Wisconsin Crop Manager

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Meet Vince Davis: New UWEX Weed Scientist

Hello everyone, my name is Vince Davis and I am a new cropping systems weed scientist at the University of Wisconsin-Madison. In my first newsletter article, the goal is to let you know a little bit about me and what I hope to accomplish during the coming months and years.

I grew up in rural Knox county Illinois which is in the Western or Northwestern part of state, depending on who you ask. I developed a love for agriculture on my grandparents' diversified corn, soybean, and farrow-to-finish swine farm. I was an active member in 4-H and FFA. I earned an A.A.S. degree in agribusiness and minor in Beef Science from Black Hawk College East Campus in 1997, a B.S. degree in agronomy from Western Illinois University in 2003, and a M.S. and Ph.D. degree in weed science from Purdue University in 2006 and 2009, respectively. For the past two years, I was an assistant professor of soybean production systems and extension specialist at the University of Illinois. I have been a member of the tri-societies (ASA-CSSA-SSSA) and the North Central and national Weed Science societies since 2002.

I have been involved with applied agricultural field research in some capacity for the past 15 years. I have held various part-time, internship, and personal consulting research experiences for Monsanto working in Illinois, Iowa, and Puerto Rico. I also conducted corn hybrid development and evaluation throughout Illinois and Iowa as a research technician for Wyffels Hybrids in Geneseo, IL for four years. While I studied at WIU, I conducted various weed science research projects at the university agronomy farm with Drs. Win Phippen and Gordon Roskamp. My weed science graduate research investigated biology, ecology, and crop management aspects regarding the evolution of glyphosate resistance in horseweed, a.k.a. marestail, at Purdue University. I studied under the direction of Dr. Bill Johnson, and I also managed Dr. Johnson's herbicide evaluation program throughout Indiana for half of my time there. I've been very fortunate to have experienced such rich opportunities in life thus far.

Now, I am new to Wisconsin, both the University and the State. I know I have a lot to learn looking ahead and that has me excited for new experiences. From the limited travels I've had around this state, I know this state is beautiful. My family and I have vacationed multiple times in WI enjoying waterparks at the Dells and fishing in the Northwoods. My family loves the outdoors (camping, fishing, and hunting) and we are excited to explore the state. I also love farming and the diversity of farming systems in WI is very interesting to me, so I'm excited to learn more about WI agriculture in general.

This year, weed science field research plans are in full swing as we will continue herbicide efficacy trials to generate important information for growers to plan their weed management programs with the latest information. However, my primary objective for this year is to learn as much as I can about the current trends and weed management challenges facing Wisconsin crop producers across the state. I'm looking forward to traveling throughout the state and meeting as many Extension educators, producers and industry stakeholders as possible. I am social and I don't bite (*often*) so feel free to introduce yourself if you see me at a field day or meeting.

If I can be of any assistance to you I can be contacted in the University of Wisconsin-Madison Agronomy department at

(608) 262-1392 or e-mailed at vmdavis@wisc.edu. I am very excited to start this new position, and I look forward to serving Wisconsin agriculture for years to come. Best regards, Vince M. Davis

2011 Wisconsin CCA of the Year: Wayne Wells

Bryan Jensen, UW-MadisonIPM Program

The Wisconsin CCA Board would like to congratulate Wayne Wells on his selection as the 2011 Wisconsin CCA of the Year!

Wayne as been employed in the vegetable industry for nearly 30 years and currently works for Hartung Brothers as a technical services manager. His primary duties include advising vegetables growers and field personnel in the Midwest, deep South and Southeast regarding best vegetable production practices, soil effects on vegetable production, pest management and variety selection. Although production contracts vary by year, Wayne typically works with over 200 growers and contracts in excess of 20,000 acres/year.

Wayne's responsibilities also include pesticide efficacy trials. These results have greatly benefited growers and in one situation led to a section 18 label for Reflex on green beans. This data eventually led to a full section 3 label. He also maintains and shares a rotational crop plant-back restriction list for pesticide labeled for peas, green beans, lima beans, sweet corn, carrots and beets. Wayne also participates in annual vegetable seed trial evaluations in cooperation with Brotherton, Crites, Pureline, Seminis and Syngenta.

Wayne serves on several industry-related committees including:

- Member and past chair of the Midwest Food Processors Association (MWFPA) Raw Product Committee
- Chair of the MWFPA Exhibit and Processing Crops Committee which coordinates the annual MWFPA Winter Convention and Annual Processing Crops Conference.
- Member and past co-chair of the UW Integrated Crop and Pest Management Advisory Committee which advises the University of Wisconsin on nutrient and pest management educational programming efforts.
- Worked with Second Harvest and the University of Wisconsin to develop protocols for the safe harvest and delivery of excess vegetables to food banks.
- Serves on the Crop Protection and Biotechnology Committees for the National Food Processor Association

Wayne also volunteers for the Muscular Dystrophy Association's fund raising Lock-up program. His "incarceration" has raised several thousand dollars for the organization. He also volunteers for the Beaver Dam Youth Hockey Program serving as the team representative.

