

# Wisconsin Crop Manager

Volume 16 Number 1 --- University of Wisconsin Crop Manager --- Jan 15, 2009

## What's inside this issue...

Managing Nutrients on Wisconsin Soils Workshop.....	1
UW-River Falls Field Scout Training .....	1
Still don't think you need integrated weed management?.....	2
Sweet Corn Tolerance Results from 2008.....	3

IPM Field Scout Training Class to be held on the UW-River Falls campus, March 18-19, 2009. Topics covered include, pest identification and biology, damage symptoms, economic thresholds and scouting techniques for insects, weeds, plant pathogens, herbicide injury and nutrient deficiency symptoms for corn, alfalfa, soybean and wheat. CCA Credits will be applied for in the areas of pest and nutrient management.

Non-student registration fee is \$100/person and covers the cost of the training and copies of the Field Crop Scout Training Manual and Ontario Weeds. To register, send a check payable to UW-Extension to Bryan Jensen, Dept. of Entomology, 1630 Linden Drive, Madison, WI 53706. Registration maybe limited and is available on a first-come, first-served basis. For more information call Bryan Jensen at (608) 263-4073 or email at [bmjense1@facstaff.wisc.edu](mailto:bmjense1@facstaff.wisc.edu)

## Managing Nutrients on Wisconsin Soils Workshop, March 11-12

Matt Ruark, Department of Soil Science

The Department of Soil Science, with cooperation from UW-Extension, UWEX-Nutrient Management Team, and UWEX-Nutrient & Pest Management Program, is hosting the workshop "Managing Nutrients on Wisconsin Soils" on March 11<sup>th</sup> and 12<sup>th</sup>, 2009. The workshop is an intensive 2-day workshop covering the basic principles of soil fertility and nutrient management. It is designed for industry and agency personnel who have not had extensive training in soil fertility. It is also recommend to anyone who needs a refresher prior to taking the course on nutrient management planning. Topics covered include: N, P, and K cycling and management; secondary and micronutrient management; manure management; soil and water interactions; and tillage and nutrient interactions.

Registration fees are \$200/person. Attendees will receive a binder of all workshop presentation materials and can earn 13 CCA credits. The event will take place at the Crowne Plaza Hotel in Madison, WI. Please contact Matt Ruark (608-263-2889) for further information. [mdruark@wisc.edu](mailto:mdruark@wisc.edu)

## UW-River Falls Field Scout Training, March 18-19

Bryan Jensen, IPM Program

The University of Wisconsin-River Falls, UW-Extension and the Integrated Pest Management Program will co-sponsor the

Wednesday, March 18, 2009  
Rm. 217 Agricultural Sciences Building

7:45	Registration -outside Rm. 217, Agricultural Sciences Building
8:00	Introduction Bryan Jensen Integrated Pest Management Program, UW-Madison
8:15	Grass and Sedge Weed Identification Dr. Mike Crotser Department of Plant and Earth Sciences, UW-River Falls
9:30	Annual Broadleaf Weed Identification Dr. Mike Crotser
10:30	Break
10:45	Biennial and Perennial Weed Identification
11:45	Lunch (on your own)
12:45	Herbicide Mode of Action and Injury Symptoms Mike Crotser
2:00	Break
2:15	Weed Identification Lab, Greenhouse

	Dr. Mike Crotser
4:00	Dinner on your own
5:30	-Soil and Plant Tissue Sampling -Nutrient Deficiency Symptoms -Introduction to Nutrient Management Scott Sturgul Nutrient and Pest Management Program
8:15	Quiz
8:45	Adjourn

	Thursday, March 19, 2009 Rm. 217, Agricultural Sciences Building
8:00	Introduction to Nutrient Management Planning Scott Sturgul, NPM Program
9:15	Break
9:30	Insect Pests of Corn, Alfalfa, Soybeans and Wheat Bryan Jensen
11:30	Lunch (on your own)
12:15	Field Crop Insect Lab Rm. 221 Bryan Jensen
1:45	Break
1:55	Diseases of Corn, Alfalfa, Wheat and Soybeans Dr. Brian Hudelson Dept. of Plant Pathology, UW-Madison
3:55	Field Crop Disease Lab Rm. 221 Dr. Brian Hudelson
5:30	Identification Test (optional for non students)

involves using herbicides with different modes of action, using multiple application timings in the same season, and utilizing cultural practices that enhance the competitiveness of the crop.

The need to diversify weed management programs and protect the value of glyphosate became a consistent message of extension weed scientists soon after the adoption Roundup Ready @crops. To put a fresh spin on this message, we pooled our thoughts to come up with a light-hearted look at this serious issue.

