Issue 12 – August 8, 2024

Manitoba Crop Pest Update

Seasonal Reports Weekly Weather Maps Insects

Summary

Insects: Some control of **bertha armyworm** has occurred in several fields in Southwest Manitoba. Some evidence of diseased bertha armyworms has also been observed. A couple of canola fields in the Eastern region were sprayed for **Lygus bugs**. Lygus near threshold in sunflowers was reported from the Southwest region. A field of corn in the Eastern region was sprayed for **European corn borer**. **Aphids** are being noticed in some fields of peas (pea aphid), soybeans (soybean aphid), cereal crops (a complex of cereal feeding aphids) and on canola leaves in some area. Currently, in most instances these are not at economic levels, or the crops are beyond the more susceptible stages. Noticeable levels of predators of aphids, and evidence of parasitism, have also been reported in some areas. High levels of **thrips** in barley were reported from the Northwest region. Some damage from **sunflower midge** was noticed along the edges of a sunflower field in the Eastern region.

Disease: There are many observations of field crop disease flowing in from agronomists across the province. Some are from our annual Crop Disease Surveys. Others are from late-season scouting to document potential causes of reduced yields at harvest. We are now beyond crop development stages (except in potatoes) where fungicides could be considered; it important that they not be used to avoid residues in harvested grain.

Weeds: Crops are rapidly maturing across the province, and we see lots of green, actively growing weeds that will hamper harvest. Desiccation and preharvest weed control operations have begun in many areas, be sure to follow proper staging for each product. Confirm the product you are using is registered for use on that crop and acceptable to the buyer. Keep scouting for waterhemp and/or Palmer amaranth as they can be very tall (6-8 feet or more) and will be noticeable in most crops. Stop and investigate any large weeds or plants that look similar to red root pigweed. Where weeds are known to be herbicide resistant, do not put them through the combine and spread seed around. Instead mow out resistant patches or combine later to prevent weed spread.

Entomology

Bertha Armyworm

Note when scouting for bertha armyworm larvae, that there can be different colour morphs. This photo shows some of these variations in colour the larvae can have.

Colour morphs of bertha armyworm

For information on the biology, monitoring, thresholds and management of bertha armyworm see: bertha-armyworm-factsheet.pdf (gov.mb.ca)

Report compiled by John Gavloski, David Kaminski, Kim Brown
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European Corn Borer

When scouting for European corn borer there are several things to be watching for. These include egg masses, larvae, feeding from the young larvae (often referred to as pinhole damage), and broken tassels or stems. The following photos capture a few of these. Note that there are things other than European corn borer that can cause stem breakage in corn, so it can't be assumed that if stems are broken European corn borer was the cause.

Photos by Jason Voogt – Field 2 Field Agronomy

For more information on European corn borer including tips on scouting, see: european-corn-borer-factsheet.pdf (gov.mb.ca)

Note when scouting for European corn borer that data and observations can be entered into a Survey123 app, which tracks the host crop, distribution and relative abundance of European corn borer. Aside from corn, European corn borer can also be found in potatoes, hemp, quinoa, millet and many other plants.

Curious What Insects are in Your Stored Grain?

Ever wonder if, and what, insects may be in your stored grain? Entomologists from Agriculture and Agri-Food Canada in Winnipeg are monitoring insects in stored grain bins and trying to determine what insects are present. They are in need of bins to take samples from for this research and looking for volunteers. The benefit to you as a farmer or agronomist is that you will have your grain sampled and get a report back on what, if any, insects were found in your grain. Sampling will be done in September and October. Three traps will be placed inside the bin and two outside the bin. Traps will be collected two weeks later. Anyone interested in participating in the survey can contact Sheila Wolfe at 204-292-3711 or sheila.wolfe@agr.gc.ca.

The following link provides some additional details on the project:
https://docs.google.com/presentation/d/1mQB7d4HQcVY4x5X8_OBvuiBZ36xyav-QR8ybTKtaZV0/edit?usp=sharing

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Plant Pathology

Diseases in Soybeans

White mold on stem of soybean.
Credit – Jennifer McCombe-Theroux (MPSG)

Last week we mentioned Sclerotinia and the many crops that it can infect. Although soybean is less prone to infection, and only rarely suffers yield loss, it is a host. Where moisture is maintained under a dense canopy the fungus can colonize flower parts and work its way into stems and pods.

