

Summary of Insects on Crops in Manitoba in 2019

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Abbreviations used: The following abbreviations will be used in this document to indicate the following agricultural regions in Manitoba; NW=Northwest, SW=Southwest, C=Central, E=Eastern, I=Interlake.

Estimated acres: Estimated acres grown in Manitoba in 2019 (shown in brackets under each commodity title) are from the Manitoba Agricultural Services Corporation (MASC) 2019 Variety Market Share Report. The symbol ↑ indicates an increase in acres from 2018, whereas ↓ indicates a decrease in acres from 2018.

Weather for 2019 Growing Season (Report from: Timi Ojo, Agricultural Meteorology Specialist, Manitoba Agriculture). Spring conditions for 2019 were drier and cooler than normal following below normal winter precipitation. Most areas south of the Trans-Canada highway had between 30 – 50% of normal precipitation from November 01, 2018 to April 30, 2019. As the season progressed, the dryness became more pronounced especially at the Interlake and Northwest regions, which received less than half of the historical average in May and June. Most areas in the southwest and eastern regions had close to normal precipitation due to a couple of systems that brought heavy showers. However, the 4 to 5 weeks between the systems resulted in crop stress.

As the season was wrapping up, the six weeks of September and early October had up to 3 times the amount of normal precipitation, coupled with a snowstorm in many areas, which hampered harvest operations.

Summary: Insect pests of greatest concern to crops in Manitoba in 2019 were flea beetles in canola, cutworms, and grasshopper. Flea beetles resulted in foliar insecticide treatments in many fields and some reseeding of canola, in spite of there being an insecticide in the seed treatment. Cutworms and grasshoppers were a concern in many crops. Also of concern, but resulting in less widespread crop damage and management were armyworms on small grain cereals and forage grasses, diamondback moth and bertha armyworm on canola, and thistle caterpillars on soybeans.

Small Grain Cereals

(**Wheat (spring)**-2,969,499 acres↑ + 6,699 acres organic↑ + 1,198 acres durum↓; **Wheat (Winter)**-33,302↓ + 678 acres organic↓; **Barley**-348,977 acres↑ + 2,450 acres organic↑; **Oats**-535,231 acres↑ + 4,602 acres organic↑; **Fall Rye**-94,105 acres↑; **Triticale**-1,229 acres↑ + 622 winter triticale)

Wireworms (Elateridae): Wireworm damage to wheat was reported from a field near Grosse Isle (I).

Cutworms (Noctuidae): There were reports of cutworm control in cereals from all of the agricultural regions in Manitoba. A field of oats in the southwest was reseeded because of cutworm feeding, and about 500 acres of small grains were reseeded in patches, and one entire field, in the Interlake. Some fields were sprayed twice for cutworms. Most control occurred during the last week in May and first 3 weeks in June.

Wheat midge (*Sitodiplosis mosellana*): Wheat midge was generally not a major concern in Manitoba in 2019. There were no reports of insecticide applications for wheat midge.

Sap Feeders

Aphids: Aphid levels were low in 2019 and there were no reports of insecticide applications in small grains.

Thrips: There were no reports of thrips being of economic concern in small grains in 2019.

Defoliators

Grasshoppers: Grasshopper levels continued to build, and there was spraying of field edges and whole field of small grains for grasshoppers. Most of the reports of grasshopper control in small grains were from the Central, Eastern and Interlake regions.

Armyworm (*Mythimna unipuncta*): Armyworms were controlled in some fields of small grains in the Eastern, Interlake and Central regions. High levels, and insecticide applications, occurred in mid- and late-July.

Note – Several photos of *Cotesia* pupal clusters on cereal heads were also submitted during the same period when armyworms were being controlled.

Cereal Leaf Beetle (*Oulema melanopus*): Levels of cereal leaf beetle were generally quite low, however quite noticeable levels were present in several fields east of the Red River. This is the first verification of cereal leaf beetle in Eastern Manitoba.

