2015 Peace River Region Annual Canola Survey

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The 2015 Annual Peace Canola Survey was completed by Agriculture & Agri-Food Canada staff based at Beaverlodge[1], and Saskatoon[2]. Samples were also kindly collected with help from the BC Pest Monitoring Contractor, Arlan Benn[3], and Canola Council of Canada Student Assistant, Trina Drummond[4].

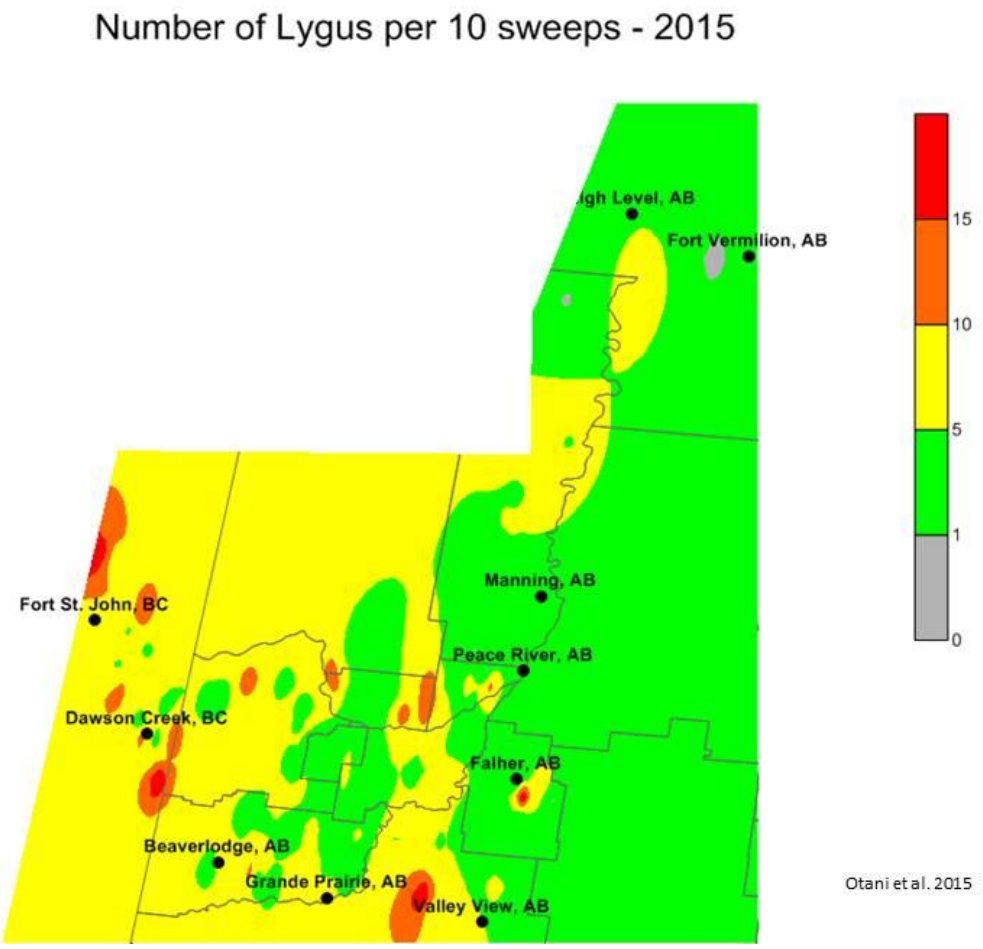
Since 2003, the annual survey has been performed with the main objectives of (i) collecting insect pest data throughout the region and (ii) to detect introduction of the Cabbage seedpod weevil into the Peace River region. In 2015, a total of 162 canola fields were randomly selected. Fields were spaced approximately 10 km apart and surveying was performed through the main canola producing areas of the BC and Alberta Peace during early- to mid-flower stages. Unfortunately, fewer fields were sampled north of 57.3° in 2015 (i.e., near Manning, LaCrete, Fort Vermilion and High Level) owing to sparse and patchy canola fields that suffered from repeated frost events and severe drought. In 2015, sweep-net monitoring was performed in 162 commercial fields of *Brassica napus* (e.g., each field ≥80 acres in size) using 50 - 180° sweeps on the following dates in these areas:

