebration	4956	6428	7429	111		97		109	

* Less than 3 years of data

Table 8. Yield of Lentil Cultivars at Scott and Melfort 2013

Cultivar	2013 Yield (kg/ha)		Long Term Average Yield (% of CDC Maxim CL)			
	Scott	Melfort	Scott		Melfort	
CDC Maxim CL	1618	4021	100		100	
Small Green						
CDC Imvincible	1074	4193	93		88	
3592-13	1646	4542	70	*	106	*
3674-30	2205	4334	94	*	108	*
Medium Green						
CDC Imigreen CL	1070	1292	63		53	
Large Green						
CDC Greenland	826	1932	64		67	
CDC Greenstar	2059	1794	77		68	
CDC Impower CL	1889	1169	74		46	
3484-2	1687	2782	72	*	73	*
Extra Small Green						
CDC Asterix	2192	3724	70	*	93	
French Green						
CDC Marble	1960	4703	84	*	119	*
CDC Peridot	1585	4257	82		72	
Green Cotyledon						
CDC QG-1	1873	1594	52		50	
CDC QG-2	1638	4145	70	*	97	*
CDC QG-3	894	926	38	*	23	*

* Less than 3 years of data

Table 8 (continued). Yield of Lentil Cultivars at Scott and Melfort 2013

	2013 Yield (kg/ha)		Long Term Average Yield (% of CDC Maxim CL)			
Cultivar	**Scott**	**Melfort**	**Scott**		**Melfort**	
CDC Maxim CL	1618	4021	100		100	
Extra Small Red						
CDC Robin	1295	3555	80		73	
CDC Rosie	1605	3819	99	*	96	
CDC Ruby	1245	3276	77		88	
IBC 507	1170	4446	72	*	111	*
IBC 605	1065	4116	66	*	102	*
3959-6	2046	4243	126	*	106	*
Small Red						
CDC Dazil	1491	3948	92		100	
CDC Imax CL	1184	3020	73		60	
CDC Maxim CL	1618	4021	100		100	
CDC Redcliff	1753	3232	108		103	
CDC Scarlet	2352	3970	145	*	118	
IBC 550	2209	3966	137	*	99	*
3365-7	2437	4494	151	*	96	*
3646-4	2724	3225	168	*	80	*
3674-15	2224	4538	137	*	113	*
Medium Red						
CDC KR-2	2114	3070	131	*	76	*
IBC 479	2078	2061	128	*	51	*
IBC 598	1614	625	100	*	16	*
Large Red						
CDC KR-1	1971	1862	84	*	74	
Spanish Brown						
CDC SB-2	640	2389	40		91	
CDC SB-3	1031	3257	64	*	81	*
3674-17	2648	3713	164	*	92	*

* Less than 3 years of data

Table 9. Yield of Pea Cultivars at Scott, Glaslyn and Melfort 2012

Cultivar	2013 Yield (kg/ha)			Long Term Average Yield (% of Cutlass)					
Yellow	**Scott**	**Glaslyn**	**Melfort**	**Scott**		**Glaslyn**		**Melfort**	
Cutlass	3905	4732	5574	100		100		100	
AAC Ardill	4137	4643	6525	110	*	129	*	117	*
Abarth	4253	4597	5383	118	*	128	*	97	*
AC Earlystar	3726	5127	6515	103	*	142	*	117	*
Agassiz	4113	4855	4485	130		129		106	
CDC Amarillo	4289	4994	5002	125		110		117	
CDC Golden	3861	4539	4606	114		103		102	
CDC Hornet	4435	4712	5531	112		100		102	
CDC Meadow	3840	4769	6432	110		111		114	
CDC Saffron	3915	4413	6588	116		100		113	
CDC Treasure	3239	4795	6019	109		114		107	
CDC 2847-21	4002	4969	5862	111	*	138	*	105	*
CDC 2950-19	4882	4625	5101	136	*	128	*	92	*
LN4228	3950	4287	5158	115	*	119	*	93	*
Green									
CDC Limerick	4322	4451	4978	110		91		101	
CDC Patrick	3548	4295	5069	113		112		96	
CDC Pluto	3879	4391	4538	107		109		96	
CDC Raezer	3104	4401	5730	104	*	90	*	101	
CDC Striker	3300	4119	4791	118		100		92	
CDC Tetris	3710	4461	5553	118		113		108	
CDC 2472-4	4305	3881	5296	125	*	82	*	107	*
Cooper	4399	3771	5330	117		106		98	
Red									
CDC 2710-1	4425	4446	4814	123	*	123	*	86	*
Dun									
CDC Dakota	4243	4332	6090	135		104		114	
Forage									
CDC Horizon	3641	3609	4915	84		68		92	
Maple									
CDC Mosaic	3683	3883	5092	80	*	75	*	90	

* Less than 3 years of data

Insect Pest Updates

Bertha Armyworm in Western Canada in 2013

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 2013. 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.

