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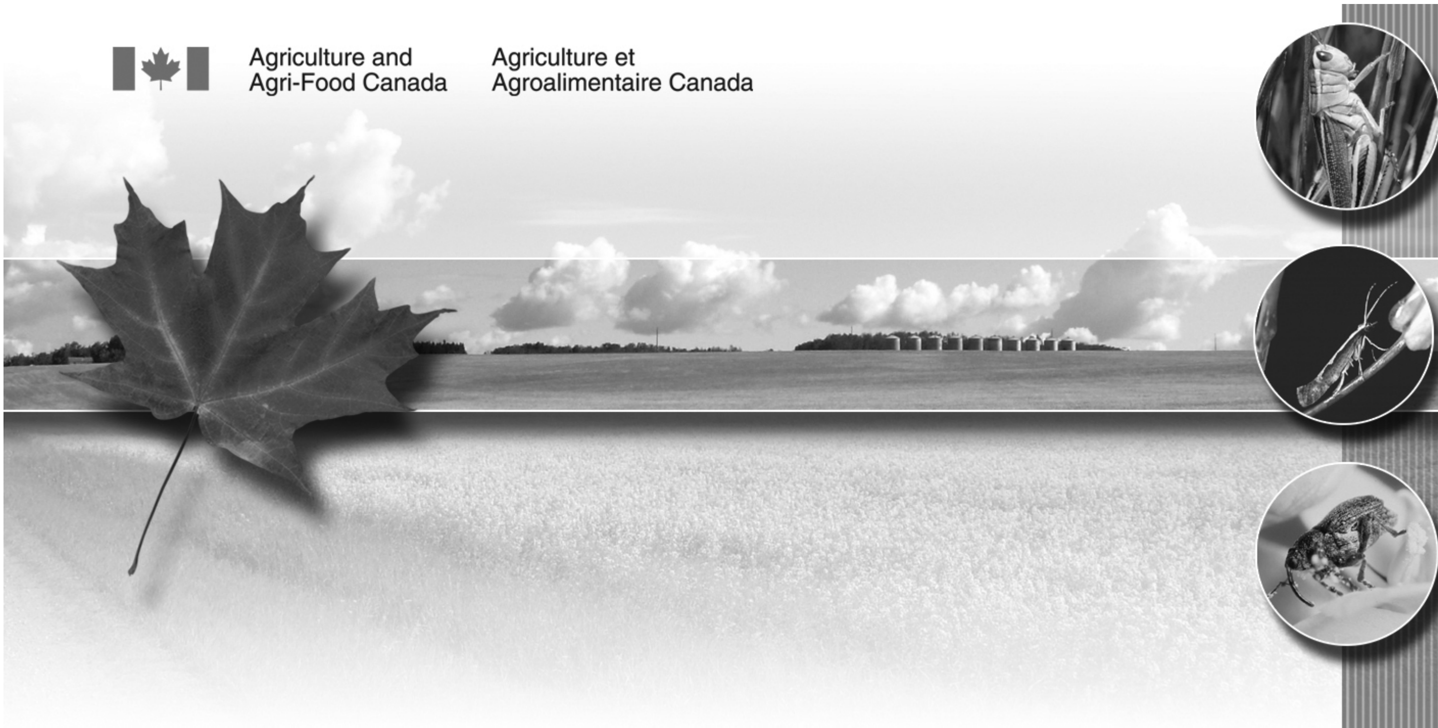

2008 Crop Variety Highlights and Insect Pest Updates

Melfort Research Farm

Scott Research Farm

Saskatoon Research Centre

Canada

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Crop Variety Highlights

Regional Testing of Cereal, Oilseed and Pulse Cultivars 2008

S.J. Dueck 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 2009*. Seed quantities for new varieties listed herein may be limited for 2009.

Table 1. Growing Season Precipitation (mm) at Scott, Glaslyn and Melfort in 2008.

Month	Scott	Glaslyn	Melfort
May	13	10	6
June	87	62	32
July	86	80	118
Total	**186**	**152**	**156**
Long Term Average	158	n/a	187

Table 2. Average Yield of Crop Species on Fallow expressed as a % of hard red spring wheat (AC Barrie) at Scott, Lashburn, Melfort and Loon Lake. For most crops, data presented is based on yields averaged over the past 15-20 years.

		Dark Brown Soil Zone	**Thin Black Soil Zone**	**Thick Black Soil Zone**	**Grey Wooded Soil Zone**
	Cultivar	**Scott**	**Lashburn**	**Melfort**	**Loon Lake**
Bread Wheat	Katepwa, AC Barrie	100 (2990)	100 (3290)	100 (3500)	100 (2820)
Utility Wheat	AC Karma, AC Crystal, AC Andrew	119	119	135	117
Extra Strong Wheat	Glenlea, AC Glenavon, Burnside	105	105	104	105
Durum Wheat	Kyle, AC Avonlea	103	103	108	---
Triticale	Frank, AC Certa	125	126	143	---
Barley	Harrington, AC Metcalfe	140	138	121	126
Oat	Calibre CDC Dancer	144	144	130	132
Canola	2663, 5020	75	84	90	69
Flax	Vimy, CDC Bethune	55	58	53	44
Mustard (Oriental)	Cutlass	77	61	---	---
Mustard (Brown)	Commercial Brown	67	59	---	---
Mustard (Yellow)	Ochre	51	48	---	---
Field Pea	Grande, Alfetta Cutlass	106	99	87	87
Lentil	CDC Milestone	72	**	54	63

* Less than 4 years of data

** Lentil yields are not reported at Lashburn where cool wet growing seasons have often reduced yield and quality to unacceptable levels.

Table 3. Yield of Spring Wheat Cultivars at Scott, Glaslyn and Melfort 2008.

