

Wisconsin Crop Manager

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Are Your Beans “Feelin the Burn”?

Shawn Conley, State Soybean and Small Grains Specialist;
Damon Smith, Extension Field Crops Pathologist,
Department of Plant Pathology, University of Wisconsin-Madison

Weed management has been a significant challenge for many farmers and retailers in 2018. The challenges range from short planting windows to shorter pre-emergence and post emergence herbicide application windows to early soybean flowering. As we approach the end of growth stage cut-offs for herbicide applications in soy-

bean can we expect any damage from herbicides and especially the Group 14 herbicides? Well unfortunately the answer to that question is the good ole Extension cop-out answer “Well folks that depends”.....

What we mean by that is as follows:

What growth stage was the soybean crop at?

Where in the United States are you located?

Was the crop stressed before or more importantly after the application?

What rate, a.i., adjuvants, carriers, tank mix partner, etc are we dealing with?

What soybean variety did you plant?

What phase is the moon in....well not really... but you all get the point.

Generally speaking as the soybean growth stage approaches R1 (owering) the risk for yield loss increases. However this is a highly regional response as we have documented differential yield responses from a +1.2% yield gain in the south to a -4.7% to -4.1% yield loss from the I-states north (Table 1). Furthermore as we transition from specifically using lactofen as a “herbicide” to a tool in white mold management we also note a differential response. In a recent meta-analysis where Dr. Smith focused on the 6 oz lactofen rate at R1 application he noted a 3.7% yield loss in low-to-moderate disease pressure, but a significant yield increase in high-pressure situations (Figure 1). In Dr. Smith’s meta-analysis he does want to emphasize they noticed A LOT of variability among varieties and environments tested as you can see by the error bars around treatments in Figure 1.

In summary we would expect some level of yield loss in these late “hot” applications; however in-terms of long-term weed management we would rather see you take a small yield hit than allow herbicide resistant weeds go back to seed and replenish the weed seed bank. This

Table 2. Percent relative yield change and break-even probabilities for Lactofen applications (12 fl. oz per a + 1%v/v COC) at V4 soybean compared to no application at multiple yield levels and soybean sale prices for studies between 2012 and 2014.

Region	RYC (%)†	Yield level								
		45 bu a ⁻¹			60 bu a ⁻¹			75 bu a ⁻¹		
		\$9	\$12	\$15	\$9	\$12	\$15	\$9	\$12	\$15
-----% probability of break-even-----										
South	1.2	31	47	57	47	60	67	57	67	72
I-states	-4.7	0	0	0	0	0	0	0	0	0
North	-4.1	0	0	0	0	0	0	0	0	0

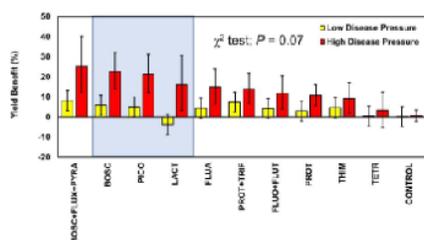
†RYC, percent relative yield change compared to the standard practice

South: Arkansas, Kansas, Kentucky

I-States: Indiana, Iowa, Illinois

North: Michigan, Minnesota, Wisconsin

Evidence Suggests That Disease Pressure May Have a Marginal Influence on the Active Ingredient Effect of Yield Benefit



*Non treated disease severity index = 42% considered low pressure. D00t ≥ 49% considered high pressure.

Figure 1. Yield response to white mold management by disease pressure.

is even more critical with potential Chinese tariffs and tighter phytosanitary regulations centered around weed seeds.

Literature cited:

J.M. Orlowski, B.J. Haverkamp, R.G. Laurenz, D.A. Marburger, E.W. Wilson, S.N. Casteel, S.P. Conley, S.L. Naeve, E.D. Nafziger, K.L. Roozeboom, W.J. Ross, K.D. Thelen, and C.D. Lee. 2016. High-input soybean management systems affect soybean yield, yield components, and economic break-even probabilities. *Crop Sci.* 56: 4: 1988-2004. doi:10.2135/cropsci2015.10.0620.

