Manitoba Crop Pest Update
Issue 3: June 7, 2023

Manitoba Agriculture

Summary

Insects: Foliar insecticide applications for flea beetles are occurring, but the overall amount of applications seems less than in recent years. In some areas some fields of canola are already into the 3-4 leaf stage of beyond, and less susceptible to flea beetles. Some cutworm control is also happening, but not to the extent of a couple of years ago. Dingy cutworm appears to be a common species in some of the areas experiencing high level, and some redbacked cutworms have been found. There was some army cutworm around earlier in the spring. This cutworm species overwinters as partially grown larvae, pupates relatively early, and many would now be adults and migrating west for the summer. Aster leafhopper samples have been collected from the Northwest, Southwest and Central regions and submitted to test for percent infectivity with aster yellows. There is no data on this to report yet. Diamondback moth count have increased substantially over the past week in the Eastern and Central regions.


Dingy cutworms

Diseases: Resist the temptation to jump to conclusions about the cause of yellowing in your cereal crops; a disease like barley yellow dwarf is currently a very remote possibility. Read on to understand why. Watch for the first Fusarium Risk Forecast maps to be posted the week of June 19th. Winter wheat may be approaching the vulnerable growth stage, however the hotter weather we have been experiencing – temperatures above 30C – would lower the risk of infection.

Weeds: Another week of challenging spray conditions has meant a lot of early morning and late evening spraying across the province. High temps during most of last week meant chasing cooler temps early and late in the day to hopefully reduce crop damage while still getting effective weed control. High temps have seen explosive growth of C4 (warm season) weeds like kochia, green and yellow foxtail, and red root pigweed.

Entomology

Evening applications for flea beetles: One of the questions that came in this week was whether you can spray for flea beetles in the evening. The short answer is yes, you can spray for flea beetles at night in circumstances when it is difficult to manage them otherwise.

On the plus side, the temperatures are cooler. Some insecticides such as pyrethroids have restrictions for high temperatures. It may be less windy as well in the evening.

On the uncertain side – little is known about flea beetle behaviour at night, such as how much time are they spending up on the plants, where contact with them would be easier. There is a lab study where they found that flea beetle feeding occurred almost exclusively in the light (Peng et al. Environmental Entomology. 1992. 21: 604-609). The insecticides should have enough residual though that I would expect good control the following day, should feeding have declined over the evening.

Ingesting the insecticide will kill the flea beetles. Ingesting the insecticide from the canola plants can result in greater mortality of flea beetles than contact with the insecticides (without ingestion) for some insecticides. Elliott et al. (2007. Can. Ent. 534-544) evaluated oral and contact toxicities of deltamethrin and spinosad on crucifer flea beetles. They found "Method of exposure had a significant effect on flea beetle mortality and feeding damage to canola seedlings. Topical treatment of flea beetles with deltamethrin or different concentrations of spinosad resulted in significantly lower mortality and higher feeding damage than exposure to treated canola cotyledons."

Applying the insecticides when flea beetles are on the plants and good contact is possible may be ideal, but not always practical because of weather restrictions or other reasons. Applying insecticides early in the morning, before the flea beetles become more active, or at night is an option when daytime application is not practical.

Pea leaf weevil survey: We are trying to track the distribution and relative levels of pea leaf weevil, as part of a survey that is being conducted across the prairies. This can be done by assessing notching to seedlings, which is done by the adult weevils. Agronomists that are in pea fields between the 2nd and 6th node stage are welcome to contribute data (on feeding notches or the lack of) for the survey.
The following link shows the protocol used to assess feeding notches from pea leaf weevil, and some historical risk maps:
Pea leaf weevil – Prairie Pest Monitoring Network

Note that the survey protocol posted at this link is what is suggested for farmers to use when making decisions about foliar insecticide use (although foliar insecticides do not provide good yield protection from pea leaf weevil). For the provincial surveys, we only sample 10 plants at 5 locations along the field edge. Unless the population is significant, the time required to count notches (either by node or per plant) is quite short.

Agronomists can also get in touch with myself, John Gavloski or Laura Schmidt, with Manitoba Pulse and Soybean Growers, to have their client's fields included in the survey.

The attached datasheet can be used to record the results when surveying fields.

