Manitoba Crop Pest Update
Issue 8: June 30, 2021

Manitoba Agriculture

Summary

Insects: Levels of grasshopper nymphs are high in some areas. Alfalfa weevil is a concern in some alfalfa fields, with some fields having been cut early and insecticides applied to some fields to manage them. Aphids have been controlled in some cereal fields in the Eastern region.

Diseases: Questions of the week:

1. What's happening with development of bacterial blights in oats and field peas?
2. Has crown rust been seen in oats?
3. Is it worth spraying fungicide for Sclerotinia in canola?
4. FHB – Is crop susceptible after flowering complete?

To answer question 3 – check out the risk calculator on our website, here.
The short answer to question 2 – No. you may yet see some surface mycelium if it gets warm and humid but you should not see Fusarium damaged kernels (FDK), the determinant of yield and quality losses.

Weeds: Recent windy weather while spraying has caused some drift issues. See yesterday's Crop Report for more information if you have a drift issue that needs to be dealt with. Herbicide spraying has almost wrapped up, with second sprays going on canola, corn and soybeans. Watch your staging, glufosinate (Liberty) can be applied up to early bolting in canola and 8 leaf stage in corn. For glyphosate-tolerant canola, Genuity (original) can be sprayed to 6 leaf stage while TruFlex can be sprayed to first flower (where 50% of plants in the field have no more than 1 flower). Glyphosate-tolerant corn can be sprayed to 8 leaf stage and soybeans can be sprayed to flowering stage. Continue post-spray scouting to evaluate the effectiveness of the herbicides you used this year, and monitor weed escapes. Plan to reduce seed set where weeds have not been controlled.

Entomology

Pollinators on canola – What are the benefits?
In previous years we have discussed in the updates how pollinators can improve the yield of canola, and reduce the time the crop spends in bloom. A factsheet was produced summarizing this information:
https://www.gov.mb.ca/agriculture/crops/insects/pubs/beesoncanolafactsheet.pdf
New research in Alberta is showing that the effects can go beyond higher yields and reduce time in the flowering stages. Pollinators reduced some of the negative effects of drought, regardless of whether the drought was during the vegetative or pod-filling

stages. Pollinators shifted peak flowering so it occurred earlier. Get the full details on this at the Canola Research Hub: https://www.canolacouncil.org/research-hub/

Take-home message for canola growers and agronomists: Unnecessary applications of broad-spectrum insecticides to flowering canola can be costly, well beyond the cost of the insecticide. If pest insects do seem to be building during the flowering stages in canola consider taking the following steps:

1) Use economic thresholds when available, and avoid unnecessary applications.
2) Use a selective insecticide that will not harm pollinators where options exist.
3) Spray in the evening, when some pollinators, such as bees, would not be foraging.
4) If there are beehives nearby, make sure to contact the beekeeper.

Wheat Midge Emergence and Scouting:

Emergence of wheat midge is now underway, and it is that time when wheat that is not midge tolerant varieties and is in the heading to flowering stages should be assessed for wheat midge.

Wheat stages to scout: Wheat heads are most susceptible to damage when egg laying occurs during heading, Zadoks growth stages 51 (ear just visible) to 59 (ear fully emerged). Damage declines dramatically when egg-laying occurs after anthers are visible. Inspect fields from the time wheat heads emerge from the boot leaf until anthers are visible on the heads.

Time of Day to Monitor: Field inspection should be carried out from about 75 minutes prior to sunset until about 30 minutes after sunset, when female midge are most active. This time of summer, wait until at least 8:30 pm before assessing levels of wheat midge; those further north, such as the Swan River area, should wait until at least 9:00 pm. Females are more active when the temperature is above 15°C (59°F) and wind speed is less than 10 km/h (6 mph).

What to Count: Midge populations can be estimated by counting the number of adults present on four or five wheat heads. Inspect the field in at least three or four locations. Midge densities and plant growth stages at the edge and centre of fields may be very different. The highest densities are often next to fields where wheat was grown in previous years or in low spots where soil moisture is favourable to midge development. Don't confuse lauxanid flies for wheat midge when assessing wheat midge levels. The following factsheet on wheat midge will help you distinguish between these flies, plus has information on biology, monitoring, thresholds and management: https://www.gov.mb.ca/agriculture/crops/insects/wheat-midge.html

Grasshopper development

Model simulations by Agriculture and Agri-Food Canada, Saskatoon were used to estimate grasshopper development as of June 27, 2021. Above normal temperatures have been responsible for advanced development of eggs and nymphs across southern Manitoba. Grasshopper populations across southern Manitoba are predicted to be

mostly in the 4th and 5th instar. First appearance of adults of potential pest species of grasshoppers should occur over the next few days.

