Wisconsin Crop Manager

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Vegetable Crop Update #6 with Supplement and Fact Sheet

The 6th issue of the Vegetable Crop Update is now available. This update contains a disease supplement and an updated potato late blight fungicide list for growers. Click here to view this update.

Acetolactate Synthase (ALS) Inhibitor Resistance in Wisconsin Giant Ragweed

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Department of Agronomy, UW-Madison

In this article, we're reporting the confirmation of giant ragweed (*Ambrosia trifida*) plants with resistance to cloransulam-methyl (FirstRate) in a population located in Columbia County, Wisconsin. Cloransulam-methyl is an acetolactate synthase (ALS) inhibiting herbicide that is commonly used for giant ragweed management in soybean. In this instance, the suspected resistant giant ragweed population was found in a corn-soybean rotation that was part of a long-term experiment at the UW-Arlington Agricultural Research Station. Field observations suggested that giant ragweed plants had survived exposure to cloransulam-methyl applied both preemergence and postemergence in soybean. These plants readily out-competed soybean and produced large amounts of seed. To confirm and quantify resistance to cloransulam-methyl, seed was collected from surviving plants for subsequent experiments under controlled conditions.

In greenhouse experiments at UW-Madison, the level of resistance to cloransulam-methyl was found in these plants to be more than 60-fold compared to sensitive plants. Cloransulam-methyl applied at the labeled rate (0.3 oz FirstRate/acre) had little or no effect on resistant plants compared to sensitive plants (see Figure 1). At 10-times the labeled rate, resistant plants showed little or no reduction in growth (shoot biomass production). At 100-times the labeled rate, resistant plants typically survived but showed some injury symptoms and reduction in growth. At high rates, we observed some variability in response to cloransulam-methyl among resistant plants, suggesting that segregation of the resistance trait may be occurring in the field population. Even so, resistant plants typically demonstrated a high level of resistance to cloransulam-methyl.

Giant ragweed with resistance to ALS-inhibiting herbicides is not unique to Wisconsin. Resistant populations were identified in Illinois, Indiana, Ohio, and Iowa more than 10 years ago (Heap 2013, www.weedscience.org). Since then, giant ragweed with resistance to both ALS-inhibitors and glyphosate (i.e. multiple resistance) has been confirmed in Ohio and Minnesota. Although results from our greenhouse experiments indicate that the cloransulam-methyl resistant giant ragweed from Columbia County is not resistant to glyphosate, we have previously confirmed giant ragweed resistance to glyphosate in Wisconsin (http://ipcm.wisc.edu/blog/2012/06/giant-ragweed-resistance-to-glyphosate-in-wisconsin/). In each of these instances, field histories suggest that repeated use of a single mechanism of herbicide action for weed management was an important factor in selecting for resistance.

The risk of developing more resistant weed problems is greater if we overuse herbicides that kill weeds by affecting only one physiological process (i.e. a single mechanism of

herbicide action). To minimize the risk of developing resistant weeds, a sound herbicide resistance management program uses a combination of practices:

1. Use herbicides only when necessary.
2. Rotate herbicides with different mechanisms of action from year to year.
3. Use multiple herbicide mechanisms of action that are effective against the most troublesome or herbicide-resistance-prone weeds.
4. Use diversified crop rotations; three or four crops in rotation reduce risk of resistance more than one or two crops.
5. Integrate mechanical control practices (e.g. rotary hoeing and cultivation) with herbicide use.
6. Scout fields regularly and control weed escapes.
7. Clean tillage and harvest equipment before moving from fields or farms with suspected resistant weeds to other fields

Refer to Pest Management in Wisconsin Field Crops – 2013 (UW Extension/Cooperative Extension publication A3646) for more information on herbicide-resistant weed management. Several best management practices for reducing the risk of weed resistance to herbicides can also be found at the Weed Science Society of America web site (www.wssa.net/Weeds/Resistance/index.htm).

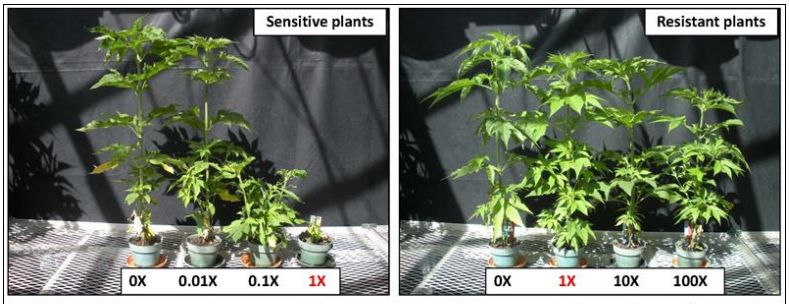

Figure 1. Columbia County giant ragweed plants 4 weeks after treatment with cloransulam-methyl (FirstRate) under greenhouse conditions at UW-Madison. Treatments were made to 6-inch tall plants and included 0.25% non-ionic surfactant and 2.0 lb ammonium sulfate/acre. The label rate of FirstRate (0.3 oz product/acre) is indicated by **1X**. Non-treated check plants are indicated by **0X**.

