

Manitoba Crop Pest Update

Issue 9: July 17, 2019



Summary

Insects: Grasshoppers continue to be a concern in some areas. Armyworms have been controlled in small grains in some areas. Thistle caterpillars are turning to pupae. Green cloverworm are present in some soybean and dry bean fields, but at non-economic levels. There has been some insecticide applications for aphids in peas in the southwest corner of the province.

Diseases: It's soon time to begin follow-up scouting to verify the soundness of the fungicide choices that we have made. Are there other diseases that were not as effectively controlled as those that were the target of an intervention? We've seen some bacterial blight on oats that already had 2 fungicide applications. Other diseases of note from the field, reported by agronomists this week: Fusarium root rot on peas, Phytophthora root rot on soybeans, and the first signs of FHB in wheat.

Weeds: There will always be weeds that we want to control, late emerging flushes of wild oat or kochia or canola...make sure it pays to spray.

Entomology

Searching for European corn borer egg masses: Last year a population of European corn borer in Nova Scotia was found to be resistant to the Cry1F strain of Bt, present in some cultivars of Bt corn. It is important that we test populations of European corn borer from across Manitoba to determine if there is any resistance to any of the cultivars of Bt corn grown in Manitoba.

I am thus looking for fields with egg masses of European corn borer that can be collected and tested for potential resistance. If you are scouting for European corn borer, and find egg masses, please contact John Gavloski (see contact information at end of report) so we can get samples for resistance testing. I am trying to collect as many egg masses as possible for this. You can either cut the egg masses from the leaf, place them in a container, and contact me. Or mark the location and let me know of the field location so we can come collect samples.

Egg masses can be found in any corn field, whether Bt corn or non-Bt cultivars. It is when the larvae start feeding that they are killed by the Bt toxins.



European corn borer egg masses – recently laid (upper) and closer to hatch (below)

Armyworms: Some high populations of armyworms (*Mythimna unipuncta*) have been reported in fields of small grain cereals and forage grasses in the Eastern, Central and Southern Interlake regions.

Scouting for armyworms in small grains and forage grasses: A common method of scouting for larvae of armyworms is to check several areas of the field, and determine the number of larvae per square foot. Larvae hide during the day, which makes assessing levels more difficult. Notched leaves may be a sign that armyworms or other defoliators are or have been present. During the day, at each stop shake the plants and look on the soil for armyworm larvae. Also look under plant debris, lumps of soil, and in soil cracks. When armyworms are found have a quick look at the back for eggs of parasites. Pay special attention to patches of lodged plants. Some birds commonly search for armyworms in small grain. Any field or areas of fields that have significant bird activity should be scouted.

Threshold for armyworms in Small Grains:

- Preheading: Treat when four or more armyworms per square foot are present.
- Heading (head clipping): If heads are being clipped, treat when two or more armyworms per square foot are present.

Control tips:

- Only infested areas of the field may need to be treated. Levels may vary between locations in a field, so assess how widespread the higher levels are.
- Spraying should be done in the evening when armyworms are feeding on the plants.
- There is little benefit in applying an insecticide once the armyworm is nearly full grown, pupae are present, parasitism is extensive, or the crop is nearing maturity. By that time most of the damage will have been done.



Note that larvae of armyworms can vary in colour. After they get to about 3 to 3.5 cm they will go a few cm into the soil to turn into a pupa (3 shown at right in photo).

For more information on armyworms see:

<https://www.gov.mb.ca/agriculture/crops/insects/true-armyworm.html>

Green Cloverworm: Larvae of green cloverworm, and their feeding, are being noticed in some fields of dry beans and soybeans. Feeding damage has been below economic levels so far. Feeding can easily be mistaken for grasshopper feeding or hail damage. If seeing holes in leaves, as in the photo below, look for the green larvae on the leaves.



Green cloverworm (right) and feeding pattern (left)



Pea aphids on Peas: Field Peas should be checked for aphid levels at the beginning of flowering. Take 180° sweeps or check at least 5, 8-inch (20 cm) plant tips along four well-spaced stops in the field. The economic threshold in peas is 2 to 3 aphids per 8-inch (20 cm) plant tip, or 9 to 12 aphids per sweep, at flowering. If the economic threshold is exceeded, a single application of insecticide when 50% of plants have produced some young pods will protect the crop against yield loss and be cost-effective. More information regarding pea aphids in pulse crops can be found at:

<https://www.gov.mb.ca/agriculture/crops/insects/aphids-on-peas.html>

Crop Diagnostic School Quiz – Grasshopper Species and staging

Crop Diagnostic School participants – here is your follow-up test from the entomology station. The grasshoppers in the photo below were all taken from our House of Hoppers on July 17th. They are all the same species, but 3 different stages. Name the species and name the three stages.



