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Soybean Growers Needed for New Soybean Aphid Threshold Project

Tracey Baute, Field Crop Entomologist, OMAFRA

Dr. Rebecca Hallett and her team of grad students from the University of Guelph are looking for a few soybean growers in Ontario that would be willing to try out a new “Dynamic Action Threshold” for soybean aphids. This new threshold currently under development takes into consideration not only the number of soybean aphids per plant but also factors in the number of natural enemies present in the field at the time. Using a helpful decision making tool that will be provided, growers will be able to determine if the number of natural enemies present at the time of assessment will keep the soybean aphids below damaging numbers, therefore not requiring control. But we still need to test in at the field level to ensure that it works as good as or better than the current threshold.

Participants would be asked to take one of their soybean fields and split it into two halves. One half would be monitored and managed according to the current soybean aphid management guidelines (ie. scouting weekly until field reaches 250 aphids per plant and increasing) while the other half of the field is also scouted at least once a week but is managed only if and when the experimental dynamic action threshold is reached. Using a yield monitor, each half of the field would be harvested separately by the grower so that yield can be documented for each of the two different treatments. Growers will be trained on how to use the decision making tools to determine if and when management is necessary and will be compensated for their time and efforts.

If this threshold proves successful we will have an excellent tool for soybean aphid management that is more natural enemy friendly.

Those interested in participating can contact me at tracey.baute@ontario.ca or 519-674-1696 for further details.

Comments, suggestions or articles are welcome. To be added to the distribution list please contact:

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Ministry of Agriculture,
Food and Rural Affairs



Can I Apply Post-Emergent Herbicides to Soybeans Before the 1st Trifoliolate Stage?

Mike Cowbrough, Weed Specialist, OMAFRA, Guelph
Clarence Swanton and Kevin Chandler, University of Guelph

When weed emergence is quicker than soybean emergence it is typical to find weeds at or near the maximum leaf-stage for control, yet the soybean crop is not at the growth stage specified on the product label. Does one focus on targeting the weeds when at their labeled growth stage or wait until the crop reaches the labeled growth stage?

The Department of Plant Agriculture (University of Guelph) in partnership with OMAFRA conducted a series of field trials with the following objectives:

1. To identify if there is an increased risk of crop injury when applying post-emergent broadleaf soybean herbicides prior to the 1st trifoliolate growth stage.
2. To identify if there is a negative yield impact by applying post-emergent broadleaf soybean herbicides prior to the 1st trifoliolate growth stage.

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Methodology

Trials were conducted at the Elora Research Station in 2006 and 2007. Pinnacle, Classic and Reflex were applied at 3 different soybean growth stages (cotyledon, unifoliolate and 2nd trifoliolate) and at two different application rates (normal and twice the normal field rate). Visual crop injury, plant population and yield data were taken and compared to an untreated, weed-free control.

Results

- Soybean tolerance to all three herbicides was general greater when applications were made prior to the 1st trifoliolate stage (See Figure 1).
- When all herbicide treatments were averaged, crop injury at the cotyledon, unifoliolate and 2nd trifoliolate stage was 3%, 4% and 11% respectively.
- Visual injury was temporary and no longer apparent by the end of July.
- Soybean yields were unaffected by herbicide applications made prior to the 1st trifoliolate stage of soybean.

Can I Apply Post-Emergent Herbicides to Soybeans Before the 1st Trifoliolate Stage?

...continued

Conclusion

Weeds emerging before or with the crop are extremely competitive and should be controlled when they are small (prior to the 6 leaf stage). The experience of two years of field data demonstrate that when a

herbicide is applied prior to the labeled crop growth stage there is no increased risk of crop injury and no impact on soybean yields.