The most common leaf diseases that we see in soybean year over year are bacterial blight and Septoria brown spot. We are always on the lookout for other diseases that have become economic problems elsewhere. One of those is frogeye leaf spot; Laura has captured a striking and diagnostic symptom – angular spots with dark margins and pycnidia within the necrotic part of the lesions. She also saw another heretofore less common disease – pod and stem blight caused by Diaporthe, another fungus that produces spores from pycnidia.

Frogeye leaf spot (left) and Diaporthe stem canker (right) on soybean.
Credit – Laura Schmidt (MPSG)

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Ergot in Spring Cereals

Two weeks ago, I suggested we watch for an uptick in the prevalence of ergot in spring cereals, considering the frequent rainfall during anthesis. That has been evident in some of the fields being surveyed for FHB. The pattern of distribution has been mostly the classic field edges concentration. Growers might consider delaying harvest of the headlands to allow winds to shake ergots from standing grain and/or harvest and bin those areas separately.

Ergot bodies in spring wheat.
Credit – Callum Morrison

Glume Blotch

One of our summer students, doing Fusarium head blight survey in the Southwest region, came upon wheat heads with glumes showing purplish brown discoloration. This is not FHB but a head manifestation of the Septoria complex (*S. nodorum*) known as glume blotch. I saw the same in a wheat field in the Eastern region a week ago and, with the abundance of leaf spots from the Septoria complex in late June, we can expect glume blotch to be widespread.

Glume blotch on wheat caused by *Septoria nodorum*.
Credit – Taylor Hudon

Aster Yellows

Finally, a quirky one. You've probably all seen aster yellows in canola. But have you ever encountered it in sunflowers? The effect is the same – phyllody – a term that describes when flower parts are malformed and appear more like leaves. It's the same pathogen which is vectored by aster leafhoppers. In sunflowers, the symptoms on heads may be confused with another head malformation caused by insect feeding.

Aster yellows causing phyllody on both ray flowers and disc flowers in sunflower. Credit – Jody Jury

Aster yellows on canola

Weeds

Desiccation and Pre-harvest Weed Control

Preharvest applications are underway, are you wanting crop drydown, perennial weed control or both? The following table of registered products is from the 2024 Guide to Field Crop Protection:

Table 17. Herbicides for Use as Harvest Aid or Desiccant Before Crop Harvest

HERBICIDE	Page	Herbicide Mode of Action Group	Alfalfa	Barley	Canola	Chickpea	Dry bean	Faba bean	Forage	Field Pea	Flax	Lentil	Oat	Potato	Soybean	Sunflower	Wheat
Advantage Glufosinate Plus	108	4,10			✓[9]												
Beloukha	136	26		✓									✓	✓			✓
Carfentrazone[3,4]	163	14		✓		✓	✓	✓		✓			✓	✓	✓		✓
Diquat[3,5]	207	22			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	
Glyphosate[1,2,6]	273	9		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓
Heat Brands[3,4]	286	14		✓[8]	✓	✓	✓	✓		✓		✓[7]			✓	✓	✓[8]
Glufosinate 150SN	267	10	✓									✓[6]		✓[6]			
Valtera[3]	488	14				✓	✓			✓		✓					✓

[1] Rates of application vary among brands. Consult glyphosate page for specific application rates. [2] For pre-harvest perennial weed control and may provide harvest management benefit. [3] For rapid plant tissue dry down to facilitate harvest. [4] Should be tank mixed with glyphosate when used prior to harvest. Not for crops grown for seed when glyphosate used. [5] Refer to product page for surfactant requirements. [6] Not for crops grown for seed. [7] Red lentil only. [8] *Heat LQ* only. [9] For use only on Roundup Ready canola with the pod shatter reduction trait.

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Glyphosate can be applied for pre-harvest perennial weed control when grain moisture is less than 30%. Wheat, barley, oats and canaryseed need to be at hard dough stage, where a thumbnail impression stays indented. Canola and mustard pods should be green to yellow, most seeds yellow to brown. The majority (75-80%) of pea pods should be brown and for flax the majority (75-80%) of bolls should be brown. Faba beans and dry beans must have stems that are green to brown in color, pods are mature (yellow to brown in color) and 80-90% of leaves have dropped. Glyphosate can be applied to 3 to 7 days prior to the last cut before forage renovation. Some glyphosate products can be applied by air for certain preharvest treatments, consult the manufacturer for current aerial preharvest registration status.

Use the thumbnail test to determine if a kernel is ready for pre-harvest glyphosate application. **This test method applies to all Cereal types.**

This photo is from the Keep It Clean website and shows the appropriate staging for pre-harvest glyphosate application in cereals. Application prior to hard dough stage will lead to unacceptable levels of glyphosate residue in the seed.