Willbur, J., P. Mitchell, M. Fall, A. Byrne, S. Chapman, C. Floyd, C. Bradley, K. Ames, M. Chilvers, N. Kleczewski, D. Malvick, B. Mueller, D. Mueller, M. Kabbage, S.P. Conley, D.L. Smith. 2018. Meta-analytic and economic approaches for evaluation of fungicide impact on Sclerotinia stem rot and soybean yield in the North Central U.S. *Phytopathology*. In review

[To read this article on their blog, click here.](#)

Understanding Nutrient Requirements and Utilization for High Yielding Soybeans

Shawn Conley, State Soybean and Small Grains Specialist

Soybean genetics and production practices have changed significantly in the past half-century. This has resulted in consistent yield increases of 0.42 bushels per acre per year in addition to physiological changes that have undoubtedly altered nutrient utilization for the soybean plant. This publication provides an updated summary of soybean uptake and partitioning of the three macro (nitrogen [N], phosphorus [P], potassium [K]), the three secondary (sulfur [S], calcium [Ca], magnesium [Mg]) and five of the micro (zinc [Zn], manganese [Mn], copper [Cu], iron [Fe], boron [B]) nutrients for soybean growth and development. These models can be used by farmers and ag industry personnel across the country to better understand and monitor soybean nutrient utilization during the growing season, including total uptake, the uptake rate and partitioning to help guide and evaluate fertility decisions. In addition, biomass (dry matter) accumulation can provide insight into soybean growth and development.

[To read the rest of this publication, click here.](#)

Palmer amaranth is now a prohibited noxious weed seed in Wisconsin, but what does it look like?

by [Rodrigo Werle](#) (UW-Madison Extension Cropping Systems Weed Scientist)

Under a new emergency rule, Palmer amaranth has been labeled as a prohibited noxious weed seed in Wisconsin. Given Palmer amaranth's aggressive nature, this is a worthwhile and necessary attempt to keep this troublesome weed species out of the state. For more details, see DATCP article: ["Keep an Eye Out for Palmer Amaranth, DATCP Cautions"](#).

Palmer amaranth's late and extended emergence window throughout the growing season and vigorous growth rate (up to 2 inches per day under ideal conditions) make control in row crops very difficult. Palmer amaranth is a major weed problem in the US Mid-South and parts of the Midwest. According to University of Wisconsin-Madison Weed Scientists, Palmer amaranth

has been reported in 6 Wisconsin counties thus far (see map below).

[To see the map and read the rest of this article, click here.](#)

Soybean Response to Nitrogen Application Across the U.S.

Shawn Conley, State Soybean and Small Grains Specialist

U.S. soybean [*Glycine max* (L.) Merr.] production has increased by 60% from 1996 to 2016 due to a 30% increase in area planted to soybean, and due to better genetics and improved crop management practices. While these historic seed yield increases have been substantial, U.S. soybean producers continually search for opportunities to optimize crop management and increase soybean seed yield, including applying fertilizer N to soybean.

Soybean has a large nutrient requirement throughout the growing season, and has an especially high N requirement due to its seed protein content that averages about 40% based on seed dry weight (Bellaloui et al., 2015). Soybean N requirements peak in the R3 to R6 growth stages (Gaspar et al. 2017; Harper, 1974). The N requirement of soybean is generally fulfilled by biological nitrogen fixation (BNF) plus N uptake from soil (Salvagiotti et al., 2008). However, BNF activity can be limited by a number of environmental conditions such as low soil moisture, extremes of soil pH and temperature, and soil compaction, any of which can result in insufficient N supply to the soybean plants (Purcell and King, 1996).

[To read the rest of this pdf, click here.](#)

Soybean Injury from Dicamba

Richard Proost, Nutrient and Pest Management Program, University of Wisconsin-Madison

Investigations of soybean leaf puckering in Wisconsin have often found the injury was caused by dicamba—a plant growth regulator (Group 4) that is prone to drift and commonly used in corn herbicides (i.e., Banvel, Clarity, Distinct, NorthStar, Status, Sterling Blue, Yukon).

In 2017, dicamba-tolerant (DT) became available to U.S. farmers along with three new restricted use dicamba products for use on DT soybean—Engenia, FeXapan, and Xtendimax. Although this represents a step forward in weed management and reducing injury and reducing injury in some soybean fields, it also potentially increases

dicamba use and therefore the likelihood of injury to non-DT soybean and other dicamba-susceptible plants in nearby fields. Other than misapplying dicamba to a non-DT soybean field, there are four common ways that dicamba can reach fields and cause injury:

1. Spray particle drift
2. Vapor drift
3. Application during a temperature inversion
4. Contaminated spray solution

Understanding how these work and how to reduce their incidence, along with being able to differentiate between true dicamba injury symptoms and those that mimic dicamba injury will help increase responsible dicamba use.

