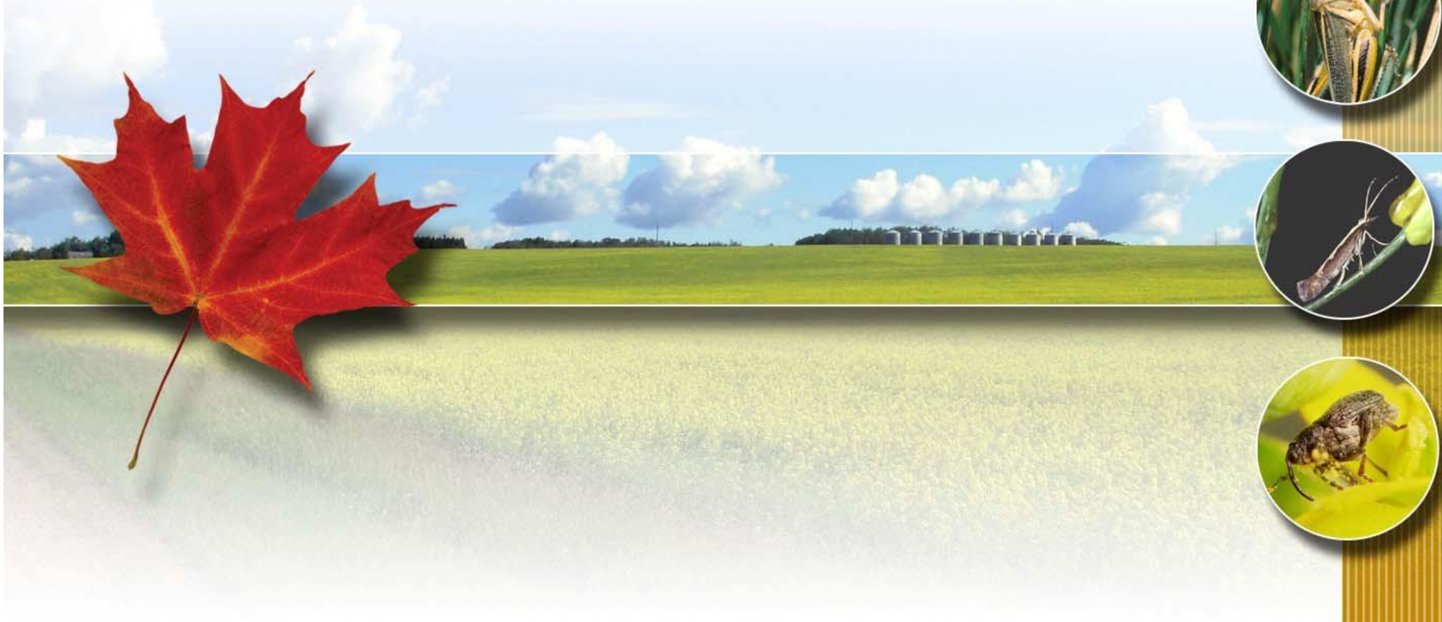
Agriculture and Agri-Food Canada   Agriculture et Agroalimentaire Canada



2022 Crop Variety Highlights

Melfort Research Farm

Scott Research Farm

Saskatoon Research Centre

Canada

Regional Testing of Cereal, Oilseed and Pulse Cultivars 2022
G. A. Ford and B. Hrynewich

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 2023*. Seed quantities for new varieties listed herein may be limited for 2023.

Table of Contents — **Page No.**

Table 1. Growing Season Precipitation (mm) at Scott, Glaslyn and Melfort in 2022

Month	Scott	Glaslyn	Melfort
May	11	0*	91
June	57	159	78
July	87	84	35
August	32	51	37
September	13	11	30
October	2	0*	12
Total	**202**	**304**	**283**
Long Term Average	270	304	298

*Weather station was put up on May 26 and taken down on October 19.

Table 2. Yield of Flax Cultivars at Scott 2022

Cultivar	Years Tested	2022 Yield (% of check)	Long Term Average Yield (% of CDC Bethune)
Brown Seed			
CDC Bethune	4	100	100
CDC Glas	4	110	114
CDC Kernen	1	121	121
AAC Prairie Sunshine	3	100	112
CDC Rowland	4	108	112
FP2591	1	111	111
FP2600	1	114	114
FP2606	1	89	89
FP2607	1	95	95
FP2608	1	98	98
FP2609	1	85	85
Yellow Seed			
AAC Bright	3	100	109
CDC Dorado	3	79	84
FP2602	1	77	77
FP2604	1	90	90
FP2610	1	92	92

Table 3. Yield of Durum Cultivars at Scott 2022

Cultivar	Years tested	2022 Yield % of check	Long Term Average Yield (% of Strongfield)
Strongfield	5	100	100
CDC Covert	3	111	104
CDC Defy	3	98	105
AAC Donlow	3	115	119
CDC Evident	1	125	125
CDC Flare	4	97	112
AAC GoldNet	3	99	110
AAC Grainland	4	113	105
CDC Precision	5	115	100
AAC Schrader	2	115	113
CDC Vantta	2	118	113
AAC Weyburn VB	2	102	117
DT1014	2	117	122
DT2015	1	130	130

Table 4. Yield of Spring Wheat Cultivars at Scott, Glaslyn, and Melfort 2022

Cultivar	Years Tested	2022 yield (% of check)			Long Term Average Yield (% of AAC Brandon)		
		Scott	Glaslyn	Melfort	Scott	Glaslyn	Melfort
Canada Western Red Spring							
AAC Brandon	2	100	100	100	100	100	100
Bolles	2	97	98	95	85	88	84
SY Brawn VB	2	95	109	150	92	98	124
AAC Broadacres VB	2	86	116	134	93	108	113
SY Cast	2	92	115	117	94	103	103
SY Chert VB	2	88	110	136	82	95	108
SY Crossite	2	90	112	119	92	100	98
Daybreak	2	107	114	120	95	103	107
SY Donald VB	2	92	104	137	92	100	121
AAC Dutton	1	100	95	140	100	95	140
Ellerslie	2	87	116	124	85	103	112
SY Gabbro	2	91	113	98	94	102	93
AAC Hassler	1	97	98	124	97	98	124
AAC Hockley	2	107	119	137	106	113	123
AAC Hodge VB	2	102	106	142	99	102	123
Jake	2	76	90	117	79	89	103
AAC Leroy VB	2	81	107	126	87	96	108
AAC Magnet	2	77	102	122	79	94	103
SY Manness	2	94	123	106	89	109	96
SY Natron	2	90	127	128	90	109	105
CDC Ortona	2	80	121	117	83	104	107
CDC Pilar CLPlus	2	88	110	113	90	100	105
Rednet	2	91	95	120	87	89	105
AAC Redstar	2	90	122	125	95	107	109
AAC Russell VB	2	90	127	136	91	114	113
Sheba	2	102	107	102	92	97	101
CDC Silas	2	92	101	113	97	92	103
CDC SKRush	2	90	100	129	92	100	112
AAC Starbuck VB	2	88	123	140	97	111	117
CDC SuccessionCLPlus VB	2	90	109	120	94	97	105
SY Torach	2	90	108	115	84	98	100
Tracker	2	86	118	116	82	105	110
AAC Warman VB	2	84	91	130	88	86	108
AAC Wheatland VB	2	101	99	138	101	99	119
BW5062	2	89	87	133	96	88	122
PT5003	2	101	124	113	93	110	103
PT5008	1	106	121	126	106	121	126

