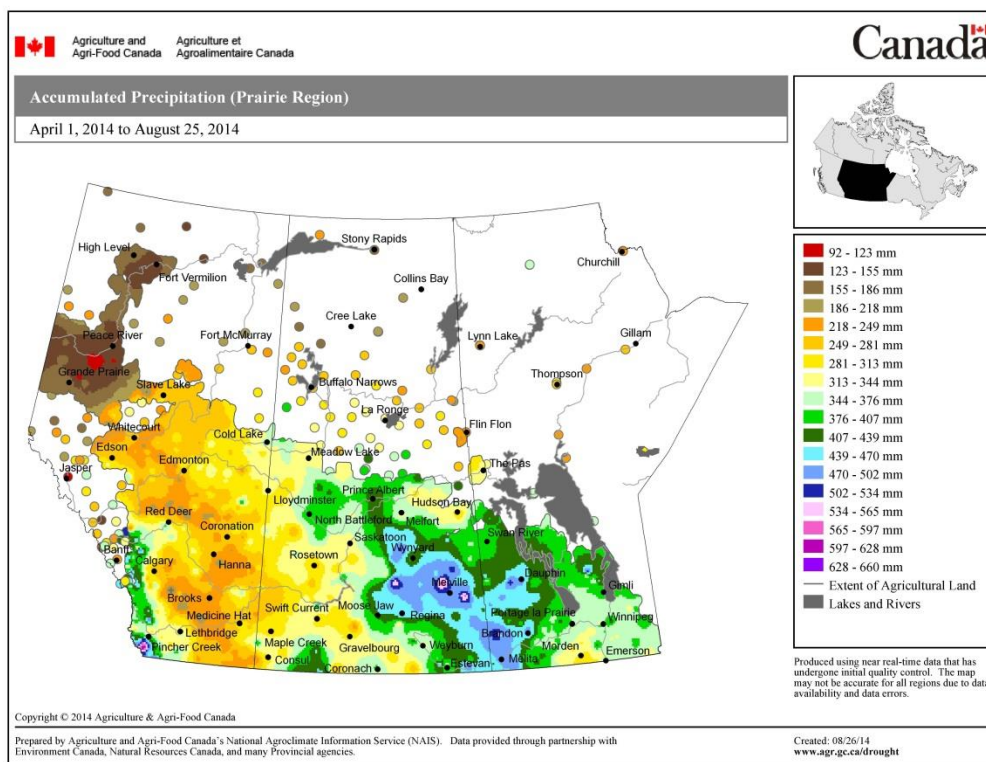


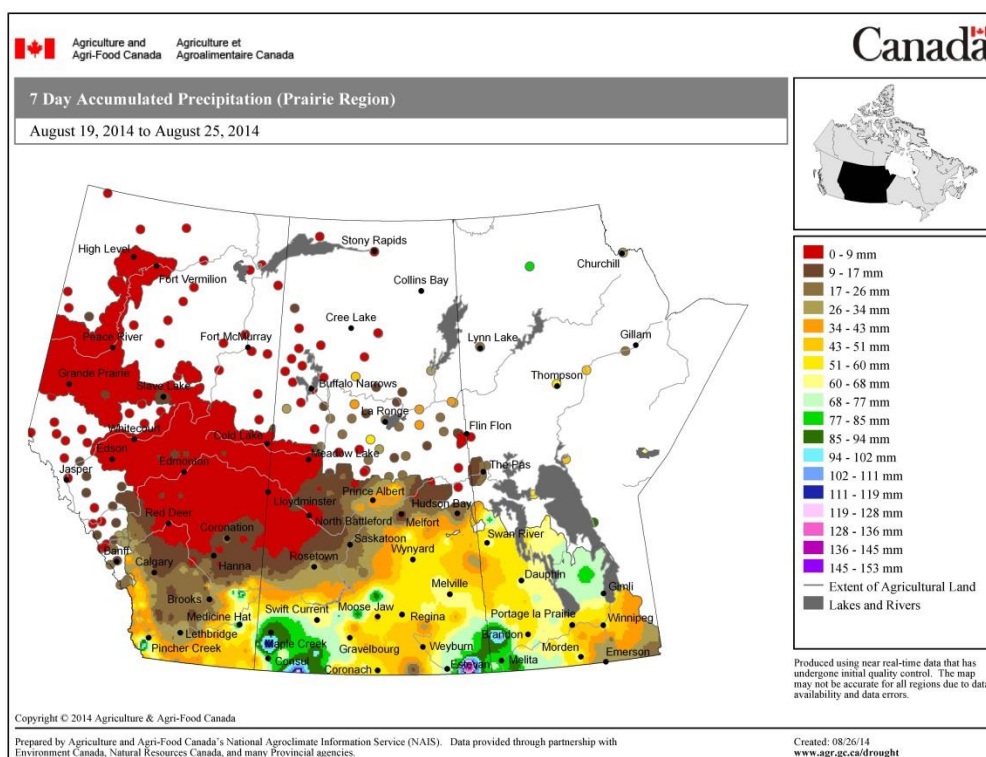
## **Prairie Pest Monitoring Network Weekly Updates – August 27, 2014**

