Manitoba Grasshopper Forecast for 2024

Twostriped (left) and clearwinged (right) grasshoppers

Grasshopper surveys have been conducted in Manitoba in various degrees of detail since 1931. The current grasshopper forecast is based on counts of grasshopper populations in August (which estimates the egg-laying population), weather data (which helps estimate whether those female grasshoppers present are capable of laying their optimum level of eggs), and recent trends in grasshopper populations. In some years, natural enemy populations may significantly affect the number of grasshoppers, or the number of their eggs that survive and hatch, and such data may be pertinent to the forecast as well. Counts are generally done in or alongside crop fields in Manitoba. The goal is to estimate levels of the four species of grasshoppers that have potential to be pests of crops in Manitoba.

Purpose of a grasshopper forecast

All stages of grasshoppers, except the egg stage, feed on plants. Some species will feed on crops, while other species do not, or rarely will. Older grasshoppers of these crop feeding species can do the most damage to crops, particularly later in the season as these grasshoppers can move greater distances. In annual cropping systems, the young stages of these species are often highly concentrated around field edges early in the season, particularly around fields that had sparse green vegetation late in the previous summer. If grasshopper populations get quite high, these younger, concentrated populations of grasshoppers are much easier to control than older and more dispersed populations later in the season.

Knowing the risk of grasshoppers being a problem alerts farmers and agronomists to the importance of monitoring field edges, vegetation surrounding the fields, and other preferred egg laying areas in late-May and June for these younger grasshoppers. This information can also help farmers choose crops and plan seeding practices for the following year.

December 2023

Manitoba

Interpreting the grasshopper survey map

The grasshopper survey map for Manitoba is based on counts of adult grasshoppers per m^2 done by crop production extension specialists, agronomists, and entomologists in August 2023. Grasshopper counts from 76 locations in Manitoba were used to produce the map. The legend on the map shows the average grasshopper counts in an area, and relates these to potential risk for many of our crops. Factors affecting grasshopper development, survival and behaviour will determine whether these August populations are likely to increase, decrease, or remain fairly stable for the next year and are also important factors in the overall forecast for 2024. The small circles on the map show where data was collected. White areas on the map are areas where data was not collected. Note that the averaging of counts in a region will result in a density category for a region representing the cumulative data, not the value from a specific count.