Hint- Note the two stripes on the larger grasshopper on the right.

This is two-striped grasshopper. On the right is the adult. Note the 2 stripes that start by the eyes and go to the back of the wings. Upper right is a 4th instar nymph; with small triangular wing buds. Lower left is a 5th instar nymph; note the triangular and somewhat larger wing buds. Only the adults can fly. There can be colour variation within this species. They are just starting to become adults, but the high majority of the population are still nymphs.

Remember – two-striped has two stripes, clearwinged has black dots on the forewings (so not really clear wings), and migratory has the mask (stripe) behind the eye. Next week you will get another grasshopper species question should you not have passed this one.

Plant Pathology

So far this growing season, the symptoms of pathogenic diseases in field crops have been unspectacular. But suddenly, at least in our small corner of the universe, rainfall has become a more regular occurrence. From the time we planted our earliest demos for the Crop Diagnostic School (May 10th) to the end of June we'd seen 73 mm (~3 inches) of rain. Since July 1, we've had another 56 mm (>2 inches).

Disease symptoms are now easier to spot in the field. However, the windows for intervention with fungicides, where warranted, are rapidly closing. Resist the urge to

indulge in “revenge-spraying.” It will not make you feel better and there are several adverse consequences. Most importantly, as emphasized in the weeds section, pre-harvest intervals (PHIs) are established to protect both the producer and the end-user from residues of the applied products ending up in harvested grain. Many commodity organizations are behind the Keep It Clean campaign to increase awareness of the pitfalls from ignoring or crowding PHIs.

For instance, the fungicides most commonly used to protect canola from *Sclerotinia* infection have PHIs ranging from 30 days to 36 days. There might be some crops that have yet to pass mid-bloom and apothecia are now beginning to pump out ascospores. However, the majority of canola crops are well beyond that stage. When does harvest occur? Either when the crop is swathed or, if it’s direct-harvested, when it goes through the combine. Count back from your anticipated harvest to be certain you are not risking exceeding a maximum residue limit (MRL) in your harvested grain.

Weeds

Herbicide Resistant Pigweed?



Slow acting herbicide on redroot pigweed. Photo submitted by Richardson Pioneer Landmark

There are a number of cases of redroot pigweed that weren’t controlled as quickly as some would hope with various herbicides this year. While there have been some cases of confirmed Group 2 resistance in redroot pigweed that may not always be the situation. Slow growing plants take up less herbicide, are able to metabolize some or all of it before it reaches the growing point, and then manage to survive the herbicide application. Even glyphosate applied before the rain in certain areas, was very slow to work on redroot pigweed but if there was some rain and then a herbicide application, the effects were much more noticeable. If normally susceptible weeds survive and manage to set seed, a herbicide resistance test could provide valuable answers for future weed control.

Economics versus Appearance – Volunteer Canola in Soybeans



The view from afar looks like a field with far too many canola plants, but take a closer look...if its only one or two plants of volunteer canola it's unlikely to be economical to control. Studies conducted at the University of Manitoba with Rob Gulden and associates suggest that action thresholds are low at 2-3 plants/m². That action threshold is to prevent yield losses of more than 5%, and is looking at controlling the canola at early growth stages. The impact of a late season herbicide application on flowers, plant health and pre-harvest intervals is likely more devastating than a few yellow blooms in your fields. Assess the economics and associated marketing concerns before spraying late in a soybean field. The Manitoba Pulse and Soybean Growers have some great information on this subject.

Preharvest Weed Control or Dessicating

Keep It Clean (<https://keepingitclean.ca/>) has been actively working to educate growers and agronomists on what issues there are with not following the label of a herbicide. Sometimes, even if it is on a label, it may not be acceptable to a particular consumer group. When in doubt about whether to spray preharvest for weed control or dessicating a crop, make sure you check with your potential buyer.

Preharvest weed control is extremely effective for helping with tough to control weeds like Canada Thistle, milkweed, toadflax or quackgrass, but spraying a herbicide that makes a crop unmarketable is a disaster. For instance, dry beans and oats sprayed with glyphosate are not suitable to all buyers.