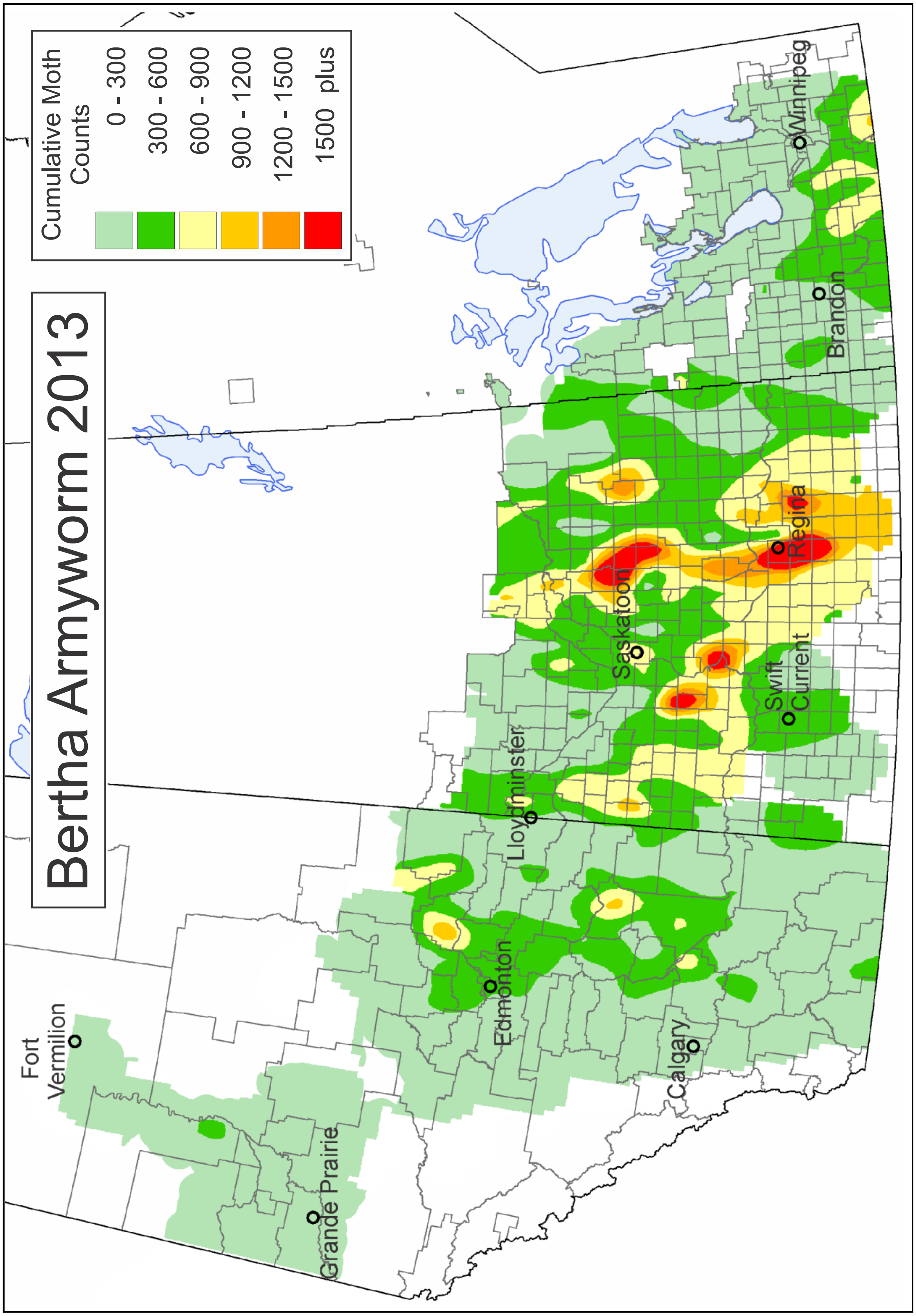
The network of traps indicated that bertha armyworm populations decreased in much of the prairie region (Figure 1). The late spring in 2013 delayed the emergence of bertha armyworm moths somewhat. The initial reports of the adults were during late June. For the upcoming growing season, a significant population still exists in central Saskatchewan from south of Regina to northeast of Saskatoon. 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 the trap counts can be difficult because the traps 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 this survey was provided by the provincial canola grower organizations in Manitoba, Saskatchewan and Alberta and the Western Grains research Foundation.. 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 2013
Cumulative Moth Counts
0 - 300
300 - 600
600 - 900
900 - 1200
1200 - 1500
1500 plus
Fort Vermilion
Grande Prairie
Edmonton
Calgary
Lloydminster
Saskatoon
Swift Current
Regina
Brandon
Winnipeg

