Agriculture and Agri-Food Canada
Agriculture et Agroalimentaire Canada

2006 CROP VARIETY HIGHLIGHTS AND INSECT PEST FORECASTS

Scott Research Farm
Melfort Research Farm
and Saskatoon Research Centre

Canada

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Regional Testing of Cereal, Oilseed and Pulse Cultivars 2006
S.J. Dueck and C.L. Vera

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 three by Scott Research Farm staff (Scott, Lashburn and Loon Lake) 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 Agriculture and Food publication, *Varieties of Grain Crops 2007*. Seed quantities for new varieties listed herein may be limited for 2007.

Table 1. Growing Season Precipitation (mm) at Scott, Lashburn, Loon Lake and Melfort in 2006

Month	Scott	Lashburn	Loon Lake	Melfort
May	63	74	n/a	61
June	46	48		74
July	35	n/a		39
Total	**144**			**174**
Long Term Average	158	188	180	187

Table 2. Yield of Spring Wheat Cultivars at Scott, Lashburn, Loon Lake and Melfort

	2006 Yield (kg/ha)				Long Term Average Yield (% of AC Barrie)			
Cultivar	Scott	Lash-burn	Loon Lake	Melfort	Scott	Lash-burn	Loon Lake	Melfort
AC Barrie	Test Failed Due to Hail	3660	1270	4488	100	100	100	100
5602HR		3760	1910	4392	90	100	108	98
CDC Alsask		3990	1180	4423	101 *	106	95	101
Infinity		3190	1140	4279	115	109	99	99
Somerset		3420	1000	4004	112	107	90	93
Kane		3470	1640	3865	---	95 *	129 *	86 *
Snowhite 475+		3690	2100	5181	120 *	119	126	106
Snowhite 476+		4010	1780	4484	147 *	114	113	103

* Less than 3 years of data, + CPS White Wheat

Table 3. Yield of Durum Cultivars at Scott, Lashburn and Melfort

Cultivar	2006 Yield (kg/ha) Scott	2006 Yield (kg/ha) Lash-burn	2006 Yield (kg/ha) Melfort	Long Term Average Yield (% of AC Avonlea) Scott	Long Term Average Yield (% of AC Avonlea) Lash-burn	Long Term Average Yield (% of AC Avonlea) Melfort
AC Avonlea		3590	4434	100	100	100
AC Navigator	HAIL	---	---	101	91	90
Commander		3350	4384	119	112	102
Strongfield		3650	4868	103	107	101

* Less than 3 years of data

Table 4. Yield of Oat Cultivars at Scott, Lashburn and Melfort

Cultivar	2006 Yield (kg/ha) Scott	2006 Yield (kg/ha) Lash-burn	2006 Yield (kg/ha) Melfort	Long Term Average Yield (% of Calibre) Scott	Long Term Average Yield (% of Calibre) Lash-burn	Long Term Average Yield (% of Calibre) Melfort
Calibre		6770	5579	100	100	100
AC Morgan		7660	5990	111	113	125
SW Betania		6500	6049	110 *	101 *	142 *
Jordan	Lost to Hail	7150	6009	130 *	109 *	144 *
CDC Sol Fi		6210	4634	96 *	93 *	93
Leggett		6530	5127	101 *	98 *	114
CDC Weaver		7340	4935	101 *	107 *	109
Hi Fi		6300	5579	---	93 *	100 *

* Less than 3 years of data

Table 5. Yield of Barley Cultivars at Scott, Lashburn, Loon Lake and Melfort

Cultivar	2006 Yield (kg/ha) Scott	Lash-burn	Loon Lake	Melfort	Long Term Average Yield (% of AC Metcalf) Scott	Lash-burn	Loon Lake	Melfort
TWO ROW	Test Failed Due to Hail							
AC Metcalfe		4810	2980	5021	100	100	100	100
CDC Cowboy		4370	2940	5042	---	101 *	99 *	103 *
Conlon		4160	2750	5298	---	95 *	92 *	97 *
Formosa		5000	2980	5690		104 *	100 *	113 *
McLeod		4760	2960	6226	106 *	104 *	100 *	116
Ponoka		5100	3550	5968	110 *	110 *	119 *	118
CDC Coalition		4750	3330	6041	---	99 *	112 *	120 *
SIX ROW								
Manny		5280	3080	5064	98 *	112 *	106 *	107
CDC Laurence		5180	3300	5537	---	109 *	106 *	102 *
CDC Clyde		5240	2860	5408	---	104 *	94 *	103 *
Sundre		5330	3270	5955	---	111 *	110 *	117 *

* Less than 3 years of data

Table 6. Yield of Flax Cultivars at Scott, Lashburn and Melfort

Cultivar	2006 Yield (kg/ha) Scott	Lashburn	Melfort	Long Term Average Yield (% of CDC Bethune) Scott	Lashburn	Melfort
CDC Bethune	**Test**	**Test**	2098	100	100	100
CDC Mons	**Failed**	**Failed**	---	94 *	106 *	102
CDC Sorrel	**Due**		2104	100	---	104 *
Prairie Blue	**To**		---	90	109 *	100
	Hail					
SOLIN						
CDC Gold			---	75	96 *	80
2090			2185	91	106 *	107
2149			2049	76 *	---	95 *

