

# CROPEST ONTARIO

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## The Weather Innovation Network DONcast maps now available at:

[www.ontarioweathernetwork.com/DONcast.cfm](http://www.ontarioweathernetwork.com/DONcast.cfm)

You'll find not only the regional maps for western and eastern Ontario but new this year, you can sign up for the field specific DONCast this year for free thanks to various sponsors such as the Ontario Wheat Producers Marketing Board, Agris Co-operative, Bayer CropSciences, Brussels Agromart and Hensall District Co-operative.

The site specific component of DONcast provides individuals the opportunity not only to enter their own local weather conditions but also gives you the flexibility to run various different scenarios. This will assist in anticipating potential problems and plan ahead.



## Soybean Emergence = Risk of Bean Leaf Beetle Injury

Tracey Baute, Field Crop Entomologist, OMAFRA- Ridgetown

Soybean planting is almost finished in some areas and the beans will be popping out of the ground soon. If your field is one of the first to emerge, it could get hit with bean leaf beetles. The overwintered adults have been active for a few weeks now. I've been finding them in alfalfa fields. I've even been catching some in my sweep net while scouting canola! So as soon as the soybeans start to come out of the ground, these beetles will be flocking to those plants.

Usually most at risk are the fields in the more southern counties, including Essex, Chatham-Kent and south

Lambton but this does not exclude

others. The beetles that will be entering the fields are the very same beetles that were around late in last summer. They found a nice place to sleep off the winter in the woodlots and ditchbanks and are now out and hungry for breakfast! Many regions last year had higher than normal beetle populations late in the season which could put them at risk this spring. Though the winter may have seemed

cold to us, it was not nearly cold enough to kill all of the adults, especially the further south you go. Scout as soon as the crop emerges. Look for adults that may be feeding on the plants. They sometimes drop and hide if they see you approaching so try to slowly approach the plants to sneak up on them. Tip toe through the soybeans sort of speak. Signs of feeding include circular holes in the leaves or cotyledons or leaves that have been clipped off.

Plants are most vulnerable before they reach the V3 stage. Scout 5 areas of the field, looking at 10 plants in each area. Determine the average number of beetles per foot of row. 16 beetles per foot of row or if there is significant clipping taking

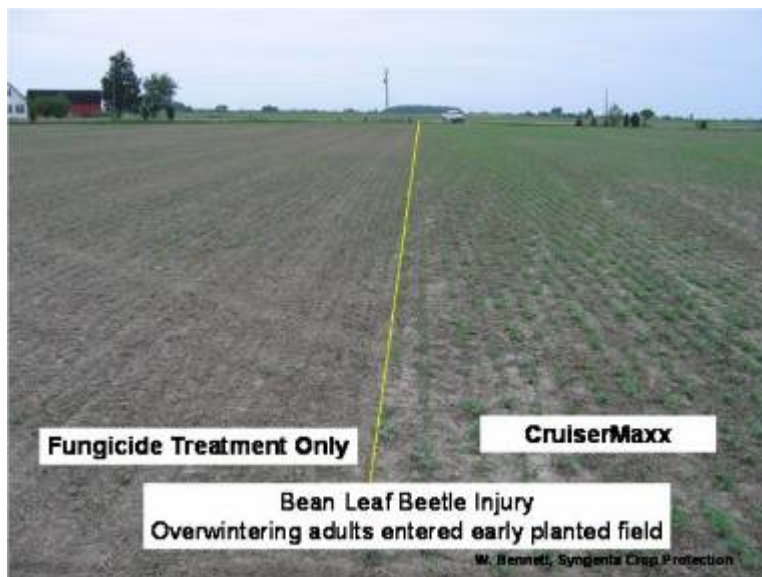


Figure 1. Early season bean leaf beetle injury in soybean field in Essex County in 2006. Right side of the field was treated with CruiserMaxx seed treatment, while the area to the left was only treated with fungicide seed treatment. (Photo Credit: Wayne Bennett, Syngenta Crop Protection)

place indicates that control is

necessary, especially for seed, IP or food grade soybeans. Once the soybeans are in the V3 stage, the concern then turns to the percent of defoliation taking place. It takes a lot of defoliation before a spray is necessary, especially before the plants are in the reproductive stages.