	2008 Yield (kg/ha)			Long Term Average Yield (% of AC Barrie)					
Cultivar	**Scott**	**Glaslyn**	**Melfort**	**Scott**		**Glaslyn**		**Melfort**	
Bread Wheat									
AC Barrie	3760	3910	4290	100		100		100	
CDC Abound	4490	4560	4610	107	*	108	*	103	
Alvena	4210	4210	4710	99	*	110	*	105	
Fieldstar VB	4260	4180	4340	99	*	107	*	101	*
Goodeve VB	4080	4700	4310	99	*	113	*	110	*
Harvest	4600	4160	4130	105		100	*	100	
CDC Imagine	4320	4370	4250	106		105	*	97	
Infinity	4290	4470	4640	114		107	*	101	
Kane	4060	4130	4490	95	*	96	*	99	
Lillian	4310	4200	4360	111		101	*	119	
McKenzie	4500	4330	4140	106		104	*	97	*
Snowstar	4220	3890	4130	101	*	102	*	99	
Stettler	4530	4400	4930	120	*	113	*	115	*
Superb	4870	4470	4840	107		108	*	105	
Unity VB	4410	4580	4440	109	*	112	*	122	*
Waskada	4420	4350	4430	106	*	112	*	113	*
5602HR	3840	4610	4600	93		118	*	107	*
Utility Wheat									
AC Andrew	5520	5690	6100	136	*	125	*	143	
Burnside	4350	4420	4370	109	*	100	*	102	*
5702PR	5240	4920	4770	123	*	119	*	111	*

* Less than 3 years of data

Table 4. Yield of Durum Cultivars at Scott and Melfort 2008.

	2008 Yield (kg/ha)		Long Term Average Yield (% of Strongfield)		
Cultivar	Scott	Melfort	Scott		Melfort
Strongfield	4140	4710	100		100
AC Avonlea	---	---	97		94
Brigade	4040	4790	98	*	102
Commander	---	---	115		93
Eurostar	3980	4590	96	*	98
AC Navigator	---	---	108		89
CDC Verona	4080	4660	99	*	99

* Less than 3 years of data

Table 5. Yield of Oat Cultivars at Scott, Glaslyn and Melfort 2008.

	2008 Yield (kg/ha)			Long Term Average Yield (% of CDC Dancer)					
Cultivar	Scott	Glaslyn	Melfort	Scott		Glaslyn		Melfort	
CDC Dancer	5470	5140	6300	100		100		100	
SW Betania	5970	5660	6550	110		106	*	115	
Hi Fi	5390	5470	6150	102	*	98	*	105	
Jordan	6120	6130	7260	110		106	*	122	
Leggett	5450	5270	6460	99		95	*	108	
CDC Minstrel	5410	5320	5870	108	*	100	*	110	*
AC Mustang	6160	5730	7330	105		111	*	125	*
CDC Pro-Fi	4690	4620	6100	90	*	81	*	102	*
CDC Sol-Fi	5480	4560	6520	94		92	*	105	
Triactor	6520	6430	7730	116	*	113	*	127	*
CDC Weaver	5870	6390	6660	103		108	*	115	

* Less than 3 years of data

Table 6. Yield of Barley Cultivars at Scott, Glaslyn and Melfort 2008.

	2008 Yield (kg/ha)			Long Term Average Yield (% of AC Metcalfe)					
Cultivar	Scott	Glaslyn	Melfort	Scott		Glaslyn		Melfort	
TWO ROW									
AC Metcalfe	5500	6200	5700	100		100		100	
Bently	6160	6580	6100	112	*	106	*	107	*
Champion	6800	7110	6190	131	*	113	*	113	
CDC Coalition	6340	6760	5780	116	*	112	*	107	
CDC Cowboy	4990	6020	5070	92		95	*	99	
CDC Landis	5750	6640	6140	104	*	107	*	108	*
CDC Meredith	6560	6730	5830	119	*	109	*	102	*
CDC Mindon	5490	6280	5390	111	*	98	*	100	
CDC Reserve	6030	6510	5910	110	*	105	*	104	*
Formosa	5280	5930	5510	113	*	100	*	104	
McLeod	6220	6460	5910	115		110	*	113	
Merit 16	5900	6390	5280	107	*	103	*	93	*
Merit 57	6270	6470	5630	114	*	104	*	99	*
Norman	5520	6060	5480	100	*	98	*	96	*
SIX ROW									
Alston	6520	6100	6460	114	*	104	*	106	
CDC Clyde	6360	6280	5670	104		102	*	97	
CDC Kamsack	5720	6550	5720	104	*	101	*	100	*
CDC Laurence	6270	7550	6380	106		116	*	103	
CDC Mayfair	6140	6330	5130	112	*	98	*	90	*
Chigwell	6210	6710	6260	113	*	104	*	110	*
Manny	6540	6070	5680	102		100	*	103	
Sundre	7010	7390	6950	120	*	113	*	112	

* Less than 3 years of data

Table 7. Yield of Flax Cultivars at Scott, Glaslyn and Melfort 2008.

	2008 Yield (kg/ha)			Long Term Average Yield (% of CDC Bethune)				
Cultivar	Scott	Glaslyn	Melfort	Scott		Glaslyn		Melfort
CDC Bethune	3130	2240	2850	100		100		100
CDC Grande	2900	1920	2170	94	*	85	*	80
Prairie Thunder	2930	1900	2050	95		89	*	89
CDC Sorrel	2860	2040	2240	98	*	97	*	95

* Less than 3 years of data

Table 8. Yield of Lentil Cultivars at Scott and Melfort 2008.