### **Otani, Giffen, Weiss, Olfert**

**1. Weather synopsis** – Below is the **Accumulated Precipitation for the Growing Season** (i.e., April 1- August 25, 2014):

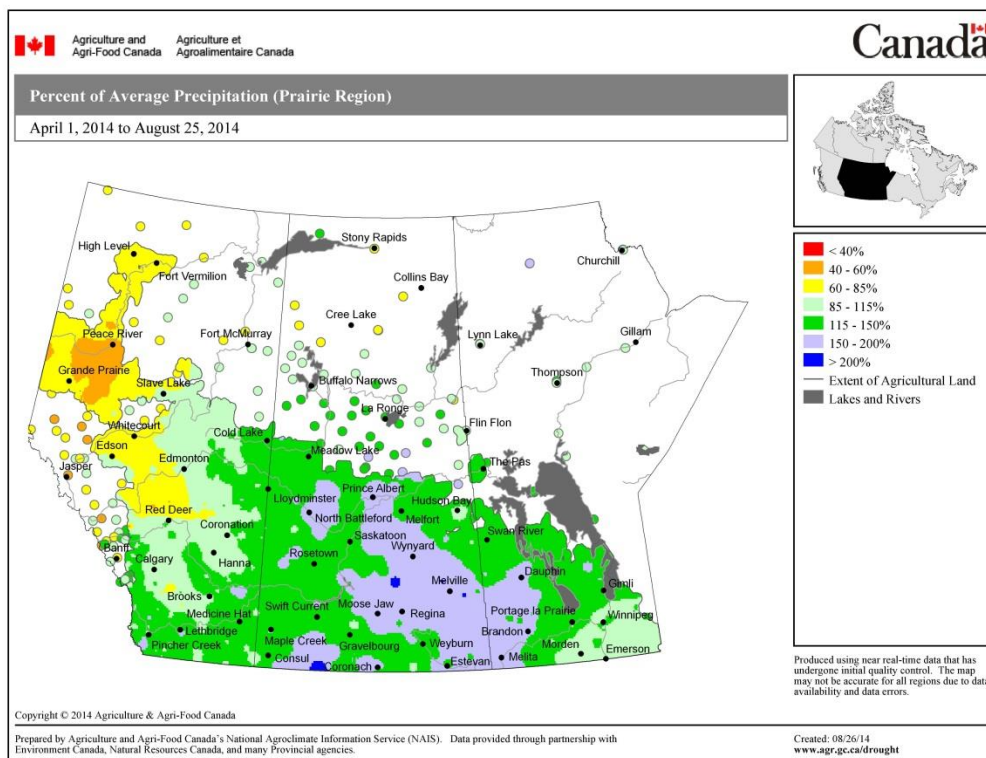


Below is the **Accumulated Precipitation the Past 7 Days** (i.e., August 19-25, 2014):

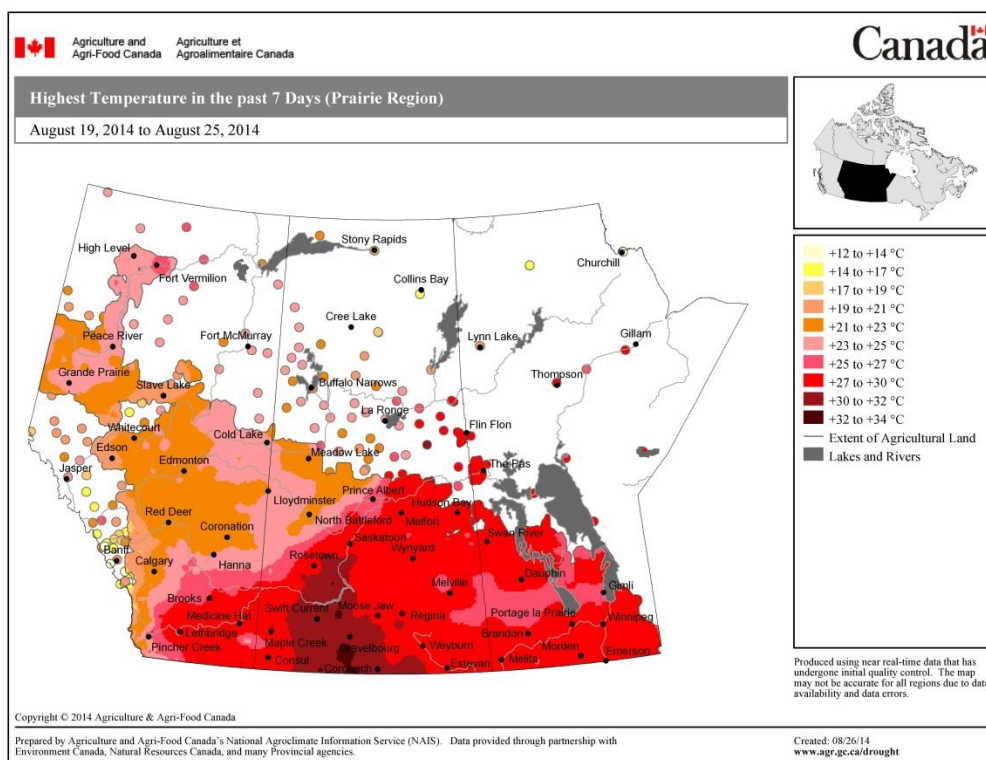




The map below shows the **Percent of Average Precipitation** for the growing season (April 1-August 25, 2014):