* Less than 3 years of data

Table 7. Yield of Lentil Cultivars at Scott, Lashburn and Melfort

	2006 Yield (kg/ha)			Long Term Average Yield (% of Laird)		
Cultivar	**Scott**	**Lashburn**	**Melfort**	**Scott**	**Lashburn**	**Melfort**
Large Green						
Laird	Test Failed Due to Hail	1100	1758	100	100	100
CDC Grandora		1040	2318	103	109	123
CDC Greenland		1370		---	124 *	144
CDC Improve		1460		---	132 *	123 *
CDC Plato		1590	3043	125	134	144
CDC Sedley		1540	2013	99	111	120
CDC Sovereign		1630	2096	105	123	124
Medium Green						
CDC Meteor		1750	2549	116 *	148 *	181
CDC Richlea		1710	2407	126	134	127
Small Green						
CDC Milestone		1590	1970	126	135	142
CDC Viceroy		2280	2858	127	153	184
Eston		1540	2086	111	117	133
Small Red						
CDC Blaze		1230	1640	108	104	131
CDC Impact		1360	1797	---	123 *	95 *
CDC Redberry		1840	2206	122 *	142	205
CDC Rouleau		2070	2460	98 *	167 *	155
CDC Robin		1790	2741	115	116	144
CDC Rosetown		1650	2629	---	150 *	183
CDC Imperial		1600	1886	---	145 *	111 *

* Less than 3 years of data

Table 8. Yield of Pea Cultivars at Scott, Lashburn and Melfort

	2006 Yield (kg/ha)			Long Term Average Yield (% of Cutlass)					
Cultivar	Scott	Lash-burn	Melfort	Scott		Lash-burn		Melfort	
Yellow									
Cutlass	Test Failed Due to Hail	2880	3002	100		100		100	
Alfetta		3630	2862	125		114		90	
Canstar		3320	3233	---		116	*	108	*
CDC Mozart		3060	4015	132		99		109	
Eclipse		2840	3205	127	*	104		95	
Fusion		3040	2938	---		106	*	99	*
Polstead		3550	3917	---		123	*	130	*
Reward		3090	3647	---		107	*	121	*
SW Benefit		2420	2698	---		84	*	90	*
SW Carousel		3890	3500	136	*	131		118	
SW Cartier		3440	3671	---		120	*	122	*
SW Marquee		2860	2957	---		101	*	109	*
SW Midas		3250	2785	122	*	105		99	
Tudor		2790	3492	---		97	*	111	
Green									
Bluebird		2340	2677	---		81	*	88	*
Camry		3200	2652	118	*	100		102	
CDC Sage		2500	2193	125	*	97		95	
CDC Striker		3450	2847	115		114		89	
Cooper		3630	3671	109	*	113		112	
SW Sargeant		3000	2959	---		104	*	107	*
Tamora		2470	2864	---		86	*	95	*

* Less than 3 years of data

Table 9. Yield of Argentine Canola Cultivars at Lashburn and Melfort

		2006 Yield (kg/ha) % of 46A65		
Cultivar	**Herbicide**	**Scott**	**Lashburn**	**Melfort**
46A65	CO	Test Failed Due to Hail	(1505) 100	(2235) 100
Roper	CO		123	66
292CL	CF		108	99
45P70	CF		141	110
71-20 CL	CF		124	106
NEX 828 CL	CF		93	73
Manor	CF		97	95
45 H72	CF		131	108
45 H73	CF		175	118
SP Force CL	CF		112	101
5020	LL		140	129
5030	LL		155	125
5070	LL		154	121
9590	LL		156	132
74P00LL	LL		100	81
BCS301L*	LL		124	110
46P50	RR		151	130
9551	RR		139	115
997RR	RR		159	117
1759 S	RR		132	123
1818	RR		123	99
1841	RR		160	112
1851 H	RR		151	121
1852 H	RR		150	133
1878V	RR		126	98
1896	RR		144	106
V 1030	RR		142	105
V 1031	RR		171	104
V 1035	RR		160	117
45H21	RR		160	109
34-65	RR		137	96
71-45	RR		159	127
Reaper	RR		108	92
43A56	RR		145	111
45H24	RR		162	119
45H25	RR		169	137
45H26	RR		187	136
SP Banner	RR		140	102
SP Desirable	RR		158	109
SW-PF 02-3902	RR		142	105
SP 621 RR	RR		149	115
SP Favourable RR	RR		137	110
Café	RR		125	101
Fortune RR	RR		115	88
SWH5263 RR	RR		150	111
SWH5269 RR	RR		160	122
SWH5289 RR	RR		148	120

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

INSECT PEST FORECASTS, SURVEYS AND MAPS

- **BERTHA ARMYWORM**
- **GRASSHOPPER**
- **WHEAT MIDGE**
- **CABBAGE SEEDPOD WEEVIL**
- **WHEAT STEM SAWFLY**

Bertha Armyworm In Western Canada in 2006

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

The coordinated program for monitoring bertha armyworm (*Mamestra configurata*) throughout the prairie region was implemented again in 2006. Pheromone traps were installed by provincial agriculture departments on farms and maintained by grower cooperators throughout the bertha flight to determine the density and distribution of moths. The network of traps indicated that the bertha armyworm populations increased across much of the prairies in 2006. There were an increased number of pockets of high moth counts, especially in Saskatchewan and Alberta, and less so in Manitoba. It is anticipated that crops (canola, flax) in these areas will be more at risk in 2007 than elsewhere in the prairies because bertha armyworm does over-winter in the soil.