Cereal leaf beetle larvae from Darlingford (C), Thornhill (C), Arnaud (E), Randolph (E), Ste. Anne (E), and Oakbank (E) were collected and sent to Agriculture and Agri-Food Canada in Lethbridge where they were tested for percent parasitism by *Tetrastichus julis* (Eulophidae). Collection dates ranged from June 21 to July 5th. For the four samples from Eastern Manitoba, percent parasitism ranged from 0 to 31 percent of larvae parasitized by *T. julis*. No new releases of *T. julis* were done in Manitoba in 2019 due to supplies not being available. Areas in Eastern Manitoba with low levels of percent parasitism (Ste. Anne and Arnaud) are priority areas for future releases of *T. julis* once sufficient supplies of the parasitoid are available.

Corn

(416,259 acres **grain corn**↑; 127,554 acres **silage corn**↑)

Cutworms (Noctuidae): There were reports of cutworm feeding on corn from all agricultural regions, and insecticides applications in many fields.

Wireworms: High levels of wireworms and their feeding were noticed in a corn field in the Manitou (C) area.

European corn borer (*Ostrinia nubilalis*): European corn borer populations were generally low in 2019. There were no reports of insecticide applications for European corn borer in corn.

Grasshoppers: Grasshoppers were a concern in some corn fields. One report indicated grasshoppers were eating the silks as they emerged.

Canola and Mustard

(**Argentine canola**-3,214,817 acres↓; **Rapeseed**-5,370 acres↓; **Mustard**-1,803 acres↓)

Cutworms (Noctuidae): Cutworms were a concern in many canola fields, resulting in insecticide applications and some reseeding. There were reports of reseeding of canola because of cutworm feeding, or a combination of cutworms and other stress, in the Northwest, Southwest, Central and Interlake regions. Most cutworm control measures occurred during the last week in May and through June. There were some reports of multiple insecticide applications being done for cutworms, including a report from the southwest of a couple of canola fields being sprayed for cutworms for the third time.

Root Maggots (*Delia* spp.): There were a few reports of high levels of root maggots. In some instances plants were also moisture stressed and wilting was noted.

Sap Feeders

Lygus bugs (*Lygus* spp.): Lygus bugs were reported getting close to economic threshold in some fields in the Central region, but there were no reports of insecticide applications.

Aster Leafhopper (*Macrostelus quadrilineatus*): Aster leafhopper levels were generally low. There were no reports of high levels or aster yellow concerns in canola.

Defoliators

Flea beetles (*Phyllotreta* spp.): Use of seed treatments to manage early-season flea beetle populations continues to be common, and there were reports of a lot of canola growers waiting until later in the spring to seed canola because of flea beetle concerns. However, feeding damage to young plants at or above threshold levels, and additional use of foliar insecticides, occurred in many fields in all agricultural regions. There were several reports of multiple foliar insecticide application for flea beetles, with some making as many as five applications. Insecticide applications for flea beetles started in late-May and continued until late-June.

Lack of precipitation resulted in canola that in many areas was slow to emerge and grow through the stages more susceptible to flea beetle feeding. Some agronomists expressed concern clients were mistaking uneven canola emergence as flea beetle damage.

Reseeding of canola due to flea beetle injury was reported from all agricultural regions of Manitoba. In some instances canola fields were experiencing additional stresses, such as frost, extended cool and dry conditions, soil blasting, or cutworm damage. There was a report from the Central region of a canola grower looking at reseeding some of his canola for a second time because of flea beetles. Another report indicated some of the reseeded canola acres were going to cereals, out of frustration with canola issues. Some reseeded canola also required spraying for flea beetles.

Bertha Armyworm (*Mamestra configurata*): A few canola fields in Southwest Manitoba had insecticide applications for bertha armyworm. Most of the spraying seemed to be concentrated in the area near Turtle Mountain provincial park, with some higher populations also reported west of Melita. Diseased bertha armyworms at the top of the canopy were also noticed in some fields.

