

# Manitoba Crop Pest Update

## Issue 12: July 28, 2021

### Summary

**Insects:** Grasshopper populations are quite variable, but continue to be a problem in some areas. Higher levels are occurring in pastures in some areas, as well as cereal crops. As some preferred hosts mature or are cut populations move around, and may move into other crops. Some grasshopper control in canola has been reported. Diamondback moth has been at economic levels in some canola fields in the Eastern and Interlake regions. Spider mites are starting to be noticed on some soybeans in the Interlake region.

**Weeds:** Combines are starting to roll across the province, for fields that have perennial weed issues preharvest control using a systemic herbicide is an option. For other fields where quicker weed and crop drydown is wanted to facilitate harvest and storage, desiccation may be desired. Grain from crops treated with preharvest products may have market access concerns, you need to consult all potential buyers before using any preharvest product. If using generic products refer to the specific label to determine if that product is registered for the crop you are spraying.

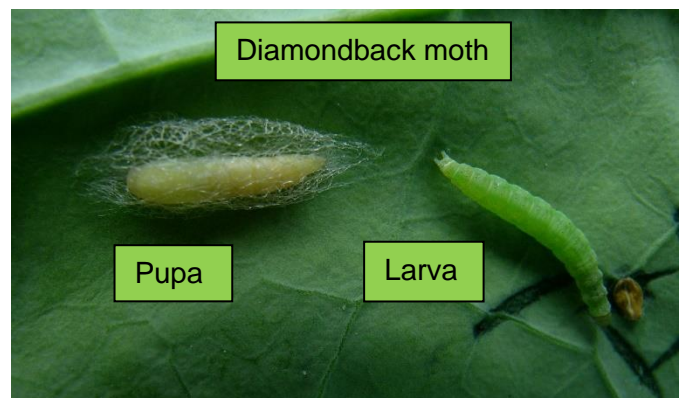
### Entomology

**Thresholds for Diamondback moth on Canola:** Thresholds for diamondback moth are nominal. This means they are based on experience rather than research quantifying the impact of the insect on the crop. There is currently research trying to develop more quantitative thresholds than those we currently use.

The threshold used for podded canola is if larvae exceed 20-30 per ft<sup>2</sup>. Also consider whether they are feeding on the pods. Leaf feeding late in the season will likely be of minimal significance.

#### How long does it generally take diamondback moth to go through the larval stages?

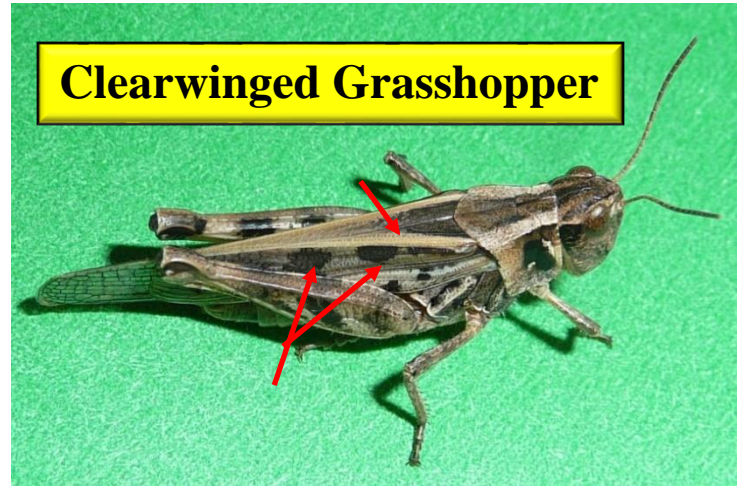
Temperature and food quality will affect rate of development, so the length of time as a larva can vary. Generally, the larval stages last anywhere from ten to 21 days. They will be in the pupal stage anywhere from 5 to 15 days. Warmer temperatures move them through these stages quicker.