The monitoring program provides an early warning system of bertha armyworm population levels of economic importance. Site specific interpretation of the trap counts can be difficult because the traps are based on male moths, while it is the female moth that selects where she will be laying eggs. Weather conditions and parasitism also influence infestations. In areas with increased population levels, growers should assess individual fields to determine larvae numbers.

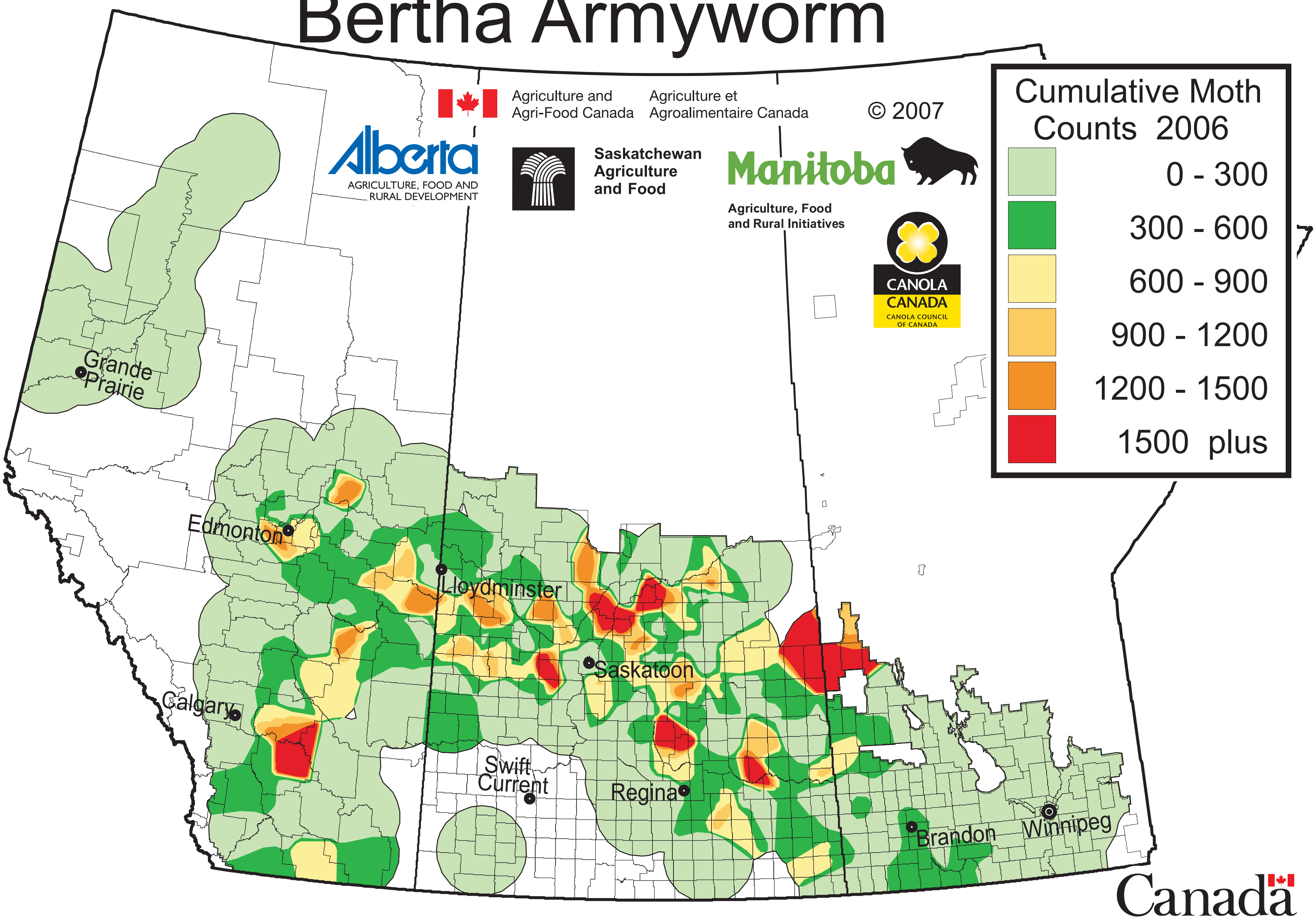
Outbreaks of bertha armyworm in western Canada have occurred at intervals of varying length. Increased canola production has coincided with an increase in the regularity of outbreaks which occur regionally about 8-10 years apart. These localized outbreaks rise, peak and generally subside over a three-year period. Outbreak peaks are not usually synchronized across the entire prairies, the last extensive outbreak occurred in 1994-1996. In most years bertha armyworm populations are kept in check by natural control factors such as: unfavourable weather, parasites, predators and diseases.