Table 4 (cont). Yield of Spring Wheat Cultivars at Scott, Glaslyn, and Melfort 2022

Cultivar	Years Tested	2022 yield (% of check) Scott	Glaslyn	Melfort	Long Term Average Yield (% of AAC Synergy) Scott	Glaslyn	Melfort
Canada Prairie Spring Red							
Accelerate	2	128	102	136	116	97	117
Forefront	2	126	100	117	104	98	108
AAC Perform	1	114	126	135	114	126	135
CDC Reign	2	114	115	117	101	100	111
AAC Rimbey VB	2	118	109	140	104	105	118
SY Rorke	2	118	108	115	111	106	108
AAC Westlock	1	109	125	116	109	125	116
Canada Western Special Purpose							
WPB Whistler	2	122	119	142	106	108	130
Canada Western Hard White Spring							
AAC Tompkins	2	87	111	104	87	101	92
AAC Whitehead VB	2	104	125	140	95	101	118

Table 5. Yield of Oat Cultivars at Scott, Glaslyn, and Melfort 2022

Cultivar	Years Tested	2022 yield (% of check) Scott	Glaslyn	Melfort	Long Term Average Yield (% of CS Camden) Scott	Glaslyn	Melfort
CS Camden	5	100	100	100	100	100	100
Alka	4	104	102	97	106	101	99
AAC Douglas	3	100	100	100	101	110	98
CDC Endure	4	115	108	103	108	116	106
Kalio	2	103	101	93	98	96	97
Kyron	2	104	106	102	107	90	102
ORe Level 48	2	101	101	89	98	101	86
ORe Level 50	2	101	95	89	94	95	89
AAC Wesley	2	100	95	95	96	93	96

Table 6. Yield of Barley Cultivars at Scott, Glaslyn, and Melfort 2022

Cultivar	Years Tested	2022 yield (% of check)			Long Term Average Yield (% of AAC Synergy)		
		Scott	Glaslyn	Melfort	Scott	Glaslyn	Melfort
Two Row Malting Barley							
AAC Synergy	4	100	100	100	100	100	100
RGT Asteroid	1	95	91	89	95	91	89
CDC Bow	3	94	94	99	95	103	89
AB BrewNet	3	85	94	104	93	104	103
CDC Churchill	4	108	101	101	103	111	98
AAC Connect	4	95	99	100	89	99	94
CDC Copeland	4	94	79	86	89	95	92
CDC Copper	4	111	104	104	108	109	102
CDC Fraser	4	98	91	105	97	101	97
AC Metcalfe	4	82	79	76	82	87	81
AAC Prairie	2	97	95	102	88	107	96
Torbellino	2	102	90	78	98	97	89
Two Row Feed Barley							
Bighorn	2	96	105	106	102	119	110
Cantu	2	104	103	102	94	112	104
Esma	2	110	86	97	110	94	105
AB Hague	2	104	91	96	103	102	95
Ibex	2	97	100	102	102	118	104
KWS Kellie	2	110	89	86	110	119	100
AAC Lariat	1	114	109	104	114	109	104
RGT Planet	2	102	87	93	96	111	99
AB Prime	2	99	86	107	103	109	103
CDC Renegade	2	105	103	95	93	117	103
AB Wrangler	2	112	102	99	103	105	99
Six Row Barley							
AB Advantage	4	78	104	108	96	106	100
AB Cattlelac	4	74	88	105	85	94	94
AB Tofield	2	115	92	103	103	102	102

Table 7. Yield of Canaryseed Cultivars at Scott 2022

Cultivar	Years Tested	2022 Yield (% of check)	Long Term Average Yield (% of CDC Bastia)
---Glabrous---			
CDC Bastia	4	100	100
CDC Calvi	4	98	105
CDC Cibo	4	109	98
CDC Lumio	4	116	119
---Hairy---			
Cantate	4	105	104
Keet	4	114	119

Table 8. Yield of Soybean Cultivars at Scott and Melfort 2022

Cultivar	Years Tested	2022 Yield (% of check)		Long Term Average Yield (% of TH 33003R2Y)	
		Scott	Melfort	Scott	Melfort*
TH 33003R2Y	5	100	100	100	.
Amirani R2	3	94	88	97	.
BY Rundle XT	2	72	90	84	.
NSC Dauphin RR2X	2	63	80	65	.
Mynarski R2X	2	105	88	92	.
NSC Watson RR2Y	5	102	91	112	.
PV 27s0005 R2X	1	89	93	89	.
PV 24s0008 R2X	1	90	80	90	.
S001-D8X	2	114	93	100	.
Wolf R2X	2	99	96	110	.
CP000621WPRX	2	71	89	89	.
Major R2X	2	107	102	93	.
PV 28s001 R2X	1	94	100	94	.
S0009-F2X	2	99	89	101	.
Young R2X	2	107	100	93	.
DKB0009-89	2	103	92	92	.
PV 22s002 R2X	2	108	100	107	.
Briggs R2X	1	91	96	91	.
BY Granite XT	1	90	90	90	.
BY Morro XT	1	97	100	97	.
EXP001-22	1	85	96	85	.
S0007-S1X	1	98	88	98	.

*2022 was first year of data at Melfort

Table 9. Yield of Lentil Cultivars at Scott 2022

Cultivar	Years Tested	2022 Yield (% of check)	Long Term Average Yield (% of CDC Maxim CL)
Small Red			
CDC Maxim	2	100	100
CDC Impulse	2	152	143
CDC Nimble	2	136	124
CDC Proclaim	2	146	134
CDC Redmoon	2	148	141
CDC Simmie	2	102	118
5929-1	2	145	141
6802-14	2	134	132
6928-4	1	122	122
6956-6	1	119	119
Extra Small Red			
6928-5	1	129	129
6935-3	1	129	129
Medium Red			
7005-3	1	123	123
7014-1	1	117	117
Large Red			
CDC Sublime	2	140	149
IBC 1306	2	125	139
Small Green			
CDC Jimini	2	122	126
CDC Kermit	2	123	132
6795-12	2	156	150
6964-4	1	137	137
Large Green			
CDC Greenstar	2	132	123
CDC Grimm	2	105	112
CDC Lima	2	116	115
French Green			
7333-2-4	1	124	124
Spanish Brown			
CDC SB-4	2	120	112
7026-13Y	1	146	146

Table 10. Yield of Field Pea Cultivars at Scott and Glaslyn 2022

Cultivar	Years Tested	2022 Yield (% of check)		Long Term Average Yield (% of CDC Amarillo)	
		Scott	Glaslyn	Scott	Glaslyn*
Yellow					
CDC Amarillo	2	100	100	100	.
AAC Beyond	2	96	100	96	.
CDC Canary	2	101	78	106	.
CDC Citrine	2	111	108	103	.
CDC Hickie	2	114	87	107	.
CDC Inca	2	97	102	98	.
AAC Julius	2	99	90	100	.
CDC Lewochko	2	90	79	91	.
AAC Profit	2	101	103	99	.
CDC Spectrum	2	111	113	110	.
CDC Tollefson	2	103	113	96	.
CDC 5779-1	1	111	84	111	.
CDC 5791-9	1	113	83	113	.
CDC 5845-2	1	103	85	103	.
CDC 5947-4	1	110	102	110	.
DL1813	1	110	85	110	.
DL1814	1	108	88	108	.
DL152033	1	112	65	112	.
Green					
CDC Forest	2	102	109	99	.
CDC Huskie	2	109	98	105	.
CDC Limerick	2	94	81	87	.
CDC Rider	2	99	84	92	.
CDC Spruce	2	103	73	93	.
Maple					
AAC Lorlie	2	116	60	108	.

