

Volume 12
Issue 06
May 31,
2007

Ontario Ministry of Agriculture, Food & Rural Affairs
Agriculture Development Branch (Field Crops Unit)
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www.omafra.gov.on.ca/croppest

 Ontario
ISSN 1203-2204

CROPEST ONTARIO

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13th Annual

Southwest Crop Diagnostic Day

**Wednesday, July 11 or
Thursday July 12, 2007**

Ridgetown Campus, University of Guelph
Cost is **\$85.00** (includes program, lunch,
refreshments and an information package)

**Registration Deadline is Friday, June 29,
2007**

Phone: OMAFRA Agricultural Contact
Centre
Toll Free 1-877-424-1300

(Visa, MasterCard, and American
Express)

Fax: OMAFRA Agricultural Contact
Centre
519-826-3567

Mail: OMAFRA Resource Centre
Southwest Crop Diagnostic Day
Box 400, Ridgetown ON N0P 2C0



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PROGRAM HIGHLIGHTS INCLUDE:

-  **Soybean Diseases** – Find out which diseases are on the rise! Using genetic resistance and tolerance to effectively manage disease, and also SCN and soybean rust updates. *IPM*
-  **Ontario's Worst Weeds** – The responses are in from across Ontario! Learn what the weeds are and how they got on the list. *IPM*
-  **The Right Amount in the Right Place** – A hands on look at insecticide application and rates for soybean aphid control. *IPM*
-  **Herbicide Injury in Corn** – Identify and discuss common herbicide injury symptoms. *IPM*
-  **Reading your Roots** – Changes in roots are often the first indication of stress. What is your crop trying to tell you? *CM*
-  **Soybean Physiology** – Examine the form and function of the soybean plant and how it relates to soybean production. *CM*
-  **Grass Weed ID** – Hone your weed ID skills on these grasses. *IPM*
-  **Insect Monitoring 101 for Vegetable Crops** - Using the right trap the correct way is the key to accurate pest numbers. *IPM*
-  **Too Much or Too Little** - Early season concerns in corn and soybeans. *NM*
-  **Herbicide Injury in Soybeans and Specialty Beans** – A demonstration and discussion of injury symptoms in beans associated with commonly used herbicides. *IPM*
-  **Cover Crops** – Late summer cover crops; what makes it worth it? *NM*
-  **Soybean Aphid** – Take a close look at scouting, seed treatments and natural enemies for aphid management. *IPM*
-  **Corn Rootworm** – Find out how to rate root injury to monitor for rootworm feeding in your Poncho and Rootworm Bt corn fields. *IPM*
-  **Diagnostic Challenge** – Choose to challenge your diagnostic skills with the samples and questions at this stop. *IPM*

For further details, visit the Southwest Crop Diagnostic Day Website:

www.diagnosticdays.ca

Alfalfa Weevil Warning

Tracey Baute, Field Crop Entomologist, OMAFRA-Ridgetown and Joel Bagg, Forage Specialist, OMAFRA-Lindsay

Alfalfa weevil numbers have been high in some fields. Scout to determine if management is necessary. Cutting is the best control method but if the crop is not ready to be cut, spray may be necessary. If the crop has already been cut, continue to scout to ensure the larvae do not take out the re-growth.



Figure 1. Alfalfa weevil larva. (photo credit: University of Nebraska)

Several areas of each field should be scouted twice a week over the next month. Peak larval activity usually coincides with the bud stage of the first crop. To count larvae, collect 30 stems in an M shaped pattern. Place them inside a white pail and beat them against the side to knock off the third to fourth stage instar larvae. Larvae are pale to bright green, with a black head and white stripe down the centre of the back (Fig. 1). First and second instars are smaller (3

mm or less), pale yellow to light green, with the white stripe not yet distinguishable. They may be in the upper leaves, but do not include these younger larvae in the count.

Threshold:

If there is 40 percent leaf tip feeding, with 2 or 3 active larvae per stem, and there is more than 7 to 10 days to preferred harvest date, consider applying an insecticide. Leaf tip feeding refers to the percent of plant tips showing obvious signs of damage, which is not to be confused with the percent defoliation.

No Action is Required if There is:

- ▶ **less than 1 active larva** per stem - but continue to monitor the situation.

Action Must be Taken if There are:

- ▶ **more than one larvae** per stem **AND** alfalfa is **less than 30 cm (12 in.) tall**
- ▶ **Two or more larvae** per stem **AND** alfalfa is **less than 40 cm (16 in.) tall**
- ▶ **More than 3 active larvae** per stem at any plant height.