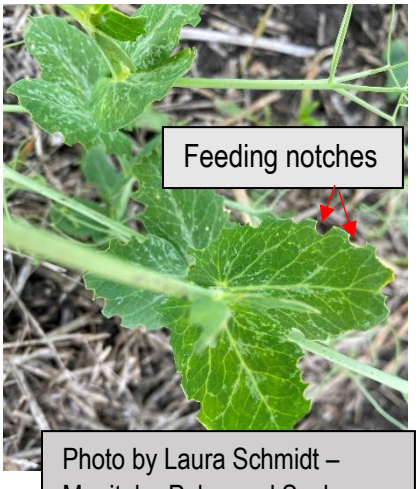

Photo by Laura Schmidt – Manitoba Pulse and Soybean

PEA LEAF WEEVIL SURVEY 2023: USE ONE CHART PER FIELD

	Site 1		Site 2		Site 3		Site 4		Site 5	
Plant	Total Notches including Clam	Clam only	Total Notches including Clam	Clam only	Total Notches including Clam	Clam only	Total Notches including Clam	Clam only	Total Notches including Clam	Clam only
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

Name: Date:

RM: Location:

Average node stage:

Plant Pathology

Yellowing in Barley and Other Cereals

Producers and agronomists are calling or sending texts or emails with pictures of cereal crops that are yellow at the 3 to 4 leaf stage. They often ask, “Is this caused by Barley Yellow Dwarf Virus (BYDV)?” The disease Barley Yellow Dwarf can affect not just barley, but other small grain cereals and grasses.

Here are two examples of yellowed barley from near Binscarth and near Pilot Mound. The first question I ask is, "Are there aphids present?" If the answer is NO, the likelihood of barley yellow dwarf is negligible. Aphids *must* be present for infection to occur, as they are a vector of BYDV and their feeding is the *only* way the virus can enter the plants. There are several species of grass-feeding aphids that can serve as vectors, most importantly the bird-cherry oat aphid. In all of the sweeping that John Gavloski has done to date, he has seen none of these aphids. Furthermore, the aphid vectors do not overwinter here; any that are currently present have blown into Manitoba from the south.

Patterns in the Field? Consider Herbicides, Soil Conditions, and Crop Nutrition

Of course, there are many other possible causes of yellowing in cereals at the seedling stage. Most of them are non-pathogenic (or abiotic). When doing inspections/diagnosis, look for distribution patterns in the field. Is the yellowing in regular strips? It could be herbicide overlaps. Is it in low spots? It could be excess moisture temporarily limiting nutrient uptake. Does it correspond with heavier residue levels where the yellowing shows? Surface applied nitrogen could be immobilized. Tissue tests are the best method for determining whether it is a nutrient deficiency.

Fusarium Head Blight Forecasting

The 2023 cereal crops are just nicely out of the ground, so it may seem early to be thinking about the risk of Fusarium Head Blight (FHB) infection. That risk, influenced by warm temperature and high humidity, is highest when those crops are on the verge of flowering (anthesis). For most spring-seeded cereals, that happens from mid-June to early July.

If you have followed Manitoba Agriculture's Risk Forecast map in the past, you can expect to see the first map the week of June 19th. The forecast includes a 7-day animation, which shows the direction that risk is going in your area, increasing or declining. There are some improvements in the model that drives the

forecast, but the maps will have the same appearance. Relative Humidity (RH) will be *measured*, rather than being *estimated* based on temperature and rainfall.

Agricultural Meteorologists with Manitoba Agriculture have been working with a team to refine the risk forecast model. Their research has been testing the newly created model over many locations and site years. The field validation of the model will continue for another three years, hopefully to include some growing seasons with more moisture than in recent years.

I have spoken with one agronomist who was concerned with the FHB risk for a field of winter wheat. The crop was fully headed and on the verge of flowering which is the vulnerable stage for infection when Fusarium is present. Close inspection showed another pathogenic disease already affecting the crop – **powdery mildew**. This disease has the unusual environment coincidence of hot, dry days and cool nights. These are dew-forming conditions in which the pathogen thrives.

Weeds

As the third largest crop grown in Manitoba (estimated up to 1.5 million acres seeded in 2023) soybeans are unique as there are several different weed management systems to choose from. While it's great to have lots of variety, it also means we have to be careful spraying as nearby soybean fields can and will be a completely different weed management system. Making sure the right herbicides get on the right fields and don't drift to neighboring soybeans is crucial.

