

## Summary of Insects on Crops in Manitoba in 2022

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Estimated acres: Estimated acres grown in Manitoba in 2022 (shown in brackets under each commodity title) are from the Manitoba Agricultural Services Corporation (MASC) 2022 Variety Market Share Report. The symbol ↑ indicates an increase in acres from 2021, whereas ↓ indicates a decrease in acres from 2021.

### Weather for 2022 Growing Season

(Report from: Brendan Brooks, Ag Meteorology Specialist, Manitoba Agriculture).

The following report summarizes weather conditions over the growing season of 2022 and the preceding winter that may have bearing on insect development, activity and interactions with crops over the same period.

**Precipitation:** Precipitation over the winter of 2021 and 2022 was above normal in most of the Eastern and Interlake regions. Some, but fewer locations were above normal in the central region. Most locations in the Northwest and Southwest regions were at or below normal over the same period.

Throughout May and June, the province received frequent rainfall, with many locations receiving at least 10-15 mm of rain per week. Over this same period, it was not uncommon for locations hit by heavier storms to receive 30 mm of rain or more per week, with some receiving in excess of 65 mm per week. Consequently, many locations throughout the province met or exceeded their respective accumulated precipitation normal early in the growing season, resulting in delayed seeding.

Moving into July and August, storms persisted, but were less frequent, with some weeks characterized by less than 5 mm of rain falling at many locations throughout the province. Similar conditions continued through September.

**Soil moisture:** As a consequence of an abnormally wet winter and spring, the top 30 cm of the soil profile could be described as wet to very wet for much of the province, measured relative to field capacity over the same period. Soils slowly dried moving into July and August, with an increasing number of locations approaching ideal conditions over time and less frequent storms replenishing soil moisture. Over this period, soils in the Northwest and Southwest regions could be described as drier, with some locations trending towards dry or very dry conditions.

**Temperature:** Throughout May and June of 2022, there was a slight lag in the weekly accumulation of growing degree days measured relative to normal, with the lag more pronounced in the Northwest and Southwest regions. By July and August, many locations throughout Manitoba met or exceeded their historical average heat accumulations. This trend continued into September. By September 21, the first fall frosts had been experienced by some locations in the province.

## Summary

Seeding was quite late in many areas this year, mainly because of excessive rainfall, and overland spring flooding in some areas. This resulted in some crops remaining in susceptible stages to some insect pests later in the season than normal. Main insect pest issues included flea beetles in canola, grasshoppers in many crops, and aphids in small grains, field peas and soybeans. Armyworm levels were high in some fields of small grains. Lygus bugs were a concern in canola in many regions in August and early-September. Cutworms were a problem in some crops early in the season.

## Small Grain Cereals

**(Wheat (spring):** 2,742,953 acres↑ + 7,549 acres organic↑ + 2,699 acres durum↑; **Wheat (Winter):** 51,972↑; **Barley:** 377,702 acres↓; **Oats:** 662,335 acres↑ + 2,946 acres organic↓; **Fall Rye:** 117,275 acres↑; **Triticale:** 969 acres↓ + 907 acres winter triticale↓)

**Wireworms** (Elateridae): No wireworm issues were reported in small grains in 2022.

**Cutworms** (Noctuidae): Some high cutworm levels and control was reported from wheat and barley in the Southwest region in mid-June.

**Seedcorn maggots** (*Delia platura*): Seedcorn maggots were found feeding on seeds and coleoptiles in wheat and barley fields that had poor emergence in the Central region. The fields were seeded 2 to 3 days before the region got some very heavy rainfall, and the maggots seemed to be concentrated in low, wet areas.

**Wheat midge** (*Sitodiplosis mosellana*): There were some reports of high levels of wheat midge from the Northwest region, but there was problems accessing insecticides to control them. About 31% of insured spring wheat acres were midge tolerant variety blends in Manitoba in 2022.

## Sap Feeders

**Aphids** (Aphididae): Aphids were controlled in many fields of small grains from late-July through mid-August. Because of the later seeding in many fields, small grains remained in the susceptible stages (prior to soft dough) later than in many years. Both oat-birdcherry aphid (*Rhopalosiphum padi*) and English grain aphid (*Sitobion avenae*) were present. Barley yellow dwarf was noted in some fields.