*2022 was first year of data at Glaslyn

Insect Pest Updates

Bertha Armyworm in Western Canada in 2022

M. Vankosky, O. Olfert, J. Gavloski, S. Barkley, J. Tansey, R. Weiss, J. Otani

Bertha armyworm (*Mamestra configurata*) populations are monitored annually in western Canada using pheromone baited traps. These traps are maintained by volunteer growers and agronomists, and by provincial and federal entomologists. Provincial entomologists provide support and guidance to cooperators during the growing season and compile and share data within each province during the growing season (in near-real time). The protocol used to monitor bertha armyworm using pheromone traps was updated in spring 2019 and is available on the Prairie Pest Monitoring Network website (https://prairiepest.ca). The monitoring program is used as an early warning system to alert growers when regional population densities may be approaching economic thresholds. However, site-specific interpretation of trap counts is difficult because pheromone traps do not capture female moths and it is the females that decide where to lay eggs. In-field scouting for bertha armyworm larvae is required for accurate, local, population estimates (protocol available from https://prairiepest.ca).

Cumulative trap captures below 600 generally represent low risk to crop production. In 2022, the cumulative trap captures of male bertha armyworm were very low, with very few traps across the prairies capturing more than 300 moths (Figure 1). In Alberta, 299 traps were set up and some barely captured 300 males. One trap of 265 total traps in Saskatchewan recorded more than 400 male bertha armyworm in 2022. That trap was located in RM 254, south of Saskatoon and west of Davidson. None of the 51 monitoring locations in Manitoba captured more than 300 male moths. Overall, population densities of bertha armyworm were very low in 2022, similar to monitoring results from 2020 and 2021.

Bertha armyworm is a generalist with multiple host plants but is particularly damaging to canola. The amount of damage associated with bertha armyworm larval feeding is dependent on several factors, including larval population density, larval stage, host plant type and stage, and temperature. To reduce the risk of damage, monitoring for bertha armyworm larvae in canola should start within two weeks of peak trap catch in pheromone monitoring traps and continue until the crop is swathed or harvested. An economic threshold for bertha armyworm larvae is available online from multiple sources and should be used to determine if and when fields need to be sprayed to prevent yield loss. Please refer to provincial Crop Production Guides for information about registered insecticides. In addition to insecticides, bertha armyworm populations can be controlled by abiotic factors (*e.g.,* unfavorable weather) and biotic factors (*e.g.,* parasitoids, predators, and disease). The effects of these natural factors result in cyclic outbreaks that have generally occurred on an 8 to 10 year cycle, on a regional basis. Localized outbreaks may also occur, where populations increase, peak, and decrease over a three year period. In the past, outbreaks in Alberta have followed outbreaks in Manitoba and Saskatchewan. The last extensive regional outbreak occurred in 1994-1996.

This survey is funded through the AgriScience Program as part of the Canadian Agricultural Partnership, a federal, provincial, territorial initiative. Funders include Agriculture & Agri-Food Canada, Western Grains Research Foundation, SaskWheat, Manitoba Crop Alliance, Alberta Wheat Commission, SaskPulse, Manitoba Canola Growers, Prairie Oat Growers Association, SaskCanola, and Manitoba Pulse & Soybean Growers. The network of pheromone traps was implemented and monitored by Alberta Agriculture and Irrigation, Saskatchewan Ministry of Agriculture, Manitoba Agriculture, and Agriculture & Agri-Food Canada (AAFC).

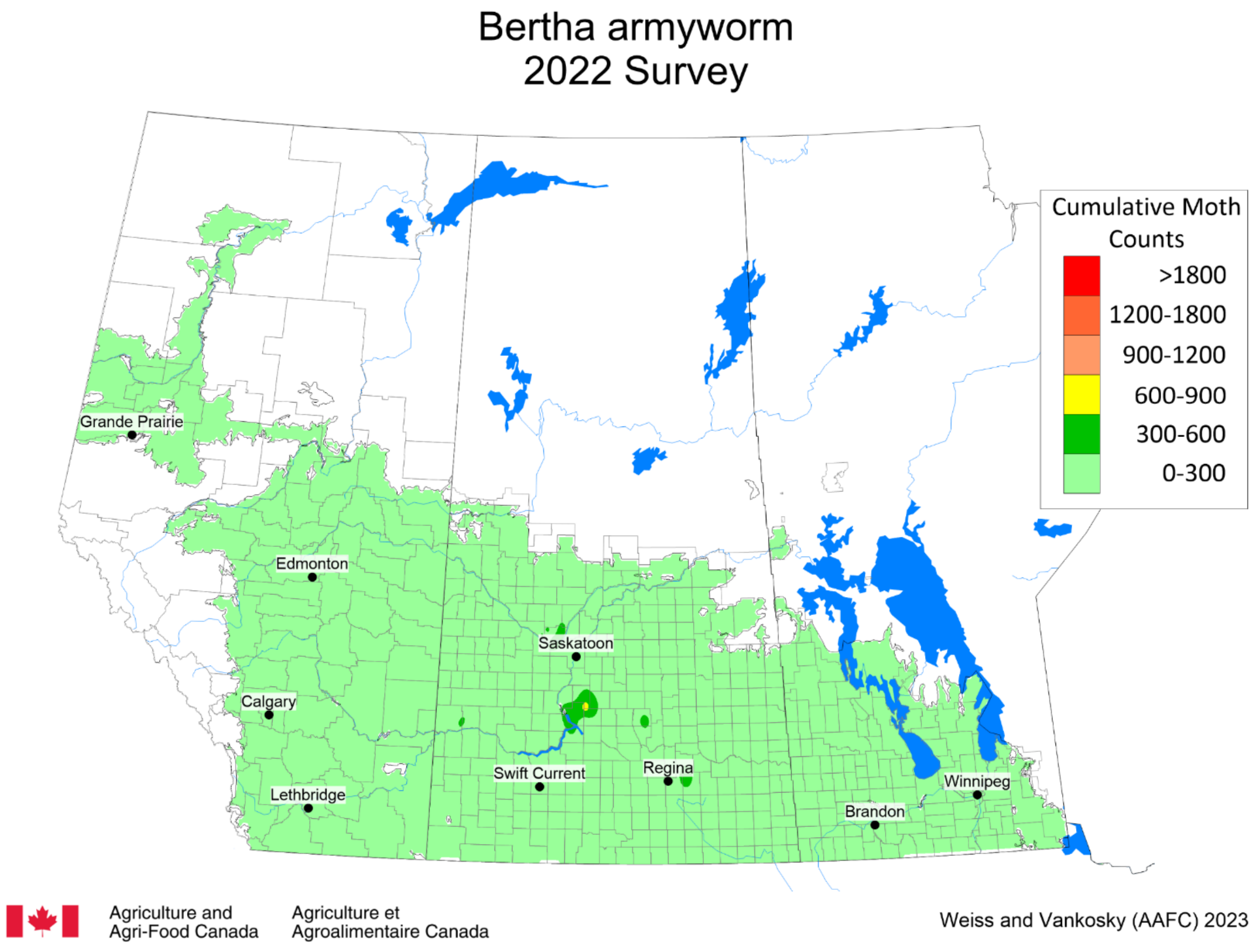


Figure 1. The cumulative trap catch of adult male bertha armyworm (*Mamestra configurata*) in pheromone-baited traps across the prairies in 2022 (map by Ross Weiss, AAFC-Saskatoon).