Weed Control Considerations for a Late Spring

Vince M. Davis, UW-Madison Cropping Systems Weed Scientist

News flash, it's been a late, wet, challenging spring for a number of reasons. Okay, that's not much of a news flash. The USDA-NASS Wisconsin Crop Progress report released today indicates that as of May 26, 64% corn is planted with 27% emerged, and 29% soybean is planted with 5% emerged. I'm certain that many of those fields were planted right between rain storms. Since that means roughly ¼ of our corn and soybean acres in the state will have seed in the ground without plants emerged, and many of those fields may have been too wet for herbicide and/or fertilizer applications, I suspect there are a lot of critical weed control decisions that could be encountered in the next week, particularly when 'Plan A' didn't work out well.

Considerations for planted corn fields needing herbicide

In corn, some common scenarios for 'Plan A' likely included a nitrogen application before the corn was planted. Secondarily, the plan may also have been to apply nitrogen in the form of Urea Ammonium Nitrate (UAN) as a carrier with a preemergence (PRE) herbicide. Those are a couple of traditional practices and there are a lot of PRE herbicides that can be applied before and after corn plants emerge, and a lot of PRE herbicides that can be applied with UAN as a carrier. However, if you chose an herbicide and nitrogen program with the full intention that the applications would be made before plants emerge, and now you find yourself needing to accomplish these applications after plants are emerging, there are some considerations that should be double-checked to avoid problems.

For starters, the maximum growth stage at which an herbicide application can no longer be applied postemergence (POST) is different for every product. Of particular importance, though, is that there are some herbicide products like Fierce, Sharpen, and Verdict (as examples) that cannot be made to emerged plants. Second, there are products that can be applied with UAN after corn plants emerge, but the risk of crop injury is greatly increased with these combinations. Please be cautious and double check the label for recommendations regarding limitations on crop stage, tank-mix combinations including adjuvant interactions, and rates of both herbicides and UAN. If you planned to apply 100% of your nitrogen needs as UAN, you may have to consider side-dressing applications to reduce the up-front nitrogen rate mixed with herbicide if the crop has emerged.

Considerations for planted soybean fields needing herbicide

In soybean, there are also some herbicides that can be applied before and after plants emerge, but there are many more products that CANNOT be applied once the plants start to emerge, and some are further restricted to applications no more than 3 days after planting. These products include (but may not be limited to): Authority Assist, Authority First, Authority MTZ, Authority XL, Enlite, Envive, Gangster, Lorox, Metribuzin, Optill, OpTILL Pro, Sharpen, Sonic, Valor, and Valor XLT.

Moreover, another consideration that may soon be encountered is whether soybean can be planted in fields that were planned for corn. If there have already been herbicide applications made in preparation for corn, the labels of those products will need to checked to make certain it is possible to plant soybean there. There are a few herbicides that can be used at similar rates ahead of both corn and soybean, but in many cases this will be a limiting factor. If corn herbicides have been used that restrict soybean planting, I'm afraid you are 'locked' in for corn. Options in this scenario would include proceeding with corn with reduced yield expectation or exercising preventive planting options. For more information

about corn agronomic considerations of late planting visit the UW Extension Corn Agronomy web page: http://corn.agronomy.wisc.edu/, and for more information about regarding insurance considerations consult a recent article by Ag Economist Dr. Paul Mitchell: http://www.aae.wisc.edu/pdmitchell/CropInsurance/LatePreventPlant2013.pdf.

Considerations for fallow fields from prevented planting

If a grower is considering the option of taking a preventative planting payment for not establishing a crop, there are a couple of considerations about weed control that should be taken into consideration. First, an obvious statement, fallow ground will be a haven for weeds to flourish for the rest of the season. An important component in an integrated management system will be to limit any seed production of weeds during the fallow year. Options will include repeated herbicide applications, repeated tillage applications, a cover crop, or some combination of these options. The most immediately important point I want to make is that all of these options will cost money and should be factored into the financial equation during the decision process of whether to take a preventive planting payment without establishing a crop.