Heat brands can be applied for harvest aid/desiccation at similar staging to glyphosate, they speed the rate of drydown of crops and green weedy material. Heat brands can be sprayed alone, or tank mixed with 1 REL glyphosate, when tank mixing always use the most restrictive staging. Wheat and barley need to be at hard dough stage (Zadok's growth stage 87), seeds must be less than 30% moisture. Apply to canola when 80% of seeds have changed color and to peas when the majority of pods are brown (70-80%). For dry beans the stems should be green to brown, pods are mature (yellow to brown), and 80-90% leaves have dropped. Fabas can be sprayed with Heat brands when 80% of lower pods turned black, middle pods turned yellow/tan, and top green pods have firm seed. Apply to flax when 75% of the bolls have turned color. Heat brands can be applied by air for desiccation use only.

Reglone (diquat) is used to dry immature green material at the top of indeterminate crops and green weeds to facilitate harvest. Diquat acts very quickly so do not apply earlier than recommended staging. Spray canola when 90% or more of the seeds are brown, and mustard (condiment type only) when 75% of the seeds have turned brown. Apply to peas when bottom pods are ripe and dry, and seeds are detached from pods. Use Reglone on flax when 75% of bolls are brown. Dry beans (red and white kidney) can be sprayed when 80-90% of leaves are lost, and 80% of pods are yellow. Apply to faba beans when most plants are ripe and dry, pods are fully filled, and bottom pods are black or tan in color. Forage crops for seed production (alfalfa, bird's foot trefoil, alsike clover and white clover) can be sprayed when pods are ripe but before shattering. Reglone can be applied by air in a minimum of 18 L per acre water volume.

Applying any product earlier than the labelled stage will result in reduced yield and quality. Confirm with all buyers or potential buyers which preharvest products can be used on your crop. Consult the product pages in the 2024 Guide to Field Crop Protection guide-crop-protection-2024.pdf (gov.mb.ca) and refer to the product labels for more details.

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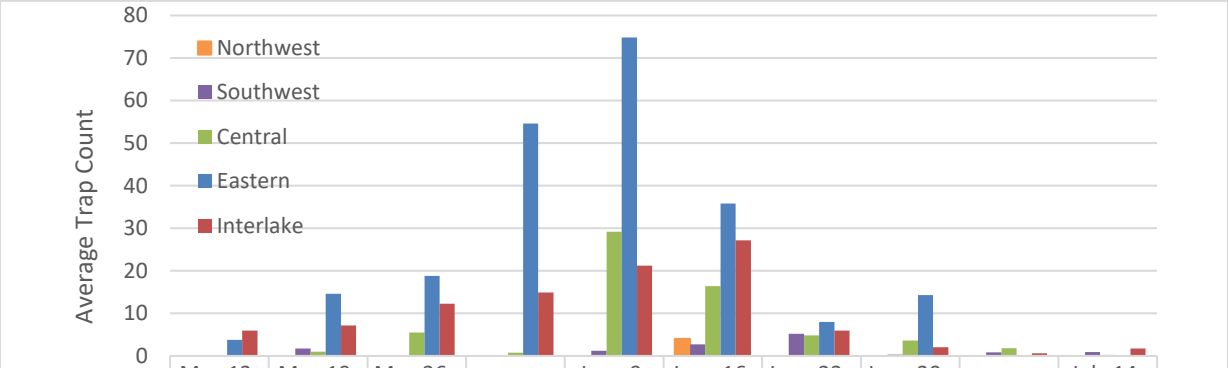
Forecast

Armyworms

The pheromone trap-based monitoring for true armyworms in now done for this year. Counts were relatively low in the western regions of Manitoba, with some moderate cumulative counts in the Central region. Some higher cumulative counts occurred in some of the traps in the Eastern and Interlake regions, mainly from moths collected in the traps in June. Counts gradually got higher over a few week period in the Central, Eastern and Interlake regions, generally increasing and peaking during a three week period from about June 2 – 22 (see Figure 3). Late-June counts for these regions were lower, as were counts in July.