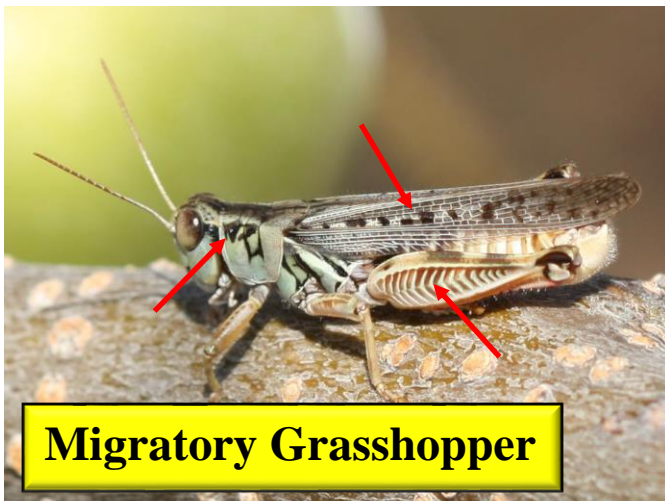
## Common Crop Feeding Grasshoppers of the Canadian Prairies



- Two **pale stripes** from eyes to tip of forewings.
- Solid **black stripe** on hind legs.



- Also has two **pale stripes**.
- Note the **brown blotches** on the forewings. Two-striped grasshopper does not have similar blotches on the forewings, and is bigger.



- Note **black bands** behind eyes.
- Forewings have rows of small dark **rectangular spots** like the windows on an aircraft.
- Hind legs have series of **black bands**.



- Two **light-coloured stripes** from just behind eyes to back of the thorax.
- **Blue hind tibia** (long, thin lower section of leg).

## Soils and Soil Fertility

### The Corn-after-canola syndrome

This now famous photo by Anastasia Kubinec has been making the twitter rounds and inviting lots of comment – here is my take. It's the photo showing advanced corn development (tasseling) following peas, but lagging development following canola.



Corn following 2020 peas (on left) and canola (on right).

The grower noticed poor growth and “floppy corn” on the corn following canola so made a rescue application of a foliar P product. The product may have helped, but still could not catch up in development.

Possible reasons for the differences:

1. Lack of mycorrhizae able to assist with phosphorus (P) uptake following canola. Mycorrhizae also help with zinc and water uptake, but generally it is the P impact most commonly observed. The lack of mycorrhizae is often equated to the impact of using starter P on corn and a 10% yield penalty after canola (or fallow) may result. University of Manitoba studies by Flaten and Rogalsky narrowed this rotational gap in development and yield by using stiff rates of P in 2"x2" band at seeding. This increased yields 10% and reduced harvest moisture by 2-3%. So I suspect the visible difference in development (tasseling) is due to lack of P.
2. The nitrogen benefit of pulses. In Manitoba we offer modest if any N credit after pulses like peas. The amount is modest and past recommendations are to expect higher yields and wheat protein due to the “pulse rotation benefit” but to apply the same N rate as if following wheat. As stated by one of Anastasia’s

twitter fans “the N benefit of peas is often over-rated, and the rotational benefit is under-rated”. But any N benefit would not be expected to advance development.

3. Water use by previous canola exceeded peas. Alberta studies estimate canola uses 16-18” per year versus 12-15” for peas. Peas simply mature quicker and draw on reserves for a shorter period of time. So more stored soil moisture may have been available under peas – but unlikely to lead to advanced development.

As for the “floppy corn syndrome” observed this spring – that’s more often a result of shallow seeding and the surface soil remaining very dry. Crown roots have a hard time establishing in bone-dry surface soil – yet the seminal roots reach deeper into moisture. These seminal roots provide enough water to sustain a vegetative crop – that becomes top-heavy but lacking the brace roots. “And over she goes!” Plants often recover with light rains providing sufficient moisture to establish brace roots.