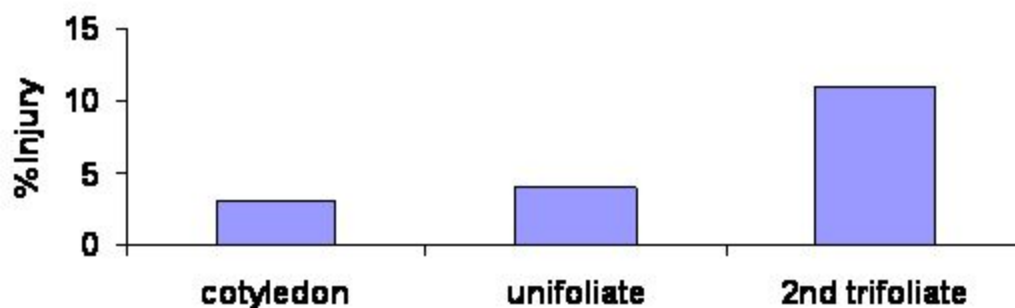


Figure 1. Visual crop injury of soybean at two weeks after application when herbicides were applied at the cotyledon, unifoliolate and 2nd trifoliolate stage of soybean.

Seed Corn Added to Callisto Label

The Pest Management Regulatory Agency has approved a User Request Minor Use Label Expansion for the Use of Callisto 480SC Herbicide (Mesotrione), Reg. No. 27833, for the late post-emergence control/suppression of labeled weeds on seed and sweet corn in Eastern Canada and British Columbia only.

On behalf of our growers, the Seed Corn Growers of Ontario would like to express our appreciation to PMRA and Syngenta Crop Protection Canada Inc. for their efforts. We would also like to express our appreciation to Dr. Rob Nurse, AAFC, Greenhouse and Processing Crops Research Centre, for all his efforts to secure this registration.

Mary Lynn Lister Santavy
Executive Director
Seed Corn Growers of Ontario

Will Fusarium Be a Problem in the 2009 Spring Wheat Crop?

Scott Banks, Emerging Crops Specialist, OMAFRA, Kemptville

That's a several \$ million question! What weather is in store for June? Fusarium infection in wheat is very much dependant on the weather that occurs around the time that the wheat heads and begins to pollinate.

Critical Infection Period

For fusarium infection to occur in the wheat head, the weather conditions 7 days prior to the wheat heading and for 5 to 10 days after the wheat heads have emerged are critical. Temperatures between 10° and 30° C and wet weather are conducive to fusarium infection. If the temperatures are above 32°C and it is hot and dry, the risk of fusarium infection is very low.

In 2009, a lot of spring wheat was planted 1 to 2 weeks earlier than most years. The crop will also be heading earlier than normal, depending on the planting date and the temperatures in June. In most parts of the province, spring wheat normally heads the last week of June or the first week of July. Start monitoring earlier planted fields for the risk of fusarium infection in mid-June.

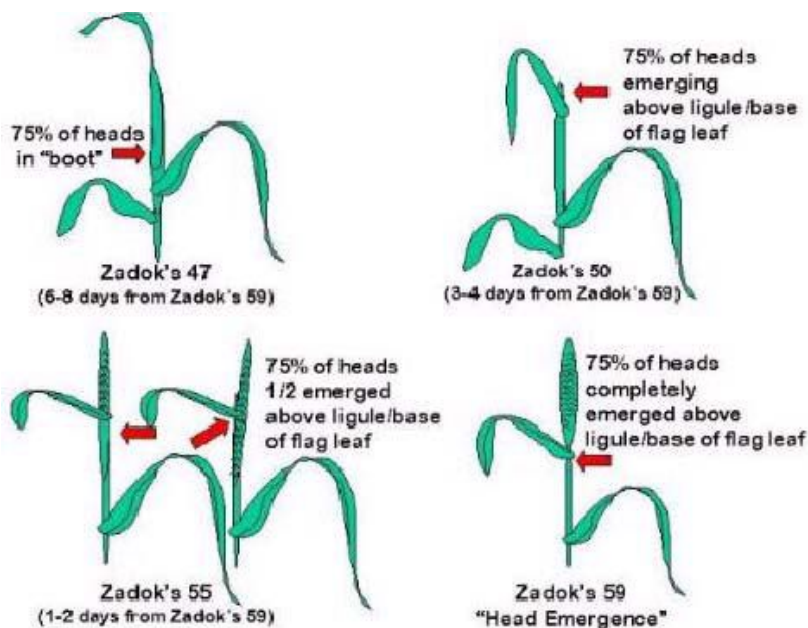


Figure 1. Representative Zadok Stages

Site-Specific DONcast

Deoxynivalenol (DON) is the toxin produced by the fusarium mould. To help predict the risk potential of fusarium and DON (in ppm), maps are available at www.weatherinnovations.com/DONcast.cfm. Site-Specific DONcast is a much more precise tool than the regional maps previously available. It is very important to monitor your own fields to identify the time of head emergence (Zadoks 59) in order to accurately run the Site-Specific DONcast calculator.