Growers who have a history of early season bean leaf beetle seedling injury should consider using Cruiser seed

treatment which is quite effective on these early season adults (**Figure 1**). However, Cruiser seed treatment will not work on the later generations of

adults that make the holes in the leaves and pods later in June, July and August.

**“Yellow Wheat” – Possibly Barley Yellow Dwarf**

**Albert Tenuta, Field Crop Plant Pathologist, OMAFRA, Ridgeway and Jocelyn Smith, Research Assistant, University of Guelph – Ridgeway Campus**

In a previous CropPest Ontario article (May 10, 2007 – Issue #3) the three of the most common wheat virus diseases in Ontario were discussed (***Soilborne Mosaic Virus, Soilborne Spindle Streak Mosaic Virus and Barley Yellow Dwarf***). Identifying virus diseases in cereals is difficult since the symptoms are often subtle and can be less dramatic than you would see in other crops such as legume crops (soybeans or dry beans) and requires specialized lab tests (serological). The University of Guelph’s Pest Diagnostic Clinic has the capabilities to test for the various viruses.

Over the past few weeks, many winter wheat samples have come into the office labeled “yellow wheat – WHY?” Many of the “yellow wheat” samples were due to frost or cold temperature injury, manganese deficiency, or a combination of other factors. A number of samples however were most likely virus and most likely barley yellow dwarf since the primary symptoms were stunting and yellowing, reddening or purpling of leaf tips. These “virus-like”

samples were sent to the diagnostic lab and the majority did test positive for at least one of the many closely related viruses that make up the barley yellow dwarf group. To be more specific they tested positive for the two most common BYDV strains (subgroups) that occur in Ontario. They are BYDV- PAV and BYDV – RPV (Table 1).

<b>Table 1 – BYDV strain subgroups and preferred insect vector</b>	
Strain	Insect Vector
<u>Subgroup 1</u> PAV – less severe strain * other strains - MAV, SGV	<u>Bird-cherry oat aphid</u> - <i>Rhopalosiphum padi</i>  <u>Grain aphid</u> , - <i>Sitobion avenae</i>
<u>Subgroup 2 – called Cereal Yellow Dwarf Virus</u> RPV – most severe strain * other strains - RMV	<u>Bird-cherry oat aphid</u> - <i>Rhopalosiphum padi</i>

### **How common is BYDV in Ontario?**

A lot more than you probably thought! That is one of the conclusions that Jocelyn Smith who recently completed her masters (University of Guelph, Ridgetown Campus) on this topic. As part of Jocelyn's thesis, winter wheat fields and fields containing volunteer wheat were sampled by her with assistance from OMAFRA Ridgetown (Albert Tenuta and Cheryl Van Herk) in order to determine the incidence and prevalence of BYDV strains in southwestern Ontario.

BYDV was detected in 20 and 29 percent of winter wheat samples even though these plants did not show any visual signs of infection (non-symptomatic) and in 10 and 25 percent of volunteer wheat samples over two years, respectively (2004 and 2005). BYDV-PAV was the most prevalent strain detected, followed by BYDV-RPV. The study supports volunteer wheat is an important reservoir of BYDV in south-western Ontario.

The PAV strain of BYDV was found in all positive samples, and the RPV strain was also detected in a small number of samples (Table 2). This level of infection is slightly higher than found by Paliwal (1982) in the late 1970's and early 1980s, where 9 to 22 percent of plants (again not showing symptoms) were infected with BYDV.

Just as Jocelyn observed, Paliwal found PAV to be dominant strain followed by MAV and RMV strains. The big difference though is Jocelyn found less variation in strain

incidence, as only RPV was also detected (Tables 2-3).

