

Insects in Forages, Perennials & Annual Crops

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FORWARD

Summer Technician—Introducing Carly Shaw!

I was born and raised on a farm near Fairview Alberta. I spent my childhood growing up around animals which mainly consisted of cattle and horses. From a young age I began to help my dad with chores around the farm and the older I became the more responsibility I was granted. For the past six summers I have worked on the farm with my dad which has included anything from chasing cows to driving equipment during farming season.

Growing up in Fairview I was involved in various 4-H's for 8 years and completed the Green Certificate "Cow Calf". Currently I have just completed my first year of university education at the University of Calgary in which I am taking a Bachelor of Commerce. After the completion of my first year of university I am unsure of the direction I wish to take my career so I am looking forward to the diversity of work and experiences I will encounter at PCBFA hopefully helping me choose a career path.

I am very excited to start my summer position here at PCBFA as it will allow me to observe farming from a different perspective than I have previously been exposed to. I am looking forward to expanding my knowledge and experiencing the important components of farming which I have yet to uncover.



We have been busy seeding plots for the last couple of weeks at sites in Fairview, Valleyview, & Rycroft, with a few more yet to be done. Here are some action shots of what we've been up to!



Insects in Forages, Perennials & Annual Crops

By Stacy Pritchard

Grazing season has already begun, seeding for 2015 is wrapping up and now its time to think about getting the best out of both annual and perennial crops. Pests can quickly destroy a promising crop and have detrimental effects on both yield and quality. So its time to talk insects. There are several harmful as well as a variety of beneficial insects to cover, so lets get started. First we'll talk about the good guys. The beneficial insects that either control harmful pests or that help pollinate or spread seed.

Ladybugs

Ladybugs are actually lady beetles. Ladybugs go through several growth stages including larva, pupa and finally adults. In order to grow and develop, the larvae eat constantly and are master aphid hunters. The larvae look like little black and yellow/orange alligators and consume aphids by sucking out all of the fluid from their bodies.



Photo: texashighplainsinsects.net



Photo: www.ars.usda.gov

Bees

When it comes to alfalfa, the alfalfa leafcutter bee is the preferred pollinator, and actually the alfalfa leafcutter bee industry was responsible for saving the alfalfa seed industry in the 1940's and 50's. During the 1940's and 50's, the acreage base for alfalfa seed was expanding so rapidly that the wild population of pollinators could not keep up. The leafcutter bee industry is still quite strong, however, recent problems with disease are causing challenges to the industry. Interestingly, honey bees are not great pollinators for alfalfa, as they can become stuck in the flowers, so they learn to harvest the nectar without tripping the flower, and therefore don't pollinate the alfalfa. However, there is interest in developing alfalfa varieties that are more honey bee friendly. The wild population of bees are quite effective pollinators of alfalfa when fields are small and there is appropriate habitat surrounding fields.

Honey bees may not be effective pollinators of alfalfa, but they can increase the yield of canola crops. Wild bees can also have positive effects on canola yields when there is suitable habitat in the area. One of the struggles bees have with canola is the danger of pesticides being used on harmful insects. So it is

important to keep beneficial insects in mind when we choose to apply pesticides.

You can't discuss beneficial insects without also talking about insect pests.

Aphid

There are many different types of aphids, each with their own preferred species, but for the most part they all have similar feeding behaviours. The Pea Aphid (*Acyrthosiphon pisum*) affects both alfalfa and pulse crops. In alfalfa, they can cover stems and leaves, and feed on the sap from young leaves. This causes these leaves to wilt, and if enough leaves are affected because of high infestations it can result in decreased yield, stunted plant growth and potentially plant death. Aphids excrete honeydew onto plants, and if the honeydew is excessive, it can interrupt harvest, and may even grow a black fungus that decreases the palatability of the alfalfa.



Photo: www.wired.co.uk

Field peas are also primary hosts of the pea aphid. The majority of aphids are female and reproduce without mating. A female can produce 50-150 young during her lifetime, and there may be 7-15 generations throughout the course of a single year. Aphids feed on peas during flowering and early pod. Their feeding can result in the abortion of flowers, or in decrease seed formation leading to decreased yields. As mentioned earlier, ladybugs are beneficial insects when it comes to aphids and can provide some biological control.