The next time you see Wayne please congratulate him a job well done; his selection as the 2011 WI CCA of the Year and for honorably representing the Certified Crop Adviser Program. Congratulations Wayne!

Save the Date – 2011 Agronomy/Soils Field Day

Dick Wolkowski, Extension Soil Scientist

The 2011 Agronomy/Soils Field Day is scheduled for Wednesday, 31 August at the Arlington Agricultural Research Station. CALS researchers will present current research information and offering recommendations on crop, soil, and pest management topics. Tours will begin at 8:30. Certified Crop Advisor CEU's will be available. Information on tours and other details will become available later this year as the program is developed. Check http://www.soils.wisc.edu/extension/ for the latest program information.

Applying Gypsum to Wisconsin Soils

Dick Wolkowski, Extension Soil Scientist

The interest in the use of gypsum in crop production has increased in Wisconsin for a variety of reasons. The installation of "scrubbers" at coal-fired power plants has reduced S emissions substantially, thereby significantly reducing the amount of S deposited in precipitation. Consequently many producers and consultants are now seeing evidence of low S for the first time and the use of S-containing fertilizer is on the rise. While there are numerous S fertilizer sources (e.g. ammonium sulfate, potassium sulfate, sulpomag), gypsum is typically the least expensive. Furthermore, a byproduct of some scrubbers is high quality gypsum, which is coming from SE Wisconsin powerplants operated by We Energies. This material is known as FGD (flue gas desulfurized) gypsum and is being marketed as Gypsoil™ .

Gypsum or calcium sulfate dihydrate ($CaSO_4 \cdot 2H_2O$) in its purest form has 23 % Ca and 18 % S, although most agricultural sources have slightly lower analyses. Calcium fertilization is unnecessary for field crops grown on Wisconsin soils. The majority of Wisconsin soils are routinely limed to maintain pH values greater than 6.0 and in doing so approximately 300 to 400 lb Ca is applied per ton of lime. Considering that crop Ca removal is 25 to 100 lb Ca/a/year and that Ca leaching is limited, a well-managed soil would rarely become Ca responsive. Soils with a Ca soil test less than 400 ppm on sands or less than 600 ppm on medium-textured soils are likely to respond to Ca applications. One situation where plant response to Ca application has been demonstrated in Wisconsin is on potato, which is commonly grown on moderately acidic, low cation exchange capacity (CEC) soils. Furthermore, calcium-treated tubers have been shown to resist bacterial soft rot in storage because the role of Ca for forming strong cell walls. Sulfur behaves similar to N in soils, as it associates with organic matter and the sulfate anion is subject to leaching. Traditionally soils in western and northern Wisconsin have been more responsive to S

fertilization as they receive less S from precipitation. However, the entire state is receiving less S in precipitation and thus, the potential for S response is increasing state-wide.

Because gypsum contains Ca some believe that it can be used as lime to increase soil pH. This belief is erroneous because it is the carbonate anion (CO_3^{2-}) in liming materials that actually neutralizes the H^+ in the soil. Note that in the literature, situations where gypsum *increases* pH have been shown, but these responses were observed on highly weathered soils containing high level of exchangeable Al. Such conditions would not be expected in Wisconsin soils.

Gypsoil™ has suggested application rates of 1 – 3 tons per acre and claims improvement in soil physical conditions (reduced compaction, improved water holding capacity), deeper rooting, enhanced biological activity, and maximized growth and yield. These claims have not been substantiated by current Wisconsin research, although studies in other north central states have shown some benefits. Research in Wisconsin has not consistently shown benefits from the application of gypsum or other Ca containing materials in crop production beyond the expected nutritional benefit of Ca or S. "Balancing" Ca:Mg levels with gypsum or other Ca containing materials is neither economically or scientifically sound. One promising potential benefit for gypsum application at these higher rates is the reduction in dissolved reactive P, which could result in reduced P in runoff. Research to confirm this response is on-going.

Gypsum is an excellent source of Ca and S for crops. Where S deficiency is suspected use plant analysis to confirm the need for S fertilization. Consult UWEX Publication A2809 for the appropriate rate of S application for the crop to be grown. Producers that choose to apply high rates of FGD gypsum should consider leaving several untreated "check" strips to evaluate the soil and crop response to the material.

