Don't Follow our Lead: Our Experiences with Off-Target Movement of Dicamba in Missouri

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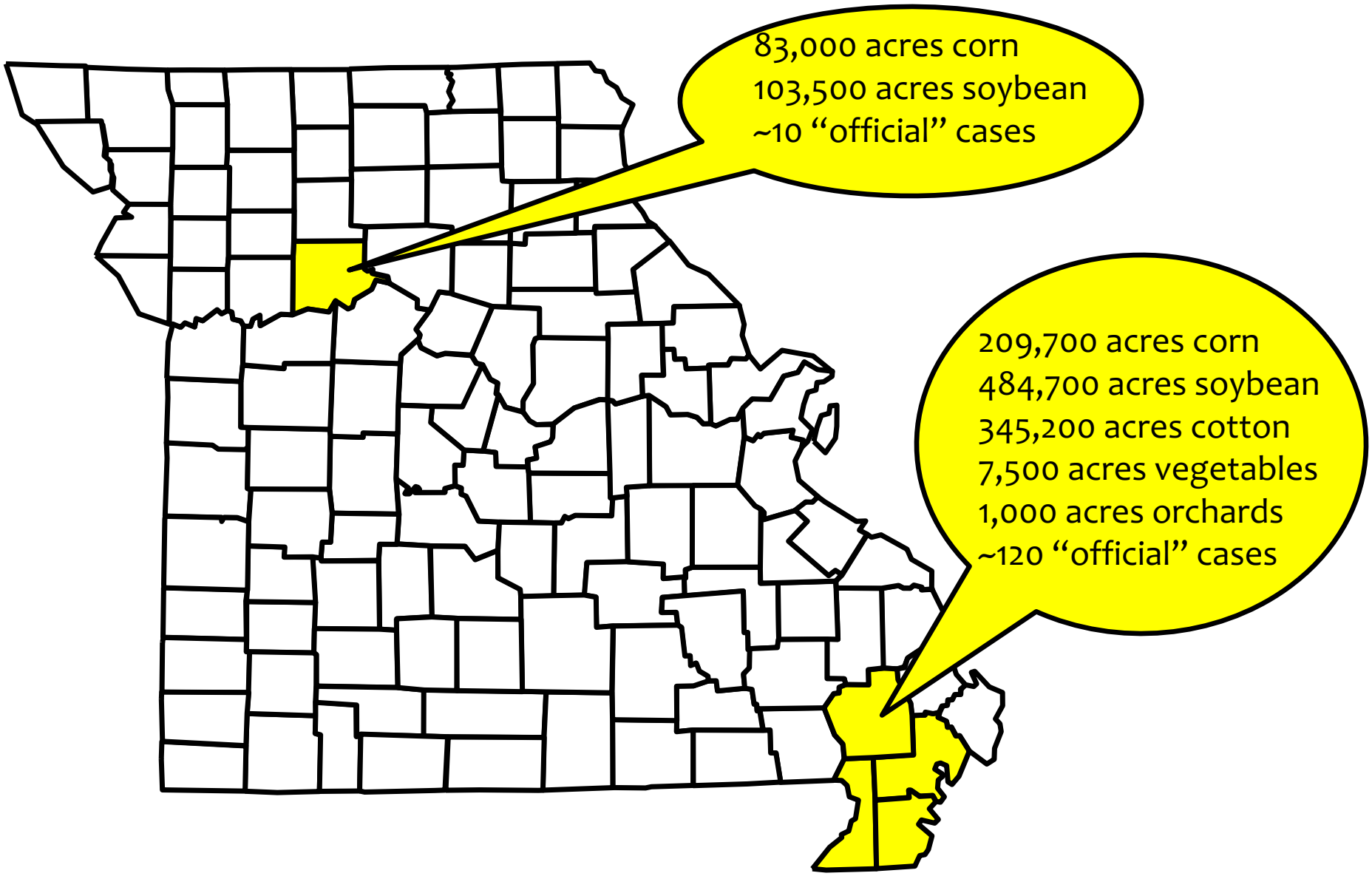
2 Distinct Geographies




~45,000 acres soybean
"officially" damaged
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How about “unofficial”damage?

~ 100,000 acres ???

2 acres fresh market tomatoes


9 acres cantaloupe
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32 acres watermelon
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400 acres purple hull peas


~900 acres of peaches
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And many, many homeowner gardens, trees, ornamental bushes, etc.
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Some common themes in the off-site movement of dicamba in Missouri.