Pheromone-baited traps to monitor adult moths of bertha armyworm were set up at 94 locations in Manitoba in 2019. The monitoring period was June 2nd to July 27th. Eighty-one of the 94 traps were in the low risk category (less than 300 cumulative moth count). Twelve traps were in the uncertain risk category (300 to 900 cumulative moths), one trap was in the moderate risk category (900 to 1,200 cumulative moths), and no traps were in the high risk category (1,200 plus moths). Trap counts from 2019 were similar to those in 2018, when there was 13 traps in the uncertain risk category, and one trap in the moderate risk category. Table 1 shows the highest trap counts for each agricultural region in Manitoba in 2019.

Table 1. Highest cumulative counts of bertha armyworm (*Mamestra configurata*) moths in pheromone-baited traps for five agricultural regions in Manitoba in 2019.

Region	Nearest Town	Trap Count	Risk Category
Northwest	Bowsman	915	Moderate
	Kenville	889	Uncertain
Southwest	Miniota	380	Uncertain
	Rivers	264	Low
Central	Glenboro	501	Uncertain
	Halbstadt	454	Uncertain
Eastern	Tourond	195	Low
	Steinbach	121	Low
Interlake	Warren	238	Low
	Balmoral / Rosser	207	Low

Emergence was very spread out, with higher trap catches occurring over several weeks. The highest trap catch in a single week was 264 at a trap near Kenville on the week of July 7-13th.

Diamondback moth (*Plutella xylostella*): Larvae of diamondback moth didn't get to noticeable levels until early-July. Some canola fields in the Eastern, Interlake, Central and Southwest regions had high levels of diamondback moth larvae and insecticides applied. These higher populations occurred from early-July to early-August. One report from the Interlake indicated that although they were finding upwards of 40 per square foot, a lot were pale and did not seem to be feeding a lot. They were leaning towards not treating this field. There were no reports of insecticide applications for diamondback moth in northwest Manitoba.

Pheromone-baited traps for adult moths were set up at 90 locations in Manitoba in 2019. The monitoring period was generally from April 28th to June 29th.

- Highest cumulative counts were generally in the Interlake and Northwest.
- During the 3-week period from June 2 to 22nd traps in the Northwest and Interlake were catching high levels of moths.
- Although diamondback moth arrives on winds from the south, the Northwest region once again had higher trap catches than the southwest.

Table 2. Highest cumulative counts of diamondback moth (*Plutella xylostella*) in pheromone-baited traps for five agricultural regions in Manitoba in 2019.

Region	Nearest Town	Trap Count
Northwest	Bowsman	369
	Bowsman	326
Southwest	Shilo	51
	Souris / Carberry	33
Central	Roland	69
	Elm Creek	64
Eastern	Steinbach	270
	Tourond	111
Interlake	Balmoral	437
	Teulon	386

The highest trap catch in a single week was 231 at a trap near Balmoral on the week of June 9–15th.

Grasshoppers: There were some reports of insecticide applications to control grasshoppers in canola. In August there were reports of feeding on pods in some fields. At times the pod feeding was more prevalent around the perimeter of the field. Grasshoppers were observed moving into canola from cereal crops and haylands in August. There was also a report of grasshoppers feeding on swathed canola, leaving the top of the swath looking like hail damage.

Flax

(Flax-45,705 acres↑ + 1,498 acres organic flax↓)

Potato aphid (*Macrosiphum euphorbiae*): There were no reports of high populations of aphids on flax in 2019.

Lygus bugs (*Lygus* spp.): Some flax in the Interlake was sprayed for Lygus bugs. One report was levels up to 160 Lygus bugs per 10 sweeps.

Grasshoppers: Some flax fields in the Interlake had considerable injury from grasshoppers.

Sunflowers

(20,032 acres non-oil↑; 45,831 acres oil↑)

Cutworms (Noctuidae): Cutworms were a concern in many sunflower fields, and there were reports of insecticide applications for cutworms on sunflowers in the Eastern, Central and Southwest regions. In the Southwest there was a report of a sunflower field being sprayed for cutworms for the third time. There were some reports of sunflower fields being reseeded because of cutworms.