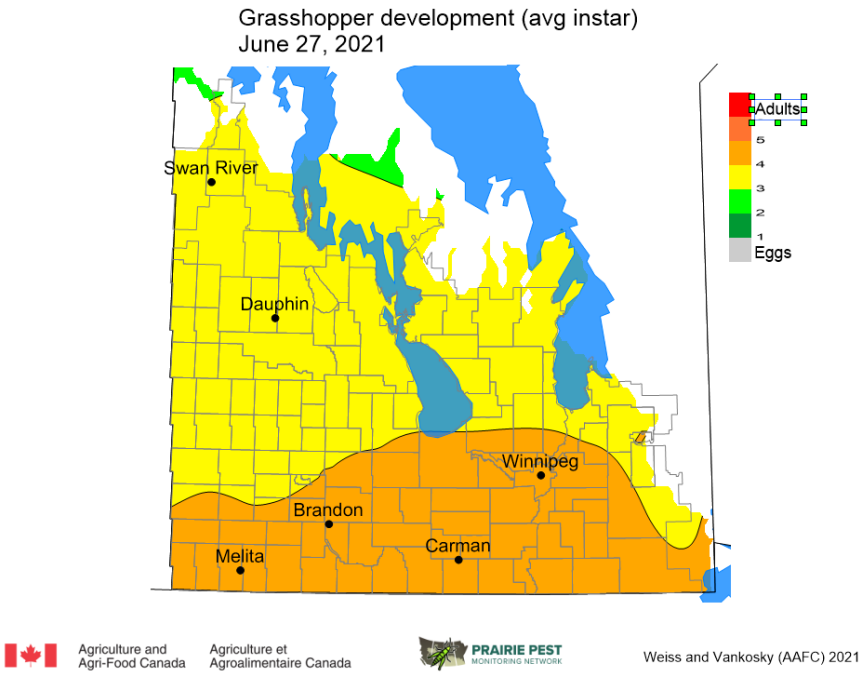

Figure 1. Predicted grasshopper (*Melanoplus sanguinipes*) development, presented as the average instar, across Manitoba as of June 27, 2021.

Plant Pathology

Last week I promised a more detailed explanation about the **bacterial blights** that have been seen **in many oat crops** and in **some field peas**. Where does bacterial blight come from? In oats, the pathogens may be *seed-borne*, particularly if you are not planting certified seed. The other pathogens can also *overwinter on infected stubble* – likely only for one season. However, strong winds as we saw in the spring could carry that residue from adjacent fields that were in oats in 2020.

Early in the spring, it takes only a little moisture for initial infection. Hence, we can see the symptoms at early stages of crop growth especially when it is cool. Abrasion of leaves by wind-blown soil particles can open wounds and intensify development. Upward spread within the crop canopy depends on rainfall and/or high humidity. Hot and dry weather may halt the disease and new growth can hide the brown lesion lower in the canopy. It seems most of the common oat varieties are susceptible. However, there is no resistance evaluation in Canada.

Fungicides have no effect on bacterial diseases, only on fungal diseases such as the Septoria complex or crown rust (more on that later).

In field peas, bacterial blight symptoms are seen in the lowermost leaves, starting as "water-soaked" lesions. These then darken and may have a "greasy" appearance – from bacteria which ooze onto the leaf surfaces and dry there. Symptoms may be mistaken for Mycosphaerella blight (see top and bottom comparison below). The fungal lesions are purplish-brown and angular on leaves, and generally round or elliptical on pods. Again, fungicides are effective against Mycosphaerella but NOT bacterial blight. It is very important to distinguish between the two.