	May 12-18	May 19-25	May 26 - June 1	June 2-8	June 9-15	June 16-22	June 23 - 29	June 30 - July 6	July 7-13	July 14-20
Northwest	0	0	0		0	4.00				
Southwest	0.10	1.73	0.17	0	1.25	2.73	5.20	0.33	0.86	0.89
Central	0	1.00	5.50	0.80	29.20	16.40	4.80	3.60	1.80	0.25
Eastern	3.80	14.60	18.80	54.60	74.80	35.80	8.00	14.33		
Interlake	5.94	7.13	12.25	14.94	21.25	27.13	5.94	2.06	0.60	1.75

Figure 1. Average weekly trap counts for true armyworm per agricultural region in Manitoba

Highest counts in each region of Manitoba and a monitoring summary are updated weekly on the Insect Page of the Manitoba Agriculture website at: https://www.gov.mb.ca/agriculture/crops/insects/pubs/true-armyworm-trap-results-2024-08-07.pdf

A map showing armyworm counts from Manitoba, Eastern Canada, and several Northeast U.S. states is available at: https://experience.arcgis.com/experience/7164d23d488246d198dcf7a07d8c9021/page/Home/?views=Welcome. Go to the link "TAW". The "Play" button at the bottom can be set so the map automatically advances (click middle arrow), or set to "Stop" and the arrows at either side of the button used to go forward or backward a week at a time.

Bertha Armyworms

The population of adult moths of bertha armyworms were monitored during the flight and egg-laying period in June and July using pheromone-baited traps. The trapping for this year is now complete**.** Counts remain in the low risk category in most traps, although in a trap near Killarney and a trap near The Pas the cumulative counts were in the uncertain risk category. Cumulative counts were generally higher in the western part of Manitoba. Trap counts peaked this year in mid- to late-July (see Figure 2 below).

Bertha armyworm moths were found in 79 out of 82 traps that counts were reported from. The highest cumulative trap count was 365 from a trap near Killarney in the Southwest region.

Larvae of bertha armyworm are being found in some areas, and there has been some control in Southwest Manitoba, so make sure to look for feeding from and larvae of bertha armyworm when scouting canola fields.

Table 2. Highest cumulative counts of bertha armyworm (*Mamestra configurata*) in pheromone-baited traps for five agricultural regions as of August 3, 2024.

Region	Nearest Town	Trap Count
Northwest	The Pas North	308
	The Pas East	100
	Bowsman North	90
	Grandview	79
	Durban	75
Southwest	Killarney	365
	Decker	218
	Birtle	213
	Cypress River	174
	Whitehead	159
Central	Horndean	76
	Morris	64
	Haywood	63
	Altona	60
	St. Joseph	58
Eastern	Whitemouth	56
	Stead	52
	Beausejour	37
	Tourond	20
	Ste. Anne	17
Interlake	Silver Bay	115
	Teulon East	110
	Rockwood	101
	Pleasant Home	84
	Lundar	83

0-300 = low risk
300-900 = uncertain risk
900-1,200 = moderate risk
1,200+ = high risk

← Highest cumulative count

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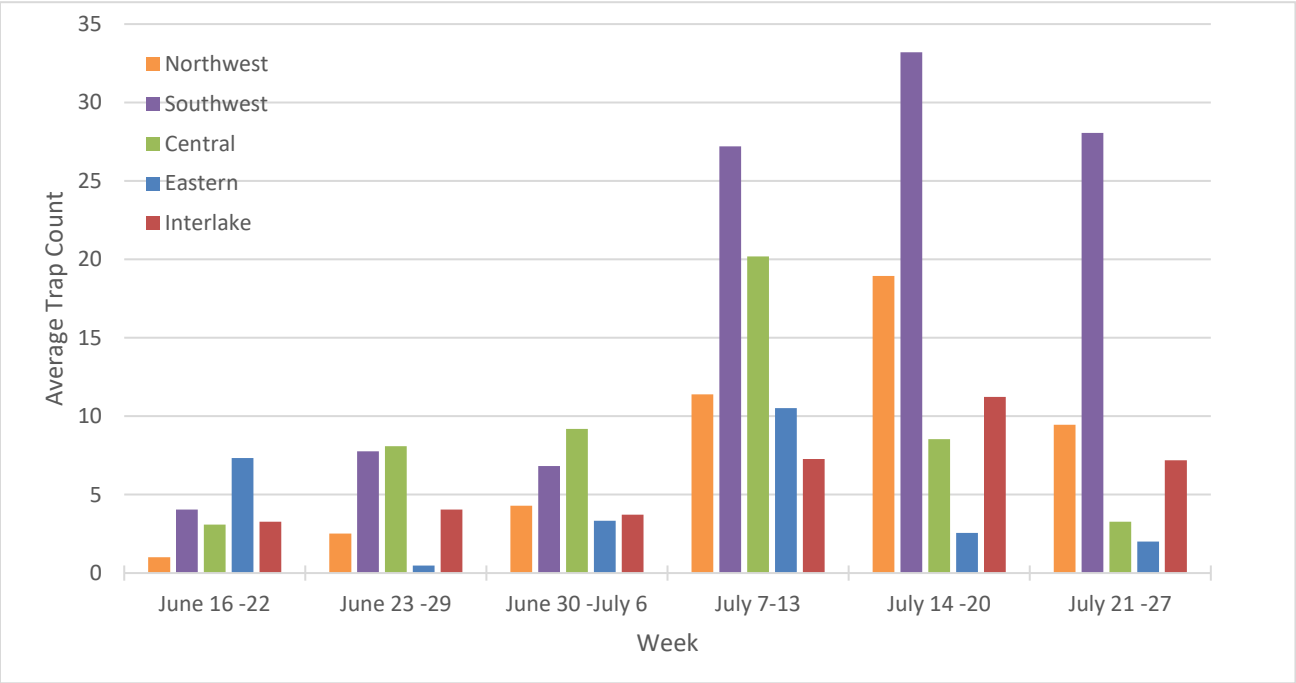