The 2014 Prairie Grasshopper Forecast

O. Olfert, D. Giffen, S. Hartley, M. Vadnais, J. Gavloski, S. Meers, 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 2013 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 the Swift Current area, while more severe population levels were noted in northwest Saskatchewan, with some control required around Meadow Lake. *Manitoba* – The risk of significant grasshopper numbers for 2014 is predicted to increase for Manitoba. In 2013, 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 numbers for 2014 is also predicted to increase somewhat in Alberta. There are a number of areas of moderate, severe and very severe high risk of grasshopper scattered throughout central Alberta and the Peace region.

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 Canola Agronomic Research Program (CARP) through the provincial canola grower organizations in Manitoba, Saskatchewan and Alberta and the Western Grains research Foundation. 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.

The 2014 Forecast of Wheat Midge in Saskatchewan and Alberta

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

The larval cocoon survey last fall indicated that economic infestations in 2014 are predicted to more of an issue in Saskatchewan than in Alberta. The distribution of wheat midge, as illustrated in the 2014 Forecast map (Figure 3), is based on non-parasitized cocoons present in soil samples collected in a 2013 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.

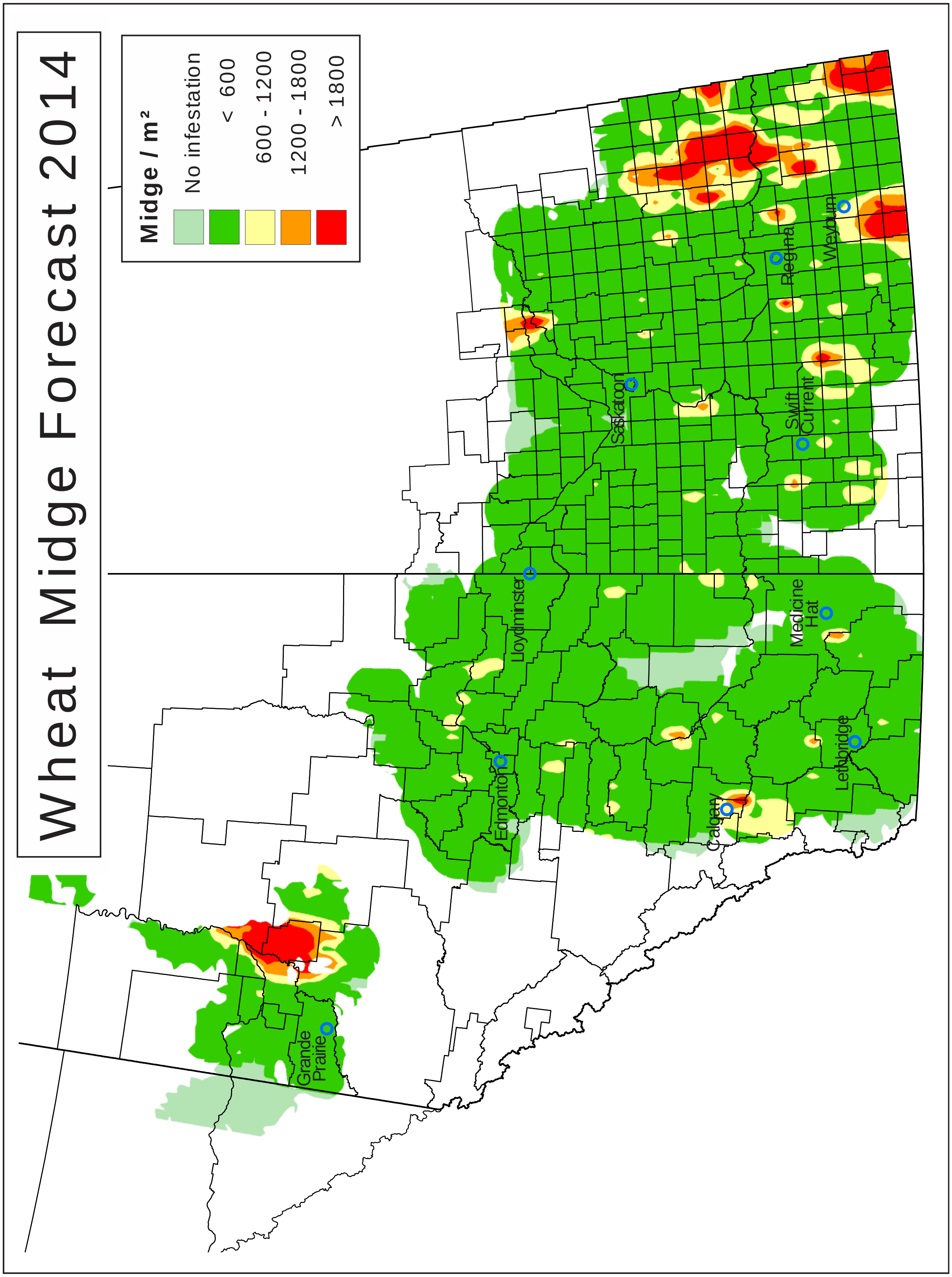
In Saskatchewan, the most severe midge population levels will be a band throughout central and eastern Saskatchewan, extending from Rural Municipality 8 in the south up through to 305 in the north. Several smaller pockets of high populations in the soil were also recorded between Moose Jaw and Swift Current and up near Prince Albert. *In Alberta*, small pockets throughout southern and central regions recorded moderate to high midge populations but generally midge pressure is predicted to be low in 2014. However, there was a large increase in soil populations in eastern Peace Region regions

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 2012 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 survey was conducted by Sharon Nowlan, Alberta Agriculture, Food & Rural Development, and Agriculture & Agri-Food Canada. The survey was funded by Saskatchewan Crop Insurance; Alberta Agriculture, Food & Rural Development; and the Western Grains research Foundation.. The forecast was prepared by AAFC- Saskatoon.


Wheat Midge Forecast 2014
Midge / m²
No infestation
< 600
600 - 1200
1200 - 1800
> 1800
Grande Prairie
Edmonton
Lloydminster
Calgary
Medicine Hat
Lethbridge
Saskatoon
Swift Current
Regina
Weyburn

Cabbage Seedpod Weevil in Alberta and Saskatchewan for 2013

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 2013 (Figure 4).