Bacterial blight – picture credits, Jason Voogt

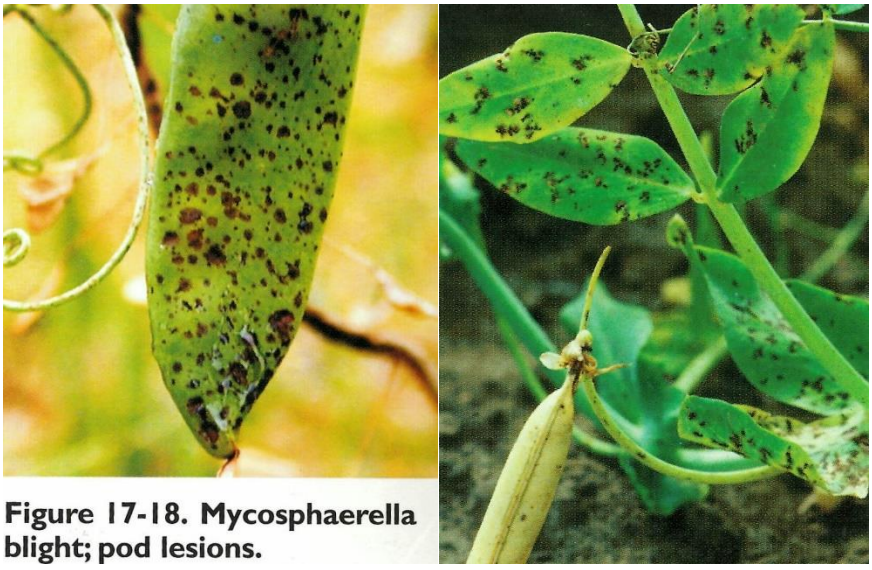

Figure 17-18. Mycosphaerella blight; pod lesions.

Two images of Mycosphaerella blight from *Disease of Field Crops in Canada*

Weeds

Herbicide Residues, part 2

Last week we made a case for soil sampling fields where herbicide residues may be suspected, in this case flucarbazone (Everest, Sierra). From 3 different pea fields, soil samples to 6" were paired to contrast healthy (normal) versus poor pea plants. Field 1 had the mildest damage symptoms, and Field # was the most severe:

	Poor areas		**Normal areas**	
	Soil pH	Organic matter	Soil pH	Organic matter
Field 1	8.0	4.6%	6.7	6.8%
Field 2	7.9	3.0%	6.1	3.2%
Field 3	8.2	1.7%	5.9	3.3%

It is very apparent that pH and OM differed between the normal versus poor plants. Both pH and soil OM can be known to effect pesticide breakdown.

Here's a snip from last weeks report to remind you of the label restrictions for flucarbazone:

Soil Zones and Rotational Crops			
Grey-Wooded	Black	Dark Brown	Brown
Spring wheat Barley Canola (all varieties) Field pea*	Spring wheat Barley Canola (all varieties) Durum wheat Field pea* Flax Field bean Soybean† Sunflower†	Spring wheat Barley Canola (all varieties) Durum wheat Field pea* Flax Soybean† Sunflower†	Spring wheat

† Not including *Sierra 3.0* at this time.

*** NOTE: Field pea may be grown the year following flucarbazone application in fields where precipitation has been equal to or above the 10-year average during the growing season, and where organic matter content is above 4 percent, and pH is below 7.5. The company suggests a minimum of 100 mm (4 inches) of rain is needed in the 60 days following application for adequate breakdown to take place.**

NOTE: Other rotational crops may also be affected if rainfall is less than the 10 year average for the area. Soils in the grey wooded, black and dark brown soil zones with a combination of low organic matter (less than 2 percent), light textured soils or high pH (greater than 7.5) (i.e. eroded knolls, sandy soils) may result in delayed growth and development in rotational crops.

Watch fields where flucarbazone has been applied this year, even with adequate rain this growing season we still may see some residue carryover in parts of the field that have low OM and high pH, like the eroded hill tops.

Soils

Compaction Causes Colourful Corn

Some purple corn is showing up in fields – which may be a symptom of many plant stresses, including phosphorus deficiency (or cold growing conditions, following non-mycorrhizal crops like canola, herbicide residues, compaction, etc). The photos below were submitted from a field following potatoes, where phosphorus deficiency would not be expected. The agronomist (J. Doerksen) scouted with a shovel to reveal the culprit – subsoil compaction and poor soil structure.

Figure 1 (left): Comparison of heathy corn (left) with extensively developed root system versus a poor, shallow root system on the stunted, purple plant.

Figure 2 (right) : Healthy plant on left, with a moderately stunted plant on right, but with a dense aggressive root system.

Frequently soil compaction shows up as a “tall corn-short corn” syndrome, with a full range from slightly to severely stunted plants, depending on the randomness of tracks or compaction below.