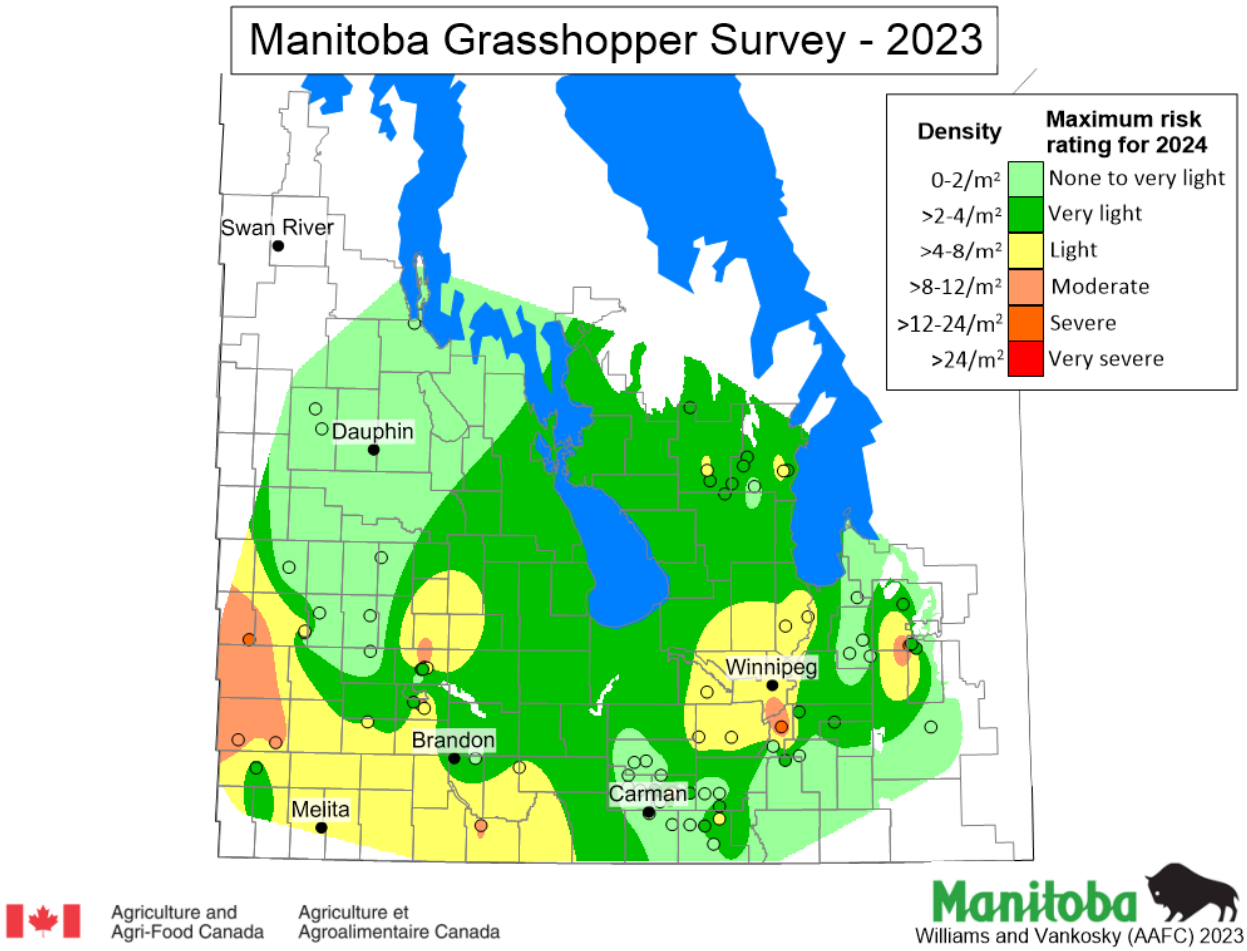

Figure 1. Average density of grasshoppers in Manitoba during August 2023.

The Grasshopper Forecast for Manitoba for 2024

What the grasshopper survey map shows

About 75% of the counts were in the none to very light or very light risk categories (57 out of 76 counts). Twelve count were in the light risk category (>4-8/m^2), 4 counts were in the moderate risk category (>8-12/m^2), and three counts were in the severe risk category (>12-24/m^2), two in the Eastern region and one in Southwestern Manitoba. There were no counts in the very severe risk category.

Table 1. Grasshopper counts in each risk category for each agricultural regions surveyed.

		Counts in Risk Category					
Region	**Counts**	**Very Severe**	**Severe**	**Moderate**	**Light**	**Very Light**	**None to very light**
Northwest	5	0	0	1	0	0	4
Southwest	21	0	1	3	4	5	8
Central	23	0	0	0	5	4	14
Eastern	15	0	2	0	0	5	8
Interlake	12	0	0	0	3	8	1
Total	**76**	**0**	**3**	**4**	**12**	**22**	**35**

Dominant species: While doing grasshopper counts, dominant species of grasshopper was recorded from 65 locations, with two different species listed as dominant at several locations. In 49 of these locations, twostriped grasshopper (*Melanoplus bivittatus*) was the most abundant, or one of the most abundant, species. Clearwinged grasshopper (*Camnula pellucida*) was the dominant species at 10 locations, 9 of these being in the Eastern or Interlake regions. Migratory grasshopper (*Melanoplus sanguinipes*) was a dominant species in 9 locations. Non-pest species of grasshoppers, such as katydids, were recorded as or among the dominant species at 11 locations.