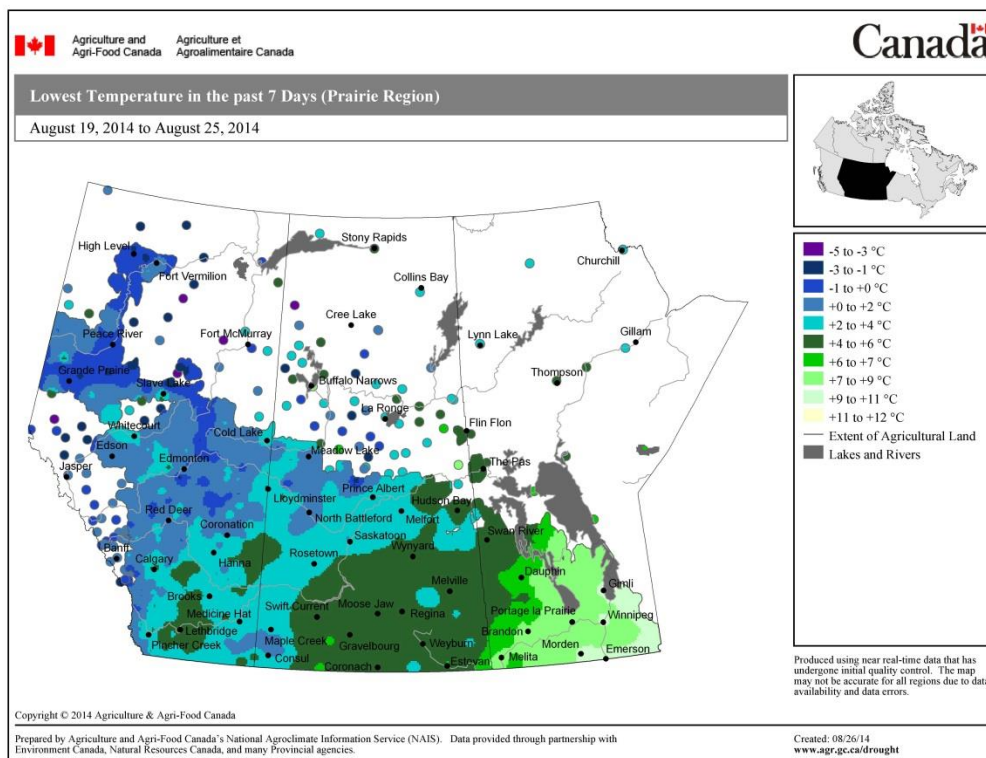


The map below reflects the **Highest Temperatures across the Prairies the past 7 Days** (i.e., August 19-25, 2014) – a little cooler than the previous week.