	2008 Yield (kg/ha)		Long Term Average Yield (% of CDC Milestone)	
Cultivar	**Scott**	**Melfort**	**Scott**	**Melfort**
Small Green				
CDC Milestone	2230	1280	100	100
Medium Green				
CDC Impress CL	2150	1700	103 *	96 *
Large Green				
CDC Greenland	1650	1270	87 *	99
CDC Improve CL	1920	1260	89 *	96
CDC Plato	2220	1420	98	104
Small Red				
CDC Impact CL	2090	1710	90 *	85
CDC Maxim CL	2540	2300	107 *	118 *
CDC Redberry	2370	1840	105	108
Extra Small Red				
CDC Impala CL	2190	1980	101 *	112 *
CDC Robin	1740	1600	87	99
CDC Rosetown	2530	2250	109 *	126
CDC Imperial CL	1720	1510	84 *	87

* Less than 3 years of data

Table 9. Yield of Pea Cultivars at Scott, Glaslyn and Melfort 2008.

	2008 Yield (kg/ha)			Long Term Average Yield (% of Cutlass)		
Cultivar	**Scott**	**Glaslyn**	**Melfort**	**Scott**	**Glaslyn**	**Melfort**
Yellow						
Cutlass	FAILED DUE TO HAIL	4250	4930	100	100 *	100
Agassiz		4530	4120	103 *	98 *	84 *
Canstar		4360	4900	99 *	98 *	107
CDC Prosper		3990	5100	90 *	92 *	104 *
Eclipse		3670	4740	98 *	88 *	99
Fusion		4170	4210	81 *	90 *	86 *
Noble		3490	4400	94 *	87 *	101 *
Polstead		4220	4620	95 *	94 *	110
Reward		4030	5120	95 *	97 *	116
Sorento		4180	4380	---	98 *	89 *
Thunderbird		3840	4940	88 *	95 *	100 *
Green						
CDC Patrick		4080	4600	87 *	91 *	93 *
CDC Striker		3870	4730	98	92 *	93
Cooper		3650	3830	104	93 *	92
Tamora		3220	3840	82 *	76 *	76
Maple						
CDC Rocket		4180	4050	97 *	106 *	95 *
Silage						
CDC Leroy		3490	4870	94 *	86 *	99 *
CDC Tucker		3380	4860	87 *	77 *	95 *

* Less than 3 years of data

Table 10. Yield of Argentine Canola Cultivars at Scott and Melfort 2008.

		2008 Yield (kg/ha) % of 45H21,5020*	
Cultivar	**Herbicide**	**Scott**	**Melfort**
46A65	CO	TEST FAILED DUE TO HAIL	(3780) 77
5505 CL	CF		92
30120-B6	CF		96
30314-A5	CF		92
71-30 CL	CF		89
45H73	CF		90
45P70	CF		103
5020	LL		114
1143 **	LL		102
1144 **	LL		105
5030	LL		118
5440	LL		112
8440	LL		108
9590	LL		111
PHS06-944	LL		110
45H21	RR		87
4414 RR	RR		105
4424 RR	RR		104
997 RR	RR		91
30507-B6	RR		95
SWK5325 RR	RR		92
04H278 **	RR		90
V1037 **	RR		103
V2018 **	RR		90
V 2030 **	RR		88
30412-B6	RR		108
30609-B6	RR		85
83S01 RR	RR		83
93H01 RR	RR		93
7145 RR	RR		107
45H26	RR		105
45H28	RR		102
D3150	RR		97
D3151	RR		102
Café	RR		87
Rugby	RR		97
9553	RR		95
9554	RR		111
46P50	RR		104

Herbicide (CO=Conventional, CF=Clearfield, LL=Liberty Link, RR=Roundup Ready)

* Average of 45H21 and 5020 = 100

** Specialty Oil

Insect Pest Updates

Bertha Armyworm in Western Canada in 2008

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

The coordinated program for monitoring bertha armyworm (*Mamestra configurata*) throughout the prairie region was implemented again in 2008. The monitoring program provides an early warning of the risk of armyworm populations reaching a level of economic importance in the coming 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. 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 over-winter in the soil. It is anticipated that crops (canola, flax) in areas where moderate to high moth counts were recorded last year will be more at risk in 2009.

In most years, bertha armyworm populations are kept in check 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 network of traps indicated that in 2008 bertha armyworm populations were low in most areas of Alberta (Figure 1). Low counts were also recorded for most of Saskatchewan and Manitoba although there were a few isolated areas in both provinces where moth numbers were in the moderate to high range. 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.

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 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.agr.gov.sk.ca/DOCS/crops/integrated_pest_management/insects/Berthawo.asp

Funding for this survey was provided by the Canola Agronomic Research Program (CARP) through the provincial canola grower organizations in Manitoba, Saskatchewan and Alberta, and by the Pest Management Centre (Agriculture & Agri-Food Canada - Ottawa). The network of pheromone traps was implemented and monitored by Alberta Agriculture, Food & Rural Development; Saskatchewan Ministry of Agriculture; Manitoba Agriculture, Food & Rural Initiatives; British Columbia Ministry of Agriculture & Lands; and Agriculture & Agri-Food Canada. The map was prepared by AAFC - Saskatoon.