Fungicide Application

Proline® and Folicur® fungicides are currently the only products registered for fusarium suppression in spring wheat. To get the greatest suppression of fusarium, these products must be applied:

1. at the correct growth stage of the wheat,
2. With the correct nozzles to get proper wheat head coverage.

Growth Stage

The product should be applied when at least 75% of the wheat heads on the main stem are fully emerged (Zadok 59) to when 50% of the heads on the main stem are in the flower stage. Refer to Figure 1 -Representative Zadok Stages and Figure 2 -Flowering Stage.

Nozzles

Research conducted by Helmut Spiecer and Dr. Dave Hooker at the Ridgetown Campus – University of Guelph concluded that the best nozzles to spray the wheat heads horizontally from the front and the back were the Alternating Turbo FloodJet nozzles (Figure 3). The nozzles should be 30 cm (12 in) above canopy and 15 degrees from horizontal (Figure 3).

The Twin Jet nozzles (Figure 4) give less coverage of fungicide product on the wheat head than the Turbo FloodJet, therefore significantly reducing the effectiveness of the product.

Will Fusarium Be a Problem in the 2009 Spring Wheat Crop?

...continued

Travel Speed

All nozzle configurations were tested at 10 and 20 km/h (6 and 12 mph). Results showed that travel speed was not as limiting a factor as had once been thought.

Nozzles that performed well at low spraying speeds also performed well at high spraying speeds. Nozzles or nozzle configurations that gave good head coverage

were consistent across both spraying speeds.



Figure 2—flowering stage

Yield

On-farm trials with Folicur in spring wheat have shown an average of about 2.5 bushel per acre yield increase.

A limited number of on-farm trials with Proline over the past two years have shown an average yield increase

of 6 bushels per acre. Yield response will vary depending on the

disease pressure at application time.

Sprayer trampling when applying a fungicide is equivalent to about 1 - 1.5 bushel per acre.

Bottom Line

Proline® and Folicur® fungicides are applied at the correct growth stage of the wheat and with the correct nozzles to get proper wheat head coverage and greatest product suppression of fusarium. Anything less will dramatically reduce the amount of suppression of fusarium in spring wheat.



Figure 3—Alternating Turbo Flood Jet Nozzles



Figure 4—Twin Jet Nozzles

Armyworm Larvae Have Been Spotted

Tracey Baute, Field Crop Entomologist, OMAFRA-Ridgetown

Isolated reports of true armyworm larvae in Essex County have come in. This does not mean that we will experience the same kind of infestations as last year but it does tell us that we all need to get out and scout wheat and corn fields thoroughly. Unfortunately for growers in Essex County, they tend to give the neighbouring counties a heads up on armyworm activity. All counties in the southwest (Essex, Chatham-Kent, Lambton, Elgin) should have the fields scouted within the next 5-7 days and every 5 days after that. Counties a little further east and north should be on the alert and be scouting within the next 10 days and weekly thereafter.

Scouting is best done in the evening after dusk when the larvae are most active (bring a flashlight), but if scouting during the day, look for crop damage including notches in the

leaves or leaves being stripped to the midrib and signs of brown frass along the ground. Those fields showing these signs should be scouted again in the evening to get a sense of the number and size of larvae present. Scout both the margins of the wheat and corn fields as they could be marching from one field to the next but also scout throughout the interior of the field. Unfortunately with the delay in weed control this year, eggs could have been laid throughout the corn fields, not just the field

margins or neighbouring wheat fields.

Remember size does matter..at least when it comes to insects. Any larvae larger than 1 inch are difficult if not impossible to control.



Figure 1. Full grown true armyworm larvae

Thresholds for Corn

With early season feeding, insecticide may be warranted in seedling corn if there are two or more unparasitized larvae per seedling and feeding damage exceeds 10%. For corn past the whorl stage, if 50% of the plants are showing damage and are infested with larvae smaller than 2.5 cm (1 in.), then insecticide treatment may be warranted.