Both the DMA (Banvel, Rifle, etc.) and DGA (Clarity, Sterling Blue, etc.) salts of dicamba were sprayed.
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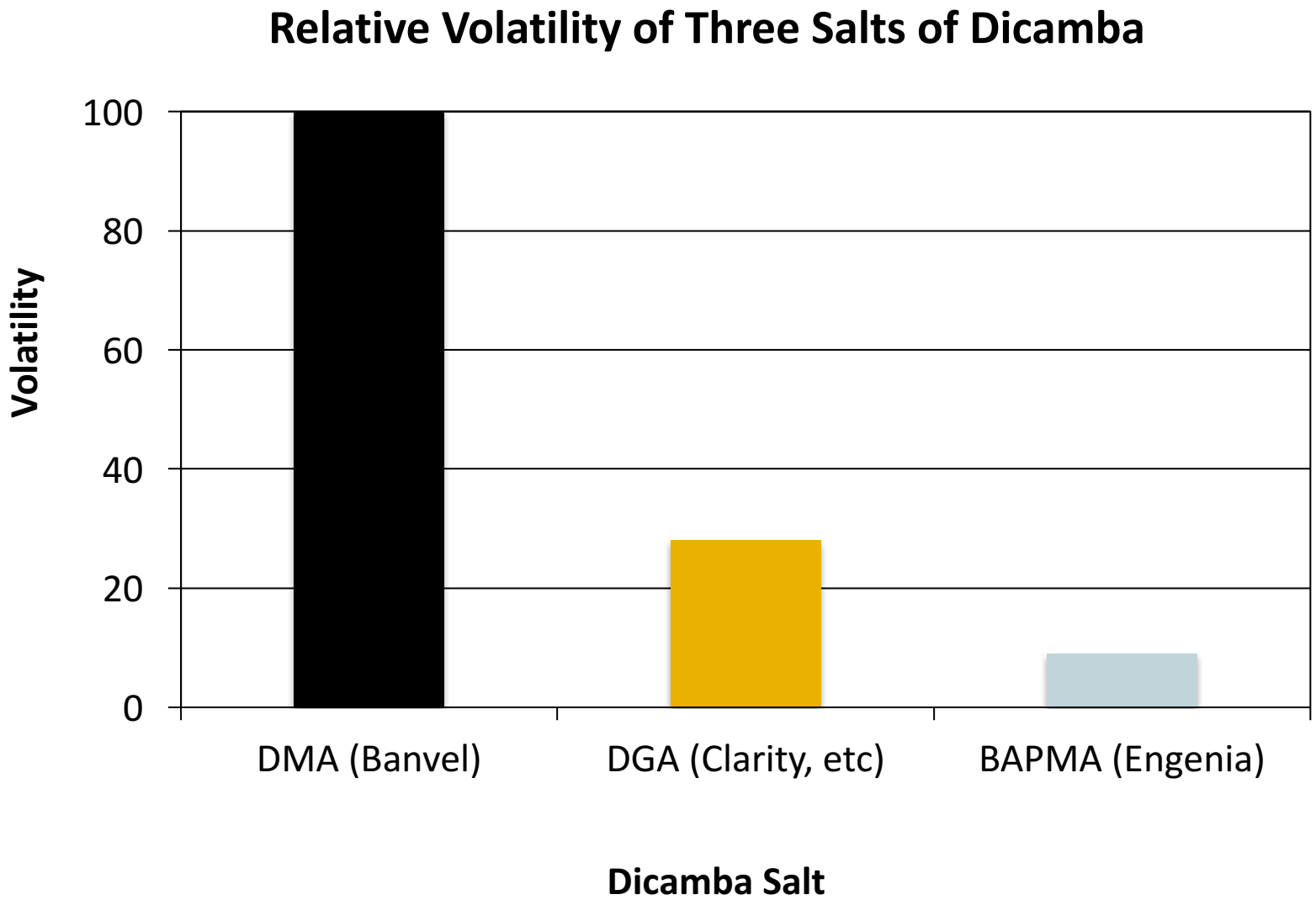
The Dicamba Salt Matters…



Factors that Contributed to the Problem

- Various crops/traits/herbicides that are in very close proximity and don't necessarily play well together

#1 Factor that Contributed to the Herbicide Injury Problems Observed in 2016

A lack of appreciation for the inherent sensitivity of soybean to *extremely* low concentrations of dicamba.