Note the differences in root systems – the healthy plants have not needed to invest as much carbohydates and energy in developing an effective, downward reaching root system. The stressed plants have had to invest more energy in developing a root system to combat the poor soil conditions. More roots are not always a sign of plant health –the plant may just be expending more energy underground, at the expense of topgrowth.

Figures 3-4. Subsoil soil structure at 10” depth under healthy plants (left) and stunted plants (right).

Compacted high-traffic areas may develop platy structure (on right) which will restrict downward root growth and water movement.

Last fall I measured corn yields in trafficked areas of a previous potato field after the wet harvest of fall 2019. The corn field averaged an impressive 146 bu/ac, considering that moderately compacted areas yielded 103-118 bu/ac and wheel tracked areas were only 45-73 bu/ac.

Potassium (K) Deficiencies in corn and soybeans

Some agronomists are seeing potassium deficiency in corn and soybean fields on sandier textured soil. Potassium is a mobile nutrient in the plant and will be translocated from older, lower leaves to support new growth. The symptoms are yellowing, followed by necrosis (browning) of the outer leaf margins (Figures 5-6 below).

Figures 5-6. Potassium (K) deficiency symptoms in corn and soybeans.

Rapid Growth Syndrome in corn

Sometimes our knee high corn behaves like awkward, fast growing teenagers, and emerges inappropriately in public (Figure 7). This is seen as yellow, chlorotic leaves emerging from a wrapped whorl, noticeably different than the dozens of other plants surrounding it. It is called “Rapid Growth Syndrome”.

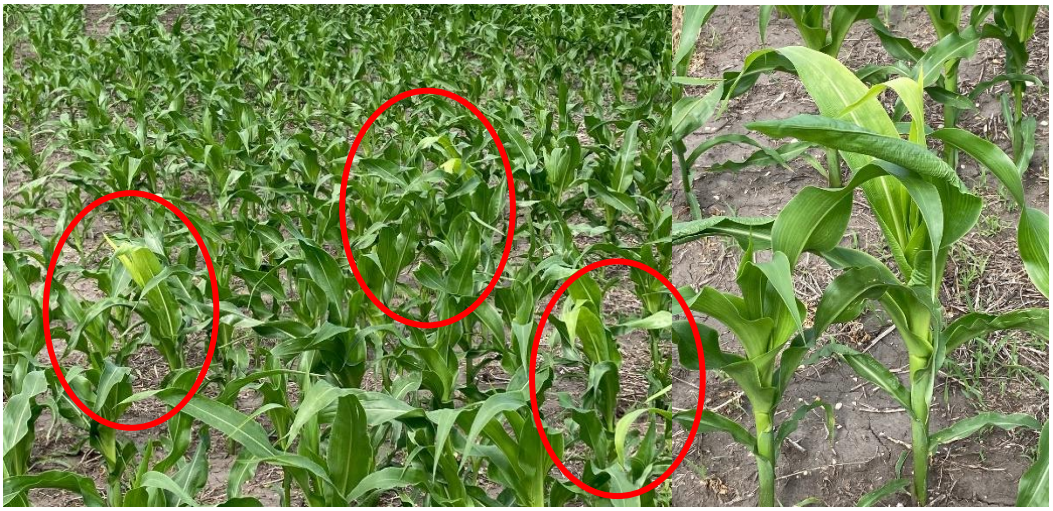

Figure 7. Rapid Growth Syndrome in Manitoba corn.

It typically results after a period of cooler conditions with slow growth, followed by warm conditions and rapid growth. Some leaves are temporarily trapped in the whorl, and when they do “pop out” are bright yellow, with undeveloped chlorophyll. Expect such “awkward” looking plants to green up and develop normally.

Forecasts

Diamondback moth. A network of 98 pheromone-baited traps are being monitored across Manitoba in May and June to determine how early and in what levels populations of diamondback moth arrive. Of these, diamondback moth has been found in 66 of the traps, and levels vary. Trap counts were generally low until late-May. Since then some moderate counts have occurred in traps in the Northwest, Central, Interlake and Eastern regions. The highest cumulative trap count so far is 171 from a trap in the Interlake region. Larvae have been found, but only at low levels. No high levels of larvae have been found or reported yet.

Table 1. Highest cumulative counts of diamondback moth (*Plutella xylostella*) in pheromone-baited traps for five agricultural regions in Manitoba as of June 30, 2021.