- July 5 near Grimshaw, Manning, Hawk Hills, LaCrete.
- July 6 near Valleyview, Guy, Falher, Nampa, Peace River, Jean Cote, Girouxville.
- July 7 near DeBolt, Grande Prairie, Bezanson, Teepee Creek, Wanham, Rycroft, Sexsmith.
- July 8 near Fairview, Blue Sky, Berwyn, Tangent, Watino, Eaglesham, Ridge Valley, Kleskun Hills, Wembley, LaGlace, Dawson Creek, Rolla, Rose Prairie, Montney, Beaverlodge, Valhalla, Woking, Spirit River, Dunvegan, Hines Creek.
- July 9 near Rolla, Doe River, Clayhurst, Farmington, Taylor, Baldonnel, Fort St. John, Golata Creek.

Sweep-net samples were frozen then processed to generate data for 16 species of arthropods. *Lygus* specimens were identified to all five instar stages. **The 2015 summary includes seven economically important pests of canola reported from 162 surveyed canola fields:**

1. **Lygus** (Miridae: *Lygus* spp.) were the most common insect pest observed in sweep-net samples collected in our 2015 surveying. *Lygus* populations of **≥5 adults plus nymphs per 10 sweeps were observed in 40.1% of fields surveyed** (Figure 1 and Table 1; N=162 fields). Densities of **≥15 adults plus nymphs per 10 sweeps were recorded in 7.4% of fields surveyed** (Figure 1 and Table 1).

Figure 1. Contoured map reflecting *Lygus* densities (adults+nymphs) in sweep-net samples collected between July 5-9, 2015, in canola fields throughout the Peace River region.



There were zero *Lygus* present in only 2.5% of fields surveyed (Table 1) whereas 21.6% of the canola fields contained only adult *Lygus* versus 75.9% of the fields that were populated by both adults and nymphs (Table 2). Note that all nymphs collected during surveying were expected to have matured into new adults by the early pod stage. **Areas highlighted yellow, orange or red in Figure 1 may contend with *Lygus* with the continuation of dry, warm growing conditions typically favouring the development of *Lygus* nymphs to adults.**

Table 1. Summary of *Lygus* densities occurring in surveyed fields in 2015.

Lygus bugs per 10 sweeps	Number of fields	Percent of fields sampled
≥15.0	12	7.4%
10.1-15.0	11	6.8%
5.1-10.0	42	25.9%
0.1-5.0	93	57.4%
0	4	2.5%
Sum	162	100%

Table 2. Proportion of fields surveyed containing zero *Lygus*, only adults, only nymphs or adults plus nymphs in commercial fields of canola in 2015.

Lygus stages collected	Number of fields	Percent of fields sampled
No *Lygus*	4	2.5%
Adults only	35	21.6%
Nymphs only	0	0%
Adults + Nymphs	123	75.9%
Sum	162	100%