The 2022 Prairie Grasshopper Survey and 2023 Forecast

M. Vankosky, O. Olfert, J. Tansey, J. Gavloski, S. Barkley, R. Weiss, J. Otani

The grasshopper survey is conducted by estimating adult grasshopper densities in the late summer and early fall, usually in ditches alongside cereal fields. This survey estimates the number of adult grasshoppers capable of laying eggs before winter. The fall survey contributes to an estimate of future risk, where high densities in the fall predict higher levels of risk to crops in the next growing season. However, weather and biotic factors may increase or reduce risk during a given growing season. Factors that lead to increased grasshopper populations include warm and dry conditions in late summer and fall; these encourage mating, egg laying, and egg development. Warm and dry conditions in the spring increase the survival of grasshopper hatchlings and the risk of crop damage. Cool and wet growing conditions have negative effects on grasshopper development. Therefore, actual levels of infestation in field crops may differ from those predicted by the fall survey because of regional variation in weather conditions and the grasshopper species present.

Recent dry conditions across the central and southern prairies have been ideal for grasshoppers. In 2022, grasshopper densities were greatest in the region south of the Yellowhead highway corridor (Figure 2). Although the area with grasshopper infestation in 2022 was similar to that observed in 2021, population densities were greater in 2022 than in 2021. More widespread outbreaks were observed in 2022 (Figure 2). Prairie farmers should be prepared to scout for grasshoppers in spring and early summer in 2023, especially if weather conditions remain warmer and drier than normal.

Female grasshoppers tend to lay their eggs along field margins and in ditches. Thus, field margins, roadsides, and crops grown on cereal stubble should be watched closely when grasshopper hatching begins in the spring. The action threshold for most crops occurs when grasshopper populations reach 8-12 grasshoppers/m^2. The action threshold in lentils is much lower (>2 grasshoppers/m^2) at the flowering and pod stage, as grasshoppers cause direct yield loss at this plant stage. For example, two-striped grasshoppers feed preferentially on lentil pods, causing direct and significant yield loss at low population densities. If insecticides are applied to control grasshoppers (please refer to your provincial Crop Protection Guide for insecticide information), they should be applied to reduce their impact on beneficial insects (*e.g.*, pollinators, predatory beetles, and parasitoids of other insects) and on environmentally sensitive areas (*e.g.*, wetlands that provide other important ecosystem services).

A protocol for grasshopper scouting is available on the Prairie Pest Monitoring Network website (https://prairiepest.ca). The developmental and risk status of grasshopper populations across the Prairie region will be available from the provinces and from the Prairie Pest Monitoring Network as the 2023 growing season progresses.

This survey is funded through the AgriScience Program as part of the Canadian Agricultural Partnership, a federal, provincial, territorial initiative. Funders include Agriculture & Agri-Food Canada, Western Grains Research Foundation, SaskWheat, Manitoba Crop Alliance, Alberta Wheat Commission, SaskPulse, Manitoba Canola Growers, Prairie Oat Growers Association, SaskCanola, and Manitoba Pulse and Soybean Growers). The survey was implemented and conducted by Alberta Agriculture and Irrigation, Saskatchewan Ministry of Agriculture, Saskatchewan Crop Insurance Corporation, Manitoba Agriculture, and Agriculture & Agri-Food Canada (AAFC).

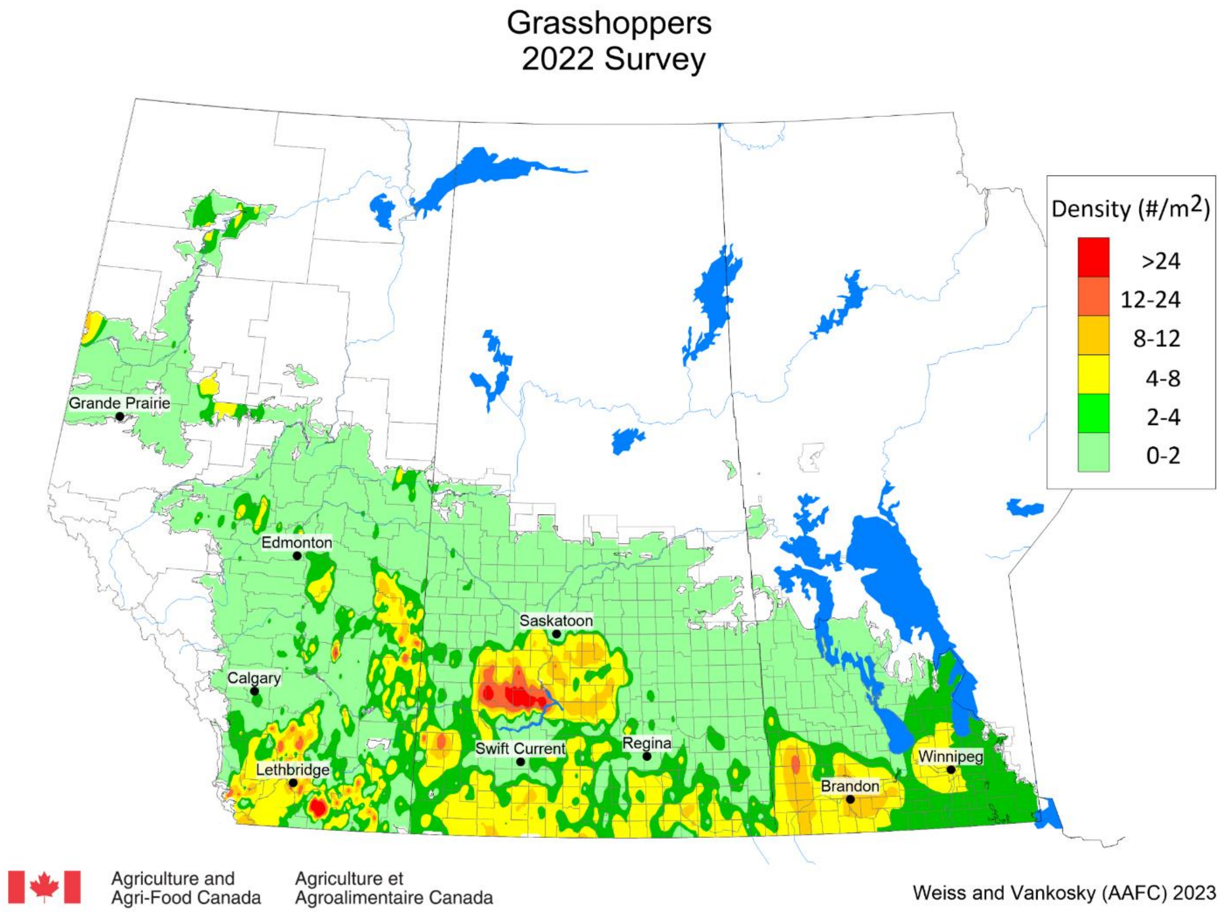


Figure 2. Estimated grasshopper population densities in late summer and early fall 2022 in western Canada; areas with high grasshopper densities in 2022 are at risk of high grasshopper densities and associated damage in 2023, based on knowledge of the life history of the primary pest species, including *Melanoplus sanguinipes* (migratory grasshopper) (map by Ross Weiss, AAFC-Saskatoon).