Conventional beans make up 1-3% of the total acres and these beans are not herbicide resistant. R2Y beans are resistant to glyphosate and nothing else. R2X have Xtend technology meaning these varieties are resistant to dicamba and glyphosate. E3 or Enlist beans are resistant to glyphosate, glufosinate and 2,4 –D choline while R2XF or Extend Flex beans are resistant to glyphosate, glufosinate and dicamba. Double and triple herbicide resistance give growers choice and flexibility to apply the best product based on weeds present.

So what product should you use and when can you spray it? Choose herbicides based on driver weeds and their staging. As we see increasing glyphosate resistance in weeds we must use other herbicides with/instead of glyphosate to manage resistant populations. Glyphosate and dicamba are safe at any stage of soybean growth pre- and post-emergent up to R1 stage. Enlist 1 (2,4-D choline) can be sprayed up to R2 stage. When spraying glufosinate in beans you must use the 200 SN products, NOT the 150SN products used in canola. The 200 SN formulation of glufosinate is more concentrated, if you substituted the 150SN product and increased the rate to get the right amount of active ingredient then you have also increased the rate of surfactant. This can lead to severe crop damage, do NOT substitute. Glufosinate 200SN can be sprayed from cotyledon to start of flowering and prior to canopy closure. With triple stacked herbicide technology it's recommended to start with a glyphosate/broad leaf partner application and if there are glyphosate resistant weeds that come through this a follow up of glufosinate will target these escapes. Use as much water as possible to ensure success with glufosinate, this is a great tool to help manage glyphosate resistance and we must give it every chance to work well. As glufosinate is a contact herbicide thorough coverage is critical, especially on larger weeds.

Be careful with drift onto nearby soybean fields as dicamba will severely injure non-Xtend soybeans, 2,4-D choline will severely injure non-E3 beans, and glufosinate will severely injure non-glufosinate resistant beans. Be aware of all sensitive crops in the area and spray accordingly. Monitor weed escapes in the face of increasing weed resistance and keep accurate records as herbicide applications get more complex.

Forecasts

Diamondback moth. A network of 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. So far, diamondback moth has been found in 58 out of 79 traps that counts have been reported from.
Trap counts were low until the week of May 21-27th, when some moderate counts occurred in traps in the Eastern region. The following week (May 28-June 3rd) higher counts occurred in some traps in the Eastern and Central region, with counts in 4 traps approaching or exceeding 100. The highest cumulative trap count so far is 182 from a trap near Beausejour in the Eastern region.

Eggs of diamondback moth hatch in about 5 or 6 days after being laid. In about a week, it would be advised for farmers and agronomists in the Central and Eastern regions to look for diamondback moth larvae when doing crop scouting.

Table 1. Highest cumulative counts of diamondback moth (*Plutella xylostella*) in pheromone-baited traps for five agricultural regions in Manitoba as of June 7, 2023.

Lower Risk: 0-25 Elevated Risk: 26-200 Higher level of moth catch: 200+

Region	Nearest Town	Trap Count
Northwest	Minitonas	5
	Durban, Grandview, The Pas	4
	Birch River, Grandview, Makaroff	3
	Russell	2
	Grandview	1
Southwest	Miniota	17
	Belmont	14
	Lauder	4
	Minnedosa, Rapid City	3
	Brandon, Tilston, Whitehead	2
	Russell, Shoal Lake	1
Central	First week with trap counts greater than 25: May 28 – June 3	
	Altona	121
	Horndean	103
	Brunkild	28
	Layland	27
	Culross	22
Eastern	First week with trap counts greater than 25: May 21 – 27.	
	Beausejour	182
	Whitemouth	113
	Hadashville	50
	Stead	7
	Tourond	8
Interlake	Lundar, Steeprock	13
	Ashern, Vidir	11
	Riverton	10
	Meadows, Selkirk	8
	East Selkirk, Hodgson	7

← Highest cumulative count

Highest counts in each region 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/diamondback-moth-monitoring-05-24-2023.pdf

So far no larvae of diamondback moth have been found or reported.

Identification Quiz:

Question: These tiny beetles can often be seen running around on the soil. What are they?

Answer: This is a type of ground beetle (Carabidae) called *Bembidion quadrimaculatum*. They are predators, thus beneficial insects.

Compiled by:

Manitoba Agriculture Pest Management Specialists:

John Gavloski, Entomologist
Phone: (204) 750-0594

David Kaminski, Field Crop Pathologist
Phone: (204) 750-4248

Kim Brown, Weeds Specialist
Phone: (431) 344-0239

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.