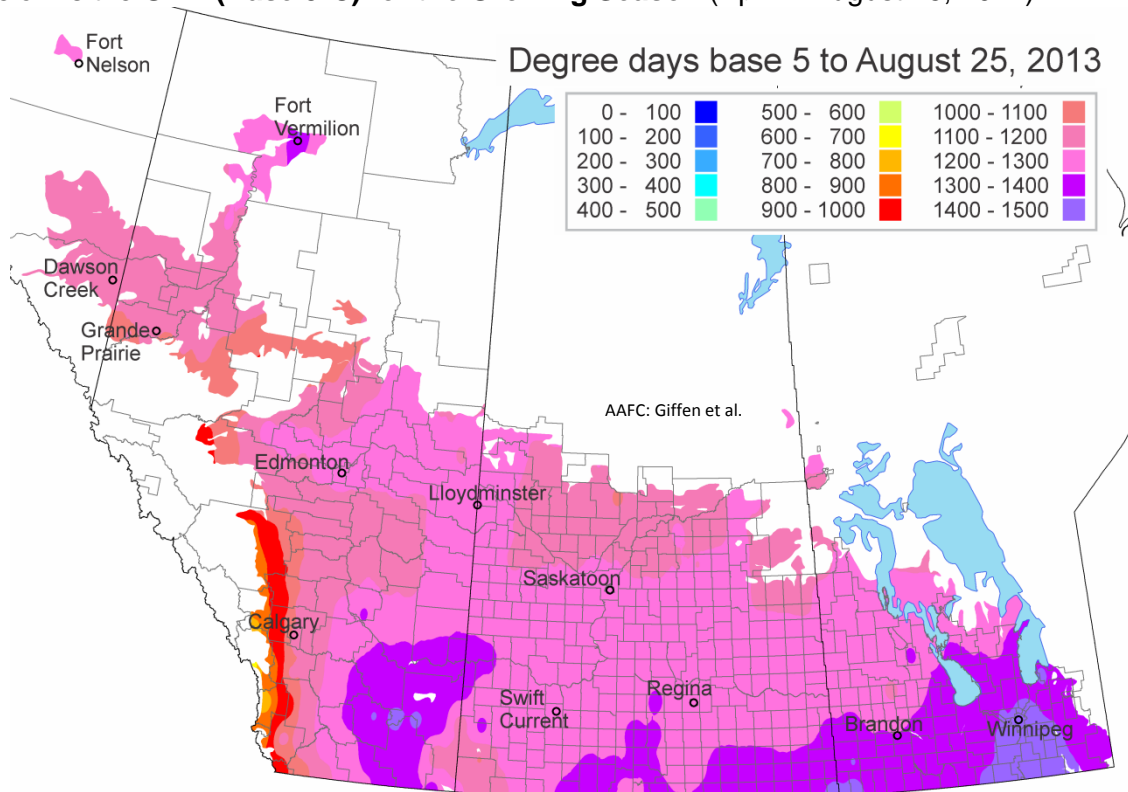




This past week frost touched some of our prairie crops - the map below reflects the **Lowest Temperatures across the Prairies the past 7 Days** (i.e., August 19-25, 2014).



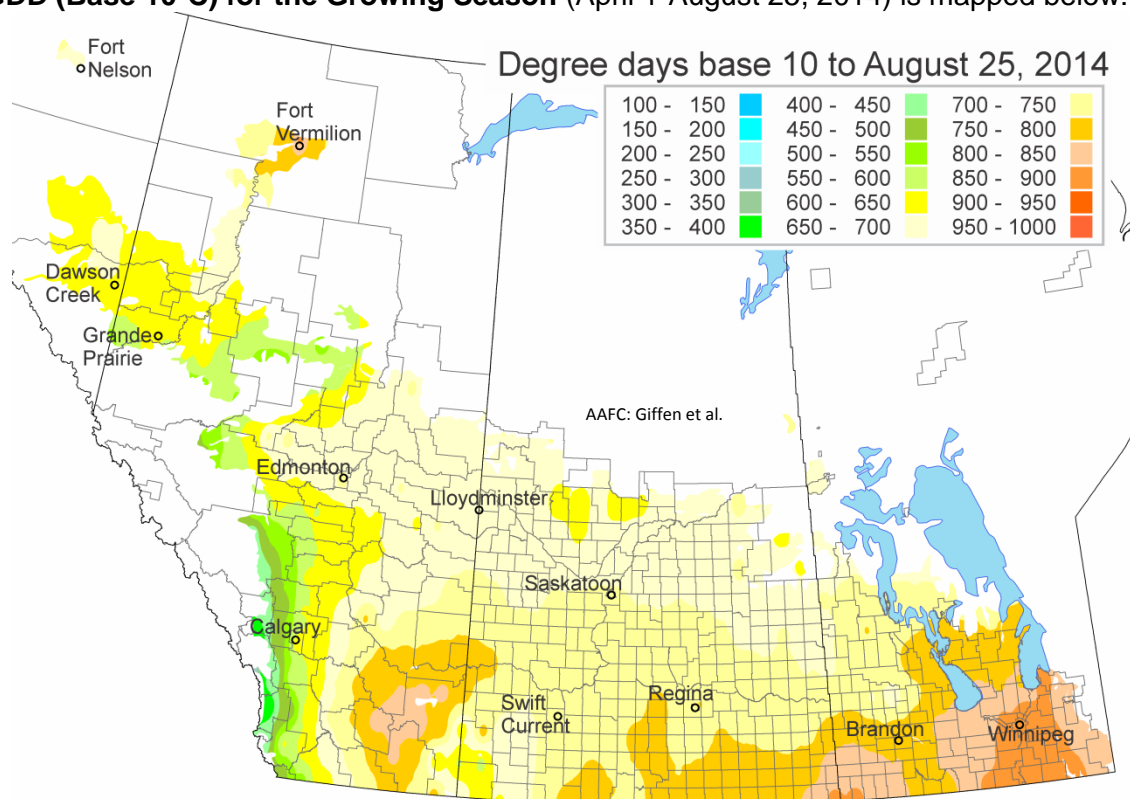
Growing degree day (GDD) estimates reflect the growing season, in terms of heat accumulation, across the prairies. Below is the **GDD (Base 5°C) for the Growing Season** (April 1-August 25, 2014):







While the **GDD (Base 10°C) for the Growing Season** (April 1-August 25, 2014) is mapped below:



**2. Insect Development and Simulation Outputs** – Model outputs are now completed for the 2014 growing season. Thank you to the dedicated AAFC-Saskatoon Staff who compiled data, generated and mapped the output data, plus provided weekly summaries for the various insect pest species during the 2014 season!

**3. Pre-Harvest Intervals (PHI)** – Last reminder: Please factor in the **PHI which is the minimum number of days between a pesticide application and swathing or straight combining of a crop**. The PHI recommends sufficient time for a pesticide to break down and a PHI value is both crop- and pesticide-specific. Adhering to the PHI is important for a number of health-related reasons but also because Canada's export customers of canola strictly regulate and test for the presence of trace residues of pesticides.