Non-treated Control – 14 days after V3 application

1/20,000th of the 1x Use Rate (0.000025 lb ae/A dicamba) – 14 days after V3 application

Non-treated Control - 14 days after R2 Application

1/200th of the 1x Use Rate (0.0025 lb ae/A dicamba) – 14 days after R2 application

1/20th of the 1x Use Rate (0.025 lb ae/A dicamba) – 14 days after R2 application

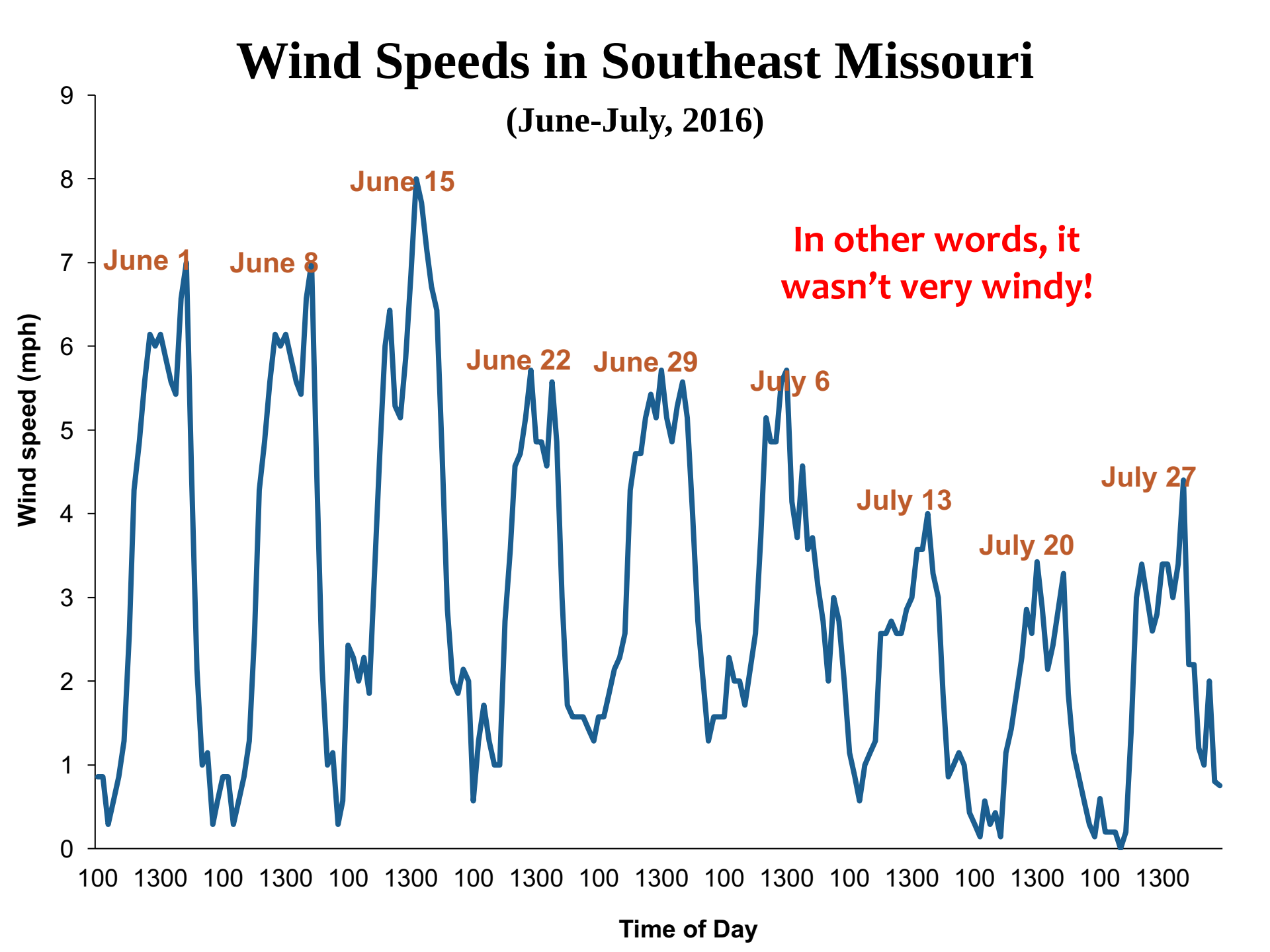
So was it physical drift, volatility, temperature inversions, or what?