Thresholds in Wheat

Four unparasitized larvae, smaller than 2.5 cm (1 in.), per square foot, if head clipping is occurring.

Thresholds in Forages

Armyworm can choose to feed on the grasses within the forage crop too.

Control is warranted when five or more larvae (smaller than 2.5 cm) per square foot are found. In seedling crops, two to three larvae (smaller than 2.5 cm) per square foot may warrant control.

Armyworm Larvae Have Been Spotted

....continued

Active Ingredient	Product Name	Rate per ha (per acre)	Comments:
carbaryl	Sevin XLR Plus	2.5–4.0 L (1.0–1.6 L)	For larvae in whorls and foliage, treat entire plant. Repeat as necessary. For silks and ears, apply in 2–4-day intervals. 1 day to harvest. Follow label precautions regarding honeybees.
cyhalothrin-lambda	Matador 120 E	83 mL (34 mL)	Ground and aerial application. Spray no later than 1st appearance of feeding. Spray no later than 14 days before silage harvest. Maximum 3 applications/season, 2 may be by air.

Table 1. Products Recommended for Armyworm Control in Corn (Table 1-1 of the Field Crop Protection Guide 2009-2010)

Active Ingredient	Product Name	Rate per ha (per acre)	Comments:
trichlorfon	Dylox 420 LC	1.5 L (0.6 L)	Ground application only. Wheat, barley and oat. 21 days to harvest.
carbaryl	Sevin XLR Plus	2.5–5.25 L (1.0–2.1 L)	14 days to harvest for wheat, rye and oat. 28 days to harvest for barley. See label precautions applying to honeybees.
methomyl	Lannate Toss-N-Go	270–540 g (108–216 g)	Ground and aerial application. 20 days to harvest. Minimum period before re-entry is 24 hr.
cyhalothrin-lambda	Matador 120 E	83 mL (34 mL)	Wheat, barley and oat. Ground and aerial application. Use 100–200 L of water/ha. 3 applications/yr, 2 may be by air. Allow a 7-day interval between treatments. Do not apply within 28 days of harvest or 14 days of livestock foraging.
spinetoram	Delegate WG	100–200 g (40–80 g)	Ground application only. Use higher rate for heavy infestations or advanced pest stages. Minimum 5 days between treatments. Maximum 3 applications/season. Do not re-enter for 12 hr. Spray tank solution pH should be between 6 and 8 for optimal control. 21 days to harvest.

Table 2. Products Recommended for Armyworm Control in Cereals (Table 4-1 of the Field Crop Protection Guide 2009-2010)

Active Ingredient	Product Name	Rate per ha (per acre)	Comments:
carbaryl	Sevin XLR Plus	2.5–5.25 L (1.0–2.1 L)	Alfalfa, clover and forage grasses. 2 days to harvest.

Table 3. Products Recommended for Armyworm Control in Forages (Table 3-1 of the Field Crop Protection Guide 2009-2010)

Avoid Getting Burned by Herbicide Residues

Scott Banks – Emerging Crop Specialist/OMAFRA Kemptville

Mike Cowbrough – Weed Specialist/OMAFRA Guelph

Helmut Spieser - Agricultural Engineer/OMAFRA Ridgeway

Herbicide residues in the tank can cause devastating yield losses

Even if the sprayer has been “rinsed out” with water, the addition of surfactants or liquid fertilizers (eg. AGRAL 90, 28% UAN) to the next tank load may cause inadvertent loosening of previous residues. For example, applying a fungicide like “Folicur” to a wheat crop following an application of a corn herbicide (i.e. Accent, Option, and Ultim) has caused severe yield losses due to an incomplete sprayer cleanout procedure. Therefore the following pointers, along with information specified on the product label should be used to minimize the risk of contamination.

