

A photograph of a vegetable field with rows of young plants under a blue sky with clouds. The plants are arranged in neat, parallel rows, and the soil is a light brown color. The background shows a line of trees and a clear sky with scattered white clouds.

# Effect of simulated synthetic auxin herbicide drift on vegetable crops

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## Synthetic auxin resistance in soybean

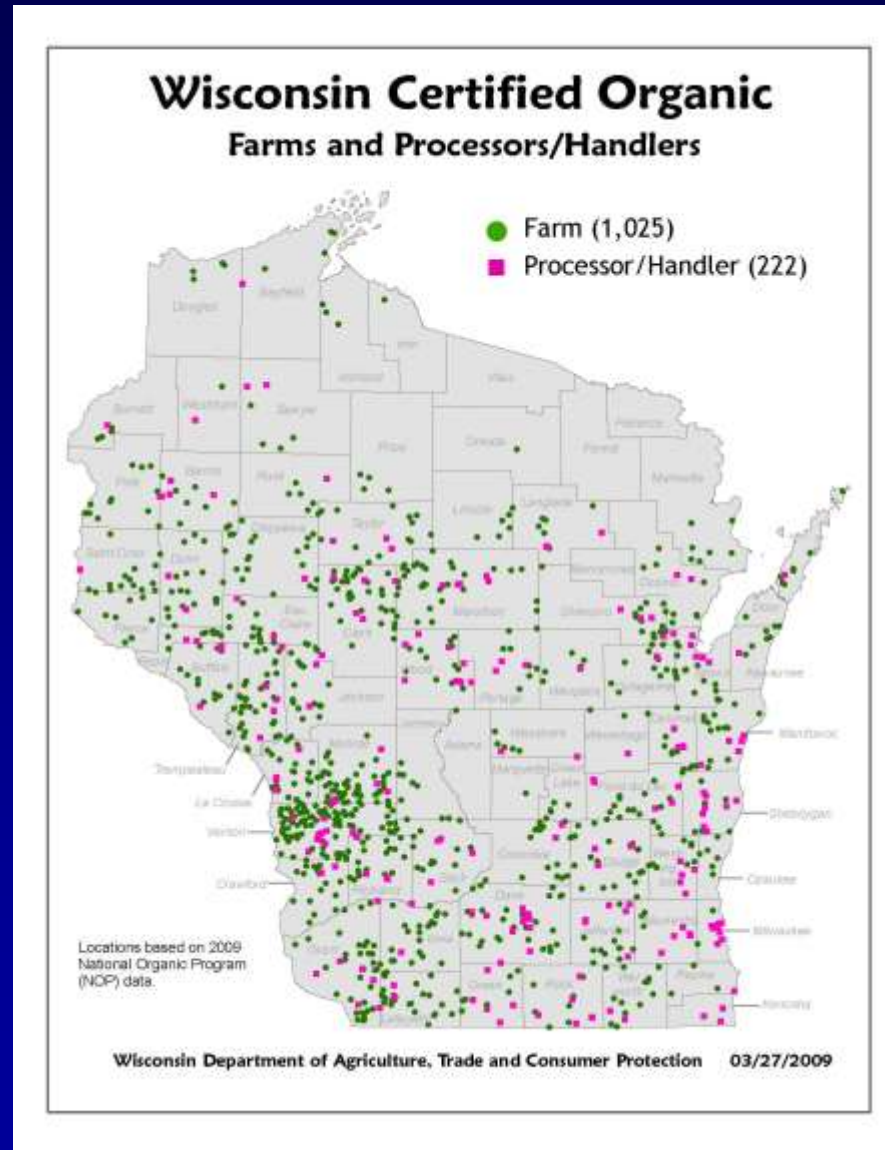
- Synthetic auxin herbicide resistance in soybean may increase weed control spectrum, particularly if glyphosate resistant weeds are present
- Occasional observations of alleged synthetic auxin herbicide drift in specialty crops, but data to determine potential effect on crop yield and quality is often lacking

# WI specialty crops are diverse

Crop	2002		2007		Average acres
	# farms	Acres production	# farms	Acres production	
<u>GRAINS</u>					
Corn	29,021	2.9 million	27,505	3.3 million	120
Soybean	15,245	1.5 million	14,513	1.4 million	96
<u>SPECIALTY CROPS</u>					
Vegetables	2,850	252,693	3,319	297,238	90
Orchards	1,009	9,683	1,135	9,730	9
Floriculture	814	644	953	864	0.9
Nursery	624	14,334	637	12,177	19
Fruit	--	--	1,132	9,719	9
Grape	--	--	253	479	2
Berry	--	--	1,019	20,485	20

USDA Census of Agriculture, 2007.