Some fields with no discernable patterns and consistent injury across the entire acreage.

My ESTIMATE: 40%

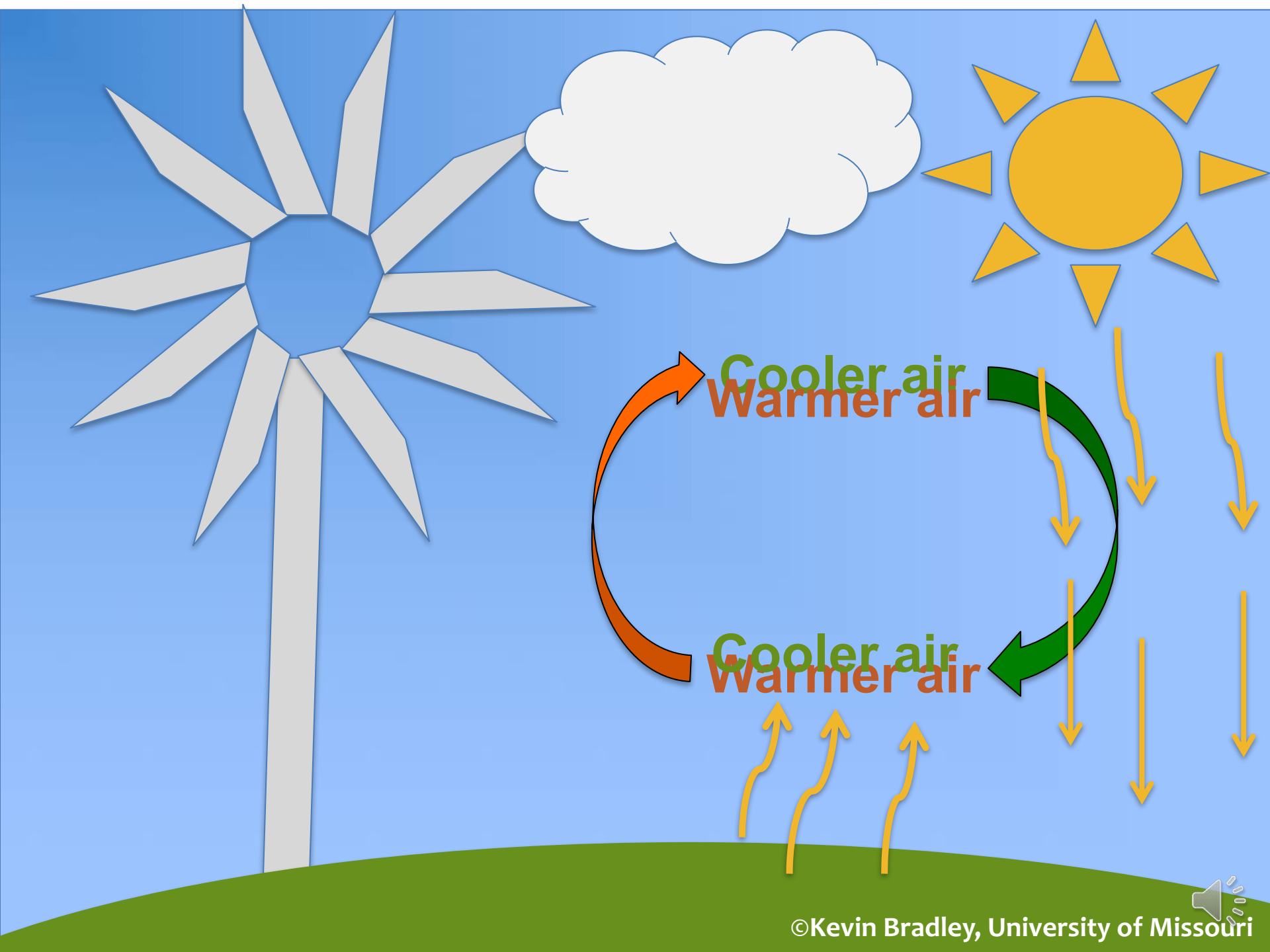
Other fields with clear patterns of injury more consistent with physical drift .

My ESTIMATE: 60%


Wind Speeds in Southeast Missouri
(June-July, 2016)
Wind speed (mph)
0
1
2
3
4
5
6
7
8
9
June 1
June 8
June 15
June 22
June 29
July 6
July 13
July 20
July 27
In other words, it wasn't very windy!
100
1300
Time of Day

New dicamba formulations will not minimize physical drift!