Also, a preharvest interval is relevant to many markets. I have said this before, but if you spray fomesafen in mid-July on soybeans (PHI – 84 days) you are making Halloween beans, beans that shouldn't be harvested until October based on the preharvest interval. Just a few others that come to mind: Glufosinate – 60 days, fluroxypyr – 60 days, imazethapyr – 60 days for field peas, 75 days for dry beans and 85 days for soybeans (more Halloween beans). CHECK THE LABELS.***And don't forget recropping issues with late herbicide applications as well!

Forecasts

Entomology:

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, but can estimate regional risks, which can help prioritize scouting for larvae.

Table 1. Highest cumulative counts of bertha armyworm (*Mamestra configurata*) in pheromone-baited traps for five agricultural regions in Manitoba as of July 17, 2019.

Region	Nearest Town	Trap Count
Note: Highest counts from 87 traps being monitored		
Northwest	Ste. Rose	322
	Durban	239
	Bowsman	222
Southwest	Miniota	318
	Rivers	209
	Souix Valley	207
Central	Glenboro	461
	Halbstadt	424
	Mather	225
Eastern	Steinbach	86
	Tourond	60
	Beausejour	59
Interlake	Warren	184
	Balmoral	93
	Arborg	40

0-300 = low risk

300-900 = uncertain risk

900-1,200 = moderate

risk 1,200+ = high risk

Out of 87 traps:

Two traps in the Central region, one trap in the Northwest, and one trap in the Southwest are in the uncertain risk range.

All other traps have cumulative counts in the low risk range.

Identification Quiz:

Question: What are these eggs found on a soybean leaf?



Photo provided by: Jordana Rempel, Arty's Air Service

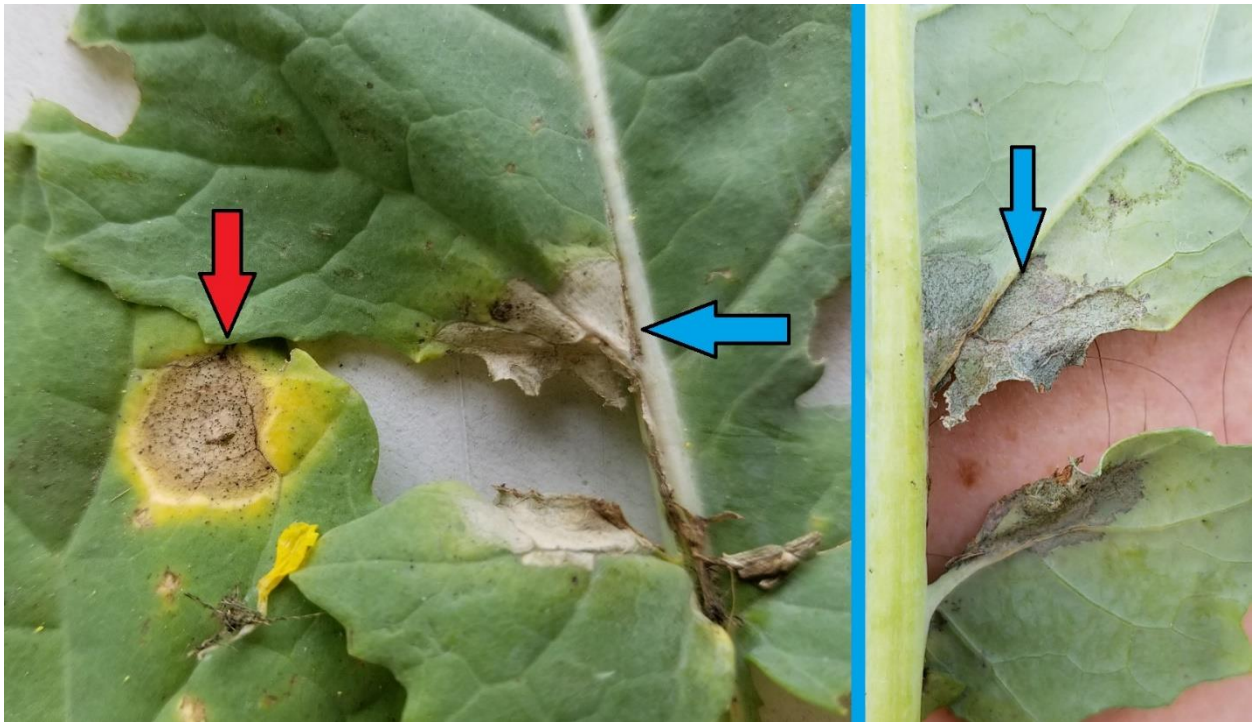
Answer: These are stink bug eggs that are just starting to hatch; you can see a few young nymphs as well. The species of stink bugs in Manitoba are rarely pests of field crops, but it is not uncommon to see them in the field.

