

Manitoba Crop Pest Update

Issue 14: August 19, 2020



Summary

Insects: Grasshoppers continue to be the insect of greatest concern. Some have also commented on the high levels of flea beetles being observed in canola currently.

Diseases: Having travelled throughout much of the province over the last week, from Swan River to Pierson to Manitou to Stonewall, I have seen mostly good crops and, in the fields that I've surveyed, very low levels of disease. That is not surprising with the last several weeks being warmer than normal – we're now ahead on GDD and CHU in most areas – and with scant or localized rainfall.

Entomology

Flea Beetles: There have been a lot of comments recently regarding very high levels of flea beetles on the podded canola. Canola can handle a fair amount of flea beetles late in the season, particularly if the crop is in the green seed stage or beyond. Do keep an eye on how much damage appears to be happening from the feeding, and how far along the seed development is.

There has been a study looking at the economics of late season feeding by flea beetles in canola. A study was done at Agriculture and Agri-Food Canada in Saskatoon to determine how economical flea beetles are on canola in late summer, and potentially develop an economic threshold. The study concluded that: "Flea beetle feeding on canola in late-summer is rarely an economic concern. Flea beetle feeding that occurs when seeds in lower pods of canola are at the green stage or beyond is unlikely to affect seed yields regardless of the infestation rate of flea beetles. Even when seeds are translucent to green, numbers higher than 100 flea beetles per plant, and for some cultivars higher than 350 per plant, may be necessary to cause significant yield reductions" (Soroka and Grenkow. Can. J. Plant Sci. 2012: 97-107).



Photo by Ingrid Kristjanson

With the extremely high flea beetle levels being reported in some canola fields this year, do keep an eye on how much pod damage is occurring.

Some have asked whether killing high levels of flea beetles in canola now can be done to reduce the flea beetle risk for next year? My advice on this question is to control flea

beetle if they appear to be an economic threat to this year's canola, and if not, the most economical decision is to avoid the late-season insecticide application and deal with levels that may emerge in the spring. Researchers have had little success correlating late-summer and spring flea beetle populations. A very high population in the late-summer does not guarantee flea beetles will be at equally high levels in the spring, although it should result in crops being watched carefully in the spring.

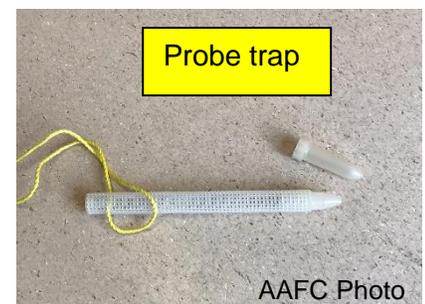
The good side of crickets: Whether you enjoy the sound of crickets chirping in the late-summer, or find some of the sounds and habits of crickets annoying, they do have a good side. Field crickets have been documented as predators of other insects, and are known to feed on weed seeds. There are research publications documenting field crickets as predators of grasshopper eggs, apple maggot pupae, alfalfa weevil adults, green cloverworm pupae (although green cloverworm is not known to overwinter here), and adults of the crucifer flea beetle. I can't imagine flea beetles being too big a part of their diet, however, based on the activeness of this beetle. Field crickets have long been known to feed on grasshopper egg pods. In a study from Alberta, 22 field crickets were collected from a known egg laying site of twostriped grasshopper. Of these, five had empty crops, and had not fed recently. Eleven of the remaining 17 had fragments of grasshopper eggs in their crops.



Studies at Michigan State University found that the fall field cricket, *Gryllus pennsylvanicus*, readily consumed seeds of small and large-seeded annual weeds. In 24 hours in laboratory no-choice tests, female and male fall field crickets consumed an average of 12 and 8 velvetleaf, 26 and 9 giant foxtail, 87 and 69 crabgrass, 223 and 90 redroot pigweed seeds, respectively (Carmona et. al. Journal of Economic Entomology. 1999. 825-829).

In case you were curious, the cricket in the photo is a female. Males have a pair of cerci that extend from the back of the abdomen, and females have a third projection, the long ovipositor (used to lay eggs) extending from the middle of the abdomen.

Farms needed for stored grain insect survey: A reminder that entomologists with Agriculture and Agri-Food Canada in Winnipeg are doing a survey in September of insects in farm grain bins. They are looking for 10 farms not too far from Winnipeg where they can access grain bins to sample insects. The goal of this survey is to determine the insect species that infest stored grain on the prairies and to try to detect potential new invaders. No grain will be removed, just insects. They will place a grain probe trap in as many bins as they are able to access, in all types of grain (cereals, pulses, etc.).



These are to catch insects occurring in the bin. They will also place a funnel trap and a bucket trap with pheromones outside, near the bins, and a parasitoid trap (a water bottle containing rusty grain beetle or red flour beetle larvae). They would place the traps after harvest sometime in September, and come retrieve them 2 weeks later. If you have or know of farms that may be willing to be involved in this insect survey, please contact John Gavloski at the contact information at the end of this update.

Plant Pathology

As harvest of cool season crops is in full swing, disease surveying is turning to the warm season crops. In soybean, it is predominantly bacterial blight in the middle portion of the canopy. Agronomists have also seen some frog-eye leaf spot (pictured below) and downy mildew in soybean. We are getting numerous reports of ergot, not just in rye but also in wheat. Larger ergot bodies are fairly easy to separate from the grain but those that are the same size as kernels are nearly impossible to clean out, even with a colour sorter. Levels of FHB in cereals continue to be very low. In canola, we are getting reports of suspected *Verticillium* stripe, particularly in the central and southwest regions. It appears to be late onset and does not seem to be affecting seed development. Telltale signs are bleached stems with some shredding but no large sclerotia inside. Later, microsclerotia (tiny black dots) appear within the vascular tissues and the pith.