Region	Nearest Town	Trap Count
Northwest	The Pas	155
	Bowsman	68
	Makaroff	52
	Grandview	39
Southwest	Carberry	36
	Minto	28
	Boissevain	15
	Fairfax	11
Central	Haywood	68
	Edwin	57
	Altona	35
	Starbuck, Culross	21
Eastern	Stead	106
	Beausejour	43
	Hadashville	38
	River Hills	29
Interlake	Selkirk	171
	Clandeboye	66
	Arborg	52
	Vidir	50

← Highest cumulative count

Highest counts in each region and a monitoring summary are updated twice weekly (Fridays and Tuesdays) on the Insect Page of the Manitoba Agriculture and Resource Development website at: https://www.gov.mb.ca/agriculture/crops/insects/diamondback-moth-forecast.html

Armyworms (*Mythimna unipuncta*). As a new monitoring program this year in Manitoba, a network of 29 pheromone-baited traps are being monitored from early-May until mid-July to determine how early and in what levels populations of armyworms have arrive. So far counts have generally been quite low. The highest count is 22, from a trap near Minto in the Southwest.

Table 2. Highest cumulative counts of armyworms in pheromone-baited traps for five agricultural regions in Manitoba as of June 30, 2021.

Region	Nearest Town	Trap Count
Northwest	0 in all traps so far	
Southwest	Minto	22
	Elgin	10
	Boissevain	8
	Fairfax	6
Central	St. Leon	13
	Glenboro	2
	Kane	1
	Austin	1
Eastern	Beausejour	9
	Lac du Bonnet	8
Interlake	Gimli	0

← Highest cumulative count

A map showing armyworm counts from Manitoba, Eastern Canada, and several Northeast U.S. states is available at: https://arcg.is/0Lry5a. Go to the link “TAW”.

Bertha Armyworm (*Mamestra configurata*). 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 their potentially being economic levels of larvae somewhere in the region. Traps are set up in about 90 locations in Manitoba. The traps do not determine risk for the field specifically that the trap is in, but can estimate regional risks, which can help prioritize scouting for larvae. Trapping for adult moths is still in the early stages, and the counts in Manitoba are still very low. The highest cumulative trap count so far is 17 near St. Joseph in Central Manitoba.

Table 1. Highest cumulative counts of bertha armyworm (*Mamestra configurata*) in pheromone-baited traps for five agricultural regions in Manitoba as of June 30, 2021.

Region	Nearest Town	Trap Count
Northwest	Bowsman	12
	Bowsman	8
	Angusville	6
	Grandview, Bowsman	6
Southwest	Brandon	8
	Rivers	7
	Shoal Lake	6
	Boissevain	5
Central	St. Joseph	17
	Emerson	13
	Haywood	13
	Horndean	11
Eastern	Beausejour	8
	Stead	8
	River Hills	5
	Hadashville	5
Interlake	Arborg	5
	Vidir	5
	Fisher Branch	2
	Remaining traps all 0	

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

← Highest cumulative count

Highest counts from bertha armyworm traps in each region and a monitoring summary are updated twice weekly (Fridays and Tuesdays) on the Insect Page of the Manitoba Agriculture and Resource Development website at: https://www.gov.mb.ca/agriculture/crops/insects/bertha-armyworm-forecast.html

Identification Quiz:

Question: What is this caterpillar that was found recently on corn in the MacGregor area?

Hint: They will bore into the stalks of corn, and it is not European corn borer, which would not be found in the stems this early in the season in Manitoba.

Answer: This is corn stalk borer (*Papaipema nebris*). They occasionally gets to levels in Manitoba where people take notice of them. Often levels are highly concentrated around field borders in corn. Higher levels usually go less than 20 rows into the field. An exception to this may be if there has been poor control of grassy weeds in the field. Younger larvae actually prefer tunnelling into the stems of grasses, but older larvae outgrow the grass stems and crawl to nearby larger-stem hosts such as corn.

These are actually pretty cool insects because the larvae can go through a lot more instars when the nutritional quality of the corn is poor. They have also been reported to feed on a lot of weeds such as burdock, giant ragweed, cocklebur, etc.

Crop rotation is one of the recommended control measures for corn stalk borer.

Quiz question 2:

Why is crown rust on oats called “crown” rust?

- Symptoms are found at the base of the plant near crown roots
- Shape of the black, thick-walled teliospores which survive the winter
- No reason, just a cool name

Answer next week.

Current stage of pycnial and aecial stages of crown rust on the alternate host – buckthorn.

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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.