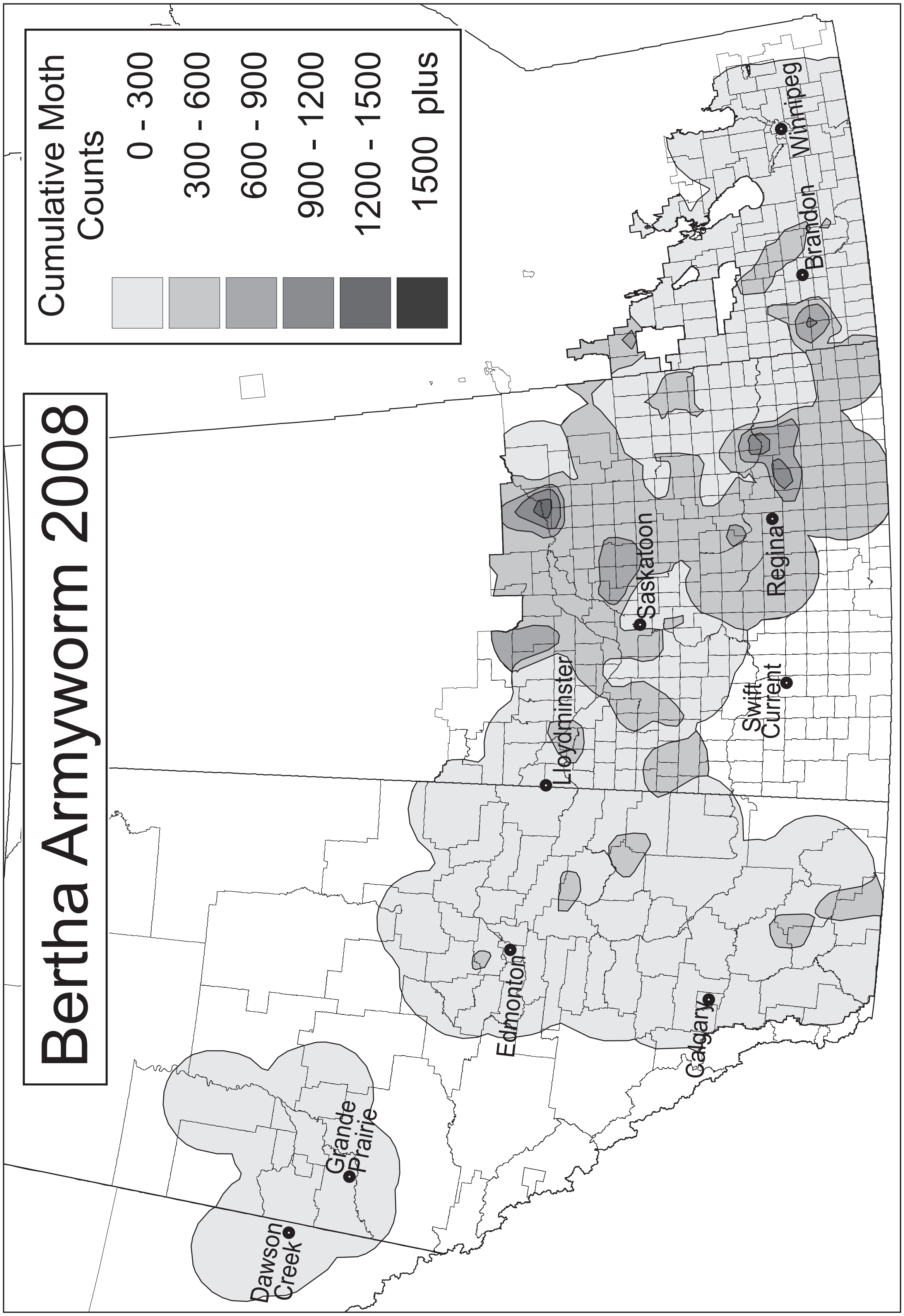

Figure 1. Bertha Armyworm in Western Canada in 2008

The 2009 Prairie Grasshopper Forecast

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

The impact of grasshopper infestations was relatively low throughout much of Saskatchewan and Alberta in 2008 (Figure 2). However, there were several locations in Manitoba, where warm temperatures and light soil contributed to an increase in grasshopper populations.

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

For the most part, in 2008 the prairies experienced cool spring and early summer temperatures that slowed grasshopper hatching and development. The above normal temperatures in August and the warm fall encouraged late season development and prolonged egg laying.

Saskatchewan – South western Saskatchewan, from south of Swift Current north to the Eston-Elrose area and east to the Craik and Davidson RMs, is at risk for light to moderate infestations with severe infestations possible in the north east corner of this area. Light to severe infestations may also occur in the Southey, Lipton, and Lestock areas. The south east portion of the province may experience light to moderate infestation.

Manitoba – The potential for infestation in Manitoba is higher in both distribution and severity for 2009. There is the potential for light to moderate infestations in most of south central Manitoba with a severe to very severe risk in some areas.

Alberta – Grasshopper population densities in 2008 decreased throughout much of Alberta, including much of the Peace River region. The grasshopper forecast map for 2009 suggests that the risk of grasshopper infestation is light throughout much of central and southern Alberta. There is, however, potential for higher levels of risk in areas of southern and eastern Alberta (along the Saskatchewan border) and in Peace River country.

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 per m^2, but in lentils, two or more grasshoppers per 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; by the Pest Management Centre; and by Saskatchewan Crop Insurance. The surveys were implemented and monitored by Alberta Agriculture, Food & Rural Development; Saskatchewan Ministry of Agriculture; Manitoba Agriculture, Food & Rural Initiatives; British Columbia Ministry of Agriculture & Lands; and Agriculture & Agri-Food Canada (AAFC). The map was prepared by AAFC - Saskatoon.