The prevalence of the PAV and RPV strains in winter wheat corresponds with the dominance or prominence of the bird cherry oat aphid (*R. padi*) in southwestern Ontario wheat fields. The bird cherry oat aphid is the most efficient vector of the PAV and RPV strains of BYDV and these results suggest that BYDV remains a problem in Ontario winter wheat even in the presence of low cereal aphid populations.

Presently, there are few control options available for BYDV. The best strategy is still the simplest - "avoid early planting". Early planting allows the aphids more time to infect the plants in the fall. Off course an extended fall and mild winter can allow the aphids a longer feeding period. Recommended or optimum planting dates for winter wheat take into consideration BYDV and hessian fly and promote a vigorous plant to maximize winter hardiness.

Chemical sprays to control the aphid vectors are not practical or economical since scouting or detecting the aphids is very difficult. By the time populations reached detectable levels, virus transmission has most likely already occurred. Preventative sprays would not be economic as BYDV is unpredictable. There maybe more help in the future with potential BYDV resistant varieties.

So if you are looking at yellow stunted wheat, do not rule out barley yellow dwarf virus. For more

information about virus testing or other problem samples, call the Pest Diagnostic Clinic at (519) 767-6256

to receive a sample submission form and fee schedule.

**Table 2. Incidence and strains of BYDV detected by DAS-ELISA in winter wheat in 2004.**

County	Fields Sampled (n)	Percent Infected Fields	BYDV Strains Detected					PAV + RPV
			PAV	RPV	RMV	MAV	SGV	
2004								
Essex	3	0	0	0	0	0	0	0
Chatham-Kent	9	22	2	0	0	0	0	0
Lambton	8	12.5	1	0	0	0	0	0
Middlesex	8	37.5	2	0	0	0	0	1
Elgin	4	50	2	0	0	0	0	0
Huron	2	0	0	0	0	0	0	0
Perth	1	0	0	0	0	0	0	0
Grey	1	0	0	0	0	0	0	0
Dufferin	1	0	0	0	0	0	0	0
Oxford	2	0	0	0	0	0	0	0
Niagara	1	0	0	0	0	0	0	0
Total	40	20	7	0	0	0	0	1

**Table 3. Incidence and strains of BYDV detected by DAS-ELISA in winter wheat in 2005.**

County	Fields Sampled (n)	Percent Infected Fields	BYDV Strains Detected					PAV + RPV	PAV (n = 12)
			PAV	RPV	RMV	MAV	SGV		
2005									
Essex	11	9	0	0	0	0	0	1	
Chatham-Kent	22	27	0	0	0	0	0	2	4
Lambton	3	0	0	0	0	0	0	0	
Elgin	12	58							7
Total	48	29	0	0	0	0	0	3	11

**Table 4. Incidence of BYDV-PAV detected by DAS-ELISA in volunteer wheat field samples in 2003 and 2004.**

County	Fields Sampled (n)	Percent Infected Fields	BYDV-PAV Infected Samples
<b>2003</b>			
Essex	4	50	2
Chatham-Kent	9	44	4
Lambton	6	0	0
Middlesex	4	25	1
Elgin	1	0	0
Huron	4	0	0
Total	28	25	7
<b>2004</b>			
Chatham-Kent	6	0	0
Lambton	4	0	0
Middlesex	6	17	1
Elgin	4	25	1
Total	20	10	2

**Figure 2 – It is typical to see various degrees of stunting due to BYDV infection. The left plant is showing a greater degree of stunting than the plant on the right but both are stunted compared to the health parts of the field (Photo - APS Press).**



**Figure 1 – Field displaying typically barley yellow dwarf symptoms which include yellow and stunted plants. (Tenuta, OMAFRA)**



**Figure 3 – Yellowing and browning of leaf tips often first sign of BYDV infection (Montana State University)**



**Figure 4 - Reddening or purpling of leaf tips is common for BYDV (Tenuta, OMAFRA).**



## **Nutrient Value of Wheat Straw**

**Robert Mullen, Assistant Professor, and Edwin Lentz, Associate Professor, The Ohio State University**

Due to the decreased wheat acreage this year, some producers may be approached about baling straw. This often leads to the question what is the nutrient value of the straw being removed and should removal lead to increased fertilizer applications in subsequent years?