A cumulative moth count of 0 - 600 is considered a low risk category. However, the actual larvae density is typically very sporadic which may cause large variations in infestations between fields. Growers in areas where bertha armyworm are reported are urged to monitor canola fields appropriately during the susceptible period.

The damage potential of bertha armyworm larvae is influenced by: larvae density and growth stage, plant growth stage, and temperature. An insecticide application is recommended when the economic threshold is reached. Twenty larvae per square metre can reduce yields by one bushel per acre. Additional information on the biology, monitoring 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 Alberta Agriculture, Food & Rural Development, Saskatchewan Agriculture & Food, and Manitoba Agriculture & Food. The network of pheromone traps was monitored by provincial government personnel and grower co-operators. The map was prepared by Agriculture & Agri-Food Canada - Saskatoon.

Bertha Armyworm



The 2007 Prairie Grasshopper Forecast

O. Olfert, D. Giffen, S. Hartley, D. Oyarzun, J. Gavloski,

The impact of grasshopper infestations was again relatively low throughout much of the crop land across the prairies. However, there were several isolated locations in Alberta and Manitoba, where warm temperatures and light soil contributed to an increase in grasshopper populations. For the most part, the prairies experienced cooler spring temperatures that resulted in a slow start of the grasshopper hatch and the cool, wet growing conditions in June and July further retarded their development and feeding activity. In 2007, the highest levels of grasshopper infestations are expected to occur in isolated regions of Alberta and Manitoba.

Saskatchewan - The 2007 Grasshopper Forecast Map reveals very light grasshopper infestations throughout most of the province. Light infestations are expected south of Regina and Weyburn in the east, with smaller areas up against Alberta in the west. There are no areas predicted to have a severe or very severe grasshopper outbreak in 2007.

Manitoba - The potential for light grasshopper infestations has increased for 2007 in Manitoba. Areas of light risk for 2007 include southwest Manitoba, surrounding Brandon and Winnipeg. Much of the remaining agricultural land had very light grasshopper infestations.

Alberta - Unlike the other two prairie provinces, the forecast for Alberta indicates the potential for moderate grasshopper infestations in 2007. The areas of the province most at moderate risk include the agricultural land east of Edmonton and west of Medicine Hat.

For 2007 we've included two "Very Light" categories. Studies indicate that two-striped grasshoppers feed preferentially on lentil pods thus causing direct and significant yield loss at a lower threshold. Action thresholds for grasshoppers on most crops are 8 - 12 per m^2 but **two or more grasshoppers per m^2 can cause losses in lentils at flowering and podding stages.** These forecast predictions are based on estimates of adult grasshopper density obtained from the annual survey, as well as on weather and biotic factors that affect grasshoppers.

Grasshopper populations tend to be higher in the warmer zones where moisture is available but low. Heat in late summer and fall encourages mating and egg-laying. A warm, dry fall enhances embryonic development; a warm, dry spring and early summer 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. Field margins, fence lines, roadsides and crops grown on stubble must be watched closely when hatching begins in the spring.

When using insecticides, take note of precautions regarding user safety, correct use, and proximity 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.

The survey was conducted by Saskatchewan Agriculture & Food, Manitoba Agriculture & Food, Alberta Agriculture, Food & Rural Development and Agriculture & Agri-Food Canada. The SK survey was funded by Saskatchewan Crop Insurance. The forecast was prepared by Agriculture & Agri-Food Canada - Saskatoon.