Sunflower beetle (*Zygogramma exclamationis*): No high populations or spraying for sunflower beetles was reported in 2019. The last year that economic populations of sunflower beetle have been reported in Manitoba is 2009.

Grasshoppers: There were reports of insecticide applications to control grasshoppers in sunflowers from

the Eastern and Central regions. One report indicated leaf damage along the outside edges; some plants had up to 50% defoliation and feeding was starting to be seen on the head.

Thistle caterpillar (*Vanessa cardui*): Thistle caterpillars were present in some sunflower fields, however no insecticide applications for them were reported.

Seedhead Insects

Some fields of confection sunflowers were treated with insecticides in late-July and early-August to control seedhead insects, mainly **Lygus bugs** (*Lygus* spp.) and **banded sunflower moth** (*Cochylis hospes*). Populations of **Red sunflower seed weevil** (*Smicronyx fulvus*) were low again in most areas this year.

Beans (Dry)

(143,207 acres↑: Pinto-55,924 acres↑, white pea (navy)-43,665 acres↑, black-27,308 acres↓, kidney-12,358 acres↑, cranberry-7,931 acres↓, small red-1,016 acres↓, other dry edible-7,363 acres)

Cutworms (Noctuidae): Some control of cutworms in dry beans was reported from the Central and Southwest regions.

Green cloverworm (*Hypena scabra*): Green cloverworm were at noticeable levels in some fields of dry beans. Generally defoliation was not economical, although there were some insecticide applications.

Faba beans

(8,052 acres)

Cutworms (Noctuidae): A field of faba beans in the Southwest was reseeded to barley because of damage from cutworms.

Peas (Field)

(112,175 acres↑ + 556 acres organic)

Cutworms (Noctuidae): Cutworms were a concern in some pea fields. A couple of pea fields in the Northwest were reseeded because of feeding by cutworms.

Pea aphids (*Acyrtosiphon pisum*): Some pea fields in the Central and Southwest regions were sprayed for pea aphids in mid-July.

Pea leaf weevil (*Sitona lineatus*): An agronomist from Northwest Manitoba sent in four weevils collected in early September from pea stubble near Swan River, MB. The agronomist commented that they are easy to find in harvested pea fields. The weevils were identified as pea leaf weevils. This is the first confirmation of pea leaf weevils in Manitoba.

Lentils

(1,542 acres↓)

There were no reports of insects of concern in lentils.

Soybeans

(1,388,899 acres↓)

Cutworms (Noctuidae): There was extensive insecticide applications to soybeans for cutworms, particularly in the Eastern, Central, Interlake and Northwest regions. Several thousand acres were sprayed overall. One report from the Eastern region mentioned 2,000 acres of soybeans being sprayed for cutworms north of Beausejour. Another report from the Central region mentioned about 1,400 acres of soybeans sprayed for cutworms in the Barnsely / Haywood area. There was a report from the Interlake of some soybeans being reseeded to canola because of cutworm feeding.

Some observations and anecdotal reports by agronomists regarding cutworms in soybeans include:

- Very different levels of cutworms in neighbouring soybean fields that were both in beans the previous year.
- Feel cutworms were worse in fields of soybeans on previous year's soybeans or in fields where shallow penetrating vertical tillage tools were used exclusively for field prep.
- Advised by retailers covering lots of acres that they have rarely seen such a wide assortment of cutworm sizes in the field as they have this year.
- More cutworm concerns in soybeans noted than ever before.

Soybean Aphid (*Aphis glycines*): Soybean aphid levels were low and well below economic threshold in 2019. The first report of any soybean aphids did not occur until August 16th this year. Normally soybean aphids are first observed in Manitoba sometime in July, however this is the second consecutive year when no soybean aphids were reported until August.

Spider mites: Some higher levels of spider mites were found along field edges and in pockets in late-August. Some field edges were sprayed for spider mites in the Winkler and Carman areas.

Grasshoppers: Grasshoppers were of concern and insecticides were applied to control them on soybeans in many areas. In some instances just headlands were treated. Harvest of nearby crops at times resulted in grasshoppers moving into soybeans. Some noticed grasshoppers moving into fields after field margins or ditches were mowed.