What about temperature inversions?



How Common were Surface Temperature Inversions?

Southeast Missouri

	Number of Inversions[a]		Typical Start Time	
	2015	2016	2015	2016
March	21	22	4:00-5:00 p.m.	5:00-6:00 p.m.
April	23	27	4:00-5:00 p.m.	5:00-6:00 p.m.
May	17	25	4:00-6:00 p.m.	6:00-7:00 p.m.
June	16	24	5:00-6:00 p.m.	6:00-7:00 p.m.
July	22	20	6:00-7:00 p.m.	7:00-8:00 p.m.

[a]Inversions were classified as air temp at 46 cm above surface < air temp at 168 cm < air temp at 305 cm; temperature differences had to occur for > 1 hour in duration and intensity had to be > 1.0°C between 305 and 46 cm air temperatures.

So how can we use the Xtend technology successfully in 2017?

There are only 2 dicamba products labeled for use in Xtend Soybean and Cotton

- XtendiMax with VaporGrip (DGA salt of dicamba, Monsanto)
- Engenia (BAPMA salt of dicamba, BASF)

Our farmers have to communicate with one another! Who's planting what and where?

RED
signifies conventional varieties with no herbicide technology traits. *Extreme caution.*

BRIGHT YELLOW
is the color chosen for Clearfield® rice technology and STS® soybeans.[1]

WHITE
represents the Roundup Ready® technology that is tolerant to glyphosate herbicide.

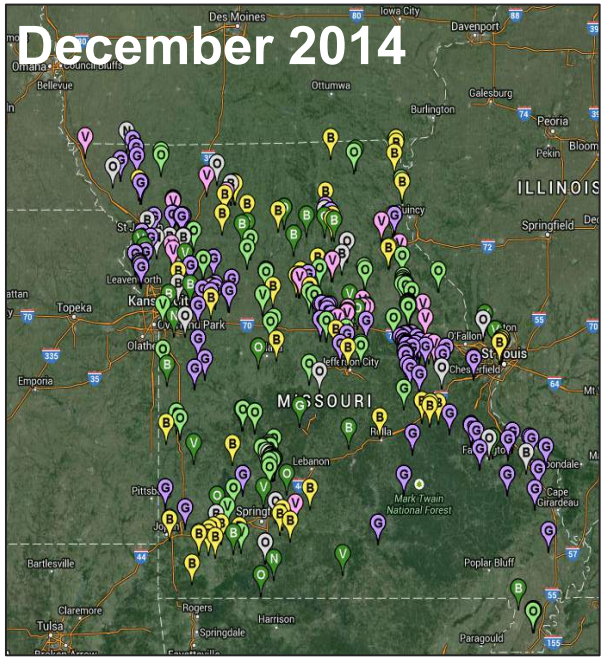
TEAL
indicates tolerance to both 2,4-D and FOP (Accase) herbicides or the Enlist® technology. The white stripes indicate tolerance to glyphosate. For Enlist cotton and soybean fields, a green flag should be added to denote tolerance to glufosinate (Liberty).

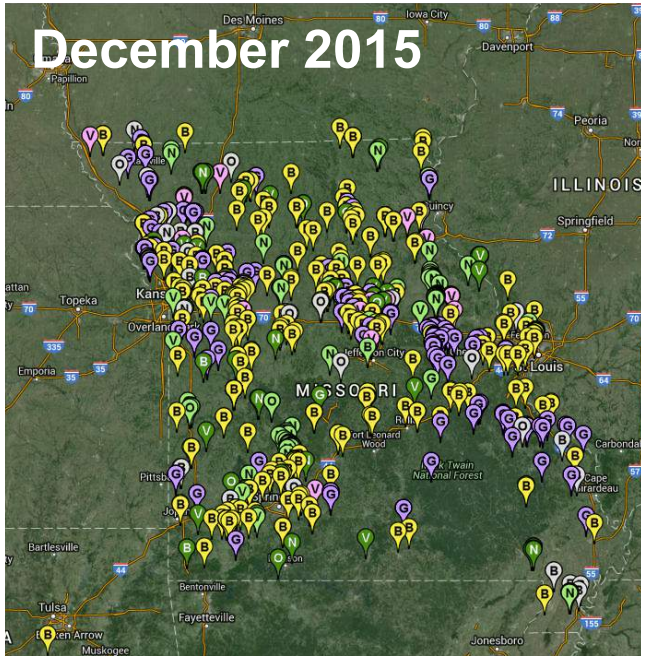
BRIGHT GREEN
indicates the Liberty Link® technology. This technology is tolerant to glufosinate (Liberty®) herbicide.