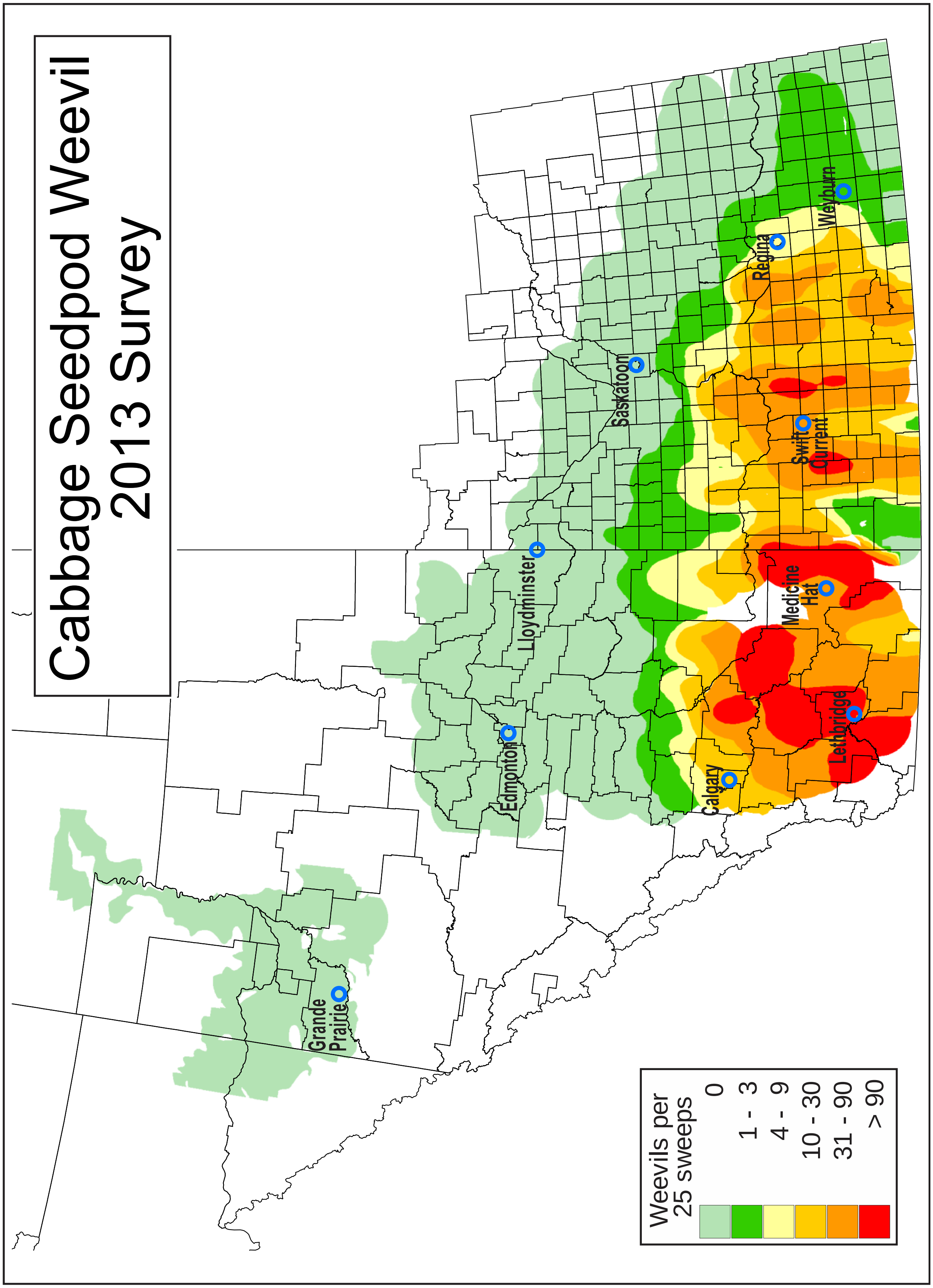
In Saskatchewan, a total of 410 fields were sampled in 2013; weevils were collected in 152 fields compared to 69 fields last year. The average number of weevils in 25 sweeps at the 69 positive sites in 2013 was 26.1 compared to 8.3, 6.0 and 4.4 in 2012, 2011 and 2010 respectively. The highest densities were found in south central Saskatchewan, from Regina west to the Alberta border and almost up to Saskatoon in the north. *In Alberta*, the 2013 survey encompassed all the canola growing areas including 252 fields in 42 counties. Generally, economic population levels were still only found in southern Alberta (south of Red Deer) with a slight increase in severity in 2013. 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 2012 Crop Protection Guide at: http://www.agriculture.gov.sk.ca/Guide_to_Crop_Protection

The survey was conducted by Alberta Agriculture, Food & Rural Development; Canola Council of Canada; Saskatchewan Ministry of Agriculture; and Agriculture & Agri-Food Canada. The map was prepared by AAFC - Saskatoon.



Cabbage Seedpod Weevil
2013 Survey
Weevils per
25 sweeps
0
1 - 3
4 - 9
10 - 30
31 - 90
> 90
Grande
Prairie
Edmonton
Lloydminster
Saskatoon
Regina
Weyburn
Swift
Current
Medicine
Hat
Calgary
Lethbridge