In some instances insecticides other than the two active ingredients registered for aphids in cereals (dimethoate and malathion) were used. Dimethoate has a preharvest interval of 35 days in small grains, and the cost of malathion was prohibitive. A selective and affordable insecticide registered for aphids in small grains is greatly needed.

Predators of aphids and evidence of parasitism of aphids were common in some fields. One of the predators that was often abundant was larvae of hover flies, which some had difficulty identifying.

**Thrips:** High levels of thrips were found in some fields of barley.

In late-July there was a report of damage by thrips to wheat in western Manitoba. Thrips were collected, sent to the National Identification Service in Ottawa, and identified as barley thrips (*Limothrips denticornis*).

## Defoliators

**Grasshoppers:** Insecticides for grasshopper control were applied to field edges and whole field of small grains. There were reports of grasshopper control in small grains from all agricultural regions in Manitoba. Most reports of insecticide application for grasshoppers in cereals occurred from mid-June through July. There were reports of insecticides for grasshoppers being tank mixed with herbicides in mid-June, and fungicides in mid-July. A field of oats in Southwest Manitoba was reseeded because of grasshopper feeding.

A grasshopper survey in August of 2022 counted grasshoppers and recorded the dominant grasshopper species at 128 locations in Manitoba. Twostriped grasshopper (*Melanoplus bivittatus*) was generally the most abundant species.

**Crickets:** Crickets were noted feeding on the heads of wheat and barley in the Eastern and Central regions in mid- to late –August. Some barley was sprayed to control crickets.

**Armyworm** (*Mythimna unipuncta*): Armyworm levels were high and controlled in some fields of small grains in the Eastern, Interlake and Central regions in late-July and early-August. In some instances, armyworms were more abundant in the lodged areas of fields.

Pheromone baited traps (Multiplier 1) for armyworm adults were set up in early-May at 11 locations across Manitoba, and monitored until mid-July. Some moderate counts occurred from traps in Eastern and Central Manitoba. The highest cumulative count is 152, from a trap near Beausejour in the Eastern region.

**Cereal leaf beetle** (*Oulema melanopus*): There were no reports of high levels of cereal leaf beetle or control being needed.

## Corn

(313,516 acres **grain corn**↓; 111,807 acres **silage corn**↓)

**Cutworms** (Noctuidae): A corn field in the Northwest region was sprayed in early-June to control black army cutworm (*Actebia fennica*) which were causing extensive defoliation.

**Wireworms** (Elateridae): High wireworm levels, and thin and weak corn, were reported from a corn field near Sperling (Central region). The wireworms were more concentrated in the lower areas of the field. High wireworm levels were also reported from a corn field near Brunkild (Central region).

**European corn borer** (*Ostrinia nubilalis*): High corn borer levels were reported from a non-Bt corn field in the Eastern region, and corn borer were easy to detect while collecting larvae from the margins of a corn field in the Central region for a research project. There were no reports of insecticide applications for European corn borer in field corn.

**Aphids:** High levels of oat-birdcherry aphid were detected in a corn field in the Southwest region in early-August.

**Corn rootworm** (*Diabrotica* spp.): Rootworm feeding was noticed on corn in the Southwest region.

## Canola and Mustard

(**Argentine canola:** 3,211,162 acres↓; **Rapeseed:** 1,522 acres↓; **Mustard:** 3,259 acres↑)

**Cutworms** (Noctuidae): Cutworms were a concern in some canola fields in the Northwest region, with some insecticide applications occurring.

**Root maggots** (*Delia* spp.): There were no reports of damage from root maggots on canola in 2022.

### Sap Feeders

**Lygus bugs** (*Lygus* spp.): Insecticide applications for Lygus bugs in canola were reported from the Northwest, Southwest, Interlake and Eastern regions in August and early-September. Count as high as over 80 per 10 sweeps were reported. Lygus bug damage showed up in some canola samples from the Interlake, resulting in downgrading.

**Aster leafhopper** (*Macrostelus quadrilineatus*): Aster leafhopper populations were low and there was no reports of aster yellows in canola in 2022.