[To read the rest of this pdf, click here.](#)

Wisconsin UWEX Vegetable Crop Update Issue 8

Amanda Gevens, Associate Professor & Extension Specialist, Potato & Vegetable Pathology, UW-Madison Plant Pathology Department

[Vegetable Crop Updates Newsletter #8](#)

In this issue:

- late blight 'look-alike' disease *Phytophthora nicotianae* in North Carolina potatoes/tomatoes
- national late blight updates
- WI DSV accumulations – no thresholds met yet for late blight preventive fungicide application trigger
- national cucurbit downy mildew updates
- potato crop status updates

Wisconsin UWEX Vegetable Crop Update Issue 9

Amanda Gevens, Associate Professor & Extension Specialist, Potato & Vegetable Pathology, UW-Madison Plant Pathology Department

[Vegetable Crop Updates Newsletter #9](#)

In this issue:

- potato dieback in response to high heat in WI
- late blight updates and DSVs
- cucurbit downy mildew updates (national)
- horticultural updates – determining potato canopy coverage and moisture

Wisconsin Fruit News- June 8

Janet van Zoeren and Christelle Guédot, UW-Extension

<https://go.wisc.edu/54j2q8>

This week we have a variety of articles in the supplemental issue, including information on first reports of the season for spotted wing drosophila and Eastern flower thrips, along with a final installment on precision apple thinning.

- First detection of spotted wing drosophila in Wisconsin for 2018
- First reports of Eastern flower thrips in Wisconsin for 2018
- Precision apple thinning part VI: Wrapping up and rescue thinning
- Current carbohydrate models

Wisconsin Pest Bulletin, Issue No. 5, May 31

Krista Hamilton, Entomologist, Bureau of Plant Industry/ Division of Agricultural Resource Management, Wisconsin Department of Agriculture, Trade and Consumer Protection

Volume 63 Issue No. 5 of the Wisconsin Pest Bulletin is now available at:

<https://datcpservices.wisconsin.gov/pb/pdf/05-31-18.pdf>

INSIDE THIS ISSUE

LOOKING AHEAD: Heavy June beetle populations reported in Grant County

FORAGES & GRAINS: Peak alfalfa weevil feeding expected in the next two weeks

CORN: Continue scouting for signs of black cutworm

activity

FRUITS: Large codling moth flights documented in several apple orchards

VEGETABLES: Colorado potato beetle egg laying underway

NURSERY & FOREST: Red spot on peony and other nursery reports

DEGREE DAYS: Growing degree day accumulations as of May 30, 2018

Wisconsin Pest Bulletin, Issue No. 6, June 7

Krista Hamilton, Entomologist, Bureau of Plant Industry/ Division of Agricultural Resource Management, Wisconsin Department of Agriculture, Trade and Consumer Protection

Volume 63 Issue No. 6 of the Wisconsin Pest Bulletin is now available at:

<http://datcpservices.wisconsin.gov/pb/index.jsp>

INSIDE THIS ISSUE

LOOKING AHEAD: European corn borer spring flight likely to peak next week

FORAGES & GRAINS: Alfalfa weevil larvae counts remain low

CORN: Continue scouting for BCW damage through V5 stage

SOYBEAN: Soybean aphids detected in WI soybean fields by June 4

FRUITS: Large codling moth flights recorded for second week in a row

VEGETABLES: Set yellow pan traps next week to capture first squash vine borer moths

NURSERY & FOREST: Downy mildew, Fletcher scale, and other nursery reports

DEGREE DAYS: Growing degree day accumulations as of June 6, 2018

Wisconsin Pest Bulletin, Issue No. 7, June 14

Krista Hamilton, Entomologist, Bureau of Plant Industry/
Division of Agricultural Resource Management, Wisconsin
Department of Agriculture, Trade and Consumer Protection

Volume 63 Issue No. 6 of the Wisconsin Pest Bulletin is
now available at:

<http://datcpservices.wisconsin.gov/pb/pdf/06-14-18.pdf>

UW/UWEX Plant Disease Diagnostic Clinic (PDDC) Update June 8

Brian Hudelson, Sue Luelo, John Lake and Ann Joy

The PDDC receives samples of many plant and soil sam-
ples from around the state. The following diseases/disor-
ders have been identi ed at the PDDC from June 2, 2018
through June 8, 2018.

The 6/8/18 PDDC Wisconsin Disease Almanac (i.e., weekly
disease summary) is now available at:

[https://pddc.wisc.edu/wp-content/uploads/
sites/39/2018/06/FullTable060818.pdf](https://pddc.wisc.edu/wp-content/uploads/sites/39/2018/06/FullTable060818.pdf)

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