**Warning: the following list contains humor. If not prepared to consider the lighter-side of weed management, do not read or read at your own risk.**

### **Extension's Top 10 reasons to diversify weed management**

10. Your crop can reach its full potential
9. Weeds won't know what hit them
8. C'mon, even Monsanto's on board with this
7. Change is big right now
6. Your ag chem dealer will thank you
5. 'Cause it's mavericky, gosh darn it
4. It will reduce our dependence on Chinese glyphosate, swinging the trade balance in our favor
3. Go ahead and try to control lambsquarter post – do you feel lucky, punk?
2. I love the smell of Lumax in the morning – smells like victory<sup>a</sup>  
<sup>a</sup>Substitute your favorite preemergence herbicide for Lumax.
1. If you do, perhaps your Extension weed specialist will find something else to talk about

Glyphosate resistance in several important weeds continues to spread across the Midwest, and many of these weeds have resistance to other modes of action as well. Continuing to rely on the simplistic systems that dominate the region will result in further appearance and spread of herbicide resistance.

IWM provides more consistent weed control, is more effective at protecting crop yields, and preserves the value of the herbicides that are essential in today's production systems.

Prepared by:

Bob Hartzler, Iowa State University  
Chris Boerboom, University of Wisconsin  
Jeff Gunsoluls, University of Minnesota  
Mark Loux, The Ohio State University

### **Still don't think you need integrated weed management?**

The introduction of Roundup Ready® soybean more than a decade ago dramatically changed weed management systems across the Corn Belt. Glyphosate's unparalleled effectiveness allowed a simplification of weed management systems. Unfortunately, glyphosate resistant weeds are a result of these systems that rely heavily on glyphosate.

Integrated weed management (IWM) is more durable than the systems currently used on a high percentage of the acres due to continual exposure of weeds to different control tactics. IWM

## Sweet Corn Tolerance Results from 2008

Chris Boerboom, Extension Weed Scientist

In 2008, Mark VanGessel, University of Delaware, Roger Becker, University of Minnesota, and Ed Peachey, Oregon State University and I collaborated again to evaluate sweet corn hybrid tolerance to herbicides. In 2008, the herbicides tested were Accent Q, Status, and the experimental herbicide Kixor. In this article, I am only summarizing our results for Accent Q, which is expected to be labeled in 2009. The other herbicides are not currently labeled for use on sweet corn.

Dupont is launching Accent Q in 2009, which is a new formulation of Accent that contains the safener isoxadifen. This safener is also in the herbicides Laudis, Option, and Status and functions by increasing the rate that a corn plant can metabolize specific herbicides. As a consequence, the degree of injury is reduced under stressful conditions or when marginal tolerance exists.

We know that sweet corn hybrids differ in their natural tolerance to Accent and that stressful weather conditions can further increase the risk of injury. Much of the natural difference in tolerance is controlled by a single gene, which is labeled NSF1. When a hybrid inherits a sensitive version of this gene from each inbred parent, the hybrid will be highly sensitive to Accent and will be killed. The hybrid Merit is a highly sensitive hybrid that we use as sensitive check in our trials.

If a hybrid inherits a tolerant version of the gene from each parent, the hybrid usually has a good level of tolerance. If the hybrid has a both a tolerant and sensitive version, the hybrid may be injured by Accent to some degree. Because of the variation in tolerance among sweet corn hybrids, Accent has only been recommended on certain hybrids that are known to have acceptable levels of tolerance.

The development of Accent Q may increase the opportunity of using Accent on sweet corn if the safener is effective. Therefore, we wanted to determine if Accent Q increased the tolerance of hybrids compared to Accent. To increase the potential of observing a safening effect with Accent Q, we selected 20 hybrids previously rated as sensitive, 9 hybrids rated as intermediate, and 10 hybrids rated as tolerant (Table 1).

These 39 hybrids were planted in single rows in trials in each of our four states. At the V3-growth stage, Accent and Accent Q were applied to their respective plots with a nontreated check plot in between so injury could easily be rated. The Accent was applied at 1.09 oz/a with 1% crop oil concentrate and 2 lb/a ammonium sulfate. The Accent Q rate was 1.5 oz/a, which had the same amount of Accent (1.09 oz/a) plus 0.41 oz/a of isoxadifen. This rate of Accent is higher than normal to increase the potential of obtaining injury. The anticipated standard rate of Accent Q is 0.9 oz/a, which would contain 0.66 oz/a of Accent.

Table 1. Sweet corn hybrids evaluated for tolerance to Accent Q. Hybrids listed according to previous Accent tolerance ratings at 2x rates of application.