### Defoliators

**Flea beetles** (*Phyllotreta* spp.): Use of seed treatments to manage early-season flea beetle populations continues to be the norm. Protection from seed treatments was not long enough in many instances and feeding damage to young plants at or above threshold levels, and additional use of foliar insecticides, occurred in many fields in all agricultural regions. In some areas, later-seeded canola received less damage and had more rapid growth than earlier seeded canola. There were many farmers concerned that flea beetles were becoming resistant to seed treatment insecticides, although there is not data to back this up.

Insecticide applications for flea beetles started in early-June and continued until early-July. In some areas canola growth was slow in early-June, and there was heavy soil crusting. There were numerous reports of multiple foliar insecticide application for flea beetles, with some making as many as five applications. In some regions, excessive rains later in June stressed the crop and prevented timely insecticide application for flea beetles.

Reseeding of canola due to flea beetle injury was reported from the Eastern, Central and Southwest regions. In some instances reseeding was due to a combination of flea beetle feeding and other stresses such as crusting and flooding to a lesser extent. Some ended up reseeding after multiple spray events.

In August there were reports of high flea beetle populations on podded canola in the Northwest region, with some spraying for a combination of flea beetles and other insects such as Lygus bugs and diamondback moth.

**Bertha armyworm** (*Mamestra configurata*): Populations of bertha armyworm larvae were generally low in most regions, although two canola fields in the Eastern region were sprayed for bertha armyworm. An agronomist from the Central region reported bertha armyworm feeding on volunteer canola and lamb's quarters in a soybean field.

Pheromone-baited traps to monitor adult moths of bertha armyworm were set up at 51 locations in Manitoba

in 2022. The monitoring period was June 5<sup>th</sup> to July 30<sup>th</sup>. All of the traps remained in the low risk category (less than 300 cumulative moth over the trapping period). Trap counts from 2022 were similar to 2021, when all traps were also in the low risk category. Table 1 shows the highest trap counts for each agricultural region in Manitoba in 2022.

Table 1. Highest cumulative counts of bertha armyworm (*Mamestra configurata*) moths in pheromone-baited traps for five agricultural regions in Manitoba in 2022.

Region	Nearest Town	Trap Count	Risk Category
Northwest	Durban	209	Low
	Bowsman	101	Low
Southwest	Glenboro	141	Low
	Oakburn	101	Low
Central	Belmont	48	Low
	Emerson	34	Low
Eastern	Beausejour, Stead, Hadashville	14	Low
	Whitemouth	10	Low
Interlake	Arborg	17	Low
	Arborg	3	Low

The highest trap catch in a single week was 104 at a trap near Durban on the week of July 17- 23.

**Diamondback moth (*Plutella xylostella*):** Larvae of diamondback moth did increase to noticeable levels in a few fields in late-July and August, but not at economic levels. There were no reports of insecticide applications specifically for diamondback moth in canola in 2022.

Pheromone-baited traps for adult moths were set up at 51 locations in Manitoba in 2022. The monitoring period was generally from May 1<sup>st</sup> to July 2<sup>nd</sup>.

- Trap counts were generally low until mid-May. After that some moderate to high counts occurred in traps in the Eastern and Central regions. Counts were generally low in Western Manitoba, with the first cumulative counts over 10 happening the week of June 19-25.
- Diamondback moths were caught in 41 of the 51 traps, with 19 of these being cumulative counts of greater than 10.
- In spite of some strong winds from the South, a lot of traps still had low numbers.

Table 2. Highest cumulative counts of diamondback moth (*Plutella xylostella*) in pheromone-baited traps for five agricultural regions in Manitoba in 2022.

Region	Nearest Town	Trap Count	Notes
Northwest	Grandview	29	Only 3 trap out of 14 with more than 10 moths.
	Grandview	27	
Southwest	Rosburn	24	3 trap out of 11 with more than 10 moths.
	Miniota	20	
Central	Altona	133	6 of 18 traps with more than 10 moths
	Gnadenfeld	111	
Eastern	Whitemouth	287	4 of the 6 traps with more than 200 moths
	Hadashville	270	
Interlake	Arborg	15	

	Arborg	5	
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The highest trap catch in a single week was 112 at a trap near Beausejour on the week of May 29–June 4.

**Grasshoppers:** There were reports of insecticide applications to control grasshoppers in canola from multiple times in the growing season. There were some reports of grasshopper nymphs being controlled in canola in the Central region in mid-June, as grasshoppers were defoliating emerging canola. There was also a report of insecticides with increased pollinator safety being mixed in with fungicides to control grasshoppers. Some high grasshopper populations and control was reported from the Central region in mid-August.