# Specialty crops are dispersed broadly



# Materials and Methods

- ‘Russet Burbank’ potato:
  - Simulated dicamba drift: 1.4, 4.2 and 7.0 g ae/ha
  - Two application timings: 10 inch potato plants, at tuber initiation
- ‘Hercules’ snap bean:
  - Simulated dicamba or 2,4-D drift: 1.4, 4.2 and 7.0 g ae/ha
  - Simulated glyphosate drift: 7.0 g ae/ha
  - One application timing: 1 to 2 trifoliolate snap beans

# Materials and Methods

- Conventional production practices, including PRE herbicides
- Conventional 2,4-D amine and dicamba formulations
- Four-row plots 20 feet in length, with surrounding crop buffer
- Four replications
- Study conducted in 2011 growing season; will be repeated in 2012

# Materials and Methods

- Data collection:
  - Visual injury evaluations (3 in snap beans, 4 in potato)
  - Crop quality
  - Crop yield by size grading at maturity in the non-treated control in snap beans and at senescence in potatoes

# Snap beans

Treatment	Rate		Injury			Yield
	g ae/ha	%, 7 DAT	%, 18 DAT	%, 28 DAT	tons/A	
Non-treated	--	0 f	3 c	0 d	2.7 a	
dicamba	1.4	19 c	43 b	11 b	0.5 d	
dicamba	4.2	26 b	40 b	14 b	0.4 d	
dicamba	7.0	45 a	53 a	24 a	0.2 d	
2,4-D	1.4	4 ef	3 c	1 cd	2.6 a	
2,4-D	4.2	6 e	9 c	1 cd	1.8 b	
2,4-D	7.0	11 d	10 c	1 cd	1.2 c	
glyphosate	7.0	5 e	3 c	4 c	2.4 a	



**dicamba, 1.4 g ae/ha**



**dicamba, 4.2 g ae/ha**



**dicamba, 7.0 g ae/ha**



**2,4-D, 1.4 g ae/ha**



**2,4-D, 4.2 g ae/ha**



**2,4-D, 7.0 g ae/ha**



**glyphosate, 7.0 g ae/ha**

# Potatoes

Treatment	Rate	Timing	% Injury		B's	Culls	Marketable yield
			30/16 DAT	38/22 DAT			
	g ae/ha					cwt/A	
Non-treated	--	--	0 c	0 c	59 b	13 ab	388
dicamba	1.4	early	1 c	0 c	78 b	11 ab	373
dicamba	4.2	early	10 b	6 bc	129 a	8 ab	446
dicamba	7.0	early	19 a	14 ab	90 ab	11 ab	386
dicamba	1.4	late	5 bc	14 ab	57 b	7 ab	391
dicamba	4.2	late	8 b	15 ab	93 ab	5 b	420
dicamba	7.0	late	10 b	23 a	69 b	17 a	366



**dicamba, early, 1.4 g ae/ha**



**dicamba, early, 4.2 g ae/ha**



**dicamba, early, 7.0 g ae/ha**



**dicamba, late, 1.4 g ae/ha**



**dicamba, late, 4.2 g ae/ha**



**dicamba, late, 7.0 g ae/ha**

# Keep in mind:

- Crops that receive drift are subject to the same pesticide residue issues as if the herbicide was intentionally applied, regardless of visible injury

# Driftwatch, Purdue Univ.

driftwatch.org

Google Calendar | Driftwatch Indiana - Ap... x

[Applicator login](#)  
[View Crop Value](#)

**Locate Field by address, town, or zipcode**  
47907

These data are meant to facilitate communication between applicators and growers.

Note: bounding lines indicate approximate positions of sensitive lands submitted to the site, not property lines.

[Disclaimer](#)

**Legend**

- Sensitive Areas!
- Endangered Species Habitat
- Public Access on Public Lands
- Restricted or No Access on Public Lands
- [Display Watersheds](#) where surface water is

**-Organics:**

- Fruits
- Grapes
- Pumpkins or Melons
- Tomatoes
- Vegetables
- Nursery Crop
- Certified Organic
- Organic Livestock
- Organic Crops

**-Others:**

- Beehives
- Fish Farm
- Floriculture or Greenhouse
- Hardwood Plantation
- Christmas Trees

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