Soil Fertility

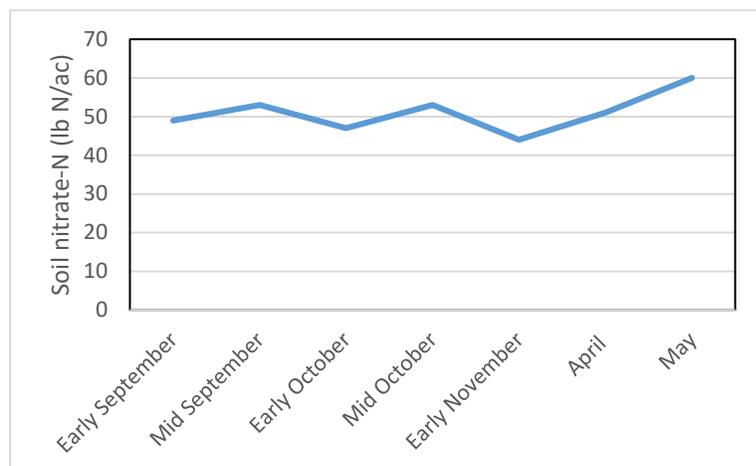
Is it too early for fall soil sampling?

Currently the traditional and most reliable method of measuring available N for the crop is the nitrate soil test. Fall sampling is most common, and to be effective, it should reflect the amount of N available at planting time. Manitoba recommendations have traditionally been to “delay sampling until soils have cooled to 5°C” so that all the N that will mineralize during the fall will be detected. This has historically been in early to mid October.

But earlier fall sampling may be desirable for number of reasons:

- sampling is more likely to be done
- analysis is available for fall fertilizer prescriptions and N application
- sampling before tillage gives more consistent /reliable sample depths
- volunteer crop regrowth is less likely to hide available N from test
- can be used as an audit of the soil’s N supplying ability (after taking into account starting soil N, applied N and N removal)

We evaluated soil sampling times at 8 sites following cereals in Manitoba in 1999-2000, with average levels shown in the figure below. On average, there was little change.



Soil nitrate levels did start to increase rapidly once spring sampling was delayed into May, due to mineralization in warm soils.

There were 2 instances where fall N levels did change from early fall sampling:

- 2" of rain on a sandy soil in late October leached some 20 lb N/ac below the 24" sampling depth
- Aggressive fall tillage (2x) on a high organic matter loam soil, increased soil N by some 25 lb N/ac

So early fall sampling is generally reliable on cereal stubble, but there remain known environmental and management factors that can still influence soil nitrate levels. We might expect to see more N mineralized during the fall following canola or peas crops.

Reference:

Heard, J and J. Lee. 2001 The Influence of Sampling Time on Fall Soil Nitrate Levels. Manitoba Agronomist Conf.

http://www.umanitoba.ca/faculties/afs/MAC_proceedings/2001/pdf/heard4.pdf

Wheat quality as an indicator of nutrient sufficiency

We have heard some reports of lower protein and piebald occurring in spring wheat in 2020. Here is some background and Manitoba thumb rules to use to assess your situation.

Piebald is a condition where white, soft starch predominates the kernel rather than the hard vitreous kernel (HVK) condition we generally expect in hard red or durum wheat (see photo below)



White, starchy kernels indicative of piebald and low protein.

The main cause is a lack of sufficient nitrogen (N) reserves during grain filling. And protein levels will be lower.

The lack of adequate N may be due to several reasons, including;

- High losses of applied N fertilizer – either to volatilization of surface applied urea or UAN. Or excessive moisture causing nitrate-N losses to leaching or denitrification
- Higher yield potential than fertilized for – with adequate moisture and lack of disease or good disease control.
- Less than expected soil organic matter mineralization due to environmental conditions, such as cool, or dry soil.
- Simply inadequate N applied for the yield potential realized. Recent studies confirmed an N supply (soil plus fertilizer) of some 2-2.5 lb N/bu was required to meet N needs of the wheat crop.

Consider the traditional MB thumbrule to assess appropriateness of your N fertility program. If hard red spring wheat is less than 13.2 – 13.5% - then insufficient N was available for optimum yield. For winter wheat this is value is 11.5%.

Soil testing is important to gauge adjust your starting N rates. And post-harvest soil sampling of wheat fields can be used as an auditing tool to determine if applied N was excessive for meeting the yield and protein for a particular field and year. Recent MB research indicated that if residual soil nitrate-N levels exceeded 55 lb N/ac in 0-24", the N supply was more than adequate for the optimum economic yield of wheat.

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. There are a couple of weeks left for doing counts.

From the 47 locations entered so far, there are some localized areas in the Southwest, Central and Eastern regions that have some higher counts. Twostriped grasshopper seems to be the dominant species in most locations.



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 2021.

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: What is the interesting Orthopteran in the photo below?



Answer: This is a species of katydid called Roesel's katydid (*Metrioptera roeselii*). There are 10 species of katydids in Manitoba; a few that are real common, although Roesel's katydid is less common than some species. Roesel's katydid likes tall grasses, and can be found in a variety of habitats, including the edges of roads, field borders and pastures. Their appearance can be similar to another katydid called the bog katydid, *Metrioptera sphagnum*.

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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.