In 2013, the Canola Council of Canada created and circulated their "[Spray to Swath Interval Calculator](#)" which was intended to help canola growers accurately estimate their PHI. Other PHIs are described in your provincial crop protection guides and remember that specific crop x pesticide combinations will mean different PHIs.

**4. Preliminary Research Updates and Field Observations for 2014** – Several of our prairie researchers who contribute to the PPMN were kindly able to provide information in time for this last Weekly Update. The following will hopefully help growers and the industry to seek out additional information at winter meetings. It may even alter in-field scouting priorities for 2015. Thank you to those who were able to send the following:

- a. **Swede Midge (*Contarinia nasturtii*) on the Prairies** – Julie Soroka (AAFC-Saskatoon) - Lars Andreassen, a recent graduate of the University of Manitoba, has been hired as a postdoctoral fellow at Saskatoon Research Centre to investigate swede midge biology and its distribution on the prairies.

From the first identification of adult flies near Nipawin, Melfort, and Yorkton in SK in 2007 and Portage la Prairie and Carman MB in 2008, swede midge continues to spread slowly across the prairies. Damage



symptoms in canola were first observed near Carrot River SK, in late July of 2012. In a survey of 44 fields in the region, swede midge was found at very low levels in 11 fields. In 2013 midge damage was seen at the beginning of July, at higher levels than and to the south and west from the locations found in 2012. **The 2014 survey is not complete, but midge damage and larvae were found in late July further south and west than previously observed in 2013.**

In our co-operator surveys and from our analysis of pheromone traps from 152 locations across the prairies in 2014, **swede midge has been found** as far west as **Meota** and as far south as **Allan SK**. Typical symptom such as feeding marks on the flower pistil – but no midges -were seen in fields near Yorkton and Melville. **Midge larvae were found in fields east of Carrot River extending to the Manitoba border. Midge larvae and adults were found north east of Swan River MB** and those populations appeared to be well established. The **earliest record of adults this season** was on traps **near Sanford MB on June 25**, although most other positive locations had the first recovery of adults well into July. **To date, no swede midges have been recovered from pheromone traps from Alberta canola fields.**

There have been reports of many fields with poor pod set and pod bunching at the top of the racemes which has left agrologists questioning if these symptoms are attributable to swede midge feeding. Bunching up of pods on a shortened stem is characteristic of swede midge damage, but Rebecca Hallett says that when there are high densities of pod bunches due to midge feeding there is usually clear evidence of foliar damage as well. Unless there is incredibly uniform stand development, it would be very unusual to have high levels of bunched pods with no apparent foliar damage from swede midge. It is worthwhile noting that extremely high numbers of *Lygus* bugs have been observed in canola in many regions of the prairies this year. *Lygus* bugs may have caused pod abortion and shortened pedicels on racemes in numerous fields yet gone unnoticed. Thrips have been prevalent and numerous in canola flowers in many areas. Several agrologists have submitted samples of “swede midge larvae” which instead were confirmed to be yellow, immature thrips. Yellowing, young pods that eventually aborted and resulted in lower yield potential have been observed in many fields of canola. The reasons for the yellow pods are unknown, but may be due to inefficient uptake of nutrients, wet growing conditions, or heat blast. It is extremely unlikely that, at this stage of its distribution, swede midge is capable of causing uniform pod losses over large areas of a field, especially if the insect has not been found in the field this year or in the area previously.

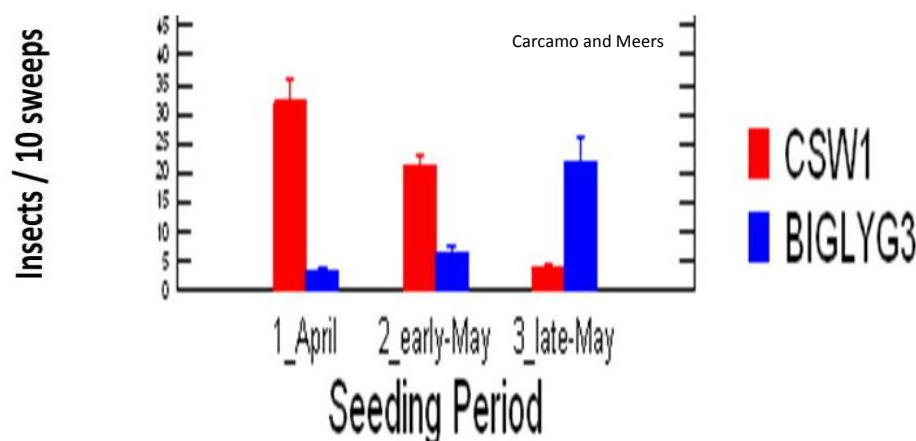
Lars continues work on midge phenology, seeding date effects, biological control, and host susceptibility.

- b. *Lygus* Bugs – Héctor Cárcamo** (AAFC-Lethbridge) - Most years, canola growers observe high numbers of *Lygus* bugs at the end of the growing season, when canola is at the late pod stage and past the vulnerable stage. However, this year high numbers (i.e., more than 5 per sweep) were present in many fields during the mid-pod stages so growers were uncertain if it was worth spraying insecticide considering the crop was to be swathed within 2-3 weeks.

