

Manitoba Crop Pest Update

Issue 6: June 26, 2019



Summary

Insects: Cutworms continue to be a problem in some areas, although we are getting to the end of their damaging stage for this year as many have now turned to pupae. Samples and submitted photos this week were mainly redbacked cutworms. Some management of grasshopper nymphs around field margins continues.

Diseases: Suddenly it seems everyone's thoughts are turning to disease management. Given this crop year's slow start and generally dry conditions, the "to spray [fungicide] or not to spray" decisions loom large. Some crops are also "stagey", that is, non-uniform. When timing precision is key, the decision making is hard. Where do you turn for credible assistance in decision making?

Weeds: Most of the first pass of weed control is complete, with some efficacy issues due to staging of the weeds or of the crop. For those that have received moisture, and have good yield potential, second pass weed control may be necessary. Economics rather than revenge need to be the rationale for a second pass. The real show stopper this week is the challenge of controlling **tall waterhemp**.

Entomology

Grasshoppers: Some of the questions this week have been regarding grasshopper monitoring and thresholds. Grasshoppers levels can be tricky to estimate and thresholds are often nominal. Here are some guidelines that may help.

Metre-square counts: Many agronomists use "metre-square" counts to assess grasshoppers in and around fields. This is simply an estimate of the number of grasshopper nymphs that jump from a square metre area as you walk towards it. To do the counts, view about a square metre of plants about 5 paces ahead of you. As you slowly approach this point, count the number of grasshoppers that leap from the designated area.

Exact counts are not always possible, especially when grasshopper numbers are high. Estimating approximate numbers, or a range, as accurately as you can is the best that can be done. Once at the metre-square area, count the remaining grasshoppers, which can be detected by disturbing the plants in the area with your feet to encourage any grasshoppers still present to jump. Do a set of 5 of these counts to determine the mean number of grasshoppers in an area. Do not walk in a straight line when doing a set of these counts. This causes fleeing grasshoppers to "pile-up" in front of you, resulting in overestimations of levels. Instead, continually change the angle of your path

through the sample area. Sample other areas in or around the field as needed and note or map areas of higher populations.

Sweep net sampling is useful in determining the stage (instar) and species makeup of grasshopper populations. A standard 15-inch diameter sweep net, with heavy cloth netting, should be used. This information can be used to optimize treatment timing, should it be needed.

Economic Thresholds: The numbers in the chart below represent guidelines for when it is economical to control grasshoppers. Some of the categories in the table below are vague, stating “not usually”, or “may be” required. This is where some judgment of the situation is required. The value of the crops bordering or near the area being assessed, the growth stage of the crops, and additional stresses on the crop (such as drought) need to be considered.

Control	Field Number/m ²	Roadside Number/m ²
Control not usually required	0-6	0-12
May be Required	7-12	13-24
Control usually Required	13+	25+

There are a few crop specific thresholds, such as for lentils and soybeans, that can be used. These will be covered in future updates. For now, these techniques and guidelines can be used to assess whether grasshopper populations along field margins may benefit from control.

Insects in Perennial Grasses: The insect in the photo below was reported to be numerous in perennial ryegrass seed fields. What is this insect?