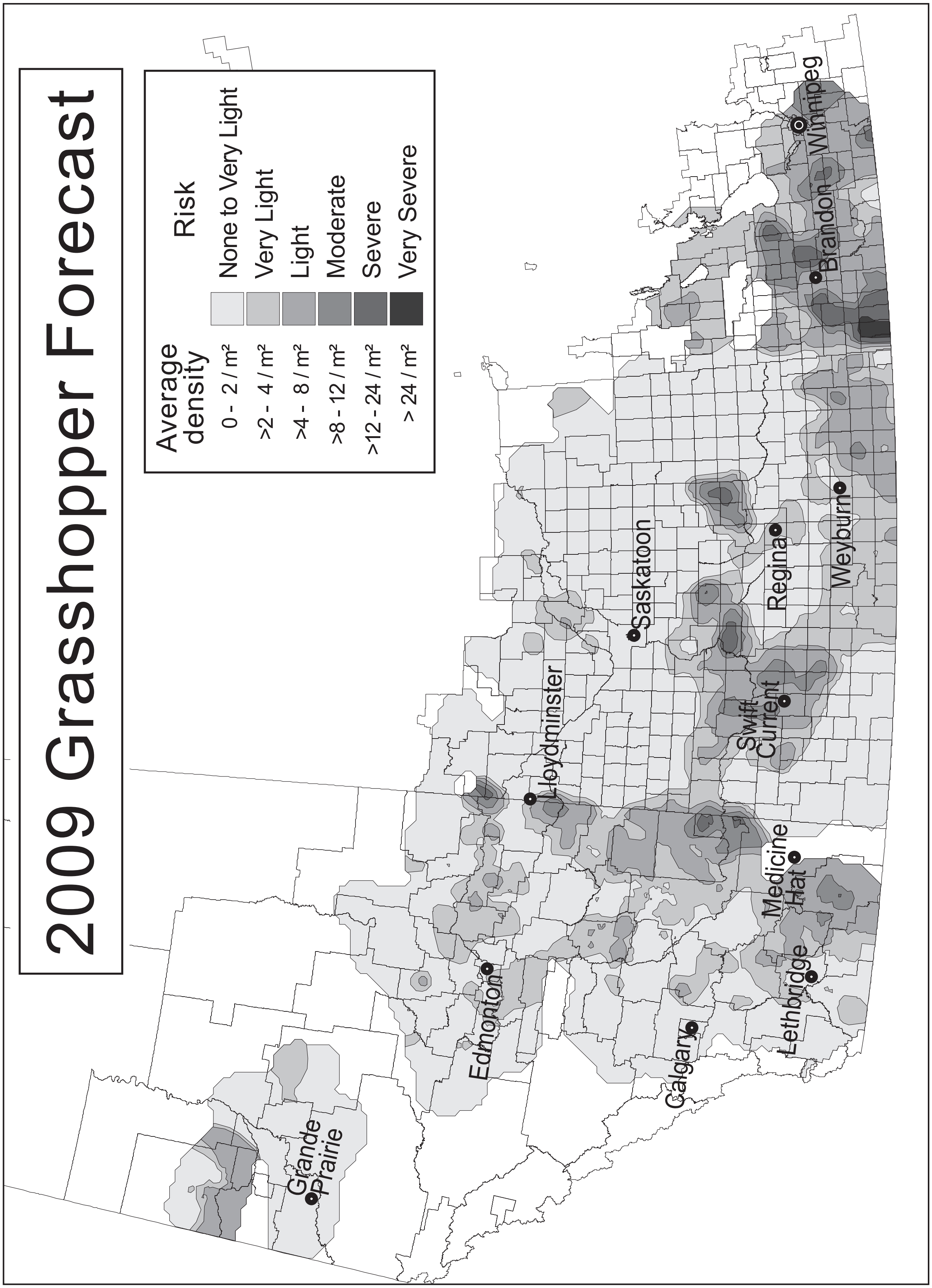

Figure 2. The 2009 Prairie Grasshopper Forecast

Forecast of Wheat Midge in Saskatchewan and Alberta for 2009

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

In 2009, population densities of wheat midge (*Sitodiplosis mosellana*) are expected to show a reversal of the trend toward increasing levels experienced over the past few years as midge numbers are predicted to be low for most areas of Alberta and Saskatchewan. This decrease may be attributed in part to advanced crop staging (relative to adult midge emergence) in many parts of the prairies in 2008, and to extensive control efforts. The distribution of wheat midge, as illustrated in the 2009 Forecast map (Figure 3), is based on non-parasitized cocoons present in soil samples collected in a 2008 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 2009. Climatic conditions - mainly temperature and moisture - will ultimately determine the extent and timing of midge emergence during the growing season.

The 2009 forecast map indicates that midge population levels have decreased over last year in most areas of Saskatchewan and Alberta. The most severe infestations in Saskatchewan for 2009 are predicted to be limited to several isolated pockets occurring along a diagonal line originating east of Yorkton (RMs 241 and 211) and extending northwest to the Redberry area (RM 435). Severe infestations are also predicted for a small area immediately north east of Prince Albert. In Alberta, severe infestations will also be limited to isolated pockets spread though out central Alberta with the majority of this area harbouring only low midge populations. However, of note are the newly-recorded infestations in southern Alberta, where irrigation of wheat crops may be contributing to midge survival by providing pockets of optimum soil moisture conditions in the drier regions of the province.

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 2009 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 survey was conducted by Agassiz Scientific Limited, Alberta Agriculture, Food & Rural Development, and Agriculture & Agri-Food Canada. The survey was funded by Saskatchewan Crop Insurance; Alberta Agriculture, Food & Rural Development; Pest Management Centre; and Agriculture & Agri-Food Canada. The forecast was prepared by AAFC - Saskatoon.