Management:

If cutting is an option, it is preferable over insecticide application for a number of reasons, including the cost of spraying and damage to beneficial parasitic wasps and honeybees. Cutting removes large numbers of these larvae from the field. Remaining larvae usually dry out, starve and are exposed to natural enemies. Cutting before the bud stage can result in extensive damage to second cut regrowth and

lower yield. Insecticides are recommended only when cutting is impractical, such as when the alfalfa is in the pre-bud stage.

Second Cut :

Occasionally, if weevil populations are high on a late first cut, surviving larvae will feed on the re-growth. Such feeding can eliminate alfalfa re-growth which may lead to a loss of the stand.

The presence of 2 or more active larvae per crown, or 4 to 8 larvae per square foot indicates a need to spray the stubble with insecticide.

Table 1. Recommended registered insecticides for alfalfa weevil control. (Source: OMAFRA Publication 812, Field Crop Protection Guide 2007-2008)

Active Ingredient	Trade Name	Rate		Label Precautions
		per ha	per ac	
Cyhalothrin-lambda	Matador 120 E	83 mL	34 mL	Alfalfa only. Ground or aerial application. Apply when larvae are small and populations are high. Maximum of 3 applications per year, 1 may be by air. Allow 7 days between treatments. Do not apply within 3 days of livestock grazing. Alfalfa seed from treated crop is not to be used for production of alfalfa sprouts for human consumption. 24 hr re-entry period.
Phosmet	Imidan 50 WP	2.25 kg	900 g	Alfalfa only. Ground application only. Do not apply during bloom. Only 1 application per cutting. 7 days to cutting or grazing.

Refer to product labels for re-entry periods and other restrictions. Local beekeepers should be contacted so they have an opportunity to move colonies out of the danger area.

Eastern Ontario Crops Diagnostic Days

Tuesday July 17, 2007

8:30 a.m. – 3:30 p.m.

At the Winchester Research Station, Kemptville College, University of Guelph

For further information, call 613-258-8295

Winter Wheat Update as of May 31, 2007

Jen Mullen, Assistant, and Peter Johnson, OMAFRA Cereal Specialist, Stratford

Winter wheat fields are in fast forward mode. Surprisingly, the wheat is early, with much of the crop 3-5 days ahead of normal. Early fields in Essex/Lambton have headed and had Folicur applied. In Huron/Bruce, advanced fields are heading, and the majority of the crop in the major producing regions will head this weekend (June 1-3). Current weather forecasts include rain just after heading, which increases the risk of Fusarium. Optimal timing for Folicur or Proline is Day 2 (Day 0 is when 75% of heads have cleared the flag leaf).

Check the weather innovations network (WIN) website for your fusarium risk at:

www.weatherinnovations.com/DONcast.cfm

Leaf disease levels remain low in most fields. Physiological fleck continues to be seen in some fields, and is quite impacted by variety. Fields closer to the lakes have moderate levels of powdery mildew. Barley Yellow Dwarf Virus symptoms are showing in an increasing number of fields, at higher levels than would be preferred. Aphids are still present,

with some fields above threshold (15 aphids/stem pre-heading, 50 aphids/stem after heading). Aphids are now being found in spring cereals as well. With the higher levels of aphids in winter wheat, spring cereals may be even more at risk. Scout! If control is warranted, please contact Jen (519 272 4268) or Peter (519 318 7769) to set up some trials, and validate threshold levels. There is little Ontario data on the impact of aphid control in cereals.

Purple Corn! Why Does It Occur?

Bob Nielson, Corn Agronomist, Purdue University

Purpling of corn plant tissue results from the formation of a reddish-purple anthocyanin pigments that occur in the form of water-soluble cyanidin glucosides or pelargonidin glucosides (Hak, 1998).

A hybrid's genetic makeup greatly determines whether corn plants are able to produce anthocyanin. A hybrid may have none, one, or many genes that can trigger production of anthocyanin. Purpling can also appear in the silks, anthers and even coleoptile tips of a corn plant.

Well, you may say, that's fine but what triggers the production of the anthocyanin in young corn at this time of year? The answer is not clearly understood, but most agree that these pigments develop in

young plants in direct response to a number of stresses that limit the plants' ability to fully utilize the photosynthates produced during the day. These stresses include cool night temperatures, root restrictions, and water stress (both waterlogged and droughty conditions).

Since the anthocyanin occurs in the form of a sugar-containing glucoside, the availability of high concentrations of sugar in the leaves (photosynthesis during bright, sunny days) further encourages the pigment formation. If fields are stressed by other factors such as soil compaction, herbicide injury, disease damage, or insect injury, the purpling becomes even more pronounced.