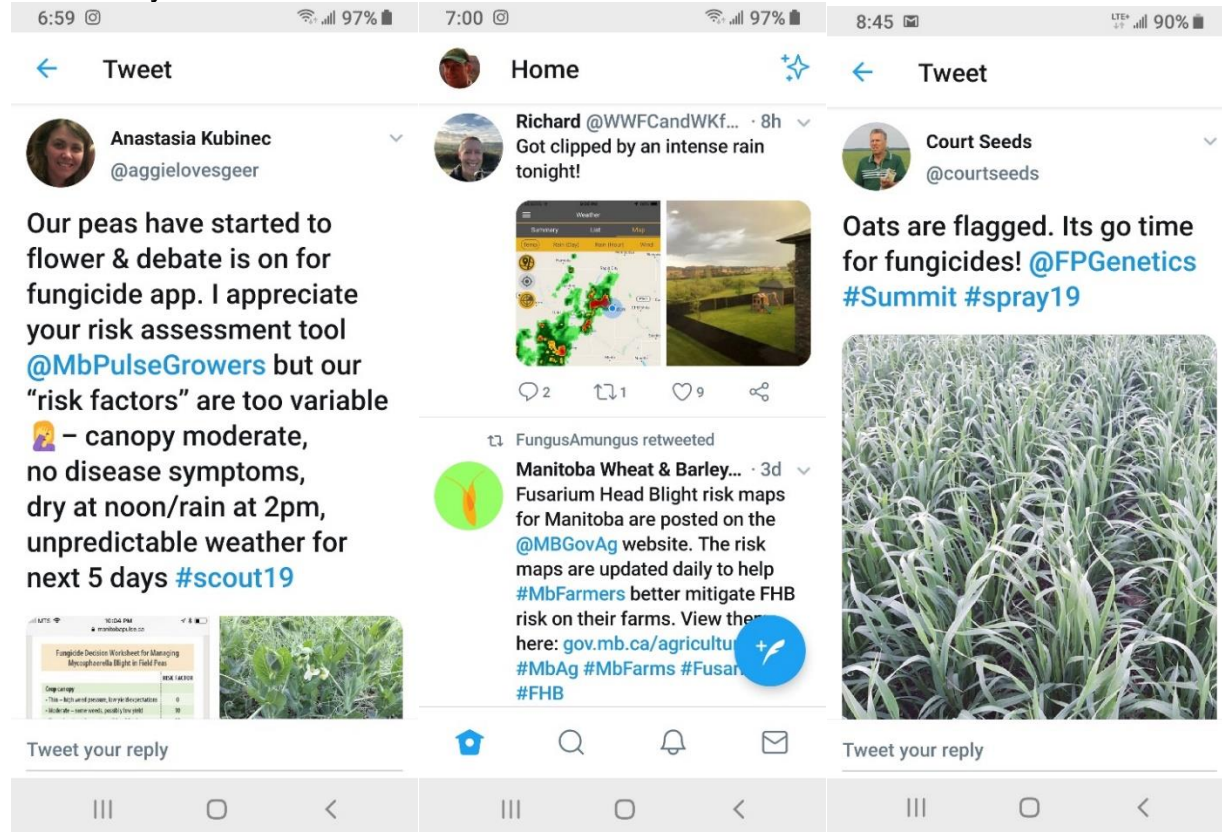


Photo by Allan Wilson, Brett Young
Seeds

This is the green grass bug, *Trigonotylus coelestialium*. It is sometimes also called rice leaf bug. These do feed on the sap of grassy plants. They are not considered to be a pest of forage grass production. They may be one potential cause of a condition known as silvertop (white, sterile seed heads), which potentially can be an issue in perennial grass seed production. I'm not aware of there being any economic threshold for them though.

Plant Pathology

Here are three tweets that hit me one morning this week as I prepared for work. The first is from a grower struggling with the complexity of the disease management puzzle. The second is from an agronomist keenly aware of the hit and miss nature of rainfall in this growing season. And the third is from a seed grower, suggesting a prophylactic approach to fungicide application. They illustrate the immediacy of agronomic data in the era of social media and the diversity of decision-making philosophies in the Ag community.



Times have changed but the need for sober second thought has not.

A weekly publication like this one should help you anticipate what's ahead. We consult with MB Agriculture's field agronomist to get a sense of what growers are experiencing and concerned about. Here are some examples:

Ingrid

Nothing much to report, possibly some tan spot or Septoria. ... some are still putting the half rate [propiconazole] in with herbicide. Staging for FHB is going to be a big challenge. ... some are thinking that the leaf margin and tip browning on cereals is disease, and are looking at fungicides. ... it's mostly environmental - wind damage, frost damage.

Half rate would be in the range of \$1.88-\$2.11/acre. ... that's why that practice is still around. It's not even the "it's only \$5/acre" story. ... just speaking with a local agronomist about an oat field - from the photo, ... it was either wind damage or bacterial blight - and new growth looks fine, so it may have been that wind a couple of weeks ago.