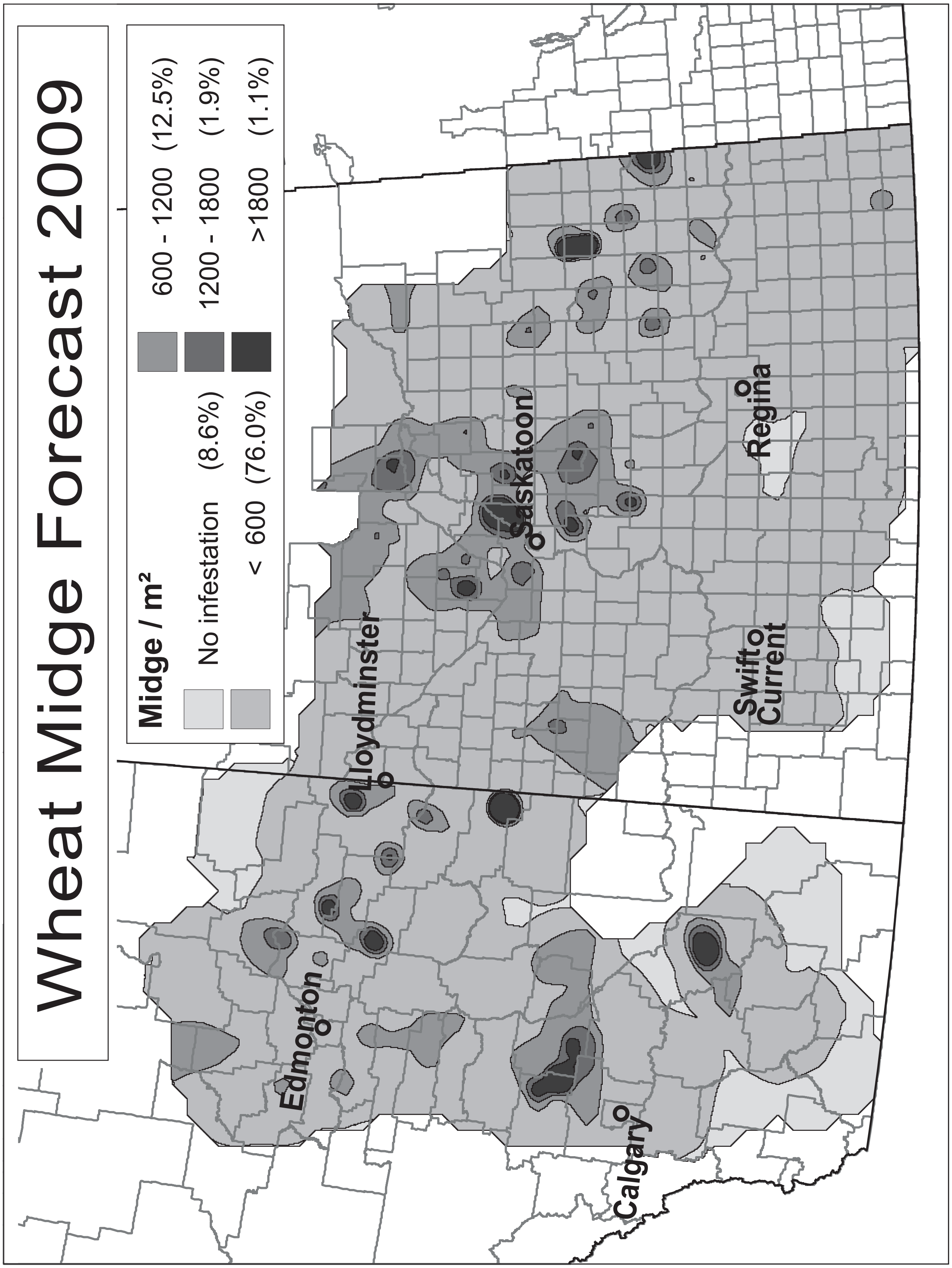

Figure 3. Forecast of Wheat Midge in Saskatchewan and Alberta for 2009

Cabbage Seedpod Weevil in Alberta and Saskatchewan for 2008

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 in parts of the prairies in 2008. The number of adult weevils recorded in sweep net samples in the fall provides a good indication of the risk of a problem the following year as the adult is the overwintering stage of the insect. The number of species of parasitoids isolated from cabbage seedpod weevil again in 2008 is still relatively low.

In Saskatchewan, both weevil population density and distribution increased from last year. The 2008 distribution extends in an easterly direction from the Alberta border out to the Regina area, and north from Montana up to Macklin (Figure 4). Noteworthy also is the new record for weevils within 70 km of Saskatoon. Population densities were also up in 2008; the mean density in sweep samples was 22.7 weevils/25 sweeps this summer, compared to only 12.5 in 2007. Very high numbers of weevils (> 90 weevils/25 sweeps) were recorded in sweep samples from areas around Swift Current. In Alberta, unlike Saskatchewan, weevil population density and distribution decreased somewhat from 2007. The greatest risk from cabbage seedpod weevil remains in southern Alberta, specifically in the areas between Calgary and Lethbridge and east to Medicine Hat. No weevils were reported from the Peace River agricultural regions in 2008.

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. 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. Feeding by adults can also cause severe damage to late-seeded canola.

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 2009 Crop Protection Guide at http://www.agr.gov.sk.ca/DOCS/crops/cropguideOO.asp

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.