Sensitive	Sensitive	Intermediate	Tolerant
Argent	GSS 1477	Captivate	Ambrosia
Basin R	GSS 2914	Chase	Bliss
Celestial	Hollywood	Early Gold	Challenger
Coho	How Sweet It Is	Incredible	Enterprise
Colombus	Merit	Lancaster	HM 2390
Devotion	Mystique	Overland	Legacy
DMC 21-84	Punch	Passion	Prime Plus
DMC 21-85 (S?)	SS Jubilee Plus	Providence	Rocker
Dynamo	Suregold	Sentinel	Sugar Buns
GH 2042	Turbo		Temptation

On average, sweet corn hybrids had 50% less stunting when sprayed with Accent Q compared to Accent at 7 days after treatment (Table 2). (By 14 days after treatment, sweet corn typically starts to recover so the 7 day rating usually shows the greatest difference in injury). The safening effect of Accent Q also appeared to be effective at most locations (Table 3). Average stunting was reduced at Delaware, Oregon, and Wisconsin. Accent did not cause significant stunting to most hybrids at Minnesota, but safening was observed in individual hybrid comparisons (data not shown). Chlorosis was also noticeably reduced at Delaware and Wisconsin (Table 3) and is illustrated with photos of Punch (Figures 1 and 2). It should be noted that even though the safener isoxadifen increased the tolerance of these hybrids to Accent, the highly sensitive hybrid Merit was still killed by Accent Q (Figure 3). Apparently because Merit lacks even one functional version of the NSF1 gene, the safener cannot trigger this gene to become more active in metabolizing Accent. Fortunately, only a few of these highly sensitive hybrids exist and most are not grown commercially.

The safening effect of Accent Q occurred across all trial locations and with most hybrids at the elevated rates tested (Table 4). This demonstrates a level of consistency for the safening effect. Although some of the more sensitive hybrids may have unacceptable injury under certain weather conditions or when over applied (e.g. overlaps), more hybrids should have acceptable tolerance to Accent Q than Accent. This reduced risk of injury should expand the options for using Accent Q for postemergence grass weed control in sweet corn.

Table 2. Average stunting of sweet corn hybrids across four locations within each tolerance group at 7 days after treatment with Accent and Accent Q. The range among the hybrids is listed in parentheses. Merit had 48 to 49% stunting for both herbicides and is excluded from the range.

Hybrid tolerance group	Stunting (%)	
	Accent	Accent Q
Sensitive	15 (4-22)	8 (3-16)
Intermediate	9 (5-16)	5 (0-9)
Tolerant	7 (2-16)	4 (0-9)
Grand average	12	6

**Table 3.** Average stunting and chlorosis of 39 sweet corn hybrids at 7 days after treatment with Accent and Accent Q.

Location	Stunting (%)		Chlorosis (%)	
	Accent	Accent Q	Accent	Accent Q
Delaware	19	9	15	5
Minnesota	2	1	1	0
Oregon	7	0	-	-
Wisconsin	18	11	10	4

**Table 4.** Sweet corn hybrid stunting to Accent and Accent Q at 7 days after treatment when averaged across locations and sorted previous tolerance rating.

Sensitive	Stunting (%)		Inter- mediate	Stunting (%)	
	Accent	Accent Q		Accent	Accent Q
Argent	20	5	Captivate	11	6
Basin R	12	4	Chase	5	0
Celestial	15	6	Early Gold	16	8
Coho	9	4	Incredible	7	3
Colombus	14	6	Lancaster	7	4
Devotion	11	4	Overland	10	9
DMC 21-84	8	3	Passion	10	8
DMC 21-85	9	4	Providence	10	3
Dynamo	22	16	Sentinel	10	3
GH 2042	14	9			
GSS 1477	12	3	<b>Tolerant</b>	<b>Accent</b>	<b>Accent Q</b>
GSS 2914	10	9	Ambrosia	6	3
Hollywood	13	6	Bliss	10	9
How			Challenger		
Sweet It Is	14	8		16	5
Merit	49	48	Enterprise	8	5
Mystique	20	8	HM 2390	6	3
Punch	13	8	Legacy	8	3
SS Jubilee			Prime Plus		
Plus	21	13		5	3
Suregold	9	3	Rocker	2	4
Turbo	11	0	Sugar Buns	4	0
			Temptation	9	4



**Figure 1.** Punch sweet corn hybrid treated with 1.09 oz/a Accent shows stunting and chlorosis at 7 days after treatment.



**Figure 2.** Punch sweet corn hybrid treated with 1.5 oz/a Accent Q has less stunting and minimal chlorosis at 7 days after treatment.



**Figure 3.** Merit sweet corn hybrid treated with 1.5 oz/a Accent Q at 7 days after treatment. This highly sensitive hybrid is still killed with Accent Q.