Twostriped and migratory grasshoppers feed on a variety of types of plants (both crops and non-crop). Clearwinged grasshopper is primarily a grass feeder, and seldom feeds on broad-leaved plants.

Recent trends in grasshopper populations

Grasshopper outbreaks usually develop after a few years of conditions that are favourable for a steady increase in numbers of those species of grasshopper that can become pests of crops. Comparing the current August grasshopper counts with those of previous years can determine if the populations tend to be rising or falling.

Comparing the counts from the 2021, 2022 and 2023 surveys, in 2021 the percentage of counts in the survey that were in the moderate to very severe categories was 10.3%, while the percentage of counts in these categories was 16% in the 2022 survey, and 9.2% in the survey done in 2023. There continues to be areas where counts in some of the higher categories are occurring, but overall the number of higher counts was reduced in the survey in 2023, and the majority of counts were in the lighter risk categories.

Weather for the 2023 Growing Season

Temperature: Through May and June, all of Manitoba experienced well-above normal daily high temperatures and overnight lows. As of June 18, the entire province had accumulated more than 120% of the 30-year average of Growing Degree Days (GDD). Growing Degree Days remained above normal throughout the season.

Temperatures for all regions were near normal in August, and at least 3° C above normal in September. All regions had average GDD of over 140% of normal in September.

The first frost was not observed on a wide-spread scale until the first week of October.

Precipitation: Precipitation throughout the growing season was extremely variable and generally below normal across agro-Manitoba. Crop stress due to the lack of precipitation

early in the season was further enhanced by the exceptionally warm temperatures. Most rainfall observed through the growing season was in the form of isolated storms. Only a few weather stations received more than the 30-year average at any time during the season.

During the primary egg-laying period for grasshoppers (August and September), precipitation was generally below normal. In August, precipitation in the Central region were approximately 50% compared to the 30-year average, and average rainfall accumulations in the East and Southwest region were between 50% and 60% of normal. The Interlake and Northwest regions saw rainfall accumulations at 88% and 89% of normal respectively for the month of August.

In September, rain accumulations in all regions were below 70% of the 30-year average (1971-2000). The Northwest had the lowest precipitation accumulation of 37% of normal. However, the Central region saw an increase in precipitation in September with an average of 69% of normal.

Summary

Grasshopper levels remained high, and control was needed in many crops, and reported from all agricultural regions in 2023.

Conditions for egg laying in late-summer were generally good. Precipitation was generally low and temperatures above normal, allowing the grasshoppers to be active and laying eggs into late-summer.

Our pest species of grasshoppers all overwinter in the egg stage. Some insects, such as larvae of some species of bee flies and *Epicauta* species of blister beetles, feed mainly on grasshopper eggs. Field crickets, which feed on many things, will also feed on grasshopper eggs. All of these insects were quite noticeable in some locations of Manitoba in 2023.

The risk of economical populations of grasshoppers developing in 2024 varies, depending on location. The August survey showed generally light to moderate levels in many areas, but there continues to be areas where counts in some of the higher categories are occurring. If weather is favourable for grasshopper survival and development there may be areas where grasshoppers are a concern to crops in 2024. Even in some of the areas that had lighter counts in the survey, control was needed during the growing season.

When they have the opportunity, farmers and agronomists are encouraged to monitor grasshopper populations, beginning in late-May or early-June in 2024, along roadsides, field edges, and other areas where populations tend to be concentrated or at high levels early in the season.

For more information on the grasshopper forecast or monitoring for grasshoppers, please contact John Gavloski at (204) 750-0594.

The protocol for doing the grasshopper counts for this survey can be found at: https://www.gov.mb.ca/agriculture/crops/insects/pubs/grasshopper-survey-protocol-revised-july2023.pdf

A factsheet providing more information on grasshopper biology, species identification, monitoring and management is available at: https://www.gov.mb.ca/agriculture/crops/insects/pubs/grasshoppers-factsheet-revised-november2022.pdf

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