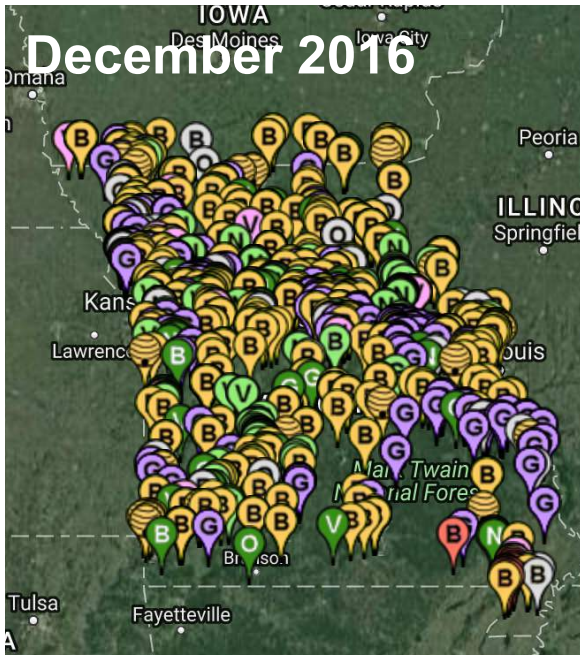
BLACK
indicates tolerance to dicamba herbicide or Xtend®. The black and white checks indicate tolerance to both dicamba and glyphosate (Roundup). A green flag should be added for cotton to denote glufosinate (Liberty) tolerance.

DriftWatch: Identifying Sensitive Areas

- What sensitive crops are near by?
- Which direction is the wind blowing?







https://mo.driftwatch.org/map

Constantly re-emphasize yield impacts and the extremely sensitive nature of soybean…

The societal impacts of off-target injury cannot be underestimated.

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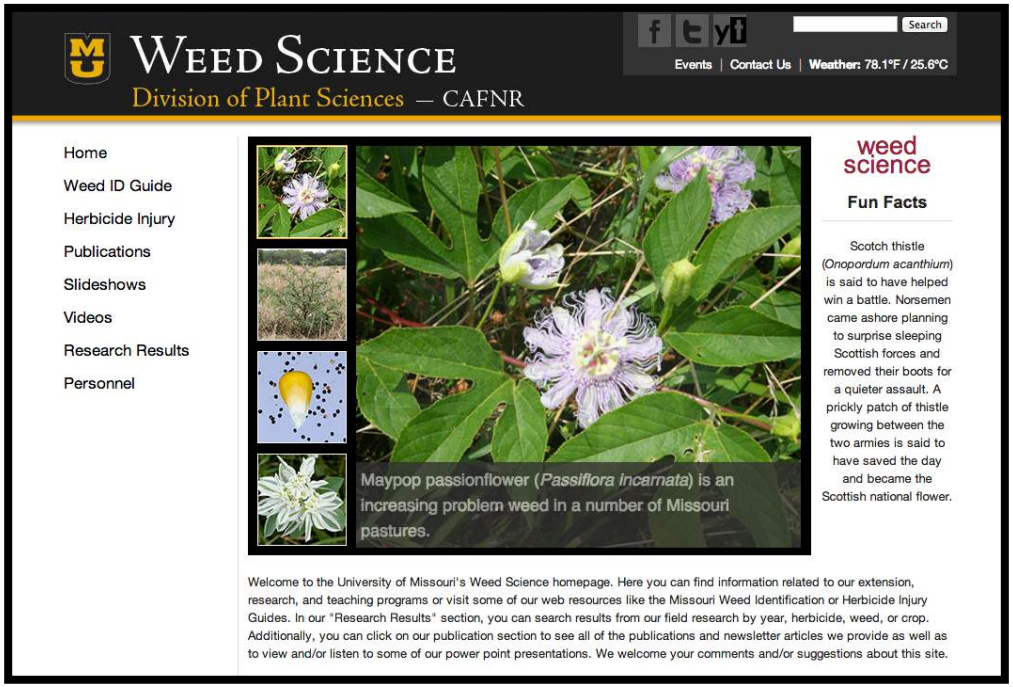

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