2007 Grasshopper Forecast

Agriculture and Agri-Food Canada / Agriculture et Agroalimentaire Canada

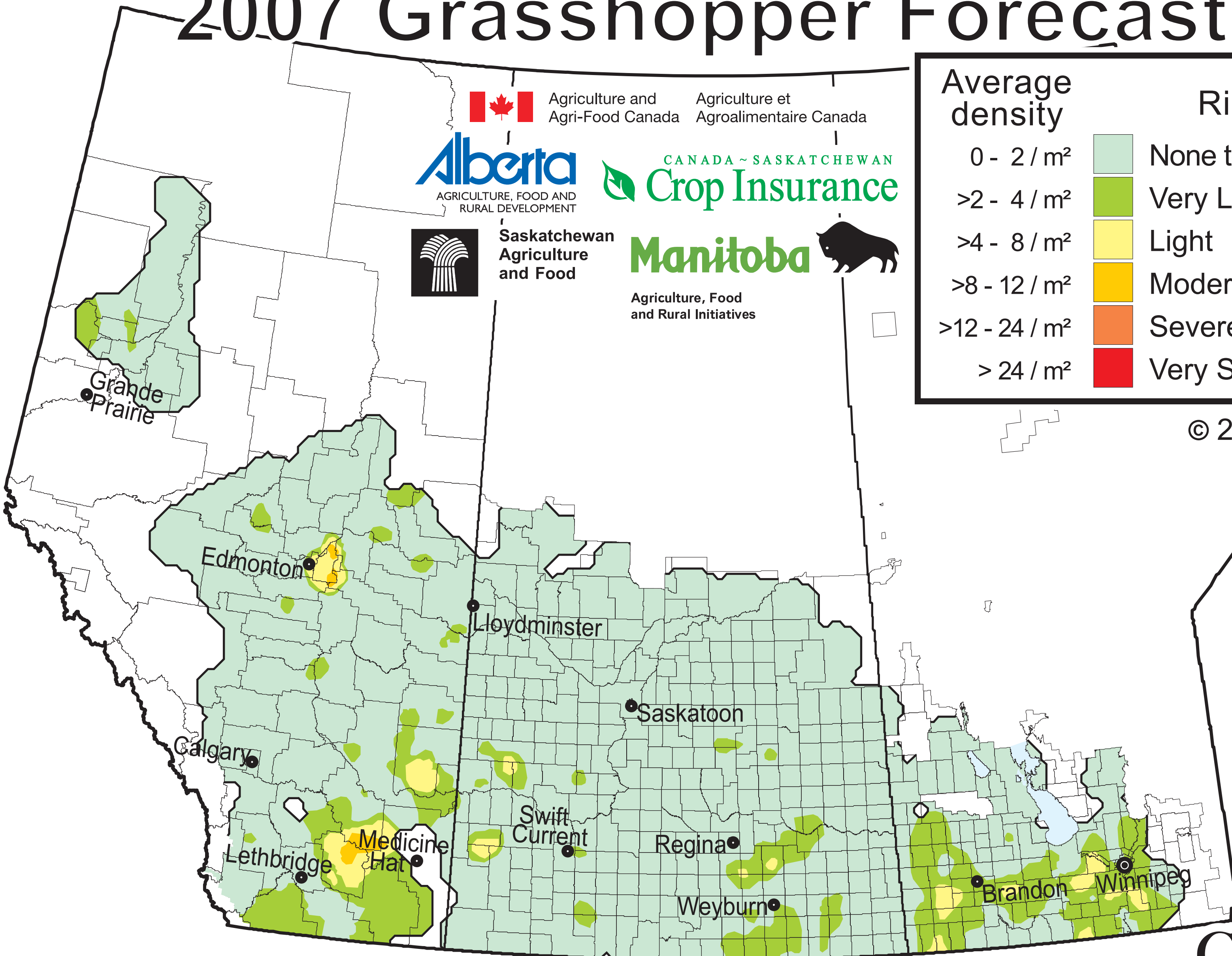
Alberta Agriculture, Food and Rural Development

Canada ~ Saskatchewan Crop Insurance

Saskatchewan Agriculture and Food

Manitoba Agriculture, Food and Rural Initiatives

Average density	Risk
0 - 2 / m²	None to Very Light
>2 - 4 / m²	Very Light
>4 - 8 / m²	Light
>8 - 12 / m²	Moderate
>12 - 24 / m²	Severe
> 24 / m²	Very Severe



Canada

Forecast of Wheat Midge in Saskatchewan for 2007

O. Olfert, B. Elliott, S. Hartley

The trend in increase of wheat midge densities over the past two years has continued. The distribution of wheat midge as illustrated in the 2007 Forecast map is based on cocoons present in soil samples collected in a 2006 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 2007. Climatic conditions – mainly temperature and moisture – will ultimately determine the extent and timing of midge emergence during the growing season.

The 2007 Forecast map indicates that midge population levels have further increased over last year in the eastern half of the province. Wheat midge larvae feeding on kernels can affect final yield, grade and grain quality. Severely damaged kernels that are lost during threshing will lower yield whereas moderately-damaged kernels that are harvested will reduce grade. **All areas, even those indicating less than 600 midge per square metre, may result in significant crop damage. Monitoring of wheat crops should continue in 2005 while wheat is in a susceptible stage and midge are flying.**

The most severe infestations are predicted to occur in a diagonal line southeast of Regina and extending west to the Alberta border, south of Lloydminster. As a result, monitoring susceptible wheat fields will be important during 2007.

In all areas where wheat midge is present, growers are urged to monitor wheat fields during the susceptible period (emergence of the wheat head from the boot until flowering begins). An insecticide application is recommended when the crop is heading and adult midge density is one per 4-5 heads. To maintain optimum grade, insecticide should be used when the adult midge population reaches one per 8-10 heads. Late insecticide applications should be avoided - it is not cost effective and may adversely affect biological control agents.

Parasitism of midge larvae by small wasps can keep populations below the economic threshold. Parasitism rates can range from 0 to 90%. The midge density on the forecast map is adjusted for parasitized larvae.

Agriculture and Agri-Food Canada will monitor degree-day conditions to determine the expected emergence and flight of wheat midge adults. Updates of current conditions and wheat midge emergence will be provided during the 2006 growing season.