Radish as a cover crop

Matt Ruark, Extension Soil Scientist, UWEX and Dept. of Soil Science,Kevin Shelley, UW – Nutrient and Pest Management Program,Jim Stute, Extension Agent – Rock County

There has been much recent interest in planting forage radish or oilseed radish (*Raphanus sativus*) following winter wheat or corn silage harvest. Some of the forage radish varieties sold as a cover crop seed are cultivars of the Daikon variety (a Japanese table radish) and have been selected for large taproot size. These selections, derived from radish grown at the University of Maryland, are trademarked and sold as Tillage Radish™ and GroundHog™. Oilseed radish cultivars are also available (e.g. Adagio), may not trademarked, and generally have stubbier taproots compared to cultivars of the Daikon forage radish. Some radish is sold as VNS (variety not stated). Use caution when purchasing VNS seed as it has not been selected for large taproots and you will not know what type of radish you are getting. While research related to using radish as a cover crop is in its infancy, there are some guidelines that we can suggest for use. In general, proceed with care if interested in incorporating radish as a cover crop into your cropping system.

The primary benefit of growing radish as a cover crop is its ability to perform "bio-tillage" by growing a large taproot that can greatly disturb soil in the upper 8 inches (or deeper). The radish decomposes quickly in the spring, leaving large holes in the soil. This can be beneficial for no-till growers or for growers who are looking to reduce spring tillage. The taproot may penetrate through compacted soil layers and alleviate soil compaction. However, it remains unclear on how effective radish can be for breaking through a dense plow plan. Currently, we do not have any data that quantifies this "bio-tillage" benefit in Wisconsin.

Another benefit of radish is that it is an excellent scavenger of nitrogen (N). It can be used to capture excess N applied to the previous crop. However, this uptake is limited to the fall growth, as radish does not survive Wisconsin winters. The taproots decompose quickly (and with quite an odor!) in the spring, while a rye cover crop will survive winters and continue to take up N in the spring. The overall amount of N taken up by radish roots and above ground biomass can exceed the amount of N taken up by above ground biomass of rye. Thus, there is a trade-off between the N scavenging cover crops: radish will scavenge more N in the fall, but rye will continue to scavenge in the spring.

It remains unknown if radish functions as a green manure by providing an N credit. It is also unclear if the release of N captured in the radish will be released in sync with N uptake of the subsequent crop (most often corn). No data exist which show that N rates should be reduced after radish. In addition, we have heard that it is recommended that 60 lb/ac of N be applied with a planting of radish. This was likely based on research conducted in Maryland where adequate levels of residual N were not expected because of the soil texture (loamy sand) and the fact that the previous crop received only a moderate amount of N (no carry-over of N). Thus, the researchers applied N at radish planting to ensure a good stand. Radish will need adequate N to grow and provide N capture and other soil benefits. However, we would expect that on most silt loam to clay loam soils, where adequate N was

Figure 1. Radish planted July 15th, 2010 and photographed October 11st, 2010. Nitrogen fertilizer was not applied when planting the radish.

applied to the previous crop, that residual N in the soil will be adequate for radish growth (Fig. 1). There is no published research on optimum soil test nitrate or N application to ensure proper growth of radish as a cover crop. However, this issue is moot if opting to apply manure at or near the time of cover crop seeding.

Radish establishes quicker than legumes, but less rapidly than grasses. It will provide good groundcover and controls weeds through a dense canopy. Recent research from the University of Maryland has demonstrated the effectiveness of radish as a weed suppressor (Lawley et al., 2011; "Forage radish cover crop suppresses winter annual weeds in fall and before corn planting.").

Using radish as a cover crop has become popular with growers who have an "early" harvest crop in rotation (e.g. winter wheat, vegetable crops). The early harvest date of these crops also makes the land available for manure applications. Radish can be planted before, after or with manure applications. It can also be grown in mixture with other cover crops, both legumes and grasses. Late-season plantings of radish after corn silage may have its limitations in Wisconsin. It is unclear what benefit you can get when planting later in the summer (late August to mid-September). In a field trial conducted in 2010, we were unable to plant cover crops (radish and rye) until September 21st and experienced very dry soil

Figure 2. Cover crops planted on September 21st, 2010 (radish on left, rye on right). Photograph taken on November 11th, 2010.

conditions at the Arlington Agricultural Research Station after planting. The late planting and lack of available moisture was detrimental to the radish, but not rye (Fig. 2).

Treat tillage radish as an experiment when growing it for the first time. Talk with crop consultants or other growers that have had success. We are working on developing scientific-based recommendations for management of radish grown as a cover crop. Currently, our recommendations would be to experiment only in systems where radish can be planted in mid-July to mid-August. Also, it is always a good idea to alert your neighbors that you have planted tillage radish, as they can be quite pungent in the spring when decomposing in the field.