2022 Wheat Midge Survey in Saskatchewan and Alberta and Forecast for 2023

M. Vankosky, O. Olfert, S. Barkley, J. Tansey, R. Weiss, J. Otani

The risk of wheat midge (*Sitodiplosis mosellana*) infestation in 2023 was estimated based on the number of non-parasitized wheat midge larval cocoons in soil samples collected during the fall wheat midge survey conducted in 2022 (Figure 3). The forecast based on non-parasitized larvae provides a general picture of existing densities and the potential for damage in 2023. A number of other factors, in addition to parasitism, influence the overwintering and developmental success of larval wheat midge and might affect wheat midge adult emergence and risk of damage to wheat crops in 2023. Weather conditions (especially precipitation levels) in spring 2023, for example, will further influence the extent and timing of wheat midge emergence during the growing season. In spring 2023, the Prairie Pest Monitoring Network will use phenology models and weather conditions to model the expected emergence of wheat midge adults. Updates will be provided in Weekly Updates (https://prairiepest.ca).

Based on the 2022 fall survey some areas east of Edmonton in Alberta and east of Saskatoon and Regina in Saskatchewan could see high population densities of adult wheat midge in 2023 (Figure 3). Areas at risk in Alberta include parts of Beaver, Camrose, Lamont, Minburn and Flagstaff counties. In Saskatchewan, several rural municipalities could see high densities of adult wheat midge in 2023, including (from north to south): RMs 461, 431, 429, 428, 399, 398, 369, 341, 312, 310, 309, 279, 248, 247, 218, 217, 187, 157, 154, 125, and 95 (Figure 3). These areas all had wheat midge cocoon densities of 1200 midge/m^2 or greater during the survey in fall 2022, with fields recording in excess of 1800 midge/m^2. Additional areas at risk, not listed here, had more than 600 midge/m^2. In the majority of fields sampled, the density of wheat midge larval cocoons was less than 600 midge/m^2 (Figure 3).

The risk of crop damage associated with wheat midge is expected to be relatively low in the Peace River Region again in 2023, but care should be taken when interpreting the forecast for this part of Alberta because of developmental differences between Peace River wheat midge populations and populations in other parts of the prairies.

All areas where wheat midge are active during the growing season are susceptible to crop damage because wheat midge larval feeding affects grain yield and quality. Growers in all areas where wheat midge have occurred in the past should monitor their fields during the susceptible crop stage (*i.e.*, emergence of the wheat head from the boot until flowering) and when adult midge are active.

If adult midge density is equal to one midge per four or five wheat heads between emergence of the wheat heads and flowering (anthesis stage), insecticide application may be warranted. Please refer to provincial crop production guides for information about application and registered products. By the anthesis stage insecticides will not be cost effective as any larvae present will have already caused damage. Larvae that hatch from eggs laid late in or after the anthesis stage will not cause significant damage as the more mature wheat kernels are resistant to larval damage. Avoiding insecticide application after the anthesis stage will help protect populations of natural enemies in field crops, including parasitoids of wheat midge, and of other pests. Parasitism by a small parasitoid wasp (*Macroglenes penetrans*) can help keep wheat midge populations from exceeding the economic threshold.

Surveys of wheat midge larval cocoons were conducted by Sharon Nowlan (SK) and by Alberta Agriculture and Irrigation. The survey was funded by Saskatchewan Crop Insurance Corporation, Saskatchewan Wheat Development Commission, and Alberta Agriculture and Irrigation. Prairie

Pest Monitoring Network activity related to this survey was funded by the Canadian Agricultural Partnership.

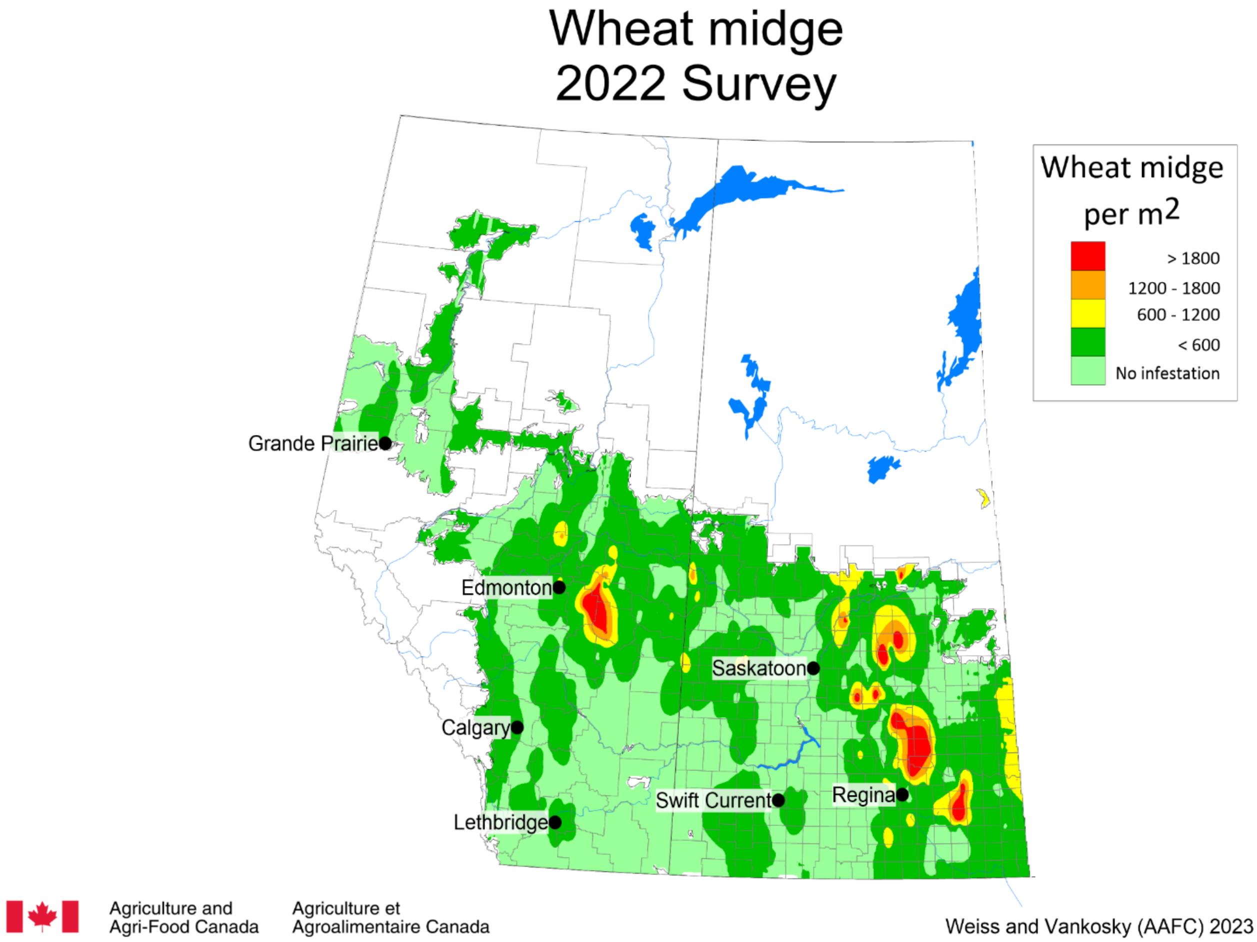


Figure 3. The densities of unparasitized wheat midge (*Sitodiplosis mosellana*) cocoons in soil samples collected in fall 2022 during the annual wheat midge survey. Risk of wheat midge infestation in 2023 is greatest in regions where wheat midge larval cocoon densities exceeded 600 midge/m^2 during the fall 2022 survey, assuming sufficient rainfall in spring of 2023, but all regions where wheat midge have occurred in the past could be at risk of wheat midge damage to susceptible host crops (map by Ross Weiss, AAFC-Saskatoon).