The survey was conducted by Agassiz Scientific Limited and Agriculture & Agri-Food Canada. The survey was funded by Saskatchewan Crop Insurance, Agriculture & Agri-Food Canada. The forecast was prepared by Agriculture & Agri-Food Canada - Saskatoon.

Wheat Midge Forecast 2007

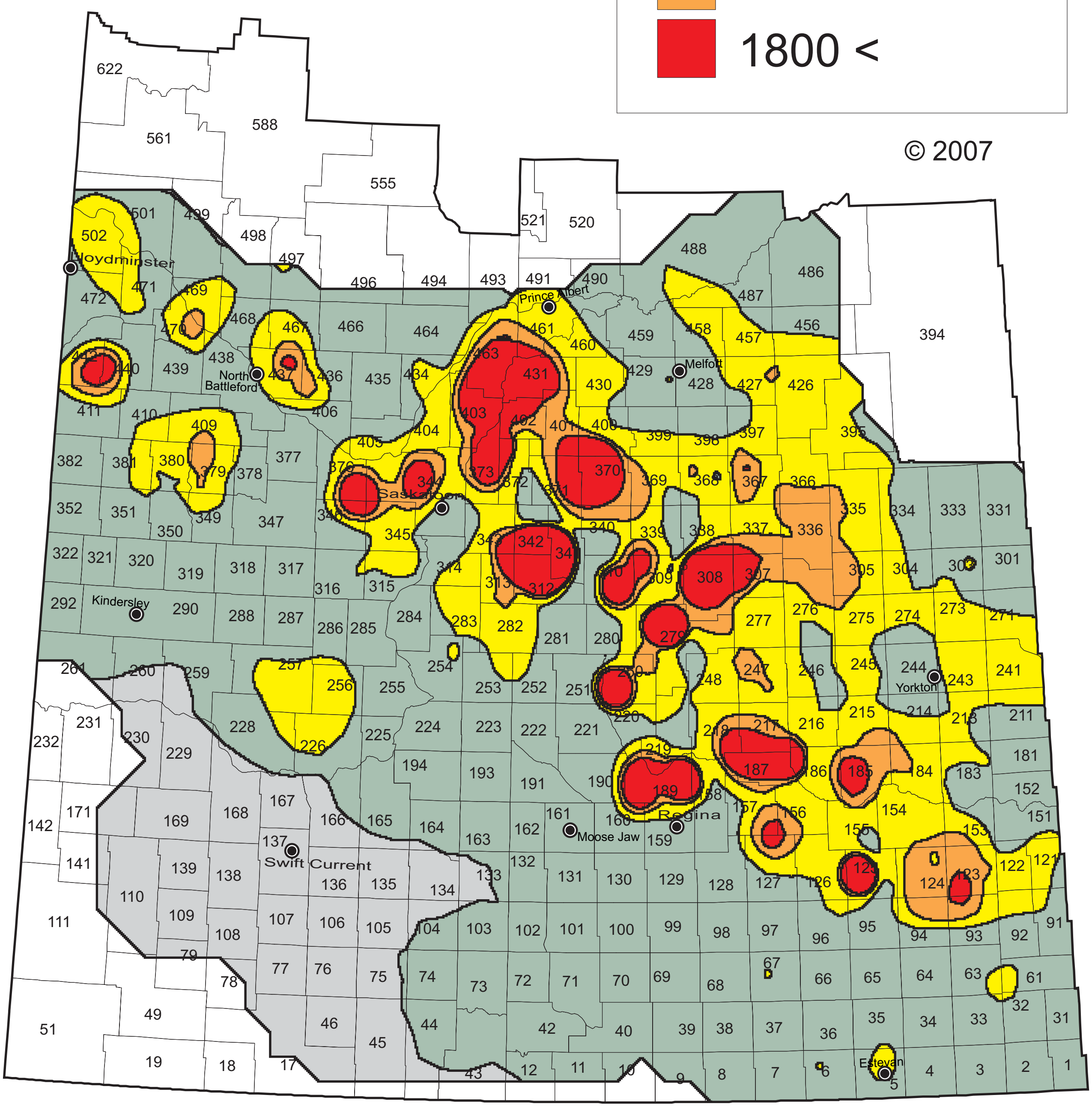
Agriculture and Agri-Food Canada | Agriculture et Agroalimentaire Canada

CANADA ~ SASKATCHEWAN Crop Insurance

Saskatchewan Agriculture and Food

Midge / m²

- No infestation
- < 600
- 600 <= 1200
- 1200 <= 1800
- 1800 <



Cabbage Seedpod Weevil in Saskatchewan for 2006

O. Olfert, L. Braun, S. Hartley

Due in part to the improvement of moisture conditions, cabbage seedpod weevil population density has again increased in 2006. In Saskatchewan, higher numbers of weevils were recorded in sweep samples in the southwest, extending from the Alberta border to Maple Creek and to south of Moose Jaw, and as far north as Kindersley.

