

# Manitoba Crop Pest Update

## Issue 12: Aug 10, 2022

### Summary

**Insects:** Insects of greatest concern currently are aphids in small grain cereals and soybeans, and grasshoppers. Insecticides have been applied for soybean aphid in some fields in Eastern and Central Manitoba. High populations of aphids are present in some fields of wheat, oats and barley, with insecticides applications occurring. There has been some spraying for Lygus bugs in canola in the Swan Valley area of the Northwest.

**Diseases:** Agronomists in the field reported two new diseases for this year: downy mildew in field peas and crown rust in oats. Read further below for the unique conditions that favour these diseases and why they might have appeared at this time in the season.

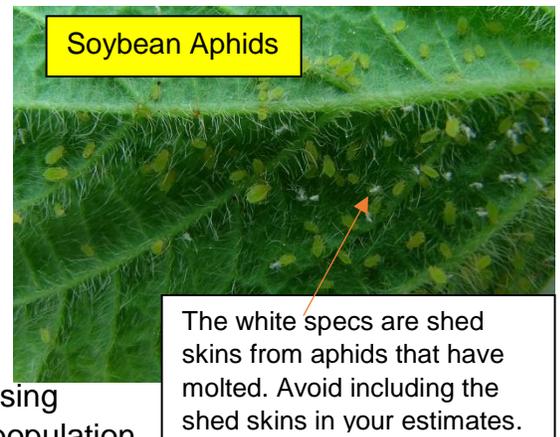
**Weeds:** Provincial Weed Survey is wrapping up with almost 700 fields sampled so far. Most fields are relatively clean and crops are in good shape. We are seeing a lot of warm season weeds like foxtails and pigweeds as well as wet season weeds like plantain and yellow dock. Other weeds like wild buckwheat, round-leaved mallow and Canada fleabane seem to be more prevalent this year. We will come back to about 1/4 of the fields at harvest time to sample mature weeds, these will be valued for herbicide resistance. Stay tuned this winter for preliminary results!

### Entomology

**Thresholds to use for soybean aphids:** The action threshold for soybean aphids (where insecticide application is recommended to prevent economic loss) is:

- 250 aphids per plant on average,
- and the population is increasing,
- and the plants are in the R1 (beginning bloom) to R5 (beginning seed) growth stages.

The reason that "and the population is increasing" is part of the threshold is because the economic injury level, where control costs will equal yield loss, is actually about 670 aphids per plant. The action threshold, where control is suggested, has been set much lower than 670 to allow time for an insecticide to be applied before increasing populations could potentially reached 670 per plant. The population doubling time for soybean aphids is on average about 7 days.



**Should the action threshold for soybean aphids be adjusted for higher crop values?** When the value of the soybean crop has increased or is high, it is not advised to use an action threshold below 250 per plant and the population increasing. There is already a large gap between the economic injury level and the action threshold that is suggested. Setting an action threshold at lower aphid densities increases the risk to producers by treating an aphid population that is growing too slowly to exceed the economic injury level in 7 days, eliminates generalist predators, and exposes a large portion of the soybean aphid population to selection by insecticides, which could lead to development of insecticide resistance. Continue to use the action threshold presented above.

More information on soybean aphid biology, scouting, thresholds, management and natural enemies of soybean aphids can be found at:

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

### **How long do we need to worry about aphids in small grain cereals?**

The economic threshold for aphids on cereals is an average of 12 to 15 aphids per stem prior to the soft dough stage. After the early dough stage insecticide treatments would not be cost-effective.

Also – by per stem, what is meant is per tiller; you are counting aphids on the heads, leaves and stems, not just on the stem.



## **Plant Pathology**

First, let us discuss **crown rust in oats**. The first report was from an area west of Morden on Summit oats, an older cultivar that *Seed Manitoba* lists as having only **Intermediate (I)** Resistance. Hearing of the report, we examined commercial blocks of oats on the Ian Morrison (U of M) Research Farm here in Carman. The variety there is CDC Endure, which should have better resistance to crown rust – *Seed Manitoba* reports it as **Moderately Resistant (MR)**. Nevertheless, characteristic pustules were easy to find on leaves and stems, especially on lodged crop, close to the Boyne River. The pictures below illustrate orange pustules on leaves and stems. When those leaves are rubbed, uredospores come off like cheesy dust on your fingers.