Alfalfa Weevil

This insect isn't quite as well known, but can still inflict damage on our alfalfa crops. Alfalfa Weevils start damaging plants early in spring when the larvae hatch and begin feeding on leaves. The damage is round holes in alfalfa leaves and begins as small holes, and as feeding progresses, leaves become very ragged until only skeletons of the leaves and veins remain. From a distance, weevil damage starts out by discolouring the field, and developing a whitish appearance, similar to a crop hit by frost. As far as damage goes, the larval stage of the alfalfa weevil is the most harmful, and most occurs on the first cut of alfalfa, and in northern climates like the Peace, often only a single generation is seen annually, with eggs hatching in May and feeding through June, laying eggs for the next generation in the stems of the plant in late June and Early July.



Photo: www.extension.iastate.edu

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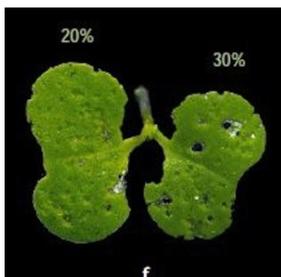
Grasshoppers

Grasshoppers affect both annual crops as well as rangeland and forages. Drier areas are more susceptible to grasshopper problems, but there can be infestations throughout the province. The majority of grasshopper damage is to cereal grains, but other crops are also affected. It's no wonder there is damage when a single grasshopper can eat between 30 and 100mg of plant material each day. In cereal crops, the damage is typically limited to the headlands, but grasshoppers can infest entire fields. The damage to a crop definitely depends on the type, stage and health of plant, in addition to the volume of grasshoppers present. There are several species of grasshopper that are particularly common in Alberta and the prairies including; the Migratory Grasshopper (*Melanoplus sanguinipes*), Packard grasshopper (*M. packardii*), and the Two-striped grasshopper (*M. bivittatus*). The Two-striped grasshopper is particularly widespread across Alberta.



Two Striped Grasshopper.
Photo: www.insectsofalberta.com

Insects in Oilseed Crops



Flea Beetle Damage
Photo: www.realagriculture.com

There are a host of insects that are primarily found in oilseed crops like canola. These include Cutworms, Flea Beetles, Diamondback Moths and Bertha Armyworms. Cutworms (redbacked and pale western) are scouted for pre and post-emergence, up until the 4 leaf stage, when the plants are big enough that damage will not kill them. In younger plants (cotyledon-2 leaf), cutworms chew through stems and leave them lying on the ground; this effectively kills the plant. Cutworms especially like south-facing slopes and are usually found just below the soil surface during the day. Damage looks like random patches of missing plants, or plants with the leaves sheared off. Cutworms don't stick to rows and can destroy large areas of canola crops very quickly if not monitored. Flea Beetles are also insects of concern during emergence and up to the 4 leaf stage. Flea beetles eat through leaves, leaving holes in leaves and cotyledons, where the holes reduce the photosynthesizing area of the leaf and can lead to plant



Bertha Armyworms.
Photo: www.gov.mb.ca



Diamondback Moth larvae
Photo: www.canolawatch.org

death. Damage is estimated by the percentage (%) of damage to the leaf (**See picture for examples**). Bertha Armyworms and Diamondback Moths are both insects that affect canola during the flowering and podding stages. The Diamondback Moth larvae chew part-way through leaves, leaving a "windowed" appearance, while Berthas chew straight through leaves and leave a "shotgun hole" appearance. Both Berthas and Diamondbacks should be scouted for throughout the field, checking several different areas and counting the numbers found to determine if our fields have reached the economic threshold for spraying. Berthas can be monitored with pheromone traps in June and July, and can determine the presence of adults, but not the larvae levels in a given field.

Wheat Midge



Photo: www.ags.ndsu.edu

In recent years there have been extreme populations of Wheat Midge in the Peace Region, however, according to the Alberta Insect Pest Monitoring Network, the risk is drastically reduced for 2015. However, one must be cautiously optimistic as the forecasts for the Peace have not been altogether accurate over the years. One of the big factors impacting wheat midge populations is their overwintering conditions and specifically temperature will impact the survival of the midge. Weather conditions will also impact hatching of midge as well as the damage midge can produce. Wheat midge damage is a combination of timing of midge maturity and wheat emergence. When these both align, damage can be increased. Female midge lay eggs after wheat heads emerge, up until flowering, and plants are most vulnerable between half emerged from the boot to half flowering. Females lay eggs on the

wheat kernels, and once the larvae hatch, they feed on the kernels and cause them to shrivel or to abort entirely. This can lead to decreased yield and quality of the wheat crop.