Reasons for this may relate to the late planting due to wet conditions in the spring. The known biology of *Lygus* bugs indicates that they usually are a problem in late planted fields. Field results from a canola study performed with producer-cooperators the past 4 years by Cárcamo and Meers revealed how seeding date had the opposite effect on cabbage seedpod weevils and *Lygus* bugs (Fig. A). Assessing the benefit of mid-pod control of *Lygus* bugs, however, is rather challenging and will require several years and attempts with growers willing to leave large check strips in their fields and being able to get yield data from their combine monitors.



Fig. A



- c. **Cutworms – Vincent Hervet (University of Lethbridge)** - With funding support from the Canola Council of Canada, research continued this year on cutworms affecting canola crops on the prairies. Common species associated with outbreaks in canola in 2012, 2013 and 2014 included dingy cutworm, red-backed cutworm, pale western cutworm, army cutworm and glassy cutworm. Additional species were recovered from forage crops with the relative abundance of all species varying with geographic region. About 20-25% of the cutworms collected were parasitized. Parasitoids included braconid and ichneumonid wasps, and tachinid flies. One of these parasitoids is the wasp *Cotesia vanessae*; a European species only identified in 2012 as occurring in Canada. Laboratory studies show that this wasp can develop in the pest species including dingy cutworm, redbacked cutworm, darksided cutworm, army cutworm, early cutworm, glassy cutworm, W-marked cutworm, clover cutworm, Barnes' climbing cutworm, winter cutworm, true armyworm, bertha armyworm, cabbage looper, alfalfa looper, celery looper, and a few other species of lower concern. Surveys are being done to determine where *C. vanessae* occurs in Alberta.

- d. **Cutworms – Ronald Batallas & Maya Evenden (University of Alberta)** – We performed a larval developmental experiment with multiple hosts including canola, wheat and peas in control conditions. Larvae were reared on host seedlings from 3rd instar to pupation. Larvae reared on canola gained weight faster in early instars compare to larvae reared on wheat and peas. Larvae reared on wheat seedlings had the lowest pupal weights.

Throughout 2014 field season, we monitored the flight activity of redbacked cutworm, bertha armyworm, true armyworm and army cutworm using sex-pheromone lures in canola and wheat fields in Central Alberta. In addition, we continued to test the efficacy of feeding attractant (acetic acid and isoamyl alcohol) at multiple release rates to monitor noctuid pest population. This experiment will continue until the first week of October. For the redbacked cutworm, we monitored the flight activity for 24 hours by checking the trap-catch from sex-pheromone lured traps every hour. Male redbacked cutworm moths look for females from 21:00pm to 2:00am, despite the nightly temperatures. These 24-hour experiments will continue until mid-September.

- e. **Bertha armyworm (*Mamestra configurata*) – Maya Evenden (University of Alberta)** – Oviposition is greatest on canola treated with intermediate levels of fertilizer. Larval development and pupal weight is also greater on plants treated with intermediate levels of fertilizer (3 g/l) in comparison to both low (1 g/l) and high (5g/l) fertilizer treatments. However, female bertha armyworms do not distinguish between canola plants grown from insecticide treated and untreated seeds within the same variety.
- f. **Pea leaf weevil (*Sitona lineatus*) – Amanda St. Onge & Maya Evenden (University of Alberta)** - Based on capture in semiochemical-baited traps, numbers of PLW in southern AB seem to be low this



year. Captures during the spring flight were greatest in traps baited with pheromone and host plant volatiles. Fall experiments are ongoing but pheromone appears to be a less important cue to weevils in the fall.

- g. Grasshoppers** – Weiss (AAFC-Saskatoon) – Grasshopper monitoring continues in Saskatchewan with a recent tour of western Saskatchewan. Surveying routes followed Morengo to Maple Creek (Hwy 21) then back through Cabri and Hazlet. Grasshoppers, particularly two-striped (*Melanoplus bivittatus*), were very abundant along the Alberta border (Hwy 21). A bit further east, along Hwy 4, populations were much lower and dominated by the smaller grasshopper species of migratory (*M. sanguinipes*) and clear-winged (*Camnula pellicuda*). At one point, a windshield scraper had to be used to clear the cadavers off the upper and lower grills of the Jeep! The photo below (Fig. A) was taken AFTER the grills were cleaned!



- h. Wheat Midge (*Sitodiplosis mosellana*) in the Peace – Jennifer Otani (AAFC-Beaverlodge)** – Wheat midge pheromone traps equipped with lures supplied by both Contech and Great Lakes IPM have collected wheat midge adults at sites manned by AAFC-Beaverlodge (near Beaverlodge and Falher AB) and the new BC Pest Monitoring Contractor, Arlan Benn, in 2014. These results confirm wheat midge is present throughout the entire Peace River region.