Wheat Stem Sawfly in Alberta for 2013

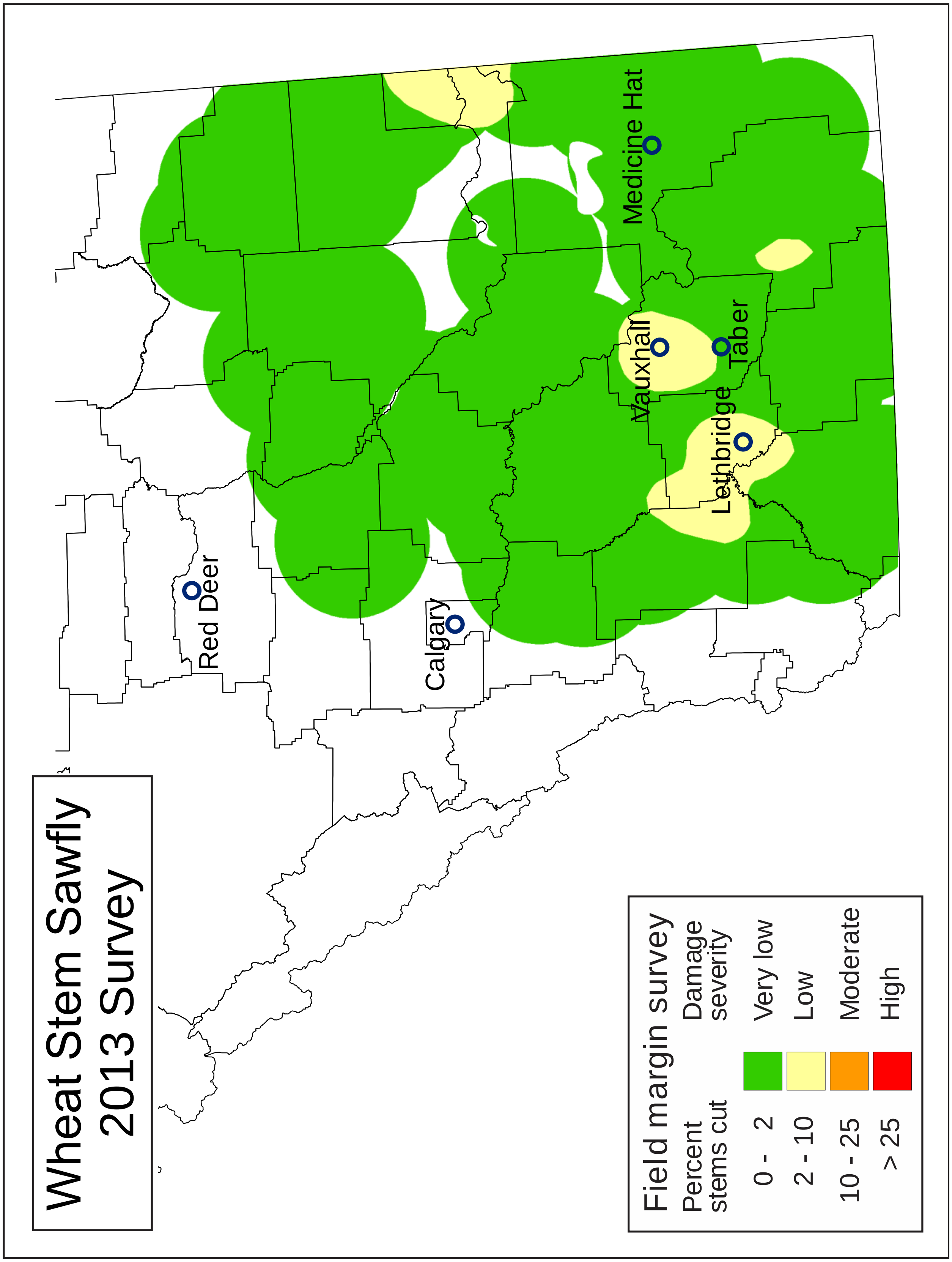
O. Olfert, S. Meers, H. Carcamo

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 (71 fields in 16 counties) conducted in 2013 indicated that the area at risk of economic sawfly populations in 2014 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
2013 Survey
Medicine Hat
Red Deer
Calgary
Vauxhall
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 for 2013