Thistle caterpillar (*Vanessa cardui*): Large amounts of the adult butterflies (painted lady butterflies) began to be noticed in early June in some areas. Thistle caterpillars started to be noticed in soybean fields in late-June. Some soybean fields in the Northwest and Eastern regions were sprayed to control thistle caterpillars in earlier/mid July. Thistle caterpillars were also noticed on Canada thistle and round leaf mallow.

Green cloverworm (*Hypena scabra*): Green cloverworm were at noticeable levels in soybean fields in the Eastern, Central and Interlake regions. In most fields defoliation was not economical, however some soybean fields were sprayed for green cloverworms in the Central region.

Hemp

(10,009 acres for grain + 2,175 acres organic)

Cutworms (Noctuidae): A few hemp fields were sprayed for cutworms. Insecticide registrations are needed for cutworms in hemp.

Quinoa

No insect concerns were reported quinoa in 2019.

Forages and Forage Seed

Plant bugs (Miridae) / Lygus bugs (*Lygus* spp.): Lygus bugs were a concern in some alfalfa seed and trefoil seed fields in the Interlake. Some timothy seed fields were sprayed for plant bugs; one report was of over 50 per sweep in some fields, while other fields had low numbers.

Alfalfa weevil (*Hypera postica*): Some fields with high levels of alfalfa weevil were reported from the Southwest and Northwest regions.

Grasshoppers: Some pastures, forage hay and clover fields had insecticide applications for grasshoppers. In some regions pastures were in poor shape with a lot of overgrazing due to limited re-growth throughout the season. Grasshoppers were a problem feeding on regrowth that did occur.

Armyworm (*Mythimna unipuncta*): Some grass forage seed crops in the Eastern region had insecticides applied for armyworms. There were also reports of armyworms in timothy seed fields in the Interlake.

Potatoes

Report from: Vikram Bisht, Horticulture Pathologist, Manitoba Agriculture.

Colorado potato beetle (*Leptinotarsa decemlineata*): Again, quite a few incidences of Colorado potato beetles appeared in July and in the later part of the potato season; some may have escaped the neonicotinoid insecticides or developed some tolerance, especially in southern and central potato growing areas of Manitoba. These cases may be apparent insecticide resistance to Admire/Titan/Actara (neonicotinoid) seed treated fields. This class of chemistry is not performing as well as it used to in a few locations. Delegate (spinetoram) insecticide was used in many instances as foliar application. Organic potato growers have used Entrust (spinosad) with limited success due to high population pressure.

Potato psyllid (*Paratrioza cockerelli*): Dr. Vikram Bisht is coordinating potato psyllid monitoring in Manitoba with Dan Johnson at the University of Lethbridge. Two potato psyllids were found in Manitoba in 2016, but none were reported for 2017 and 2018. Yellow sticky traps have been collected for 2019 season but have not been checked yet.

European Corn Borer (*Ostrinia nubilalis*): Damage was seen in some fields as part of ECB monitoring. European corn borer was monitored using pheromone-baited traps in 10 fields from June 24 until mid-August. Counts were generally low with only traps at 2 sites having counts over 10 moths in a week (18 and 17 at traps near Shilo, and 14 on a trap near Carberry). No insecticide application was recommended; but some growers applied insecticide anyway.

Aphids (Green Peach aphid (*Myzus persicae*), Potato aphid (*Macrosiphum euphorbiae*) and other types): The numbers were low for 2019, but higher than 2018. During harvest of nearby crops there was not a significant bump in aphid numbers in potatoes.

Vegetable Crops

Report from: Tom Gonsalves, Vegetable Specialist, Manitoba Agriculture, and
Vikram Bisht, Horticulture Pathologist, Manitoba Agriculture.

Flea beetles (*Phyllotreta* spp.) **on Cruciferous vegetables:** There was generally high flea beetle pressure on cruciferous vegetable crops in the Portage la Prairie area. Frequent insecticide applications were needed to manage flea beetles in crucifer crops. Once canola had been swathed there was flea beetle damage on the kale in the Manitoba Agriculture high tunnel in Portage la Prairie.