### Soil sampling this fall

Growers will be having questions about nutrients remaining from this drought impacted 2021 crop. This urgency is prompted by:

1. Presently high nitrogen and phosphorus fertilizer prices that do not seem to have decreased from springtime.
2. Drought affected crops with lower yields may leave more nutrients – most likely residual nitrogen (N). And N losses due to wet soils will have been negligible.
3. Some crop farmers harvesting cereals as green feed, with more nutrient removal in forage than grain alone

Of course soil sampling is the best way to do such nutrient inventory – with a few pointers.

- Cereal crops mineralize little N after harvest, so early fall soil sampling can be reliable. Normally soil N levels increase following canola or peas due to fall mineralization from residue. BUT – last year I tracked pea residue in 2 fields until November and measured no N release due to continued dry conditions.
- The soil will be very dry and hard to penetrate – practically impenetrable by hand samplers to the 24’ depth. Trucks with in-cab mounted probes routinely sample in frosted soil and should be able to sample to depth.
- Make every attempt to sample to 0-6” and 6-24”. Using shallower sampling and a “fudge factor” to estimate what is below can be very misleading in years of abnormal moisture.
- In dry sandy, or even clay soil, your sample can drop out the bottom of the sampling tube. Savvy samplers may switch to “dry tips” and “plug the tip” with a little “lift then push” of the probe.

Interpreting results may take some expertise:

- If cereals have been taken as forage, potassium (K) removal can be high, but not be immediately reflected in soil test levels.
- We may experience the “Birch Effect” leading to elevated soil N levels. This is a burst of N release when a soil is rewetted after extended dry periods. Initially microbes release much N as desiccated microbial biomass “are chewed up and spit out as N”. Shortly this surplus N is immobilized again into the microbial biomass as crop residue starts decomposing. So watch for and be prepared to temper expectations if extremely high nitrate levels are observed.

Good luck.

## Weeds

**Preharvest Management:** There are three products available for preharvest management – Roundup, Heat and Reglone. Roundup is registered for perennial weed control in certain crops, full control may take 2-3 weeks after spraying. It’s crucial that Roundup be applied at less than 30% grain moisture to avoid glyphosate translocating into the grain, which would affect germination and possibly exceed Maximum Residue Limits (MRL’s). The following chart is copied from the 2021 Guide to Field Crop Protection, with visual staging guidelines for each registered crop:

### Crop Staging for Preharvest applications:

- Apply to crops (except forage) when grain moisture is less than 30 percent. The following chart lists visual symptoms that can be used as guidelines to when 30 percent grain moisture has been reached.

Crop*	Visual Guide to Proper Application Stage
Wheat, barley*, oats*, canaryseed****	Hard dough stage – a thumbnail impression remains on seed.
Canola, mustard****†	Pods are green to yellow and most seeds are yellow to brown.
Flax (and solin - low linolenic acid flax)	Majority (75 to 80% of bolls) are brown.
Lentil	Lowermost pods (bottom 15%) are brown and rattle when shaken.
Pea	Majority (75 to 80%) of pods are brown.
Chickpea**, lupin**, faba bean**, dry bean	Stems are green to brown in colour; pods are mature (yellow to brown in colour); 80% to 90% leaf drop (original leaves).
Camelina****	When 95% of pods have changed colour, seed is firm and less than 40% of seed is green.
Soybean	Stems are green to brown in colour and pod tissue is brown and dry in appearance (80 to 90% leaf drop).
Forage	3 to 7 days prior to the last cut before rotation or forage renovation. DO NOT apply to forage stands that are to be maintained.

\* Registered for application to barley grown for malt and tame oats grown for milling; however, many millers and malsters are not accepting glyphosate treated oats or malt barley. Contact malt barley or milling oats buyers prior to application to confirm acceptance of glyphosate-treated grain.