Lionel

Starting to see some leaf disease showing up in cereal crops and the question in some cases is the crop worth spraying for leaf disease now or is it best to wait for Fusarium application.

Rejean

Recent rains have dramatically changed the moisture conditions over the last ten days with significant rains above the escarpment and going west progressively wetter with standing water in fields visible in the Cartwright-Killarney area. Disease pressure will be higher and field access with machinery may be a challenge due to those wetter field conditions.

Today's farmers are faced with great challenges in pest management decision-making. They sift through a ton of information daily and test the credibility of their sources all the time. Agronomists and specialists like us are here to back them up.

Now, here's a special guest contribution, pertinent to the careful diagnosis of abiotic disease.

Back tracking stresses in the crop

John Heard, Crop Nutrition Specialist

Recently on a field call we observed this leaf discoloration on corn (Figure 1). It is not disease or nutritionally related, but response to a stress – perhaps cold, heat, sunlight, spray? And it likely occurred some time ago when the crop was younger.

It differs from the many other traditional corn leaf discolorations commonly observed this time of year in Manitoba and discussed at length in <http://cropchatter.com/corn-concerns-curiosities/>

One way to track back to the stress is to use knowledge of crop growth stages and heat accumulation or growing degree days (GDD). This corn has advanced about 2 leaf stages from when the presently discolored leaves were new leaf tissue, just emerging from the young whorl. Now it takes about 85 GDD (base 10C) for each corn leaf to develop¹. And one can access free local daily weather station data², in this case from Elm Creek. So when did the stress occur?

- Current GDD on June 24 = 493
- Less 2 leaves x 85 GDD = 170

493-170 = 323 GDD

Some 323 GDD had accumulated by June 9. But on June 12, with 340 GDD, station nighttime temperatures dipped to 2C, with frost in low lying areas.

So this light frost probably caused the leaf scorching, which the crop has since grown out of.

This is an example of using one's knowledge of crop growth stages and our weather network to solve crop mysteries.



Figure 1

¹Bob Nielson. 2019. Predict leaf stage development in corn using thermal time.

<https://www.agry.purdue.edu/ext/corn/news/timeless/VStagePrediction.html>

PS – Bob will be a featured speaker at MAC this November

²Manitoba Agriculture. Weather and Reports. Daily Summary

<https://web43.gov.mb.ca/climate/DailyReport.aspx>

Weeds

What is this weed? The tentative, but confident identification is tall waterhemp - in Manitoba. The samples will be sent away for genetic confirmation, but the key identifiers are consistent with tall waterhemp.



Waterhemp suspects in the RM of Reynolds. Faint yellowing of the growing point is likely due to Atrazine applied prior to seeding, and glyphosate has had little or no impact on the growth of this population.

smoothness in comparison to the rough stem or reedroot pigweed). The leaves of waterhemp are longer and more narrow (lanceolate) than reedroot pigweed (ovate), and tend to have a glossier/shinier appearance than reedroot pigweed. Tall waterhemp is a Tier 1 Noxious Weed in Manitoba. That means that there is the legal requirement to **destroy** the plant. In addition to chemical control, the survivors or subsequent flushes need to be destroyed and the site needs to be monitored for several years, as the seed can persist. Reporting suspected sights is important, not only for confirming identification, but also management planning and future monitoring.

This is not a weed to ignore. One plant can produce 200,000 – 500,000 seeds which means an explosion in the population in just one year. Many populations of waterhemp are resistant to different herbicides, including glyphosate. The costs of destruction once the population has exploded is almost as exponential as the population. Asking for identification early is so important.

Future management also means that equipment that goes into infested areas are thoroughly cleaned at the site and that all parts of the plant are destroyed at the site with no transportation to any other area. Seed last, harvest last, this is another type of situation where biosecurity protocols are relevant – to slow the spread and mitigate the risk.

Herbicide options for waterhemp are important but limited especially in certain cropping systems. Herbicide resistance patterns in the Manitoba populations are not known (based on herbicide applications to date, there is likely resistance to Groups 2,5 and 9, and those herbicides that are registered for suppression or control reedroot pigweed in Manitoba may not provide control of the more aggressive waterhemp).