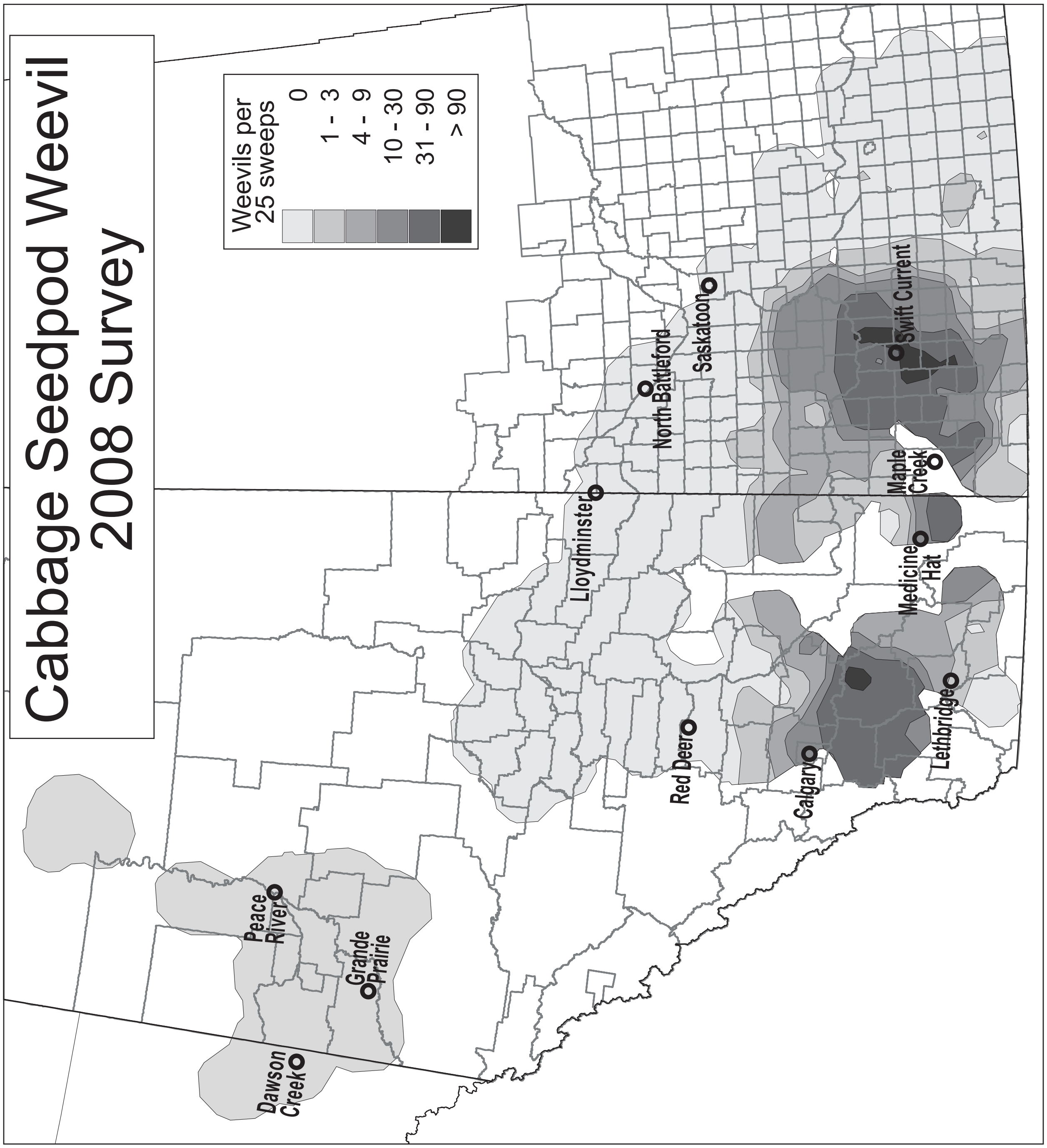

Figure 4. Cabbage Seedpod Weevil in Alberta and Saskatchewan for 2008

Wheat Stem Sawfly in Alberta for 2008

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 conducted in 2008 indicated that crop damage from wheat stem sawfly was higher than in 2007. Light and moderate damage was recorded in a band from the southwest corner of the province stretching northeast through Lethbridge to the Saskatchewan border (Figure 5). Severe damage was recorded in an area centered around Taber.

Sawfly adults tend to emerge in June on the prairies and are usually present until mid-July. Females lay up to 50 eggs, usually only one egg is inserted per stem. Within the stem, hatched larvae bore upwards through the nodes feeding for about a month. As the plant begins to ripen, the larvae move back down and cut a groove around the inside of the stem at about 25 mm above the ground. Because the structural integrity of the stems is damaged plants tend to lodge. 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; Saskatchewan Ministry of Agriculture; and Agriculture & Agri-Food Canada. The map was prepared by AAFC - Saskatoon.