Crown rust can cause weakening of the stems and subsequent lodging. The black structures you see are pustules of a more advanced spore stage. Ultimately, these send inoculum back to the alternate host, a woody shrub called buckthorn.



The alternate host is the source of initial infection on the oat crop. You will probably find crown rust to be most intense close to streams and riverbanks that are the natural habitat of buckthorn. We do not see widespread infection of oats because conditions (winds from the southeast) have not favored the influx of airborne uredospores from the US. At this point, fungicide application is not warranted for two reasons:

- 1) It would no longer halt the advance of infection
- 2) It is too close to harvest to meet the pre-harvest interval restrictions

Another red flag, or at least a caution – fungicides that contain the active ingredient **fluopyram** do not have an established Maximum Residue Limit (MRL). For now, the MRL is the very low default level. For a fuller explanation of this caution, please consult the website of *Keep It Clean* [here](#).

Next, we shall turn to **downy mildew in field peas**. A grower in the Eastern region of Manitoba reached out to MPSG Agronomist, Jennifer McCombe-Theroux, concerning the impact of downy mildew in field peas. According to the book – *Diseases of Field Crops in Canada* – “This disease is common but causes serious losses only ... in cool, wet years. On the prairies, the disease is usually of little importance.” I knew I had seen it when I operated a Diagnostic Lab in Alberta years ago. Laura Schmidt, also an Agronomist with MPSG out a more recent journal article from *Crop Protection* – K.F Chang *et al.* 46 (2013) 23-28. It dealt with the impact of the downy mildew in field peas and the effectiveness of seed treatments and foliar fungicides.



*Images used by permission*

If you are scouting pea fields on suspicion of downy mildew, the symptoms on the upper leaf surfaces are inconspicuous – vague pale or yellow spots. On leaf undersides though, you can find felt-like spore growth, first white and later grey. This might also be evident on stems, petioles, tendrils and flowers.

Historically in Manitoba, we have seen downy mildew but at low severity and not of economic concern. In the situation at hand, the crop was lodged due to a strong wind and rain event, then cool nights with consistent rain every couple of days and heavy dews magnified by a thick canopy.

Other important factors were the use of farm-saved seed, sown without any seed treatment. Downy mildew is highly seed-borne. The 2013 paper mentioned above cites seed treatments containing the systemic active ingredient **metalaxyl** as the most effective against the disease. Checking the *2022 Guide to Field Crop Protection*, we noted that the foliar fungicides available only provides suppression of downy mildew. The crop was sprayed at early bloom to control *Mycosphaerella* blight and the grower was deliberating on whether a second application could be economical. There is no established threshold for downy mildew in peas. If one were to spray a second time, it is critical to use a fungicide with a different mode of action than the first in order to prevent the development of fungicide resistance in these pathogens.

## 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:** The green slug-like insect in the photo on the right below was found on peas while looking for aphids. The type of insect in the photo on the left below was reported to be seen in a variety of cereal crops. What are these? Hint – neither has legs, so these are not caterpillars.



**Answer:** These are insects you don't mind seeing in your crops. Both of these are larvae of hover flies (family Syrphidae). There are 539 species of hover flies in Canada, so they are a fairly diverse group. Larvae of most species of hover flies are slug-like, legless, and taper towards the head. Colour is commonly brown, greenish, but they can also be pink or whitish. Many species are important predators of aphids, and some may also feed on thrips, scale insects or small caterpillars. Larvae of some species are capable of destroying hundreds of aphids during their development.

With no true eyes, hover fly larvae discover their victims by swinging their head to and fro, searching for prey with sensory structures located on the front end of its fleshy head. When it bumps into an aphid, it quickly snares its victim and sucks the fluids from its body, and tosses the exoskeleton.

Adults feed on pollen and nectar and can be very effective as pollinators. As adults, many species of hover flies resemble bees or wasps and are usually seen on or near flowers. But do not bite or sting.

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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.