Economic Thresholds

Economic Threshold are how we determine if the pest insect pressure is high enough to necessitate chemical control. These numbers are determined based on insects/unit area, whether that is m³, sweeps with a sweep net, or per plant. It is important to be aware of which unit we are using before determining whether we have reached the economic threshold in a crop for a given insect. For example, wheat midge has two thresholds, one to maintain grade (1 adult midge per 8 to 10 wheat heads) and one to maintain yield only (1 adult midge per 4-5 wheat heads) (from www.westernforum.org). Beneficial insects must also be accounted for when determining whether insecticides are appropriate for specific situations.

In conclusion, there are both pest, and beneficial insects that can drastically impact our forage and annual crops. Knowing what to look for in terms of damage, staging and threshold can help us make wise decisions when it comes to controlling the pest insects.

For more information please visit:

The Western Forum on Pest Management (www.westernforum.org) has a wealth of information on pest insects, including the 2015 Forecast and Risk Maps for Insect Pests of Prairie Field Crops.

<http://www.agriculture.gov.sk.ca/Alfalfa-Weevil>

<http://www.ipm.ucdavis.edu/PMG/r1200111.html?printpage>

[http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/agdex6463](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex6463)

<http://www.alfalfa.org/pdf/AlfalfaAnalyst.pdf>

Contact us for:

- Project Ideas
- Feed Testing
- Environmental Farm Plans
- Growing Forward 2 Assistance
- Ration Formulation Help
- Past Project Information

Upcoming Events!

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Field Day with Peter Donovan Soil Carbon Coalition

Join us to learn about the Soil Carbon Coalition, Carbon Sequestration and the relationship between carbon, water and soil!

June 15, 2015

Registration at 9am at the Eureka River Hall
Hands-on demo at Maverick Livestock

Controlled Traffic Farming Workshop

Join us, with Peter Gamache for a day of learning about the benefits of CTF and how you can get started!

June 29, 2015

Hillsboro Farms—Cleardale, AB
10am Registration

Stockmanship with Curt Pate

Curt will discuss and demonstrate gathering, handling, treating and sorting cattle.

June 16—Eglesham Ag Society

June 17—Beaverlodge Ag Society

10am-3pm each day

Registration is appreciated before June 8, 2015

Building Soil—Creating Land Part 2! Dr. Christine Jones

Join us for a Field Day this summer to learn more from this renowned soil scientist!

July 28, 2015

Location: Rycroft Ag Society Hall
More Details to Come!

How to Have More Grass, More Profit & a Better Quality of Life with Don Campbell

Don Campbell is a rancher from Meadow Lake, SK. His tour with PCBFA in 2014 was a great success so he will be back in 3 locations!

June 23—High Prairie (Tim McGrath's)

June 24—Brownvale Little Hall

June 25 in Grovedale Community hall

10am-4pm each day

PCBFA Field Day

We want to show off our plots!

- ⇒ Tour the plots: corn, cover crops, fescue, sainfoin and much more!
- ⇒ Hear from experts on grazing, fescue production, electric fencing and more!
- ⇒ Pancake breakfast to start the day!

August 5th

MD of Fairview Research Farm

More Details to Come!

Other Upcoming Events!

PCBFA Field Day in Valleyview—August 6th

On-Farm Water Management Workshops: August 18 & 19 near High Prairie & Nampa

The Foothills Forage & Grazing Association has organized a trip to Gabe Brown's Ranch and the Menoken Farm in North Dakota this August 16 to 20, 2015

Stay tuned for more information on these great events!

For more information, directions or to register for PCBFA events please call
Stacy or Kaitlin at 780-835-6799!

Monika Benoit
Manager
High Prairie, AB
780-523-4033
780-536-7373

Akim Omokanye
Research Coordinator
Fairview, AB
780-835-6799
780-835-1112

Stacy Pritchard
Extension & ASB Coordinator
Fairview, AB
780-835-6799
780-772-0277

Kaitlin McLachlan
Crop Program Coordinator
Fairview, AB
780-835-6799
780-523-0443