The "rule of thumb" the threshold population that can cause economic damage is 3 - 4 weevils per sweep. Crops should be monitored regularly from the bud stage until the end of flowering in 2007. (Weevil populations are highest in canola crops at this time.) The best monitoring tool is a standard insect sweep net. Weevil counts should be made at 10 different locations within the field using a sample of 10, 180˚ sweeps. Early in their invasion, weevils may be more abundant on field edges. Therefore, at least half of the samples should be more than 200 feet from the field's edge to determine their distribution within the field.

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 pods.

Crop losses from cabbage seedpod weevil attack can occur in several ways. Adults feeding on flower buds causes them to die off (bud-blasting). Larvae feeding within pods creates pods that are more likely to shatter than non-infested pods 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.

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

Insecticides have now been registered for control of cabbage seedpod weevil: please check for details in the 2007 Crop Protection Guide at http://www.agr.gov.sk.ca/DOCS/crops/cropguide00.asp

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

Cabbage Seedpod Weevil 2006 Survey

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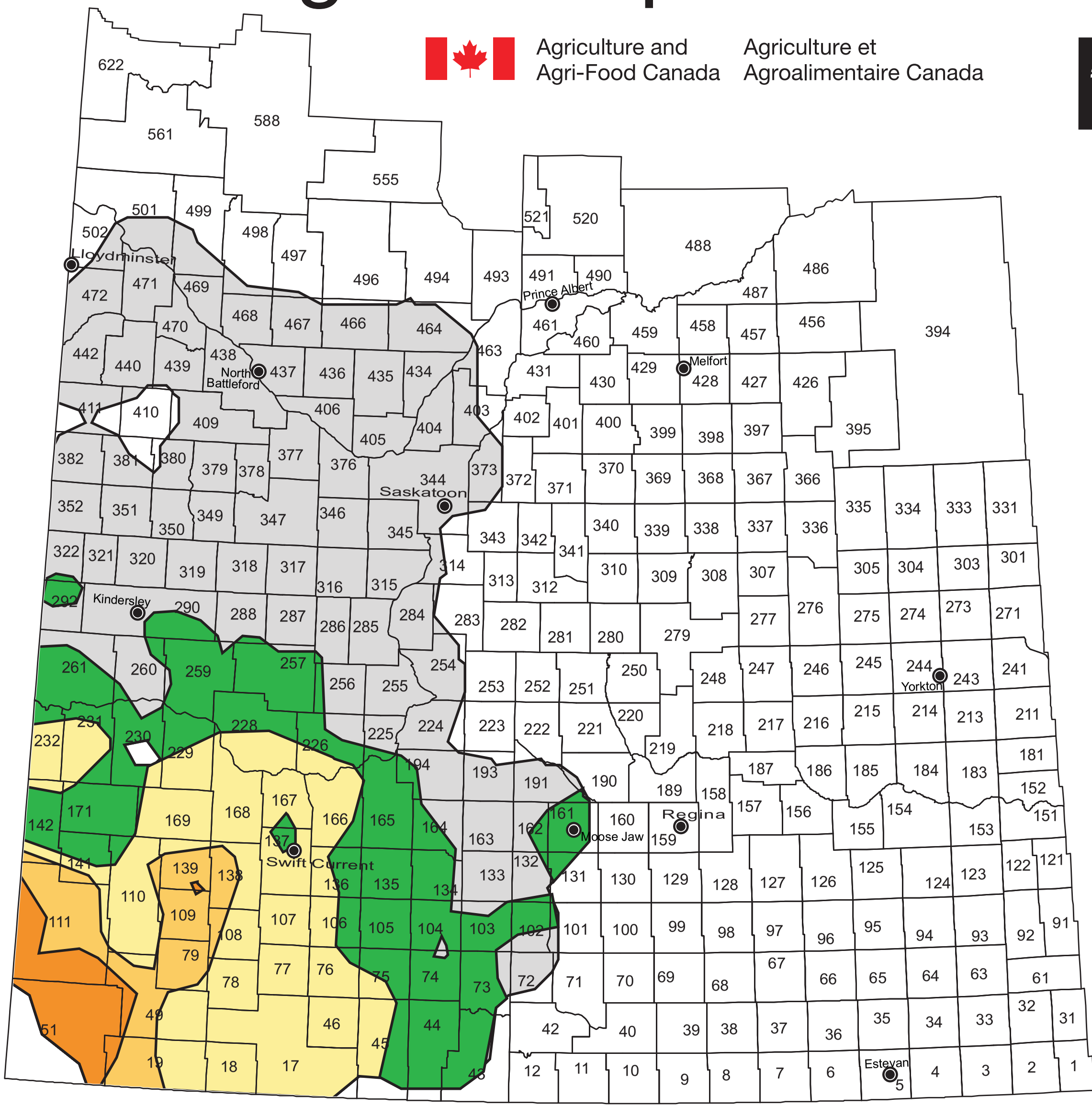
CANOLA CANADA
CANOLA COUNCIL OF CANADA



Weevils per 25 sweeps

- 0
- > 0 - 3
- > 3 - 9
- > 9 - 30
- > 30

Canada

Wheat Stem Sawfly in Alberta for 2006

O. Olfert, H. Carcamo and S. Meers

The wheat stem sawfly *(Cephus cinctus)*, has long been considered an agricultural pest of wheat in Canada. A survey of wheat fields conducted in 2006 indicated that the pest is distributed throughout much of southeast Alberta. 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 of the stems cut. The primary hosts for the wheat stem sawfly are cultivated cereal crops. The most preferred hosts are spring and durum wheat, although rye, triticale and even barley can be affected