From a pure fertilizer value, wheat straw contains very little in the way of phosphorus (P<sub>2</sub>O<sub>5</sub>) but moderate amounts of nitrogen (N) and

potassium (K<sub>2</sub>O). The actual amounts of N, P<sub>2</sub>O<sub>5</sub>, and K<sub>2</sub>O contained in a ton of wheat straw are 11, 3, and 15 pounds, respectively. A sixty bushel per acre wheat crop will produce 2.7 tons of straw per acre removing 30 pounds of N, 9 pounds of P<sub>2</sub>O<sub>5</sub>, and 41 pounds of K<sub>2</sub>O. Thus straw does have some fertilizer value especially with regard to potassium and may require some additional fertilizer input in subsequent years, but soil testing should be conducted to validate the need for additional nutrients.

Wheat straw residue also contains organic matter that when returned to the soil does have value, but it is difficult to put a dollar value on it. Continued removal of the above ground biomass may have negative repercussions in the long-run in the form of decreased organic matter, especially if some organic residue is not returned to the soil.

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### **Southwest Crop Diagnostic Day 13<sup>th</sup> Annual**

**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 Options**

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

For further details, visit the Southwest Crop Diagnostic Day Website at  
[www.diagnosticdays.ca](http://www.diagnosticdays.ca)

## Winter Wheat Update as of May 24, 2007

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

Winter wheat fields are advancing quickly past the flag leaf stage. Fields in Essex/Lambton are at the mid-boot stage (Zadok's 47-48); advanced fields will head on the weekend (May 26/27). In Huron/Bruce, advanced fields are at flag leaf (Zadok's 39) while most fields there are at the flag leaf just emerging stage (Zadok's 36-37). Over the next couple of weeks, depending on where you are in the province, it will be time to spray for fusarium. Make sure to scout your fields to optimize spray efficacy. Optimal timing for Folicur or Proline is Day 2 (Day 0 is when 75% of heads have cleared the flag leaf). Trials by Dr. David Hooker indicate potential yield and quality improvement with Proline over Folicur,

but does it cover the additional cost? The only way to know is with lots of field trials! Contact Peter Johnson (519 318 7769) if you have interested growers!

Vigorous stands have begun to outgrow their physiological fleck symptoms. In poor stands, the flecks are still obvious, and in severe cases the flecks have become necrotic, and will impact yield. Powdery mildew is present in the lower canopy in 60-70% of fields. In very dense canopies, the fungus is moving into the middle of the canopy. Because powdery mildew growth stops above 25°C, this week's warm weather should stop disease progression. Septoria levels remain low. No rust has been found to date. Barley Yellow Dwarf Virus symptoms are showing in an increasing number of fields (see previous article titled "Yellow Wheat – Possibly Barley Yellow Dwarf" in this issue.)

### Weeds as observed in Essex/Lambton and Huron/Bruce

Species	Growth Stage			
	Essex/Lambton		Huron/Bruce	
	May 15	May 24	May 15	May 24
Proso millet	3-4 leaf	4-5 leaf		
Yellow foxtail	3-4 leaf	20% 5-6 leaf 80% 3-4 leaf		
Green foxtail	1-2 leaf	3-4 leaf	1 leaf	2-4 leaf
Ragweed	4 leaf	4-6 leaf	2 leaf	2-4 leaf
Wild buckwheat			1 leaf	3 leaf
Lambsquarters		20% 4 leaf 80% 6 + leaf	10% 2 leaf 70% 4 leaf 20% 6 leaf	10% 2 leaf 10% 4 leaf 80% 6-8 leaf
Velvetleaf	Cotyledon	1 leaf		
Prostrate knotweed		2-4" trails	3-4 leaf	1-2" trails
Stinkweed			Beginning to flower	Beginning to seed
Milkweed		6-8" suckers		2-5" suckers
Bindweed		1' trails		
Nightshade		20% 3-5 leaf 80% 1 leaf		
Purslane		4-6" trails		
Yellow whitlow grass		Seed		