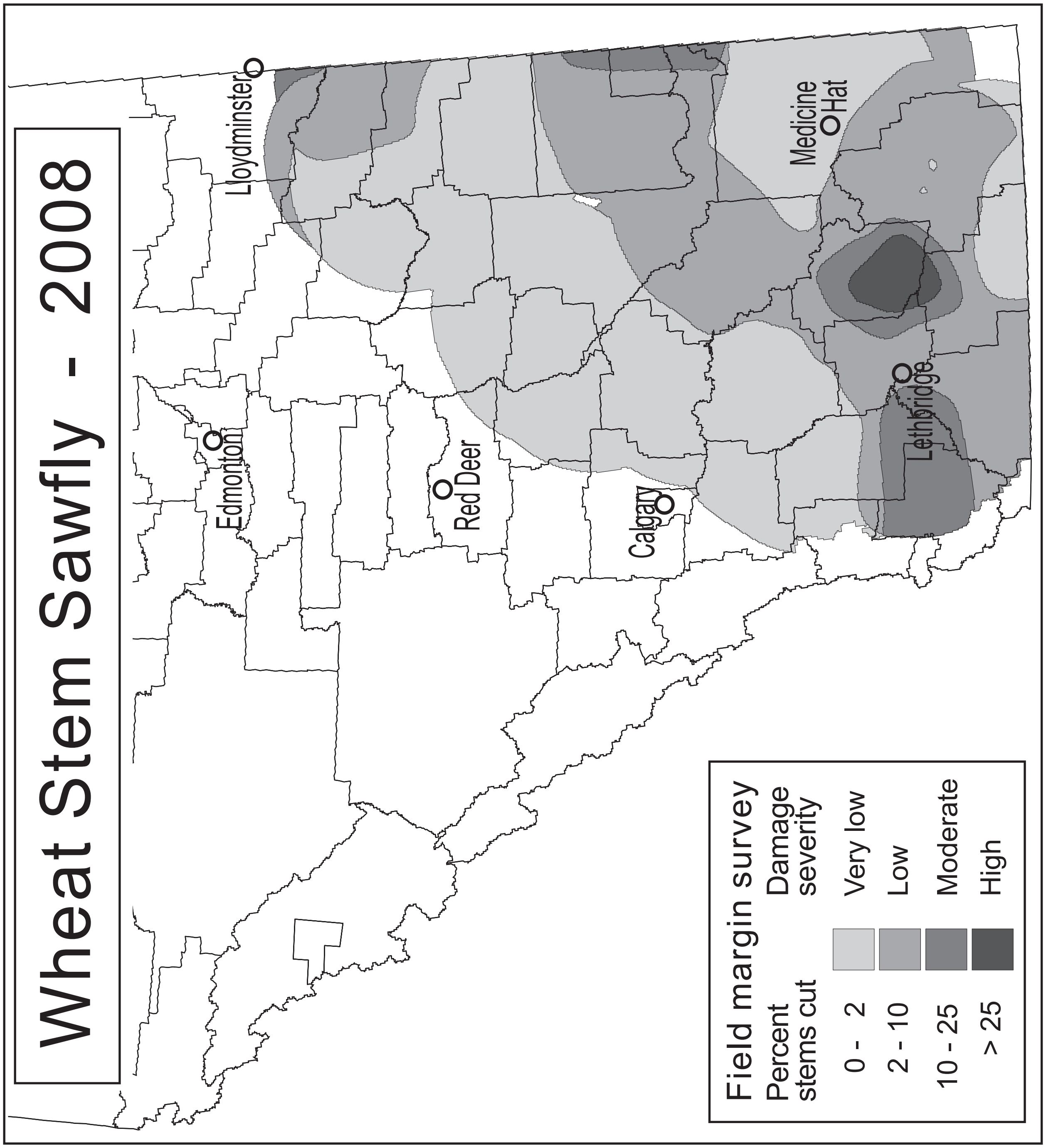

Figure 5. Wheat Stem Sawfly in Alberta for 2008

Pea Leaf Weevil in Alberta and Saskatchewan for 2008

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 south west 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 survey map for 2008 shows that weevil damage to field peas decreased from 2007 with a large portion of the surveyed area recording an average of < 1 notch/plant (Figure 6). Higher levels of damage (> 10 notches/plant) occurred in central Alberta, from the US border north to areas east and north east of Calgary, and in areas south east of Medicine Hat The area most affected by this pest was centered in the County of Vulcan. In Saskatchewan only a small area west of Maple Creek recorded damages greater than 1 notch/plant.

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 in 2008 may also wish to consider using seed treatment in 2009 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.

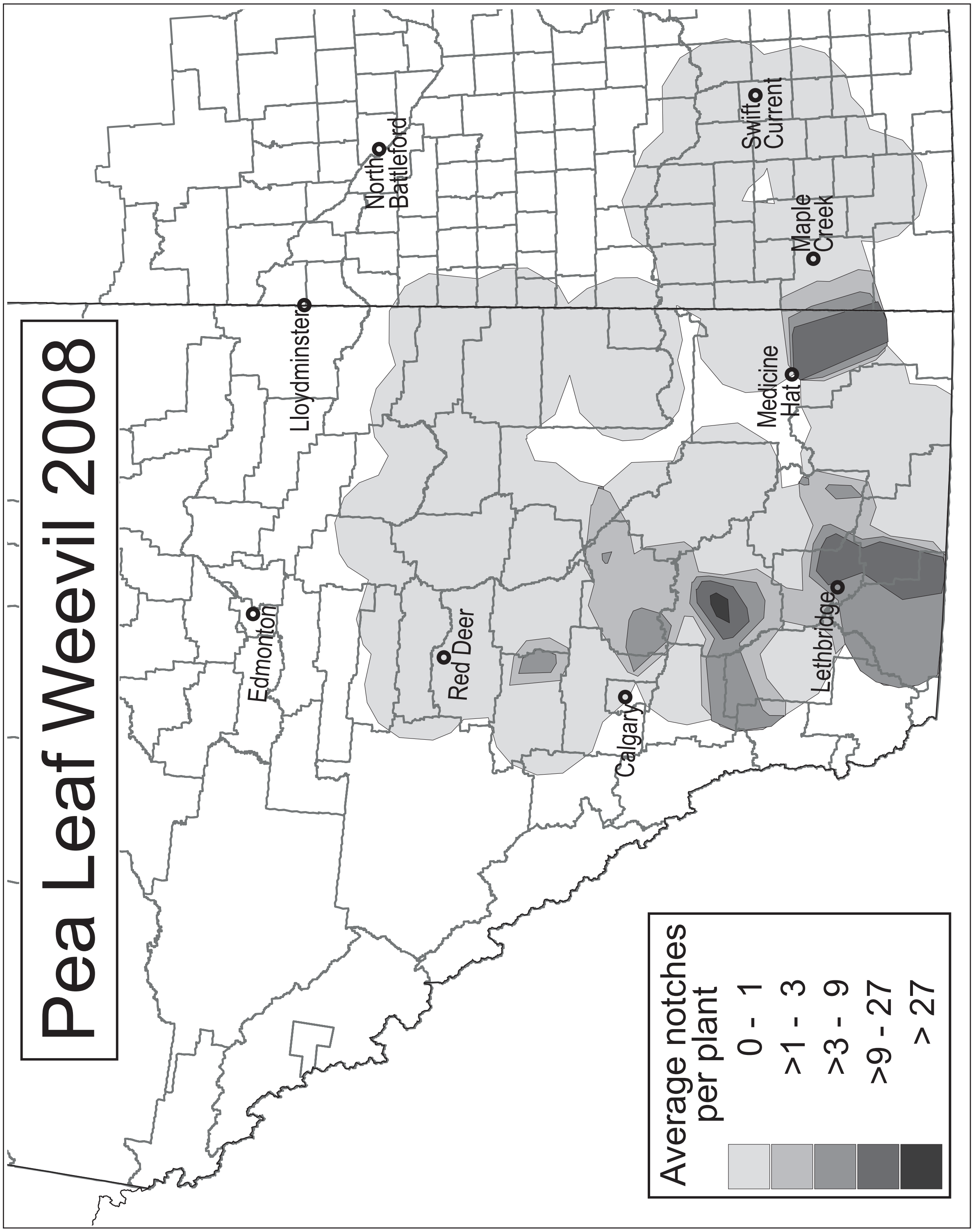

Figure 6. Pea Leaf Weevil in Alberta and Saskatchewan for 2008