\*\* Preharvest applications on these crops are registered with *Roundup Transorb HC*, *Roundup WeatherMax*, *R/T 540*, *Advantage Glyphosate 540*, *Credit LV*, *Stonewall 540* and *StartUp* only.

\*\*\* Preharvest applications on these crops are registered with *RoundUp Weather Max* only.

† Yellow/white, brown, oriental mustard only.

‡ NOTE: Since these uses are registered under the User Requested Minor Use Label Expansion (URMULE) program, the manufacturer assumes no responsibility for herbicide performance. Those who apply glyphosate to chickpea, lupin, faba bean, canaryseed, camelina or mustard do so at their own risk.

Heat is registered as harvest aid/desiccation to speed the rate of drydown of crops and weedy material. Merge or MSO adjuvant must be applied with Heat, and use the higher

labelled rate when apply Heat WG alone, when not tank-mixed with glyphosate. The following chart is copied from the 2021 Guide to Field Crop Protection:

Crop	Pre-Harvest Interval (Days after application)	Application Stage
Barley (for feed only)	3	Hard dough stage (Zaddok's growth stage 87) <30% seed moisture
Canola	3	Apply when 60 to 75% of seeds have changed colour.
Chickpea	2	Desi – Apply when most seeds turned yellow/brown Kabuli – Apply when most seeds turned white/tan
Field pea	3	A majority of the pods are brown (70 to 80%)
Faba bean <sup>††</sup>	2	Apply when 80% of lower pods have turned black, middle pods have turned yellow/tan, and top green pods have firm seed.
Red lentil varieties only*	3	Lower most pods (15%) are brown and rattle when shaken
Dry bean	2	Stems are green to brown, pods are mature (yellow to brown), and 80 to 90% of leaves have dropped
Soybean	3	
Sunflower	7	The backs of flower heads and bracts are turning yellow, and seed moisture is 20 to 30%.
Triticale	3	Hard dough stage (Zaddok's growth stage 87) <30% seed moisture
Wheat	3	Hard dough stage (Zaddok's growth stage 87) <30% seed moisture

\* Glyphosate must be added when applying *Heat* pre-harvest in red lentil varieties. Stand alone applications of *Heat* are not registered on red lentil varieties.

<sup>††</sup> *Heat LQ* only

*Heat (WG or LQ)* may be tank mixed with glyphosate on barley (feed only), field pea, lentil, dry beans, soybeans and wheat for additional pre-harvest weed control. When tank mixing with glyphosate, it is recommended to apply *Heat WG* at 20.4 grams per acre or *Heat LQ* at 42.8 mL per acre. DO NOT tank mix with glyphosate when the harvested grain is to be used for seed.

Reglone is a desiccant, used to dry immature green material at the top of indeterminate crops and green weeds to facilitate harvest. It will not speed the maturity of green crops and if applied before the recommended stage you can expect reduced yield and quality. Cool, wet weather after application can slow drydown, whereas hot, dry weather can speed the drydown and the crop could be ready to combine very quickly. Reglone Ion has built-in adjuvant, for other 240 g/L formulations an adjuvant is required. Refer to product labels for specific recommendations for adjuvant use. Here are the registered crops and recommended staging copied from the 2021 Guide to Field Crop Production:

Crop	Stage	Rate (L per acre)			
		240 g/L formulations		Reglone Ion	
		Ground	Aerial	Ground	Aerial
Canola*†	90% or more of seed has turned brown.	0.50 to 0.69†	0.69 to 0.93	0.61 to 0.83†	0.83 to 1.11†
Dry Beans (red and white kidney)	Crop has lost 80 to 90% of leaves and 80% of pods are yellow.	0.50 to 0.69†	0.69 to 0.93	0.61 to 0.83†	0.83 to 1.11†
Soybeans					
Faba beans††	Most plants are ripe and dry. Pods fully filled, bottom pods are tan or black in colour.	0.50 to 0.69†	0.69 to 0.93	0.61 to 0.83†	0.83 to 1.11†
Flax and Solin (low linolenic acid flax)	75% of bolls brown.				
Lentil	Lowest pods are light brown and rattle when shaken.				
Mustard (condiment type only)	75% of seed has turned brown.				
Peas	Bottom pods are ripe and dry, seeds detached from pods.				
Sunflowers	Backs of sunflower heads and bracts are turning yellow and seed moisture is 20 to 50%.				
Chickpeas†	Plants yellow, pods mature, seeds changed colour and detached from pods.				
Potatoes (top growth mature and few weeds)	Two weeks prior to harvest.	0.5	Requires 2 Passes Pass #1: 0.69 to 0.93 L/acre** Pass #2: (4 to 5 days later) at 0.5 L/acre	DO NOT use <i>Reglone Ion</i> on Potatoes	
Potatoes (some top growth and/or some weeds)		0.69 to 0.93***†			
Potatoes (dense crop, heavy weed infestations)		1.42***†			
Alfalfa, bird's-foot trefoil, red clover, alsike clover††† and white clover (for seed production only)***	Pods are ripe but before shattering. Harvest within 7 days.	0.69 to 1.09†	0.69 to 1.09†	0.83 to 1.32†	0.83 to 1.32†

† Use high rates for dense crops and/or heavy weed infestations. Use of high rates for canola and chickpea is recommended.

†† Except *Nufarm Drifast*.

††† *Reglone Ion* only.

\* This use can cause shattering losses in non-shatter resistant canola.

\*\* DO NOT use an adjuvant on potatoes except at the 0.5 L per acre ground application rate.

\*\*\* DO NOT use on forage legumes that have been treated with a residual herbicide in the previous 12 months.

## Forecasts

**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 at 99 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. We are into the last week of the trapping period, and all the counts in Manitoba are still in the low risk category. The highest cumulative trap count so far is 250 near Snowflake in Central Manitoba. There have been no reports of high levels of bertha armyworm larvae yet.

Table 1. Highest cumulative counts of bertha armyworm (*Mamestra configurata*) in pheromone-baited traps for five agricultural regions in Manitoba as of July 28, 2021.

Region	Nearest Town	Trap Count
Northwest	Makaroff	127
	Swan River	74
	Benito	53
	Russell, Grandview	51
Southwest	Boissevain	134
	Decker	98
	Foxwarren	87
	Inglis	71
Central	Snowflake	250
	Darlingford	113
	Pilot Mound	57
	Somerset, St. Joseph	47
Eastern	Ste. Anne	37
	Stead, River Hills	10
	Beausejour, Tourond	9
	Hadashville	6
Interlake	Warren	24
	Grosse Isle	16
	Arborg	11
	Vidir, Fisher Branch	7

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>

**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 have 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.



Estimates of grasshopper levels can be collected during regular farm visits. "Estimates" of grasshopper populations is stressed as it will not be possible to accurately count grasshoppers along a field edge or ditch area as they will be moving around as you get near the area of the count. But estimates of what is present gives us some idea of the relative numbers that are present in different areas.

Data from the survey, along with weather data during the egg laying period of the grasshoppers, is used to produce a forecast for 2022.

The protocol and data sheet for the grasshopper survey is at:

<http://www.gov.mb.ca/agriculture/crops/insects/mb-grasshopper-survey.html>

## Identification Quiz:

**Question:** This large fly can be observed preying on many types of insects, such as this lygus bug in the photo below. What is it?



**Answer:** This is a robber fly (Diptera: Asilidae). These flies are aggressive generalist predators in both the adult and larval stages. Robber fly adults often have an easily identifiable beard as well as large, bulging eyes and a sunken forehead. These large eyes gives the robber fly fantastic vision, making them excellent predators. Robber flies will prey on both crop pests along with other beneficial insects. They have even been known to attack insects significantly larger than them, such as dragonflies and butterflies.

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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.