Varying levels of suppression with Viper ADV on tall waterhemp in soybean in Manitoba.

Testing for Herbicide Resistance

Each year there are herbicide failures, and sometimes it's easier to blame herbicide resistance than something else. One call this spring was glyphosate and lamb's quarters. This particular patch of weeds has been a problem for a couple of years and it made sense that it could be herbicide resistance. As a quick test, I transplanted some lamb's quarters from a field after a glyphosate application, and resprayed. The grower may collect seed this fall to do more testing, but this looks more like an environmental issue than herbicide resistance.



Six days after spraying, lamb's quarters is controlled with glyphosate. There is no evidence of herbicide resistance.

When scouting for herbicide resistance, look for:

- patches that don't match spray patterns;
- areas where most weeds are dead, but a few survivors have prevailed and/or;
- varying levels of response to the herbicide within similar sized weeds



Photo credit: Allison Rasmussen – Technical Sales Agronomist, Corteva

<This smartweed is suspected of Group 2 resistance based on varying responses to herbicide application even though they are similar in size and very close in proximity, so unlikely to be a spray miss. Group 2 resistance does exist in pale smartweed in Manitoba, so there will be more investigation to try to confirm herbicide resistance. Obviously there are smaller weeds that have emerged after the spray application and would not be part of the assessment.

>This lamb's quarter's has survived herbicide application by protection from the crop, not due to herbicide resistance while the redroot pigweed was controlled.



Forecasts

Entomology:

Diamondback moth. A network of pheromone-baited traps are monitored across the Canadian prairie provinces in May and June to determine how early and in what levels populations of diamondback moth arrive.

Reminder: After counts are done for the week of June 23rd to 29th the trapping period is done and traps can be pulled.

Table 1. Highest cumulative counts of diamondback moth (*Plutella xylostella*) in pheromone-baited traps for five agricultural regions in Manitoba as of June 26, 2019.

Region	Nearest Town	Trap Count
Northwest	Bowsman	369
	Bowsman	320
Southwest	Shilo	43
	Justice / Carberry	31
Central	Roland	69
	Elm Creek	64
Eastern	Steinbach	258
	Tourond	108
Interlake	Balmoral	419
	Teulon	340

Some traps in the Northwest, Eastern, and Interlake regions have some higher numbers. Of particular note, some traps in the Interlake and Northwest regions have cumulative trap counts over 300 moths. When canola in this region is being scouted make sure to look for diamondback moth larvae.

The first generation of diamondback moth larvae will be feeding on canola in the rosette and bud stages. This first generation is usually not of economical concern unless levels are extremely high. It is later generations that are feeding when canola is in the podding stages that have the greatest potential to be economical.

Bertha armyworm. A network of pheromone-baited traps are monitored across the Canadian prairie provinces in June and July to determine levels of bertha armyworm adult moths, and forecast risk of there potentially being economic levels of larvae somewhere in the region. The traps do not determine risk for the field specifically that the trap is in.

Table 1. Highest cumulative counts of bertha armyworm (*Mamestra configurata*) in pheromone-baited traps for five agricultural regions in Manitoba as of June 26, 2019.

Region	Nearest Town	Trap Count
Northwest	Ste. Rose	232
	Minitonas	82
Southwest	Souix Valley	15
	Elgin	15
Central	Halbstadt	74
	Altona	34
Eastern	Beausejour	34
	River Hills	23
Interlake	Balmoral	8
	Arborg	7

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

So far trap counts are all in the low risk range, with highest counts being in the northwest.

Identification Quiz:

Question: There seem to be a lot of these beetles around this year and some are wondering what they are. Clues – it is a black beetle that has the potential to cause blisters.



Answer: This is a species of blister beetle called the black blister beetle, *Epicauta pennsylvanica*.

They are generally not economical in field crops, and do have a good side - larvae of blister beetles in the genus *Epicauta* feed on grasshopper eggs.

There are 19 species of blister beetles in Manitoba.

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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 the above contacts.

To be placed on an **E-mail list** so you will be notified immediately when new Manitoba Crop Pest Updates are posted, please contact John Gavloski at the address or numbers listed above.