Weed control with herbicide: Why did I say 'repeated' herbicide applications? First, there may be several herbicide options to choose from to manage weeds all season, but make certain if you use residual herbicides they are appropriate choices for your rotational crop. Second, don't expect that a residual herbicide, which provides season-long control in a crop will also provide season-long control on fallow ground. It's likely that even many expensive residual herbicide programs would need a second application at the end of the season without the help of a competitive crop. Also, realize that striving for fields completely free of vegetation all summer-long may be a tremendous risk to soil erosion. From this perspective, allowing weeds to occupy the field for some vegetative growth may not be a bad thing as long as they are terminated prior to flowering. Unfortunately, if you violate weed size limitations on the labels of non-selective herbicide products, it would not only be accepting tremendous risk of ineffective control, but it would also provide tremendous selection pressure for herbicide resistance. So, to rely on non-selective herbicides that don't have residual activity will also likely necessitate multiple applications.

Weed control with tillage: Perhaps the most straight-forward discussion is of repeated tillage applications with tillage equipment, probably a disc, to keep vegetation from going to seed. The only comment here is that this could, depending on soil type, be a tremendous risk to soil erosion or other soil properties.

Weed control with a cover crop: Establishing a crop to aid the suppression of weeds in this scenario is a great idea. However, keep in mind there are different considerations for establishing a 'cover' crop and establishing a 'forage' crop: http://host.cals.wisc.edu/wcws/wp-content/uploads/sites/4/2013/03/CoverCrops_Article_2012_Davis.pdf. A cover crop will be grown the rest of the year but not harvested. In this case, the major consideration is whether there are possibly any herbicide residues in the soil that would inhibit getting the cover crop species established. However, if you have any intentions of harvesting the crop for any kind of grazing or haying later in the year, that crop is a forage crop. Under this scenario, make certain you understand the implications for crop insurance, and secondarily make sure the following crop planted is allowed as a rotational crop on the pesticide labels that have been used in that cropping system for at least the previous 3 years. There are several herbicides that would prevent a large number of forage crops to be harvested and fed to livestock for as long as 40 months following herbicide application.

Lists of product names mentioned in this article were not meant to be all inclusive or as any product endorsement. As always, read and follow the label directions for all products you are using in a cropping system. Last, good luck and think safety first in this challenging season.

Fusarium Head Blight Update 6/4/13

Damon Smith, Extension Plant Pathologist, University of Wisconsin

Winter wheat was scouted in in variety trials in Janesville and Lancaster Wisconsin on June 4, 2013. Wheat is beginning to flower, or in full flower, in these locations in Southern WI. Risk for head scab has been moderate in these locations over the last week or so according to the risk assessment tool. I would expect the risk to remain moderate in these locations over the next several days with good chances of rain in the forecast and a warming trend during the late week and weekend. Farmers in Southern Wisconsin should assess their head scab risk now and make a decision to apply fungicide to manage head scab. DO NOT use fungicides that contain strobilurin fungicides (FRAC 11) for control of head scab, as increased risk for DON (deoxynivalenol) can result. A triazole fungicide such as Prosaro, Caramba, or similar during the onset of flowering to 3-5 days after will be most effective.

Wisconsin Winter Wheat Disease Update – June 5, 2013

Damon Smith, Extension Field Crops Pathologist, Department of Plant Pathology, University of Wisconsin-Madison

Winter wheat was scouted in variety trials in Janesville and Lancaster Wisconsin on June 4, 2013. Wheat is beginning to flower, or is in full flower, in these locations in Southern WI. Risk for head scab has been low to moderate in these locations over the last week or so according to the risk assessment tool. I would expect the risk to remain moderate in these locations over the next several days with good chances of rain in the forecast and a warming trend during the late week and weekend. Farmers in Southern Wisconsin should assess their head scab risk now and make a decision on when to apply fungicide to manage head scab. DO NOT use fungicides that contain strobilurin fungicides (FRAC 11) for control of head scab, as increased risk for DON (deoxynivalenol) can result. A triazole fungicide such as Prosaro, Caramba, or similar product applied during the onset of flowering to 3-5 days after will be most effective.

In the Janesville location a single flag leaf with stripe rust was identified (Fig. 1). I would classify the level of stripe rust as "trace" currently in Southern Wisconsin. No leaf rust has been found in Wisconsin. Other diseases include a moderate level of Septoria/Stagnospora leaf blotch in some more susceptible varieties. Extremely wet weather has resulted in moderate severity on lower and mid-level leaves that may spread to the flag leaf if wet weather continues. Low levels of *Barley Yellow Dwarf Virus* (BYDV) were also noted in some varieties. No powdery mildew has been found during scouting trips this season. This is very unusual in Wisconsin. I suspect frequent rainy conditions have prevented spore attachment and/or resulted in spores bursting due to too much free moisture.