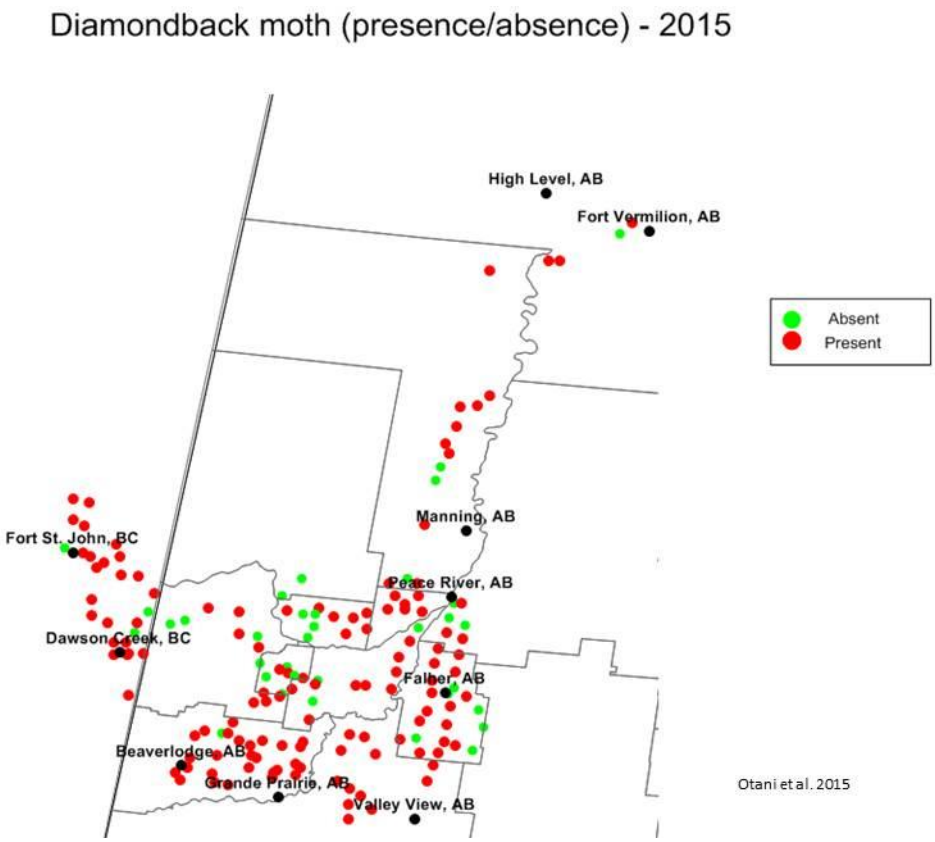
2. **Grasshoppers were present in 35 of 162 canola fields** surveyed. Late-instar and adult stages of two-striped, clearwinged, lesser migratory, and red legged grasshoppers were present in the sweep-net samples (listed from most numerous to least) in canola growing near Valleyview, Eaglesham, Whitemud Creek, Manning, Bluesky, Blueberry Mountain, Peace River, Ridge Valley, DeBolt, Rose Prairie, Rycroft, Hotchkiss, Savannah, Berwyn, Bonanza, Farmington, Beaverlodge, Blue Hills, Teepee Creek, Sturgeon Lake, Wembley, LaGlace, Poplar Ridge, Bridgeview, Dixonville, Tangent, Fairview, and Royce.

   Click here to review the entire grasshopper protocol and biological descriptions. Additional information related to grasshoppers can be located on Alberta Agriculture and Rural Development's webpage located here or the BC Ministry of Agriculture's webpage located here.

3. **Diamondback moth** (Plutellidae: *Plutella xylostella*) **were generally present in low numbers in the sweep-net samples** (N=162 fields) **in 2015**. Sweep-net monitoring is **NOT** recommended for this insect pest yet we collected a total of 672 specimens from 162 fields in 2015 compared to 230 specimens in the 206 fields in 2014 and 93.6% of the 672 specimens were DBM larvae. Sites with higher numbers of DBM included Valleyview, Farmington, Ridge Valley, Baldonnel, Donnelly, Fort St. John, Beaverlodge, Blue Hills, and DeBolt.

   It's important to note that parasitoid wasps (e.g., *Diadegma* sp. and *Microplitis* sp.) were observed throughout the region and the presence of these natural enemies of DBM is strongly suspected to be keeping DBM densities relatively low.

Figure 2. Presence/absence map reflecting distribution of diamondback moth (adults, larvae, pupae) occurring in sweep-net samples collected in canola from July 5-9, 2015.



4. **Root maggot (*Delia* sp.) adults** were again prevalent in fields and were collected from 122 of the 162 sites surveyed throughout the Peace River region in 2015. Numbers collected by sweep-net surveying ranged from 0.2-5.6 *Delia* sp. flies per 10 sweeps versus 0.2-10 flies per 10 sweeps in 2014 but growers should note **– root assessments, rather than sweep-net monitoring, is recommended to accurately assess densities of root maggots**. More information related to root maggots in canola can be found by linking here.

5. Normally, the annual canola survey is conducted during the initial weeks of the **Bertha armyworm** adult flight period so larval stages, if present, are typically very small and difficult to accurately detect and identify within the sweep-net samples. Even so, seven of 162 fields surveyed contained early instar larvae tentatively suspected as **Bertha armyworm larvae** (e.g., Hawk Hills, Blue Hills, Valleyview, Guy, LaGlace and Scotswood). It should also be noted that early instar larvae suspected as Salt Marsh Caterpillars were tentatively identified from three fields surveyed (e.g., Doe River, Clayhurst, Taylor).

