Not just glyphosate: Alternative programs approach to weed management

Vince M. Davis
Annual Cropping Systems
Weed Science Extension Specialist
Department of Agronomy
University of Wisconsin-Madison
vmdavis@wisc.edu
(608) 262-1392
Twitter: @vmdavis
www.wcws.cals.wisc.edu

Why did I come into this room to listen to this presentation?

Why do I think Vince Davis wanted to present on this topic -- again?

Most concerning weeds for herbicide resistance in WI

- Giant Ragweed
  - CONFIRMED resistant to glyphosate (2012)
  - CONFIRMED resistant to cloransulam-methyl (FirstRate®) (2013)
- Horseweed
  - CONFIRMED resistant to glyphosate (2013)
- Amaranthus sps. (Palmer amaranth, Powell amaranth, redroot &smooth pigweed, and waterhemp)
  - Palmer amaranth
    - CONFIRMED location in Dane county, suspected Glyphosate-Resistant by molecular technique (2014) [whole plant assays in progress]
  - Waterhemp
    - Multiple 2013 failures under investigation

Why advance IWM?

“U.S. farmers are heading for a crisis”

Dr. Stephen Powles, University of Australia, Crawley.

Science **VOL 341, Page 1329**

20 September 2013

www.sciencemag.org

Wild Radish Song

Wisconsin Crop Weed Science
UNIVERSITY OF WISCONSIN-MADISON

Blog: Out of Control

YouTube Hit: Australian farmer sings about herbicide resistance

Posted on December 18, 2013

Posted in WCWS | Tagged Agriculture, herbicide, herbicide resistance, integrated pest management, IPM, Pesticide, Weed

UPCOMING EVENTS

January 2014 »

M	T	W	T	F	S	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

WISCONSIN CROP MANAGER

- The Cold Temperatures and Alfalfa
- Final Announcement for the 2014 Wisconsin Corn Conferences
- UW-River Falls Field Scout Training Class
- Economic Risk and Profitability of Soybean Seed Treatments at Reduced Seeding Rates
- UW-Extension/Madison Plant Disease

CAST® Issue Paper
Number 49
February 2012

Herbicide-resistant Weeds Threaten Soil Conservation Gains: Finding a Balance for Soil and Farm Sustainability

The balance between conservation tillage and herbicide-resistant weed management is the central issue addressed in this paper. (Left photo from ARS; middle photo from Howard F. Schwartz, Colorado State University, Bugwood.org; right photo from Shutterstock.)

Abstract

Tillage has been an integral part of crop production since crops were first cultivated. Growers and scientists have long recognized both

Glyphosate-resistant crops are planted on the majority of canola, corn, cotton, soybean, and sugarbeet acres in the United States and many other nations as a result of efficacy and economics. When any single her-

where the farmer does not need to modify or abandon his current conservation tillage practices in order to manage a resistant weed population. Best management practices (BMPs) that have been established for both