Dead grasshopper at the top of canola plants, which is caused by the fungal pathogen *Entomophaga grylli*, was noticed in some locations. This is commonly called summit disease because of the grasshopper's peculiar plant-climbing behavior. In an extreme display of this, a canola field in the Central region near MacGregor had areas where the diseased grasshoppers were very abundant at the tops of plants, with some plants having multiple dead grasshoppers on them, and dead grasshoppers clinging to other dead grasshoppers.



**Crickets:** Cricket levels were high in some areas of Manitoba this year, and they were noted feeding on canola pods in some fields, mainly along the headlands or in patches in the field, from mid-August until early-September. Some insecticide applications were made along the edges or to patches of canola fields in the Central and Eastern regions to control crickets. One agronomist noted that the canola fields they sprayed for crickets had lodged early, making it easier for the crickets to get to the pods.

**Blister Beetles (Meloidae):** Blister beetles were quite noticeable in some canola fields in the Southwest region in late-June and early-July.

**Cabbage seedpod weevil (*Ceutorhynchus obstrictus*) and pollen beetle (*Brassicogethes viridescens*)** survey: A survey was once again conducted for cabbage seedpod weevils and pollen beetles in Manitoba in 2022. Three sets of 25 sweeps were done in 12 canola fields. Data analysis is still being completed.

## Flax

(Flax: 49,500 acres↓ + 1,232 acres organic flax↓)

**Potato aphid (*Macrosiphum euphorbiae*):** There were no reports of high populations of aphids on flax in 2022. The last year economic populations of aphids were reported in flax in Manitoba was 2014.

**Cutworms (Noctuidae):** Part of a flax field in the Central region was reseeded because of cutworms.

**Grasshoppers:** Some flax in Southwest Manitoba was sprayed for grasshoppers in late-July.

**Crickets:** Crickets were reported to be feeding on the bolls of flax in a field in the Eastern region in August. This was being noticed well into the field.

In addition to the above insect issues in flax, two flax fields in the Central region were sprayed for crickets, grasshoppers and lygus bugs which were occurring all at once in those fields.

## Sunflowers

(4,492 acres non-oil↓; 70,505 acres oil↑)

**Cutworms** (Noctuidae): A number of sunflower fields were sprayed for cutworms, particularly in the Eastern region. Some of these applications may have been preventative.

**Sunflower beetle** (*Zygogramma exclamationis*): No high populations or spraying for sunflower beetles was reported in 2022. The last year that economic populations of sunflower beetle have been reported in Manitoba is 2009.

**Grasshoppers**: Some higher grasshopper levels and control of grasshoppers in sunflowers was reported.

**Aphids** (Aphididae): High levels of aphids were present in some sunflower fields in the Eastern, Central and Southwest regions in August and early-September. Aphids were controlled in some sunflower fields in the Central region, and some edge spraying of sunflower fields for aphids occurred in the Eastern region, where about 500 to 1,000 aphids per leaf was estimated.

### Seedhead Insects

Lygus bugs were present on some sunflower fields in the Southwest, but otherwise there were no reports of seedhead insects in sunflowers.

## Beans (Dry)

(116,182 acres↓: Pinto: 64,411 acres↓, black-21,053 acres↓, white pea (navy)-20,318 acres↓, kidney-4,300 acres↓, cranberry-2,805 acres↓, other dry edible-3,295 acres)

There were no reports of insect issues in dry beans in 2022.

## Faba beans

**Pea leaf weevil** (*Sitona lineatus*): Pea leaf weevil adults were quite noticeable in some faba bean plots in the Northwest in June.

## Peas (Field)

(187,519 acres↓)

**Cutworms** (Noctuidae): Black army cutworms (*Actebia fennica*) were a concern in a field of field peas in the Northwest region in early-June.

**Seedcorn maggots** (*Delia platura*): Seedcorn maggots were abundant in a field of peaola (the intercropping of peas and canola) in the Central region. More seedcorn maggots were observed on the peas than the canola.

**Pea aphids** (*Acyrtosiphon pisum*): Aphid levels were high in peas in many fields, with insecticide applications reported from the Central, Southwest and Northwest regions. In some fields the insecticide for pea aphids was tank mixed with fungicide. High levels of aphid mummies were noticed in some fields.