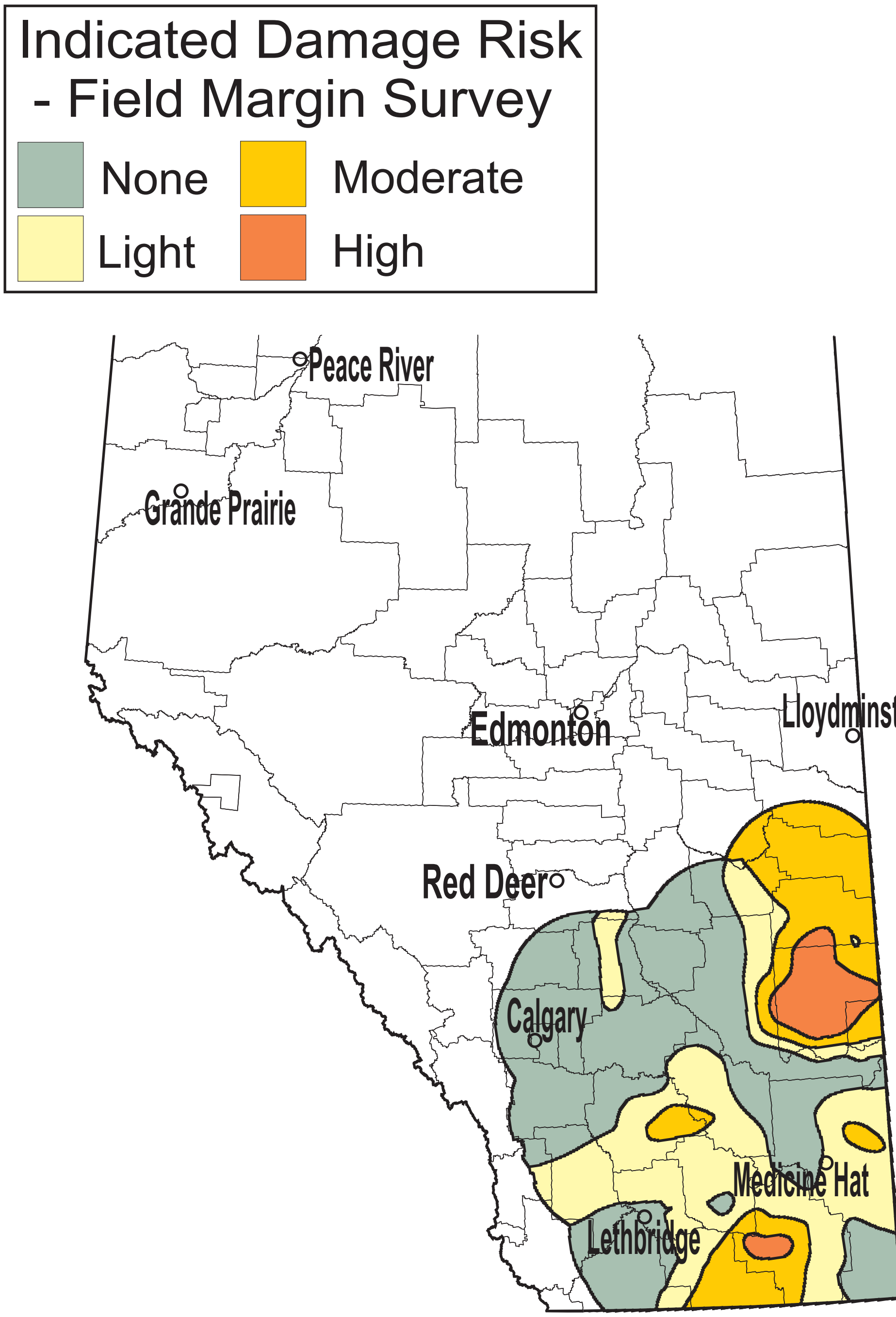
Wheat stem sawfly has recently become a major problem due in large part to the warm and dry summers in the last three years. The adult is not a very strong flier so warm, sunny, calm weather following spring rains supports the dispersal of the insect. Excessively wet conditions tend to be detrimental to both sawfly and parasite populations and activity.

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 are damaged, they tend to fall over easily, making pick-up for harvest difficult. Sawfly damage may result in economic losses due to reductions in yield and/or lower quality.

There are no insecticides registered for control of wheat stem sawfly; management is primarily through agronomic and cultural practices. Producers are encouraged to consider management strategies if 10 - 15 per cent of the stems were cut the previous year. 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 Eatonia, AC Abbey) should be grown as they are significantly more resistant to sawfly than hollow-stem cultivars. All broadleaf crops such as canola, flax and alfalfa are not susceptible to wheat stem sawfly.

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

Wheat Stem Sawfly - 2006



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