Early Assessment of Wheat Stands Suggest We are Off to a Great Start

Shawn Conely, WI State Soybean and Wheat Extension Specialist

A visual survey of our Arlington, Janesville, and Lancaster winter wheat variety trials suggest that green-up of the 2011 winter wheat crop is occurring 5-7 days later than last year. We were unable to accurately assess our Chilton site last week due to delayed crop development. Our green-up assessment at the southern locations suggest very little winter-kill occurred (Image 1). Given the calendar and the inclement spring weather-to-date growers and retailers are anxious to apply nitrogen.

(Lancaster variety trial - T. Wood)

It is important to remember that the functional purpose of spring N is to 1. stimulate tillering and 2. provide crop nutrition. If ample tillering (> 70 tillers per square foot) has occurred growers can delay N applications up to pre-joint (Feekes 4-5; Zadoks 30). This practice will aid in minimizing early spring N loss. Applications of N made after this growth stage may lead to wheel track damage. If growers have < 70 tillers per square foot it is important to get across those fields as soon as possible to minimize yield loss due to low tiller/head counts.

Merging of Soy Health and Field Crops Plant Pathology Websites

Paul Esker,WI State Extension Field Crops Plant Pathologist

I just wanted to take this opportunity to announce that we have a new and integrated website for diseases of field crops. This new website is called: Field Crop Pathology.

fyi.uwex.edu/fieldcroppathology

For those who have used the Soy Health webpage (and we know that it has been a lot of you), please be assured that the content that was on that website will be fully integrated into our new site. We have been working to standardize the presentation of the material on Soy Health with our new website.

On the new Field Crop Pathology website will be information about diseases of corn, soybean, wheat, and alfalfa. We have tested the search function on the main page and are quite happy with the results for finding materials on this site. We also linked from our main page to several of UW- and UW-Extension associated websites (among others) that we know you are also interested in using. On the Main Page, I will try to write periodic updates about new information available on the website.

Please feel free to contact me with any questions that you have about the new website. We welcome your feedback. We will not be taking down our current websites until we have fully integrated our materials. Thanks and have a great weekend! Paul

IRM Calculator Helps Growers Plant the Right Refuge for the Right Bt Corn Hybrid

Eileen Cullen, Extension Entomologist

In 2011, more corn hybrids contain multiple Bt traits for insect control or suppression. Refuge requirements have changed for multi-trait corn hybrids with pyramided traits (two or more Bt traits for the same insect pest complex above and/or below ground) and seed blend refuge-in-the-bag products. Some product refuges remain at 20% and 'structured' in blocks in or near the field, or rows within the field. Others are reduced to 5% structured refuge, while others are 'in the bag' at a 10% refuge seed blend for corn rootworm mixed in with the Bt seed.

The National Corn Growers Association has an excellent user-friendly **IRM Refuge Calculator** available for free download and use on your computer. To download the program visit:

http://www.irmcalculator.com

From the NCGA website above: "This IRM refuge calculator is a tool intended to illustrate the appropriate refuge calculation, the quantity of standard seed bags to purchase for both trait and refuge, and illustrate possible planting configurations for planting certain corn products in the U.S. This refuge calculator does not replace or supplement the applicable manufacturer's IRM Grower Guide in any way. As a grower using this information, you are still obligated to understand and abide by the applicable IRM Grower Guide on planting and Insect Resistance Management."

I have used the IRM Calculator twice this week as growers make plans for spring planting - Once on a phone call with a UW-Extension county agent and his grower calling in to my office, and yesterday while teaching Entomology 351 field and forage crops module at UW Madison entomology department. I found the program very easy to download and use on PC. I was not able to download the Mac version successfully and have contacted the NCGA site about this. You may have better luck with the PC download.

In six easy steps, you enter the type of Bt corn hybrid (classified on the IRM Calculator as: Corn Borer Only Traits, Corn Rootworm Only Traits, or Stacked Traits) particular seed product trade name, field size, and seeding rate. The IRM Calculator will calculate for you how many acres of Bt trait and refuge corn you need to plant, respectively, and how many bags of each you need to plant the field. You can calculate this for a single field or a farm. At the end of the six steps you get a color graphic illustrating options for how to configure the refuge in the field. (The program also allows an option for pivot irrigation setups).

For more information and to review current Bt corn hybrid trait choices and insect resistance management (IRM) refuge requirements please visit the following *Wisconsin Crop Manager* newsletter links and UW Extension entomology resources:

Keeping up with Bt Corn Insect Traits and Refuge Requirements

Wisconsin Crop Manager 17(9): 36-38.

Handy Bt Trait Table

Michigan State University and UW Extension Fact Sheet

Corn Insect Traits 2011

UW Madison Nutrient and Pest Management Fact Sheet