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

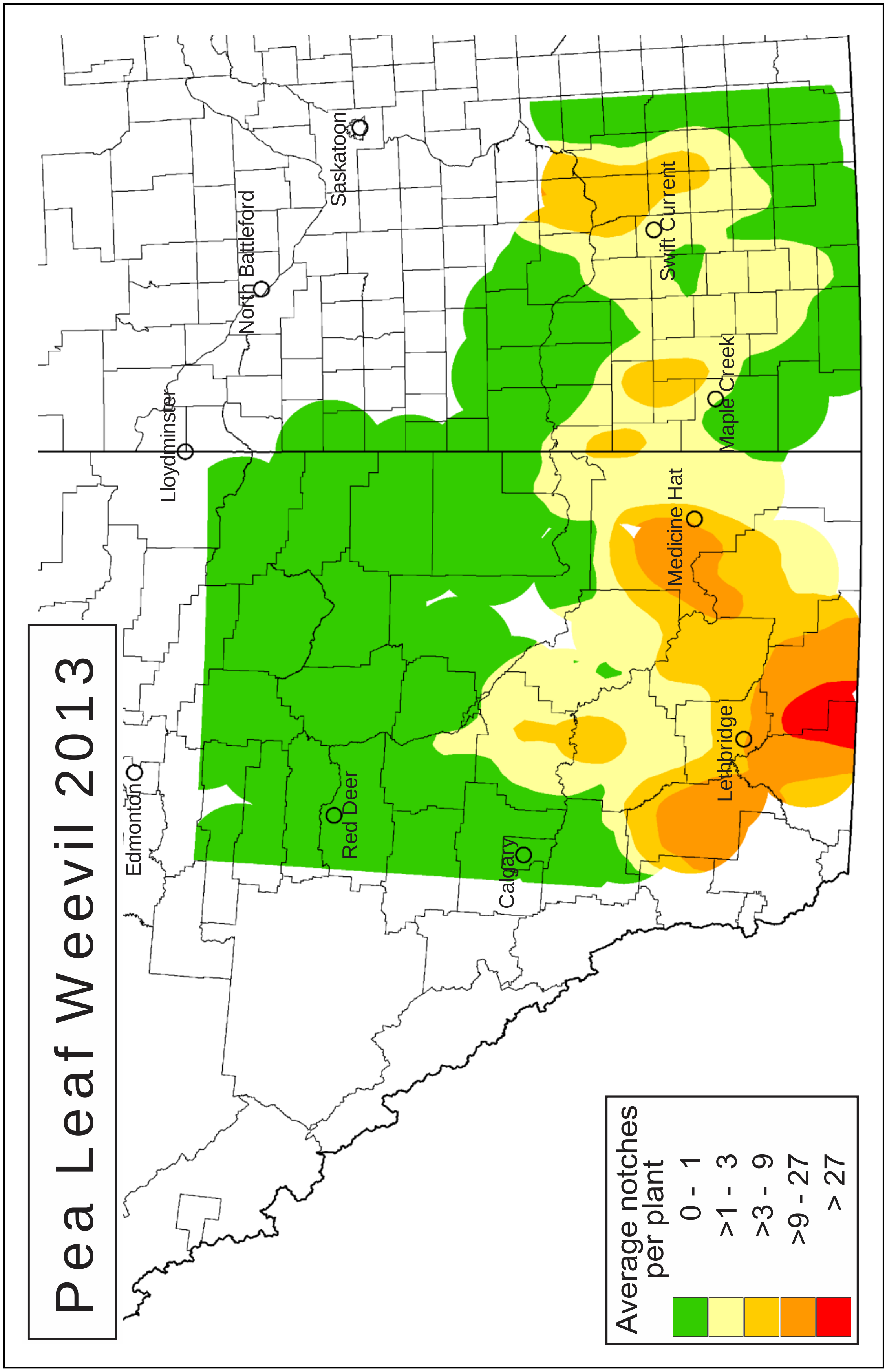
Native to Europe, pea leaf weevil (*Sitona lineatus*) has recently become an economical insect pest of field peas in southern Alberta. The known distribution of pea leaf weevil on the prairies is currently limited to central Alberta and southwest Saskatchewan. The weevil was first recorded attacking 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 2013 (Figure 6). *In Saskatchewan*, the severity of damage to pea crops was less in 2013; damage was recorded from east of Swift Current across the south to the Alberta border. *In Alberta*, damage to pea crops decreased in severity in 2013, the area of highest risk is still limited 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 2014 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 2013
Edmonton
Lloydminster
North Battleford
Saskatoon
Red Deer
Calgary
Swift Current
Maple Creek
Medicine Hat
Lethbridge
Average notches per plant
0 - 1
>1 - 3
>3 - 9
>9 - 27
> 27