Cabbage Seedpod Weevil in Alberta and Saskatchewan in 2022

M. Vankosky, O. Olfert, S. Barkley, J. Tansey, J. Gavloski, R. Weiss, J. Otani

Populations of cabbage seedpod weevil (*Ceutorhynchus obstrictus*) were quite low north of Calgary in Alberta and north of Swift Current and Regina in Saskatchewan again in 2022 (Figure 4). In fact, population densities of cabbage seedpod weevil have been declining in Alberta and Saskatchewan over the last few years. In 2022, population densities were the lowest they have been since the first annual surveys were conducted in Alberta (early 2000s) and Saskatchewan (2007). No cabbage seedpod weevils were found in sweep samples collected in the Peace River Region of Alberta or British Columbia, but small numbers of weevils have been collected in north-central Alberta that could be source populations. The annual survey is important to document the geographic expansion of this pest. In 2022, the greatest population densities were observed in southwestern Saskatchewan, from the AB/SK border to the Swift Current area (Figure 4). Although not shown on the map in Figure 4, some fields were sampled for cabbage seedpod weevil in Manitoba in 2022. Of those fields, some had weevils present in low numbers, including fields as far east as Carman.

Cabbage seedpod weevil damage their host crops when adult weevils feed on leaves, flowers, and buds (resulting in bud-blasting). Later in the growing season, adult feeding by new generation weevils can cause damage to the pods, which may cause pods to shatter during harvest. Larvae directly reduce yield by feeding on developing seeds inside pods. Once larval development is complete, the larvae chew exit holes in the pods before dropping to the soil to pupate. The exit holes are a source of indirect damage, as these increase the incidence of pod shatter and can facilitate secondary fungal infection of the pods. During the survey, fields of *Brassica napus*, *B. alba*, and *B. juncea* may have been surveyed, as all are suitable host crops.

To protect crops from cabbage seedpod weevil damage, monitor canola and brown mustard fields on a regular basis from the bud stage until the end of flowering. The protocol for monitoring cabbage seedpod weevil is available on the Prairie Pest Monitoring Network website (https://prairiepest.ca). Accurate monitoring requires that sweep samples be collected from multiple locations within a field, with accuracy increasing as the sample size increases. To avoid overestimation of weevil populations, sweep samples should be taken from the interior of the field, and not just from field edges. The nominal economic threshold for cabbage seedpod weevil is 2.5 to 4 adult weevils per sweep. Insecticides are registered for cabbage seedpod weevil; please refer to the most recent Crop Protection Guide for your province.

Surveys were conducted by Alberta Agriculture and Irrigation, Saskatchewan Ministry of Agriculture, Manitoba Agriculture, and Agriculture & Agri-Food Canada (AAFC). This survey is funded through the AgriScience Program as part of the Canadian Agricultural Partnership, a federal, provincial, territorial initiative. Funders include Agriculture & Agri-Food Canada, Western Grains Research Foundation, SaskWheat, Manitoba Crop Alliance, Alberta Wheat Commission, SaskPulse, Manitoba Canola Growers, Prairie Oat Growers Association, SaskCanola, and Manitoba Pulse & Soybean Growers.

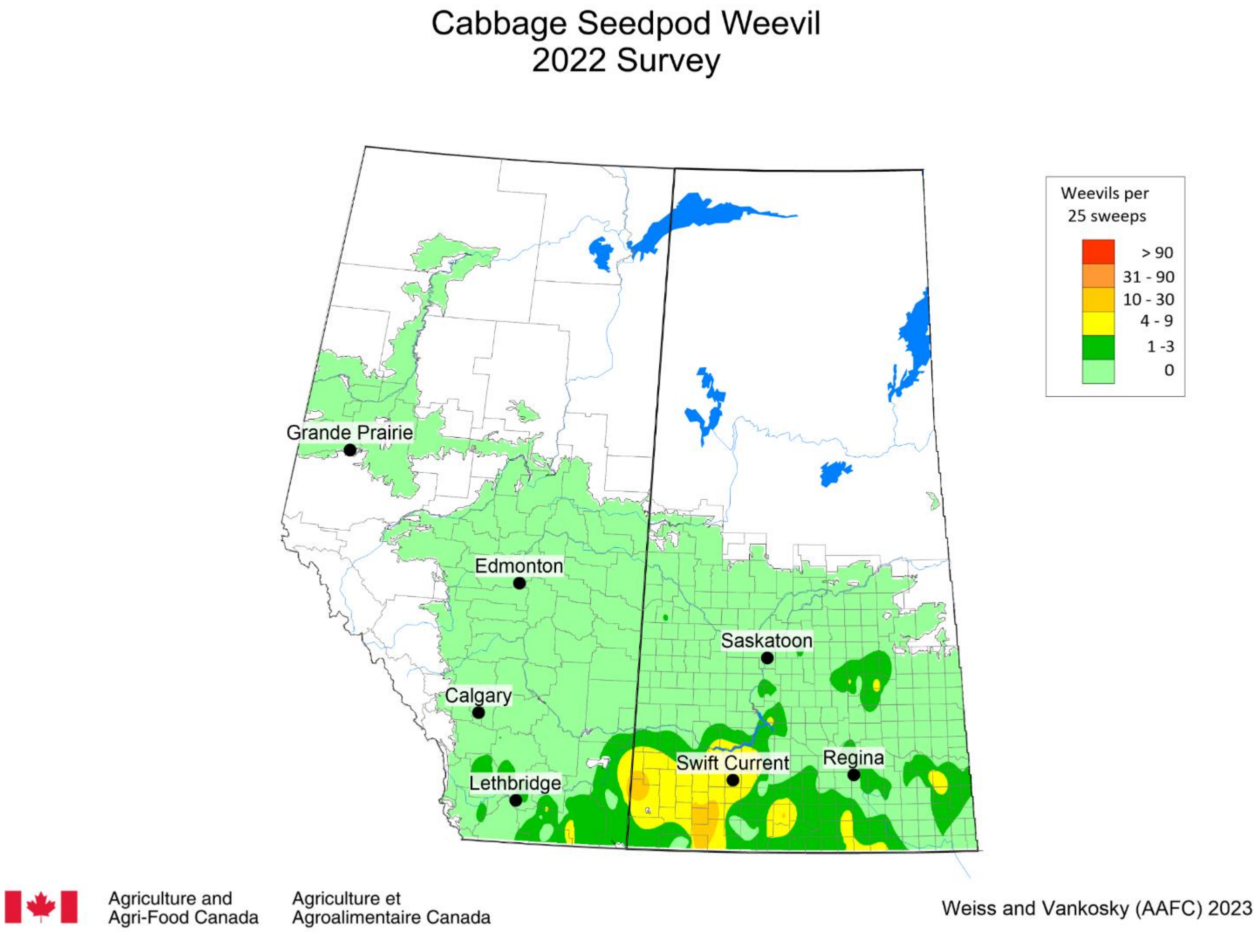


Figure 4. Cabbage seedpod weevil (*Ceutorhynchus obstrictus*) distribution in Saskatchewan and Alberta based on a sweep net survey conducted in randomly selected *Brassica* sp. fields in 2022 (map by Ross Weiss, AAFC-Saskatoon).