In an effort to confirm the species and distribution of wheat midge parasitoids, sweep-net monitoring was performed at selected wheat sites from July 4-17, 2014. Sites ranged from 55-59° North by 117-120° West with specimens preserved then forwarded to the National Identification System located at AAFC-Ottawa. While the most northerly and westerly sites have yet to be confirmed, *Macroglenes penetrans* (Kirby) was kindly confirmed by Dr. Gary Gibson (AAFC-Ottawa) and now corroborates field observations of parasitoid wasps active on wheat heads in 2013 (Dolinski pers.comm. 2013). A second parasitic wasp, very kindly confirmed as *Platygaster* sp. by Dr. Lubomir Masner, was confirmed amongst the specimens sweep-net collected in 2014. Some canola survey samples collected in canola but standing on wheat stubble contained large numbers of *Macroglenes* which is good news amidst the widened distribution of the midge within both the AB and BC sides of the Peace River region in 2014.

**5. Crop Reports** - The following provincial websites now have their Crop Reports posted so click the links to find their weekly updates:

- Manitoba's Crop Report: <http://www.gov.mb.ca/agriculture/crops/seasonal-reports/crop-report-archive/index.html>
- Saskatchewan's Crop Report: <http://www.agriculture.gov.sk.ca/crop-report>
- Alberta's Crop Report: [http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/sdd4191](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/sdd4191)

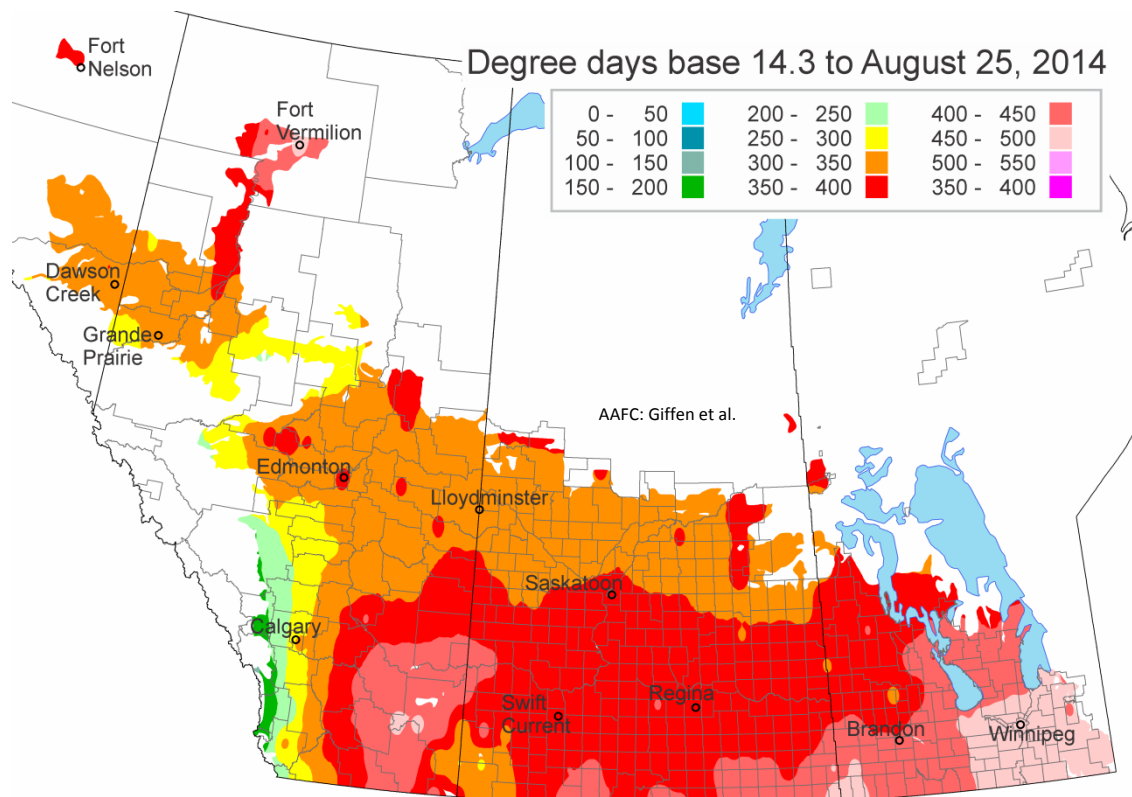
Link here to access the USDA's [Weekly Weather and Crop Bulletin](#).





**6. West Nile Mosquito (*Culex tarsalis*)** - As of this week, **two birds collected in Saskatchewan, one bird in Ontario, and one bird in Quebec tested positive for West Nile virus** (click [here](#) to view reports posted by the Canadian Wildlife Health Cooperative).

Areas highlighted in red on the map below (i.e., 350-400 GDD) have accumulated sufficient heat units for *C. tarsalis* to fly. Remember to apply DEET if you are outdoors!



The Public Health Agency of Canada posts information related to West Nile Virus in Canada and their website can be accessed by clicking [here](#).