**Pea leaf weevil** (*Sitona lineatus*): Pea leaf weevils were noticeable in some pea fields in the western part of the province.

A survey counting the number of crescent-shaped notches by adult weevils was conducted at 27 sites in 2022. The survey was done while plants were in the 2<sup>nd</sup> to 6<sup>th</sup> node stage. Highest levels of notching were in the Roblin, Swan Valley and Dauphin areas in the Northwest.

## **Lentils**

(1,003 acres↓)

**Grasshoppers:** Some lentils in Southwest Manitoba were sprayed for grasshoppers in late-July.

## **Soybeans**

(892,928 acres↓)

**Soybean aphid** (*Aphis glycines*): The first report of any soybean aphids was on July 5<sup>th</sup> this year. Soybean aphids got to economic levels and control was needed in some fields in August. There were reports of insecticides being applied for soybean aphids in the Eastern, Interlake and Central regions.

Some were disappointed in the lack of availability of selective insecticides for soybean aphids. There was some discussion on whether the economic threshold for soybean aphids should be adjusted because of the high price of soybeans, but this was discouraged. Natural enemies like lady beetles, hover fly larvae and aphid mummies (parasitized aphids) were noticed in some soybean fields, while others commented on the lack of beneficial insects, and wondering whether prior spraying for flea beetles and grasshoppers may have affected regional populations of beneficial insects.

Until this year, soybean aphids had not reached economic threshold levels in Manitoba since 2017.

**Spider mites:** There were no reports of spider mites on soybeans in 2022.

**Grasshoppers:** There were reports of insecticide applications to control grasshoppers in soybeans from the Southwest, Central and Interlake regions. Some of the applications were to borders, in other instances whole fields were treated.

## **Hemp / Cannabis**

(5,604 acres of hemp for grain↓)

There were no reports of insect issues in hemp or cannabis in 2022.

## **Quinoa**

**Lygus bugs** (*Lygus* spp.): The only insect control reported from quinoa was for Lygus bugs in research plots.

## **Forages and Forage Seed**

**Lygus bugs** (*Lygus* spp.): Lygus bugs were noted on some seed alfalfa fields.



**European skipper** (*Thymelicus lineola*): A field of timothy was sprayed for European skipper.

**Alfalfa weevil** (*Hypera postica*): There were no reports of damage from or control of alfalfa weevil in 2022.

**Armyworm** (*Mythimna unipuncta*): Some feeding from armyworms was noted on forage grasses.

## Potatoes

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

**Colorado potato beetle** (*Leptinotarsa decemlineata*): Compared to 2021, there were few high population incidences of Colorado potato beetles that appeared in 2022. Most incidences were in July and in the later part of the season, especially in southern and central potato growing areas of Manitoba. Resistance to neonicotinoid insecticides and limited effectiveness of spinosad insecticides (eg Entrust) on organic potatoes were reported in these regions. High populations were noticed in early to mid-August also. In the rest of Manitoba, seed treatment with neonicotinoids has been sufficient for effective control. In 2022, Colorado potato beetles were controlled with foliar applications of diamides or spinosyns when seed treatment with the neonicotinoids were not adequate.

**European corn borer** (*Ostrinia nubilalis*): Damage was seen in some fields as part of European corn borer (ECB) monitoring. ECB was monitored using pheromone-baited traps in eleven potato fields from mid-June until mid-August. This year, Iowa and NY strain lures were used. Counts peaked on July 18-25, with up to 57 adults trapped on a card and then catches dropped dramatically. Highest numbers were mostly in western Manitoba potato fields. No insecticide application was recommended, but some growers applied insecticide anyway. Even though the direct injury due to European corn borer is very minor, the injury sites act as port of entry for *Pectobacterium* spp. stem rot and blackleg.

**Aphids - (Green Peach aphid** (*Myzus persicae*) and **potato aphid** (*Macrosiphum euphorbiae*) and other types): The numbers were low up to the end of the third week in July, but the numbers increased rapidly in August. The cumulative numbers in August onwards were higher than the 2021 growing season, as the numbers spiked towards the end. During harvest of nearby crops there was an apparent surge in aphid numbers in potatoes. Green peach aphid and potato aphid are effective vectors of potato virus diseases, and can lead to downgrading of seed lots. Mineral /stylet oil with or without other insecticide is often used by seed growers to manage the PVY spread in seed potato crops.