Figure 2. Average weekly trap counts for bertha armyworm per agricultural region in Manitoba.

Highest counts in each region of Manitoba and a monitoring summary are updated weekly on the Insect Page of the Manitoba Agriculture website at: bertha-armyworm-monitoring-2024-08-08.pdf (gov.mb.ca)

Information on the biology of bertha armyworm and monitoring larval levels can be found at: https://www.gov.mb.ca/agriculture/crops/insects/pubs/bertha-armyworm-factsheet.pdf

Grasshopper Survey

A reminder for those participating in the grasshopper survey that counts are done during August, when the majority of grasshoppers are in the adult stage.

Agronomists and farmers who would also be interested in estimating grasshopper numbers in or around the fields they are in, and having this information included in the survey, are encouraged to see the survey protocol (at the link below) for more details of the survey and where to send data. Your counts would be welcomed.

Data from the survey, along with weather data during the egg laying period of the grasshoppers, will be used to produce a forecast for 2025.

The protocol and data sheet for the grasshopper survey is at: grasshopper-survey-protocol-revised-2024-07.pdf (gov.mb.ca)

Identification Quiz

Question: These dead grasshoppers were noted clinging tightly to the top of the plants. What happened to these grasshoppers?

Answer: These grasshoppers were infected with a fungal pathogen commonly called summit disease.

Summit disease is caused by a naturally occurring fungal pathogen called *Entomophaga grylli*. The genus name *Entomophaga* describes the focus of these fungi: "entomo" refers to insects and "phaga" means "to eat". While species of *Entomophaga* that are pathogens of aphids and moths exist, *E. grylli* is specific to grasshoppers.

Grasshoppers become infected from spores that stick to their bodies as they seek food. The spores germinate and penetrate the grasshopper's cuticle, then the fungus multiplies in the blood and grows on internal organs. Symptoms normally do not appear until advanced stages of the disease. Prior to death there may be general restlessness, coordination may be reduced, and feeding may stop. Just before death, infected grasshoppers climb to the top of the plant canopy and die with their legs wrapped tightly around the plant. This is how the infection gets the name summit disease. Around the time of death, the grasshopper's body is full of several million spores. The fungus causes the climbing behaviour to ensure widespread dispersal of these fungal spores. Following death, the abdomen may swell to almost twice its original size and often will curl upwards and forwards. The grasshopper's body becomes soft and is easily broken up if disturbed. The grasshopper's tight grasp on the plant ensures that the corpse will remain high on the plant for several days until the body dries out and falls apart after having been digested and consumed by the fungus. As the grasshopper disintegrates, millions of fungal spores are spread on the ground, germinate, and produce more sticky spores, thus spreading the disease.

Summit disease can help control grasshoppers under warm, humid conditions. It is capable of causing high mortality in grasshopper populations, but these outbreaks of the disease are usually sporadic and localized and generally occur late in the season after economic damage from grasshoppers has occurred. Regardless, the reduced grasshoppers, and reduced grasshopper egg laying caused by summit disease can be an important component reducing high populations of grasshoppers.

To **report observations** on insects, plant pathogens, or weeds that may be of interest or importance to farmers and agronomists in Manitoba, please send messages to one of the following Manitoba Agriculture Pest Management Specialists.

John Gavloski, Entomologist (204) 750-0594 David Kaminski, Field Crop Pathologist (204) 750-4248
Kim Brown, Weed Specialist (431) 344-0239

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