Distribution of Wheat Stem Sawfly in Alberta in 2022

M. Vankosky, S. Barkely, D. Giffen, O. Olfert

Wheat stem sawfly (*Cephus cinctus*) was surveyed in southern Alberta in 2022 by counting the number of stems cut by wheat stem sawfly larvae along the edges of wheat fields (Figure 5). The 80 fields that were sampled had damage severity levels ranging from very low to high. Many of the fields sampled had at least 2-10% of stems cut (low damage severity); fields in the counties of Vulcan and Forty Mile had fields with high damage severity (>25% of stems cut). Fields in several counties, including Foothills, Willow Creek, Lethbridge, Warner, Wheatland, and Kneehill had 2-25% of stems cut by wheat stem sawfly in 2022, as did some fields around Oyen, Alberta (Figure 5). Although the areas with the highest population densities have shifted slightly between years, sawfly populations continued to increase in 2022 as compared to population densities observed between 2011 and 2017, with some notably high populations found farther north than normal in 2022 as well. At present, wheat stem sawfly populations are not monitored in Saskatchewan. However, in 2022, there were some reports of sawfly damage from several fields across the province, including near Moosejaw, Pense, Biggar, and Cabri, in both spring wheat and durum crops and plans are in place for a survey in 2023.

Hot and dry weather conditions may contribute to decreased parasitism rates and sawfly population growth. *Bracon cephi* is the primary parasitoid of wheat stem sawfly. In hot and dry years, wheat plants mature early, limiting *B. cephi* to one generation and resulting in reduced parasitism rates. In normal growing seasons, *B. cephi* can have two generations per year and parasitism rates are higher, allowing *B. cephi* to exert more control over wheat stem sawfly populations. Very wet conditions can also hinder wheat stem sawfly population growth.

Cultivated cereals including spring wheat and durum wheat are preferred hosts of wheat stem sawfly. They can also utilize other cereal grasses as developmental hosts, but pose no threat to broadleaf crops. Damage resulting from sawfly feeding and development inside the stem contributes to economic losses via reduced yield, reduced quality, and reduced ability to harvest the crop when plants lodge before they can be swathed or combined. Solid stem wheat varieties have been integral in maintaining wheat as a profitable crop and reducing wheat stem sawfly pest pressure.

Adult wheat stem sawflies are weak fliers, although their dispersal improves in warm, calm, sunny weather conditions following spring rains. as does parasitism. Because they tend to be weak fliers, damage levels are often highest along the field margins. However, studies have shown that adult sawflies are not confined to the crop edges and may be more prevalent within 20 m of the crop edge. When entire fields are affected, damage levels greater than 50% have been recorded.

No insecticides are registered for management of wheat stem sawfly. Management tactics rely on cultural and agronomic practices, as well as biological control. Resistant cultivars with solid stems are the most effective management option in areas where wheat stem sawfly occur consistently. Producers are generally advised to consider alternative crops or preventative strategies when damage levels in the previous year's crop range from 10 to 15%.

The survey was coordinated and conducted by Shelley Barkley from Alberta Agriculture and Irrigation and their partners and cooperators.

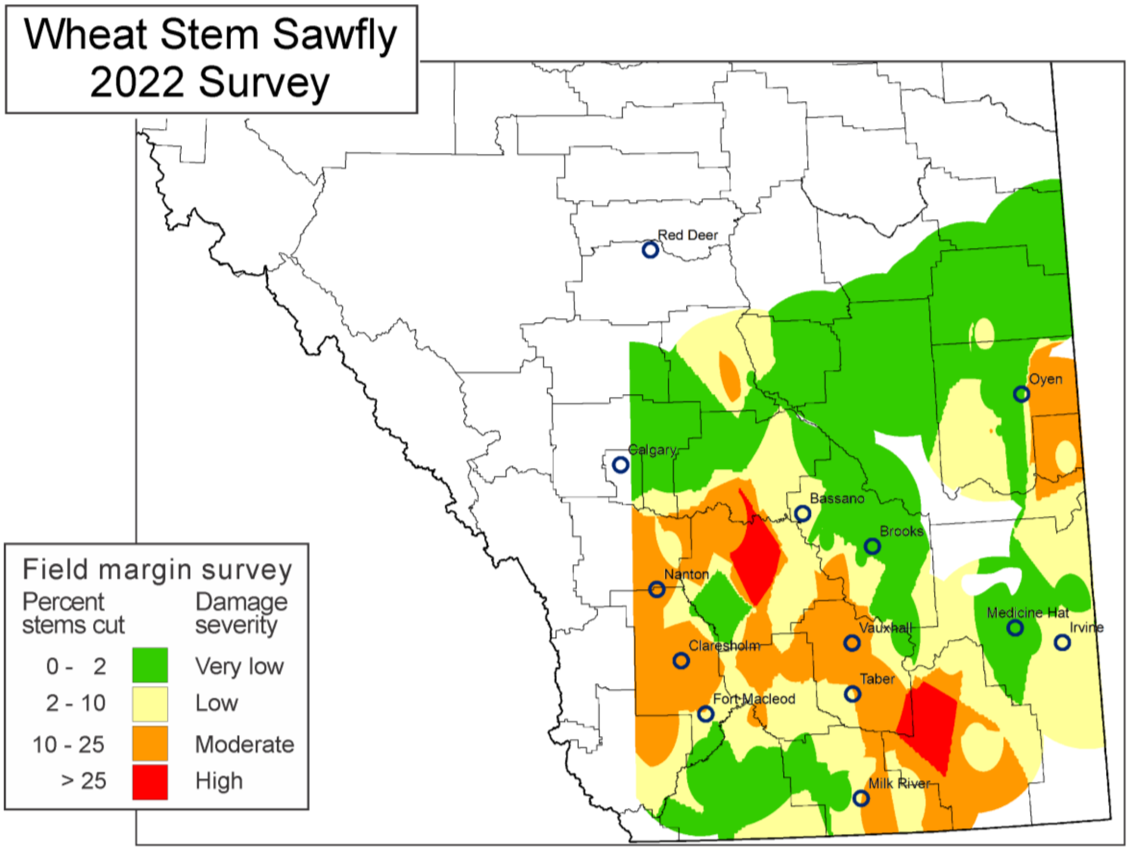


Figure 5. Wheat stem sawfly (*Cephus cinctus*) distribution in Alberta in 2022 based on results of a survey of cut stems in wheat fields counted after harvest (map by David Giffen, AAFC-Saskatoon).