Figure 1. Stripe rust pustules on a soft red winter wheat flag leaf. Photo Credit: Damon Smith

Plant Disease Diagnostic Clinic (PDDC) Update

Brian Hudelson, Ann Joy, and Andrew Pape, Plant Disease Diagnostics Clinic

The PDDC receives samples of many plant and soil samples from around the state. The following diseases/disorders have been identified at the PDDC from May 25, 2013 through May 31, 2013.

PLANT/SAMPLE TYPE	DISEASE/DISORDER	PATHOGEN	COUNTY
FRUIT CROPS			
Apple ('Winesap')	Cytospora Canker	*Cytospora* sp.	Iowa
VEGETABLES			
Lettuce	Powdery Mildew	*Oidium* sp.	Ozaukee
Tomato	Unidentified Virus Disease	Not determined	Buffalo
	Sunburn	None	Buffalo

For additional information on plant diseases and their control, visit the PDDC website at pddc.wisc.edu.

Wisconsin Pest Bulletin 6/6/13

A new issue of the Wisconsin Pest Bulletin from the Wisconsin Department of Agriculture, Trade and Consumer Protection is now available. The Wisconsin Pest Bulletin provides up-to-date pest population estimates, pest distribution and development data, pest survey and inspection results, alerts to new pest finds in the state, and forecasts for Wisconsin's most damaging plant pests.

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

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

http://datcpservices.wisconsin.gov/pb/pdf/06-06-13.pdf

2013 Pest Management Field Day

Bryan Jensen, IPM Program

Please join us for the June 27 Pest Management Field Day that will be held at the Arlington Agricultural Research Station. Our field day features several topics presented by UW staff and students. No preregistration is required and CCA Credits will be applied for.

Speakers and Topics include:

Mark Renz, Dept. of Agronomy	Roundup Ready Alfalfa Removal in No-Till Fields
Eileen Cullen, Dept. of Entomology	Update on Corn Insect Traits and the Status of CRW Resistance and Recommended IRM
Shawn Conley and David Marburger, Dept. of Agronomy	Interactions Between SCN and SDS
Damon Smith, Dept. of Plant Pathology	Alfalfa Foliar Fungicide Research
Quinn Watson Dept. of Plant Pathology	Quantifying the effect of sulfur source and concentration on the growth of *Aphanomyces euteiches in vitro* and Aphanomyces root rot development in alfalfa
Vince Davis, Liz Bosak, Tommy Butts, and Daniel Smith, Vince Davis Dept. of Agronomy	National Threat of glyphosate-resistant Pigweeds: UW efforts to research and extend relevant information in Wisconsin
Dave Stoltenberg, Stacey Marion and Courtney Glettner, Dept. of Agronomy	Research Update on Herbicide-Resistant Giant Ragweed
Ross Recker, Dept. of Agronomy	Pro-active Late-Season Weed Escape Surveys and Herbicide Resistance Screening Results
Dan Heider, Dept. of Horticulture	Reducing Spray Drift – Making Good Choices

The Field Tour will depart from the Public Events Facility promptly at 8:30 am and return around noon. In case of rain, "field tours" will be conducted inside the Public Events Facility. A light lunch and refreshments will be provided after the tour is completed.

The Public Events Facility is located on the Arlington Agricultural Research Station, N695 Hopkins Road. If traveling from the south, exit I 90/94 onto Hwy 51 North. Look for the Arlington Ag. Research Station sign north of Deforest. Turn left (west) onto Badger Lane. Travel 1 mile

and turn left (south) onto Hopkins Rd. If traveling from the north, exit I 90/94 onto Hwy 60. Travel east through Arlington and turn south onto Hwy 51. For more detailed driving directions click on http://www.ars.wisc.edu/arlington/directions.html

Basic Soil Sampling for Wisconsin Agriculture Video

Kevin Shelley, Nutrient and Pest Management Program Specialist

This video demonstrates the recommended procedures for collecting soil samples for basic, field-average fertility analyses from farm fields in Wisconsin. It also discusses procedures for submitting the samples to a state-certified soil testing laboratory. Research-based soil nutrient application recommendations from the University of Wisconsin Extension are based on soil test results. The information provided is useful for managing soil fertility for field crop and processing vegetable production and is consistent with the requirements for nutrient management planning programs in Wisconsin.

A2809: http://www.soils.wisc.edu/extension/pubs/A2809.pdf

A2100: http://www.soils.wisc.edu/extension/pubs/A2100.pdf

UW soil testing labs: http://uwlab.soils.wisc.edu/

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