**Aster leafhoppers** (*Macrostes quadrilineatus*) were seen often at the edges of a few fields late in the season. In one field the numbers were high enough to lead to purple top symptoms on 2-3% plants at the edge of the field.

## Vegetable Crops

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

**Aster leafhoppers** (*Macrostes quadrilineatus*) were trapped in insect sweep nets from a few carrot fields. Typical symptom of foliage purpling was noticed.

**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. Cauliflower roots also sustain root maggot damage but is less critical than the root vegetables because the harvestable part is not affected by the larvae. This is especially true in vegetable production farms near Portage la Prairie.

**Wireworms** (Elateridae): There was minor damage by wireworms to carrots, similar to last year. The problem is increasing with years.

**Spider mites** were a minor issue in tomato and cucumber crops in greenhouses / high tunnels.

## Fruit Crops

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

Strawberries- **pest grasshoppers** and **crickets** caused minor fruit and leaf damage at harvest time. Late summer and into early fall some fields with high levels of pest grasshoppers experienced extensive leaf damage. Some growers applied control applications of insecticide bait to ditches and headlands surrounding those fields.

Raspberry- Control was required for **spotted-wing drosophila** (*Drosophila suzukii*) (SWD). Growers not applying control applications for SWD experienced 30-50% yield loss while growers that applied repeated 7-10 day control applications during harvest had 10-20% yield loss.

Saskatoons- no insect issues other than **SWD** berry infestations resulting in 5-10% late harvested berries to be unmarketable. Most growers did not apply control applications for SWD.

Apple- some orchards experienced extensive leaf damage due to **pest grasshoppers** feeding resulting in near complete removal of all leaf material. Some growers applied control applications of insecticide bait to ditches and headlands surrounding those orchards to reduce populations.

## Stored Grains

Report from: Brent Elliott, Program Manager, Infestation Control and Sanitation, Canadian Grain Commission

Rusty grain beetle (*Cryptolestes* spp.) continues to be the dominant insect in Canadian Grain Commission findings on grain from the Canadian prairies for export, accounting for 90% or better of what they find. Occasional findings include red or confused flour beetles (*Tribolium* spp.), rice or granary weevils (*Sitophilus* spp.) and the lesser grain borer (*Rhyzopertha dominica*) making up the bulk of the rest of the findings in much lower numbers than *Cryptolestes* spp.

## Insects on Trees

Report from: Fiona Ross, Pest Management Biologist, Natural Resources and Northern Development, Winnipeg.

**Aerial Survey:** Manitoba conducted its annual aerial forest health survey across the province in 2022. This survey provides an overall picture of potential issues and an estimate of forest defoliation and damage. The main defoliators identified across the province were jack pine budworm and forest tent caterpillar.

**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, 2019, 2020. The population started to decline in 2021 with further decline seen via the aerial survey in 2022. In 2022, 673,851 hectares of defoliated jack pine budworm forest was observed across the Province. The trap catches and egg mass counts for 2022 are still being processed to determine where the population is building and where it is declining.

**Spruce budworm** (*Choristoneura fumiferana*): Small pockets of spruce budworm defoliation were observed in the northwest corner of the province in 2019. In 2022, 19,422 hectares of moderate and severe spruce budworm defoliation was seen across the province. Population indices based on trap catches and egg mass counts are still being processed, with results expected mid-November.

**Forest tent caterpillar** (*Malacosma disstria*): Small isolated pockets were observed; however populations are considered light across the province (151,956 ha).

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

Manitoba Agriculture 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 locations. All traps in Manitoba were found to be negative for the presence of emerald ash borer.

**Spongy moth** (*Lymantria dispar dispar*): A reproducing population was confirmed in 2020 with multiple life stages present. A management plan was conducted in the spring of 2021 consisting of three aerial applications of *Bacillus thuringiensis* (Btk) with the RM of Portage la Prairie. Monitoring will continue in the area for the next couple of years before eradication is considered successful.

**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 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 3,320 infected trees in 2022. These numbers do not include the City of Winnipeg which has its own independent program.