Manitoba Crop Pest Update
Issue 13: Aug 17, 2022

Manitoba Agriculture

Summary

Insects: Aphids are still a concern in soybeans and small grains in some areas, although small grains are advancing past susceptible stages. High levels of parasitism of aphids have been noted in some areas. Lygus bugs are being noticed in canola. A field in the Eastern region was above threshold and will be sprayed for Lygus bugs, and as reported in last week's update there has been some spraying for Lygus bugs in canola in the Swan valley area of the Northwest. In many cases levels are below economic thresholds, and in some fields a big part of the population is early instar nymphs.

Grasshoppers remain a concern in some areas. Grasshoppers may move as some crops mature or are cut. Crickets are also at high levels in many areas. Crickets are generally not regarded as a major concern in field crops, but there have been past reports of them causing boll loss in flax, and this year agronomists have noticed them feeding on flax bolls, wheat seeds, and on canola.

Diamondback moth levels are also being watched in some areas. No populations of diamondback moth above threshold or being controlled has been reported, however some later seeded canola crops in the Northwest were sprayed for a combination of diamondback moth, Lygus bugs and flea beetles.

Diseases: Last week Kim Brown-Livingston said that she and her team were in the midst of the mammoth Weed Survey – over 700 fields! The Disease Surveys of soybeans, wheat and canola do not target as many fields (70 + 140 + 150 = 360). Even so, many staff and agronomist have been hard at it for several weeks already and possibly three more ahead. Considering the very wet spring, and areas with much too much precipitation since, disease levels have been surprisingly low in those three crops. To learn what we have documented thus far, in all the field crops, read on.

Entomology

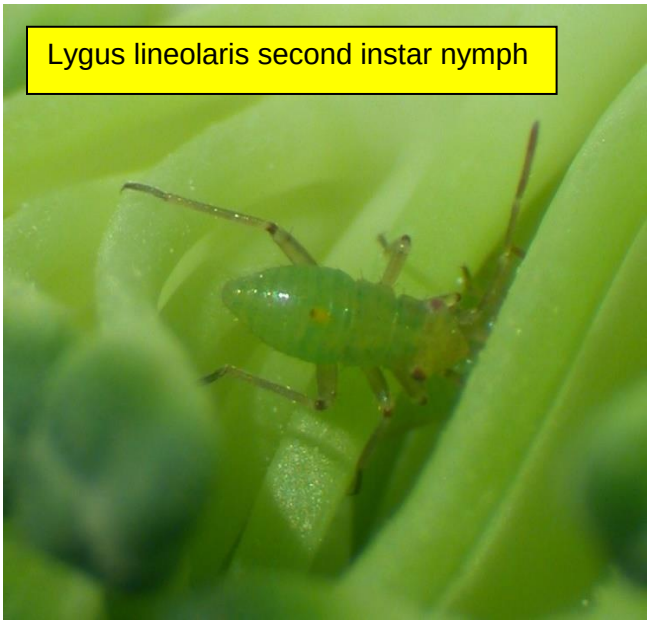
Thresholds for Lygus bugs in canola: A reminder that the threshold for Lygus bugs in canola, based on recent research in Alberta, is 20-30 per 10 sweeps. The first two instars are not taken into account in the economic threshold calculations, because they do not appear to have the ability to puncture the seed. Threshold tables developed from older research, which were previously used, are no longer recommended.

Pods are the focus for crop protection efforts against lygus in canola. The most vulnerable crop stage for lygus feeding is after flowering and when seeds are enlarging on lower pods. When most pods become “leathery” and when seeds inside are firm, lygus bugs can no longer penetrate the pods or seeds with their mouthparts and are no longer an economic threat.


Lygus bug adult on canola pod

Length of nymph stages for Lygus bugs: Young nymphs of Lygus are the dominant stage on crops in some areas.

The young nymphs are pale-green and look like aphids except that they are more active, and lack cornicles (small tubes at the back of the abdomen in aphids). They develop through five instars before they become adults. The fourth and fifth instars have four black spots on the thorax and one on the abdomen. Fully grown nymphs have wingpads and are about 4 to 4.5 mm long.


Lygus lineolaris second instar nymph


Lygus lineolaris fifth instar nymph

Both photos from Tharshi Nagalingam, University of Manitoba.