It has been my experience that the combination of bright, sunny days and cool nights when corn ranges from V3 to V6 in development (3- to



Figure 2. More intensely purple plant

6-leaf collar stages) most commonly results in plant purpling. Hybrids with more anthocyanin-producing genes will purple more greatly than those with fewer "purpling" genes. In

most cases, the purpling will slowly disappear as temperatures warm and the plants transition into the rapid growth phase (post-V6).



Figure 1. Moderately purple corn

I have rarely diagnosed phosphorus deficiency as the primary cause of purple plants early in the season. Nonetheless, cold or wet soils inhibit root development and can aggravate a true phosphorus deficiency situation, frequently causing even more intense leaf purpling.

What About Yield Losses? Does the leaf purpling lead to yield losses later on?

The cause of leaf purpling, not the purpling itself, will determine whether yield loss will occur by harvest time.

If the main cause is the combination of bright, sunny days

and cool nights, then the purpling will disappear as the plants develop further with no effects on yield. If the stress of restricted root systems is a major contributor to the purpling, then the potential effects on yield depend on whether the root restriction is temporary (e.g., cool temperatures & wet soils) or more protracted (e.g., soil compaction, herbicide injury).

Plants can recover from temporary root restrictions with little to no effect on yield. If the root stress lingers longer, the purpling may continue for some time and some yield loss may result if the plants become stunted.

Related References

Chalker-Scott, Linda. 1999. Environmental Significance of Anthocyanins in Plant Stress Responses. *Photochemistry and Photobiology* 70(1): 1–9.

Christie, P.J., Alfenito, M.R., and Walbot, V. (1994). Impact of low-temperature stress on general phenylpropanoid and anthocyanin pathways: Enhancement of transcript abundance and anthocyanin pigmentation in maize seedlings. *Planta* 194: 541-549.

Dixon, Richard A. and Nancy L. Paiva. 1995. Stress-Induced Phenylpropanoid Metabolism. *The Plant Cell* 7:1085-1097. American Society of Plant Physiologists. [On-Line]. Available at <http://www.plantcell.org/cgi/reprint/7/7/1085>.

Kim, Jae Hak. 1998. Maize Anthocyanin Pathway. Pennsylvania State Univ. [On-Line]. Available at http://scripts.cac.psu.edu/courses/plp_hy/plphy597_hef1/mpath.html.
Editorial note: This link is for biochemistry fans!

Specialist's Corner

Bean Leaf Beetle Battle

**Tracey Baute, Field Crop
Entomologist, OMAFRA-Ridgetown**

Reports are coming in of bean leaf beetles being found in many early emerging fields as far north as Oxford and Brant Counties. This is much farther north than growers are used to at this time of year. Get out and scout your fields as soon as they emerge, especially if your soybean

field is the first to come out in your area. Don't overestimate the damage they are doing. It does take a lot of beetles per plant to justify a spray. Seedling plants can take up to 30-40% defoliation, as long as there are not a lot of plants being clipped off. Seed, IP or food grain fields are most at risk. The threshold is 16 beetles per foot of row (4-5 beetles per plant) before the V3 stage or if extensive clipping is noticed. Once plants are in the V3

stage, the plants can usually outgrow the beetle feeding. New leaves come out making it even more difficult for the beetles to cause more

than 30% defoliation to justify a spray. For more information on bean leaf beetle management, refer to last week's article in CropPest Ontario.

New Tools Added in 2007 to Monitor Soybean Rust

Albert Tenuta, Field Crop Pathologist, OMAFRA- Ridgeway and Sarah Hambleton, AAFC, Ottawa

The North American Soybean Rust Sentinel plot network has proven to be an effective "early warning system" and decision support tool for producers and advisors. Additional technologies have been added which screen rainfall (filtrate) samples and air samples for the presence of



Figure 1 – Syngenta Spore Tracker

soybean rust spores. In 2006, two passive spore trap systems (JB rainfall collectors and Syngenta Rust Tracker)

were added to the sentinel plots. The Syngenta traps (Figure 1) are used to collect spores that are



Figure 2 – JB Rain Collector

transported by wind (dry deposition) whereas the JB collectors (Figure 2) are intended to collect spores that are washed out during rain storms (wet deposition). They are both called passive collectors since they are open to the elements at all times and not only during rainfall.

In 2007, two new active collectors have been added to further enhance the Ontario soybean rust

detection network. The first is the automated "Loda" collector (figure 3) which has sensors that open collection buckets during rain events only. The other is Burkhard collectors (Figure 4) that sample air directly for potential spores. They are considered active collectors as they selectively take samples.

Funding for this project was provided in part by AAFC through the Agricultural Adaptation Council's CanAdvance Program and the AAFC Pest Management Centre, OMAFRA, the Ontario Soybean Growers and the Ontario Soybean Rust Coalition.



Figure 3 – Automated rainfall collector "Loda"



Figure 4 – Burkhard sampler