**7. We close this final Weekly Update of the 2014 growing season with our thanks to the many people who contributed to the various insect pest monitoring projects this year.** A sincere 'Thank You' to our webmaster, Dr. Kelly Turkington, who very kindly posted all 17 "Weekly Updates", several monitoring protocols updates, plus the annual forecast and distribution maps. We thank the various Associations and Commissions who posted, circulated, and Tweeted the Weekly Updates. We also acknowledge the funding institutions and industry partners listed below who recently signed a five-year agreement to help support 2014 plus four more years of Prairie Pest Monitoring Network and the various crops and pests it continues to monitor:

**Agriculture and Agri-Food Canada  
Western Grains Research Foundation  
Alberta Wheat Commission  
Saskatchewan Pulse Growers  
Saskatchewan Canola Development Commission  
Manitoba Canola Growers Association**

**8. Questions or problems accessing the contents of this Weekly Update?** Please e-mail or call either [Owen.Olfert@agr.gc.ca](mailto:Owen.Olfert@agr.gc.ca) (tel. 306-385-9355) or [Jennifer.Otani@agr.gc.ca](mailto:Jennifer.Otani@agr.gc.ca) (tel. 780-354-5132). Past and present Weekly Updates can be viewed on the Western Forum website ([click here](#) to link to that webpage).





## 9. Previous topics:

- a. **Flea Beetles** (Chrysomelidae: *Phyllotreta* species) – Fact sheets for flea beetles in canola are posted by [Manitoba Agriculture, Food and Rural Development](#), and [Saskatchewan Agriculture](#). Helpful images produced by Dr. Julie Soroka (AAFC-Saskatoon) exemplifying percent of cotyledon leaf area consumed by flea beetles are posted at [Canola Watch](#).
- b. **Cutworms** (Noctuidae) – **Cutworm reports came out of central Alberta and Manitoba this past week.** Cutworm biology, species information, plus monitoring recommendations are available at the Prairie Pest Monitoring Network's [Cutworm Monitoring Protocol](#). Also refer to these cutworm-specific fact sheets ([Manitoba Agriculture, Food and Rural Initiatives](#), [Alberta Agriculture, Food and Rural Development](#)).
- c. **Wind trajectories Related to Diamondback Moth (DBM) and Aster Leafhopper Introductions** – Completed for the season. Please refer to earlier [Weekly Updates](#) for details related to backward and forward trajectories associated with air parcels moving over western Canadian locations.
- d. **Diamondback Moth (*Plutella xylostella*)** – The **Action Threshold for DBM in canola is applicable at pod stage and is 200-300 larvae/m<sup>2</sup> or 20-30 larvae per 0.1 m<sup>2</sup>.** Please refer to **fact sheets for DBM** posted by [Manitoba Agriculture, Food and Rural Development](#), [Saskatchewan Agriculture](#), [Alberta Agriculture and Rural Development](#), and the [Prairie Pest Monitoring Network](#).
- e. **Pea Leaf Weevil (*Sitona lineatus*)** – Link here for the [Pea leaf weevil monitoring protocol](#) including photos of related weevils).
- f. **Swede Midge (*Contarinia nasturtii*)** – Link here for the PPMN's [swede midge monitoring protocol](#). The Ontario Canola Growers post swede midge information [here](#) and canola management recommendations for swede midge in Ontario are posted by [Rebecca Hallett and Brian Hall](#).
- g. **Cabbage seedpod weevil (*Ceutorhynchus obstrictus*)** – **Reminder:** Correct sampling methods by clicking [here](#) or you can link to either the [Alberta](#) or [Saskatchewan](#) fact sheets for detailed biological and pest management information including the economic threshold.
- h. **Cereal Leaf Beetles (*Oulema melanopus*)** – Fact sheets for CLB are posted by [Alberta Agriculture, Food and Rural Development](#), and [BC Ministry of Agriculture](#), and the [Prairie Pest Monitoring Network](#).
- i. **Cereal leaf beetle biological control agent (*Tetrastichus julis*)** - The arthropod biological control agent **attacking the cereal leaf beetle**, is described in a **NEW Agriculture and Agri-Food fact sheet** which can be accessed by linking [here](#).
- j. **Grasshoppers** - Biological and monitoring information for grasshoppers can be linked by clicking [here](#) or you can access fact sheets produced by the provinces of [Manitoba](#), [Saskatchewan](#), [Alberta](#) or [British Columbia](#).
- k. **Wheat Midge (*Sitodiplosis mosellana*)** – Wheat midge biology and monitoring information can be located by clicking [here](#) or linking to your provincial fact sheet ([Saskatchewan Agriculture, Alberta Agriculture and Rural Development](#)).
- l. **Bertha Armyworm (*Mamestra configurata*)** – Provincial fact sheets describing the biology and related pest management information for bertha armyworm are posted by [Manitoba Agriculture, Food and Rural Development](#), [Saskatchewan Agriculture](#), [Alberta Agriculture, and Rural Development](#), or [BC Ministry of Agriculture](#).
- m. **Lygus Bugs (*L. lineolaris*, *L. keltoni*, *L. borealis*, *L. elisus*)** – The **economic threshold for Lygus bugs in canola is applied at late flower and early pod stages.** Biological and monitoring information related to *Lygus* bugs can be accessed by [clicking here](#) or you can access [Manitoba](#), [Alberta](#) or [British Columbia](#) fact sheets.