Spider mites were an issue in tomato and cucumber crops in greenhouse/ high tunnel. Predatory mites (*Neoseiulus californicus*), which were released when spider mites were first detected in the high tunnel, kept the numbers under control until mid to late September.

Wireworms (Elateridae): There were low levels of **wireworm** damage to carrots. It is becoming a concern, due to limited options for insecticides.

Root Maggots (*Delia* spp.): Root maggot damage on crucifer vegetables continues to be high. The crucifer root crops (rutabaga, radish) cannot be successfully grown in most areas where canola is a major crop. This is especially true in Portage vegetable production farms.

Fruit Crops

Report from: Anthony Mintenko, Fruit Specialist, Manitoba Agriculture.

Spotted-wing drosophila (*Drosophila suzukii*): Monitoring for spotted-wing drosophila (SWD) occurred throughout June & July in select Manitoba locations. Ideal breeding conditions before and during harvest (warm, humid, wet) combined with later than normal harvest times resulted in SWD becoming an economic pest for strawberries, raspberries and for the first time a noticeable issue in saskatoons. Unprotected raspberry crops still experienced 50-70% yield lost, while saskatoons and strawberries experienced 20-30% yield loss due to SWD.

Fourspotted sap beetles (*Glischrochilus quadrisignatus*): This insect was observed by raspberry producers in the later part of harvesting (mid-late July) in high numbers but by that stage most berries were infested with SWD so were already unmarketable.

Grasshoppers: Minor/ moderate leaf damage to strawberry and raspberry plants after harvest and throughout August but not at levels to justify control measures.

White-marked tussock moth (*Orgyia leucostigma*): Some raspberries in the Carberry area had insecticide applied to control larvae of white-marked tussock moth.

Insects on Trees

Report from: Fiona Ross, Pest Management Biologist, Manitoba Sustainable Development, Winnipeg.

Emerald ash borer (*Agrilus planipennis*): Discovered in Winnipeg in November of 2017. The city of Winnipeg remains the only regulated area for emerald ash borer in Manitoba.

Manitoba Sustainable Development deployed 150 green prism traps at high risk locations throughout the province. Additional partners deployed traps across the province as one tool to aid in the detection of emerald ash borer in any new location. All traps in Manitoba were found to be negative for the presence of emerald ash borer.

Jack Pine Budworm (*Choristoneura pinus*): A small pocket of jack pine budworm defoliation was observed in the Interlake Forest Section in 2015. The outbreak area expanded in 2016, 2017, 2018 and has further expanded 2019. In 2019, 1,143,748 ha of defoliated jack pine budworm forest was observed across the Province. 2019's trap catches and egg mass counts are still being process to determine were the population is building and were it is decline.

Spruce budworm (*Choristoneura fumiferana*): Small pockets of spruce budworm defoliation were observed in the northwest corner of the province. Population indices based on trap catches and egg mass counts are still be processed with results expected mid-November.

Cottony ash psyllid (*Psyllopsis discrepans*): Confirmed July of 2017 and was found wide spread across many communities in Manitoba. After a couple years of significant damage on black and mancana ash cultivars, little new damage was seen this year.

Forest tent caterpillar (*Malacosma disstria*): Small isolated pockets were observed however populations are consider light across the province (35,729 ha).

Dutch Elm Disease (*Ophiostoma novo-ulmi*): Manitoba's integrated, community-based Dutch Elm Disease Management Program partners with 38 participating communities throughout the province. With financial support provided by the province, communities are responsible for tree removals and implementing preventative measures such as basal spraying, tree inventories and forest health monitoring. The Manitoba government continues to coordinate the delivery of the program, provide technical support, and conduct annual detection surveys. This partnership approach results in increased community participation and enhanced protection efforts for Manitoba's urban forests. Provincial survey crews marked approximately 4,270 infected trees in 2019. These numbers do not include the City of Winnipeg which has its own independent program.