Distribution of Pea Leaf Weevil in Saskatchewan, Alberta, and Manitoba in 2022

M. Vankosky, J. Tansey, S. Barkley, J. Gavloski, R. Weiss, O. Olfert

The pea leaf weevil (*Sitona lineatus*) is an invasive insect. Its primary hosts are field pea and faba bean, which can be damaged by adults feeding on foliage and by larvae feeding on the root nodules. Secondary hosts of pea leaf weevil include alfalfa, clover, and chickpea, but these plants are only affected by adult foliage feeding. The pea leaf weevil was first detected on the prairies near Lethbridge in the late 1990s, in southern Saskatchewan in 2007, and in Manitoba in 2019. Adult pea leaf weevils consume the foliage of field pea and faba bean plants, beginning in the spring, resulting in 'u' shaped notches along the margins of the leaves. The survey is conducted annually in the spring when field pea plants range in size between two and six pairs of leaves by counting the number of feeding notches. The number of notches is used to estimate population density, based on the expectation that increasing levels of damage are indicative of increasing population density. The monitoring protocol is available online from https://prairiepest.ca.

Since becoming established, the range of pea leaf weevil in western Canada has expanded east and north. The pea leaf weevil was confirmed in the Peace River Region a few years ago, and evidence of its presence (in low to moderate densities) was observed throughout the region in 2022 (Figure 6). In the rest of Alberta, population densities were greatest in the Edmonton area and north of the Yellowhead Highway corridor (Figure 6). Densities of pea leaf weevil were the quite low in southern Alberta, aside from some fields near the foothills (*e.g.*, counties of Pincher Creek and Cardston).

Pea leaf weevil populations in Saskatchewan were quite low in the western and central agricultural regions in 2022 (Figure 6), similar to observations from the survey in 2019, 2020, and 2021. However, as compared to 2021, more fields in eastern Saskatchewan had moderate to high numbers of notches per plant, with some fields having an average of 9-27 notches per plant (RMs 333, 331, 303, 301, 273 and 271, all northeast of Yorkton).

In Manitoba adult pea leaf weevils were collected and their identity confirmed in 2019. In 2022, pea fields were sampled using the protocol used in Alberta and Saskatchewan. Low to moderate densities of pea leaf weevil, based on foliar damage to peas, were observed in fields in northeast Manitoba, including fields in the Swan River Valley where pheromone traps were deployed in 2021.

Insecticides (foliar and systemic) have been registered for management of the pea leaf weevil; growers should consult Crop Production Guides for up-to-date information about registered products. Results of insecticide trials indicate that systemic insecticides are more effective than foliar insecticides for managing pea leaf weevil damage in field pea crops. The use of systemic insecticides could be made more efficient with an accurate forecast of pea leaf weevil densities between growing seasons. This is a focus of ongoing research.

The pea leaf weevil survey was conducted by Alberta Agriculture and Irrigation, the Saskatchewan Ministry of Agriculture, Manitoba Agriculture, and Agriculture & Agri-Food Canada (AAFC). This survey is funded through the AgriScience Program as part of the Canadian Agricultural Partnership, a federal, provincial, territorial initiative. Funders include AAFC, Western Grains Research Foundation, SaskWheat, Manitoba Crop Alliance, Alberta Wheat Commission, SaskPulse, Manitoba Canola Growers, Prairie Oat Growers Association, SaskCanola, and Manitoba Pulse & Soybean Growers.

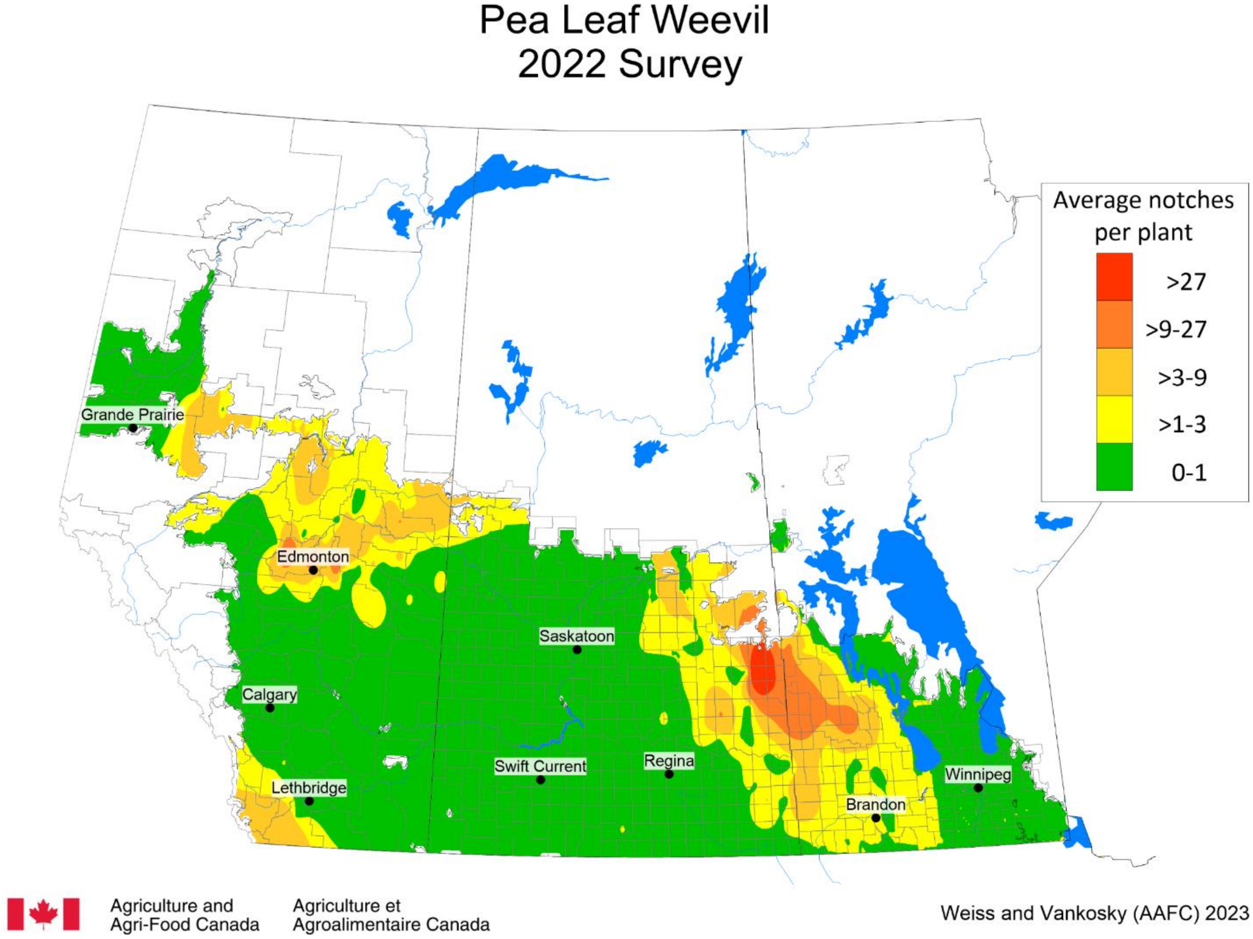


Figure 6. The distribution of pea leaf weevil (*Sitona lineatus*) in Alberta, Saskatchewan, and Manitoba in 2022, based on a plant damage survey conducted in the spring in randomly selected field pea crops (map by Ross Weiss, AAFC-Saskatoon).