Change in Herbicide Diversity Over Time

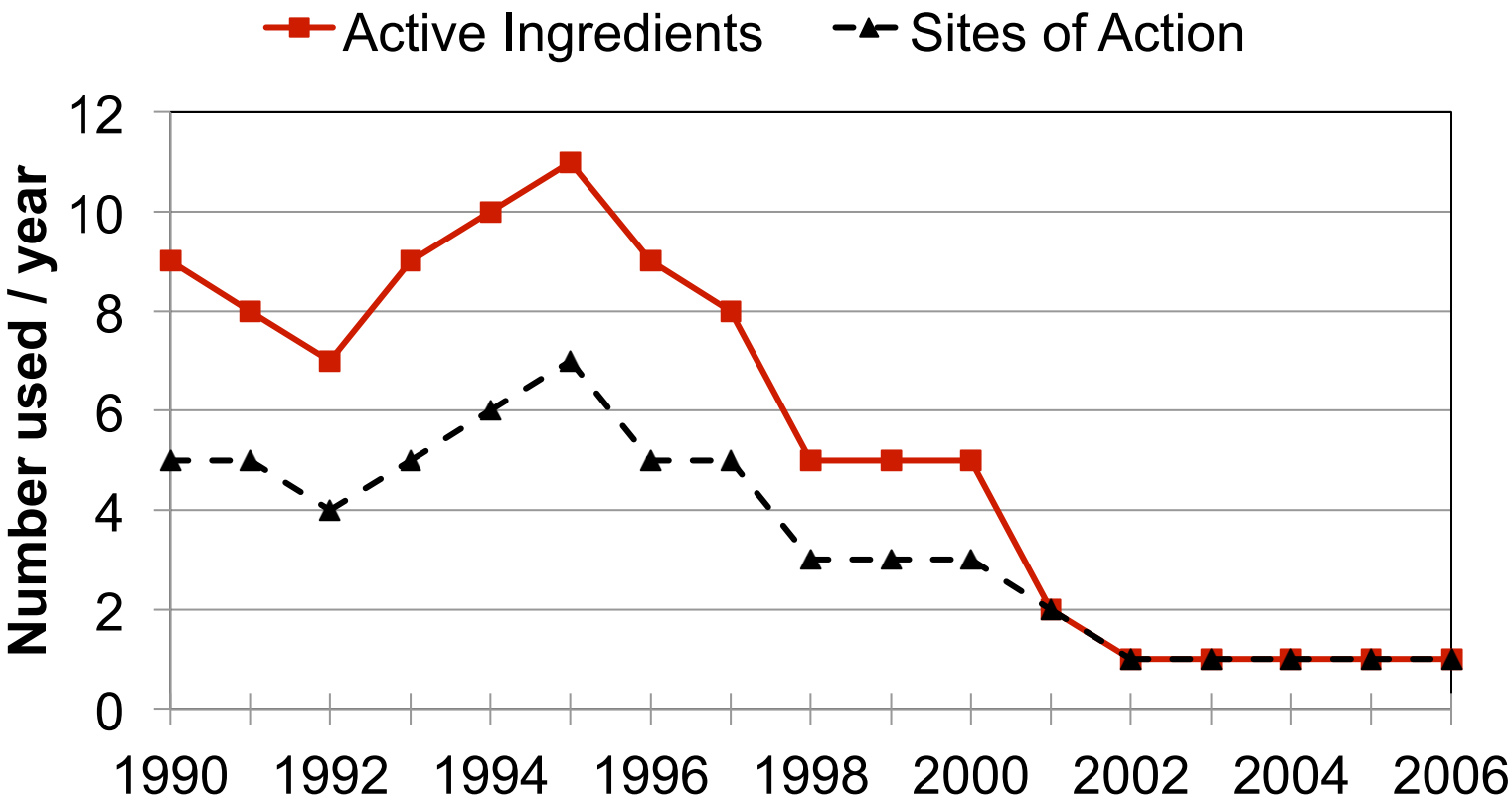

Figure 1. Number of different herbicide active ingredients and herbicide sites of action used on at least 10% of U.S. soybean hectares from 1990 to 2006. Data adapted from USDA-NASS (2008)

Courtesy of Ryan DeWerff

Why did I, or my customers, adopt glyphosate-resistant crop technologies on such a high percentage of acres and then rely so completely on POST glyphosate?

- Reduce
  - –Costs
  - –Tillage
  - –Management
  - –Soil applied pesticide concerns (carryover, runoff, leaching)
- Increase
  - –Weed control
  - –Yield
  - –Crop safety
  - –Flexibility

Why do I, or my customers, want to adopt new herbicide-resistant crop technologies?

Why do I want to learn more about utilizing additional weed management strategies, and implement them, to reduce the reliance on the simple tactic of spraying POST glyphosate?

WEED OUT RESISTANCE

- Know Your Weeds
- Know Weed Growth
- Know Weed Seed Characteristics
- Know Herbicide Resistance

IN THE FIELD

- Crop Rotation
- Multiple Herbicide Modes of Action
- Mechanical Practices
- Know Herbicide Tolerant Traits

SPRAY ATTENTION

- Herbicide Mode of Action and Properties
- Drift Management
- Know Environmental Conditions
- Know Your Neighbors

THE BOTTOM LINE

- Risk Management
- Cost-Benefit of Practices
- Know the Cost of Poor Weed Control

HERBICIDE CLASSIFICATION

REPEATED USE OF HERBICIDES WITH THE SAME SITE OF ACTION CAN RESULT IN THE DEVELOPMENT OF HERBICIDE-RESISTANT WEED POPULATIONS.