Question: Why didn't glufosinate kill this kochia?

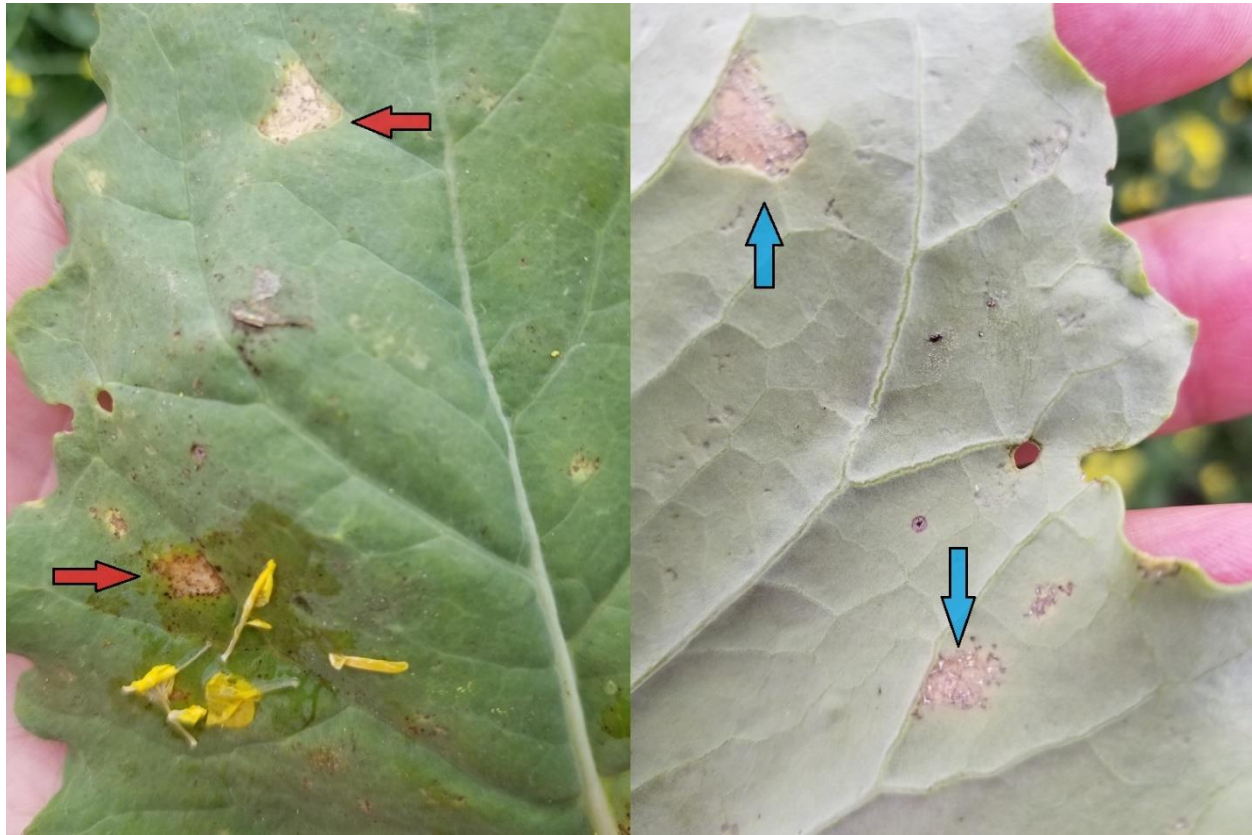


Answer: There is likely more than one factor that would result in this issue. Water volume: there is limited movement with chemical because cell disruption happens so quickly. Staging: glufosinate is registered for control of kochia up to 3 inches – this is kochia is closer to 12 inches tall.

Last issue we asked you to identify some foliar symptoms on a canola leaf. Congrats if you recognized the characteristic lesions of **blackleg**. The small, black spore-bearing structures (pycnidia) that resemble pepper are the giveaway. In the picture below, we have another blackleg lesion (red arrow on the left) compared with the first leaf infection of *Sclerotinia* (blue arrows, right) from Dane Froese's plots at CDS19. Notice the rapid collapse of cells from the fungus' pectolytic enzymes, especially on the underside of the same leaf.



Here's another mystery for next week. Again on canola, you will have to go to the underside of leaves to spot the characteristic mildew-like spore production (blue arrows) of this disease. The vague symptoms on the upper surface (red arrows) could be mistaken for *Alternaria* or even blackleg, if you're not looking really closely or using magnification. What is this fungal disease?



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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.