In a research study *Lygus lineolaris*, which is usually the most common species of Lygus bug in Manitoba, was reared on green beans (another host of Lygus bugs) at multiple constant temperatures and longevity of various stages and reproduction was measured (Ugine. 2012. Environmental Entomology. 1-10).

The time it took *Lygus lineolaris* to go through their 5 nymph stages varied with temperature (in the study these were constant and not fluctuating temperatures):

Temperature °C	Days in nymph stages					
	1st	2nd	3rd	4th	5th	total
17	8.5	6.0	6.1	6.9	9.9	34.8
18	6.5	4.9	5.1	5.5	8.1	28.0
25	3.9	3.0	2.8	3.2	4.7	15.6
27	3.0	2.6	2.6	3.0	4.3	13.4
30	3.1	2.4	2.4	2.6	3.9	12.4
32	2.9	2.6	2.3	2.8	3.7	12.3

The 18C and 25C rows are likely the most relevant for the temperatures we are currently experiencing. These can be used to estimate how long Lygus bugs should remain in each stage.
With daytime temperatures in the 20 – 30C range and temperatures in the evening getting below 20C, it will probably take about 2 to 3 weeks to go through their 5 nymph stages. But as the data shows this is very temperature dependent. Note that these would be approximations, as the quality of host plants may also contribute to Lygus longevity.

Plant Pathology

Last week we talked about oat crown rust. Early reports suggested it set in late and might not be an economic concern. However, in the Aug 10th edition of CropTalk, I learned of some oat fields in the Souris-Glenwood area with heavy infestations. I visited one of them and saw for myself that it was as serious as reported. Ones trousers quickly developed orange knees after a walk though the crop.



I went into some detail about the life cycle last week. The pronounced evidence of the telial stage (black pustules) suggests that this crop was infected early. A fungicide had been applied at flag leaf timing. The producer wondered whether a second application would be of economic benefit. In the end, they chose to desiccate the crop as a pre-harvest treatment. While this might stop the advance of the disease, however, done too early, that is before the hard dough stage can also result in low bushel weight and a greater proportion of thins.

Unfortunately, the cultivar was Souris, which is moderately susceptible (**MS**) to crown rust. There are varieties available that have a **MR** or even an **R** rating for this disease. Incidentally, the field was within a few miles of the Souris River where the alternate host –buckthorn – will harbour the inoculum that re-infects oats each year.

Sclerotinia in canola

Among the first surveyed canola fields, stem rot was not an issue – most of those fields were sprayed with fungicides. However, I did visit one field in the RM of Yellowhead, just south of Riding Mountain National Park, that had not been sprayed; it had an incidence of 13% (13 of 100 plants examined). Of those, the average severity was 3 on the 0-5 scale. This translates to a potential yield loss of ~50% on infected plants or 6.5% over the whole field. Assuming an expected yield of 45 bushels/acre, that would be approximately 3 bu./ac. lost or, at current prices, about $55/acre.

Reports from staff and industry agronomists

1. More Barley Yellow Dwarf and Bacterial Blight [in oats] than in previous years.
2. Concern about sunflower head rot … if the wet August continues. “Wet conditions now are always a problem for sunflowers no matter how nice they look.” – Eastern region.
3. Sclerotinia in canola is low; fusarium in wheat is low also – Northwest region.

Forecasts

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, will be used to produce a forecast for 2023.

The protocol and data sheet for the grasshopper survey is at: https://www.gov.mb.ca/agriculture/crops/insects/pubs/grasshopper-survey-protocol-2022.pdf

Identification Quiz:

Question: Some have reported finding these red things under the wings of grasshoppers. What are they?

Answer: The red on the grasshoppers are parasitic larvae of a species of velvet mites (*Eutrombidium locustarum*). Mites develop through four stages; egg, larvae, nymph and adult. Larvae of *Eutrombidium locustarum* feed on the blood (hemolymph) of grasshoppers. Nymphs and adults also prey on grasshopper eggs. Each nymph requires more than two grasshopper eggs to become an adult. Adult males require three eggs to be able to reproduce, and adult females require seven to eight eggs to reproduce.

Each female mite can lay up to 4,000 eggs, providing mite populations the potential to increase rapidly and substantially as grasshopper populations increase.
Research in Montana has shown that these mites can reduce the survival and reproduction of grasshoppers.

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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.