TakeACTION HERBICIDE-RESISTANCE MANAGEMENT

by MODE OF ACTION *(effect on plant growth)*

This chart groups herbicides by their modes of action to assist you in selecting herbicides **1)** to maintain greater diversity in herbicide use and **2)** to rotate among effective herbicides with different sites of action to delay the development of herbicide resistance.

SITE OF ACTION GROUP	SITE OF ACTION	NUMBER OF RESISTANT WEED SPECIES IN U.S.	CHEMICAL FAMILY	ACTIVE INGREDIENT	PRODUCT EXAMPLES (TRADE NAME®)
	LIPID SYNTHESIS INHIBITORS				
1	ACCASE INHIBITORS (acetyl CoA carboxylase)	15	Aryloxyphenoxypropionate (fops)	clodinafop	*Discover NG*
				cyhalofop	*Clincher*
				fenoxaprop	*Ricestar, Tecoma, others*
				fluazifop	*Fusilade DX*
				quizalofop	*Assure II, Targa*
			Cyclohexanedione (dims)	clethodim	*Select Max, others*
				sethoxydim	*Poast, Poast Plus*
			Phenylpyrazolin	pinoxaden	*Axial XL*
	AMINO ACID SYNTHESIS INHIBITORS				
				imazamox	*Raptor, Beyond*

by PREMIX

This chart lists premix herbicides alphabetically by their trade names so you can identify the premix's component herbicides and their respective site of action groups. Refer to the Site of Action chart on the left for more information.

PREMIX	COMPONENT ACTIVE INGREDIENT	COMPONENT TRADE NAME®	COMPONENT SITE OF ACTION GROUP
AFFINITY BROADSPEC (Affinity Tankmix)	thifensulfuron	*Harmony*	2
	tribenuron	*Express*	2
AGILITY SG	dicamba	*Clarity*	4
	thifensulfuron	*Harmony*	2
	tribenuron	*Express*	2
	metsulfuron	*Ally*	2
ALLY EXTRA	thifensulfuron	*Harmony*	2
	tribenuron	*Express*	2
	metsulfuron	*Ally*	2
ANTHEM	pyroxasulfone	*Zidua*	15
	fluthiacet	*Cadet*	14
	pyroxasulfone	*Zidua*	15

PREMIX	COMPONENT ACTIVE INGREDIENT	COMPONENT TRADE NAME®	COMPONENT SITE OF ACTION GROUP
HUSKIE COMPLETE	pyrasulfotole	----	27
	bromoxynil	*Buctril*	6
	thiencarbazone	----	2
INSTIGATE	rimsulfuron	*Resolve, Matrix*	2
	mesotrione	*Callisto*	27
KEYSTONE (Keystone LA)	acetochlor	*Surpass*	15
	atrazine	*Aatrex*	5
LEXAR EZ	mesotrione	*Callisto*	27
	s-metolachlor	*Dual II Magnum*	15
	atrazine	*Aatrex*	5
	mesotrione	*Callisto*	27
	s-metolachlor	*Dual II Magnum*	15

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**NEW WEBSITE

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Home

The mission of this program is to evaluate weed management practices to help Wisconsin growers sustainably control weeds and maximize the production of corn, soybean, small grains, and sweet corn crops. Through integration of applied field research and extension activities, we strive to deliver

WISCONSIN CROP MANAGER

- Online Webinar Training Sessions Starting in December
- UW-Extension/Madison Plant Disease Diagnostic Clinic (PDDC) Update
- Vegetable Crop Update 10/24/13
- UW-Extension/Madison Plant Disease Diagnostic Clinic (PDDC) Update
- Accepting Nominations for the 2014 WI CCA of the Year Award

http://wcws.cals.wisc.edu/

UW Extension
Cooperative Extension

THE UNIVERSITY of WISCONSIN MADISON

THANK YOU!

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Questions?