General tank clean out steps

1. Before cleaning the sprayer, dispose of surplus spray solution. The Grower Pesticide Safety Course suggests diluting the remaining spray solution with water at a 1:10 ratio. This diluted solution can be applied to the previously treated area provided that the maximum recommended product rate on the label is not exceeded.
2. Fill tank with water and add detergent, ammonia or other tank cleaner products (See table 1) and agitate vigorously for 10-20 minutes.
3. Flush the boom, hoses and nozzles with solution. Be sure to operate every circuit in the plumping system. Flush each boom section individually with full liquid flow. **Important:** When flushing the boom, open the boom ends to blow out particles and spray solution from the line. Drain tank.
4. Wash out any self-cleaning filters or strainers using your cleaning solution.
5. Wash outside of sprayer with soap and water.
6. Remove all screens, nozzles and wash separately in a bucket containing cleaning solution. Wash out any measuring containers with the cleaning solution.
7. Thoroughly rinse tank, booms, hoses, strainer and pump. These parts are often overlooked and can trap residues. Because of today’s highly active, low-use-rate herbicides, it is essential to clean out every trace of herbicide.

General Precautions

- Wash water contains herbicide residues. Never allow wash water to run into any water source (i.e. a well, pond, lake).
- Do not leave puddles that may be accessible to children, pets, farm animals or wildlife.

Choose the right cleaner

Each herbicide should have a recommended cleaning agent listed on the product label. The following table summarizes herbicide-specific cleaning agents found after several hours of combing through product labels. This is by no means a comprehensive list and therefore the pesticide label should always be consulted.

What if the label doesn’t specify a cleaning agent or a cleanout procedure?

Some product labels simply don’t state a cleanout procedure. In that case, the 7 step cleanout procedure above along with one of the three “cleaning solutions” listed would be acceptable. For “group II” products like Pursuit, the preferred cleaning agent is household ammonia, according to the manufacturer.

Cleaning Solutions

- Clean water rinse (i.e. triple rinse)
- Ammonia solution at 3%/100L water
- Strong detergent solution (i.e. 1.0 kg detergent/150 L water)

WARNING

Do not mix ammonia with chlorine bleach. This can produce toxic chlorine gas

Avoid Getting Burned by Herbicide Residues

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Herbicide(s)	Recommended Cleaner
2,4-D ester	1% ammonia/100 L water
Assure II	Clean water
atrazine	Strong detergent solution
Accent, Accent 1-Pass, Accent Total	3% ammonia/100 L water
Banvel II	1 kg detergent/150 L water
Basagran Forté	*Not specified on label
Battalion	3% ammonia/100 L water
Callisto	3% ammonia/100 L water
Classic	3% ammonia/100 L water
Cleansweep	*Not specified on label
Distinct	1 L household ammonia/100 L water
Excel Super	Strong detergent solution
FirstRate	3% ammonia/100 L water
Liberty	Strong detergent solution
Marksman	1 kg detergent/150 L water
Option 35 DF	3% ammonia/100 L water
PeakPlus	3% ammonia/100 L water
Pinnacle	3% ammonia/100 L water
Poast	Detergent
Prowl	*Not specified on label
Pursuit	Detergent
Reflex	*Not specified on label
Roundup Transorb/Weathermax	*Not specified on label
Summit	3% ammonia/100 L water
Ultim, Ultim Total	3% ammonia/100 L water
Venture	Clean water

Table 1. Recommended tank-cleaning agent for several herbicides used in Ontario

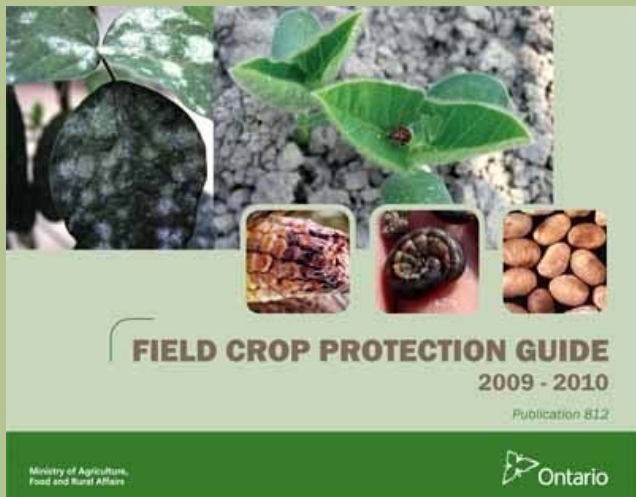
New Publication Now Available

Field Crop Protection Guide
Publication 812
2009 - 2010

This 108-page publication contains pesticide products and IPM strategies for the control of major field crop pests in Ontario, and is a companion piece to Publication 811, *Agronomy Guide for Field Crops*.

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