6. **Leafhoppers** were observed in 69 of 162 fields yet densities **were consistently low** in our canola sweep-net samples in 2015. The highest density was six per 50 sweeps in a canola field near Fort Vermilion and near Bezanson. More information related to leafhopper biology and monitoring can be found by linking here.

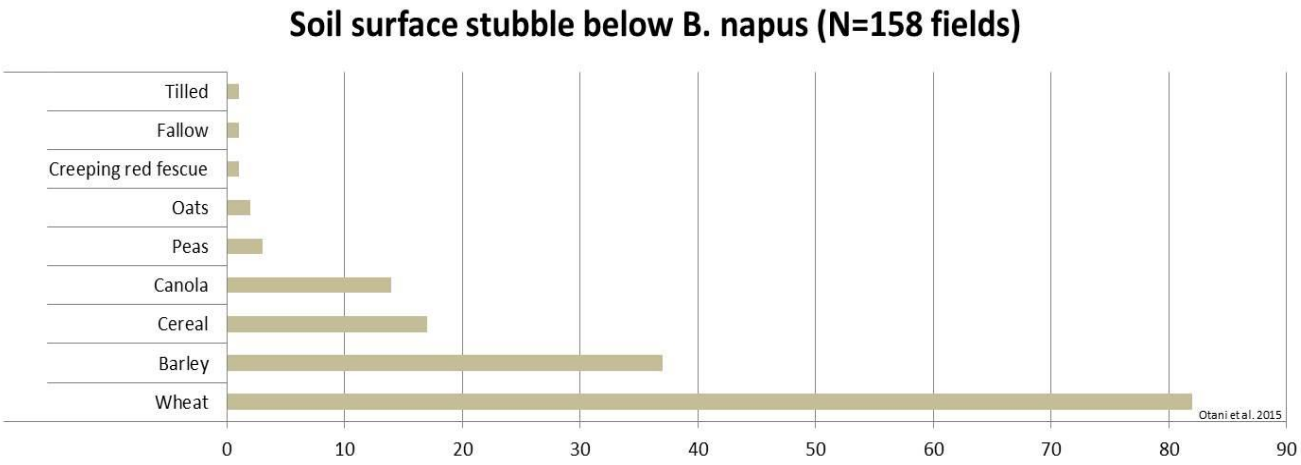
7. We are again happy to report that **zero cabbage seedpod weevil** (Curculionidae: *Ceutorhynchus obstrictus*) were observed in the 162 fields sampled in the Peace River region in 2015. Approximately nine small weevils measuring <4mm in length and <20 beetles measuring <5mm in length were retained

from the survey samples for forwarding to the National Identification System (AAFC-Ottawa) for species confirmation.

8. **Previous cropping data** was recorded by visually inspecting the soil surface of surveyed canola fields. Surface field trash was categorized then summarized in the figure below (Note: category "cereal" was used to describe fields where the previous crop was either barley or wheat yet no seed was readily observed nor was the straw sufficiently intact to determine the presence/absence of auricles).

   The most frequently observed soil surface stubble encountered beneath surveyed canola fields in 2015 was wheat stubble, followed by barley, residue that was characterized as "cereal", canola, peas, oats with single fields of stubble remaining from creeping red fescue, left fallow, or tilled (N=158 fields).

   Figure 3. Field surface condition or stubble type observed in canola fields surveyed in the Peace River region in 2015.



THANK YOU to the following hard working AAFC staff who surveyed[†], processed[‡], and mapped[∞] this data: Owen Olfert[2†∞], Ross Weiss[2†∞], Shelby Dufton[1†‡], Amanda Jorgensen[1†‡], Holly Spence[1†‡], Andras Szeitz[1†‡], Jadin Chahade[1†‡], and Kaitlin Freeman[1†‡].

Finally, and MOST IMPORTANTLY, *Thank you* to our canola producers for allowing us to sample in their fields!