Off-target movement: Can herbicides be kept in place

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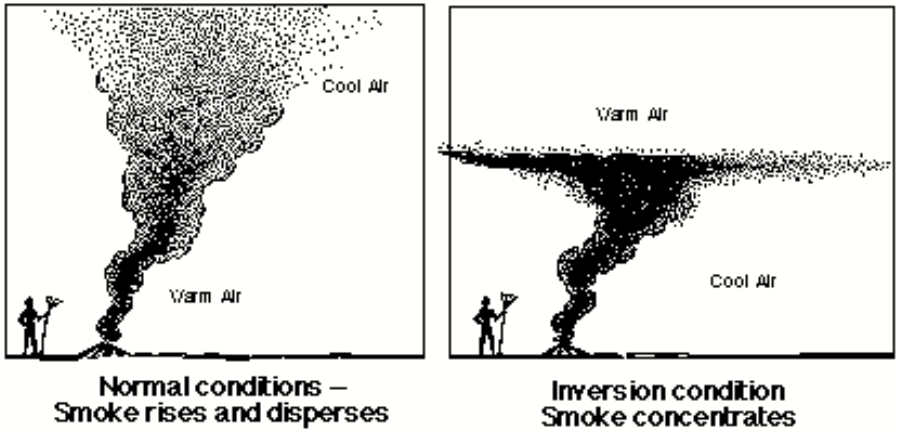
Drift – Movement of pesticides off-site

- Particle drift – movement of pesticide in spray droplets
- Vapor drift – movement of pesticide via evaporation after it reaches target
- Temperature inversion – layer of warm air traps cool air near ground

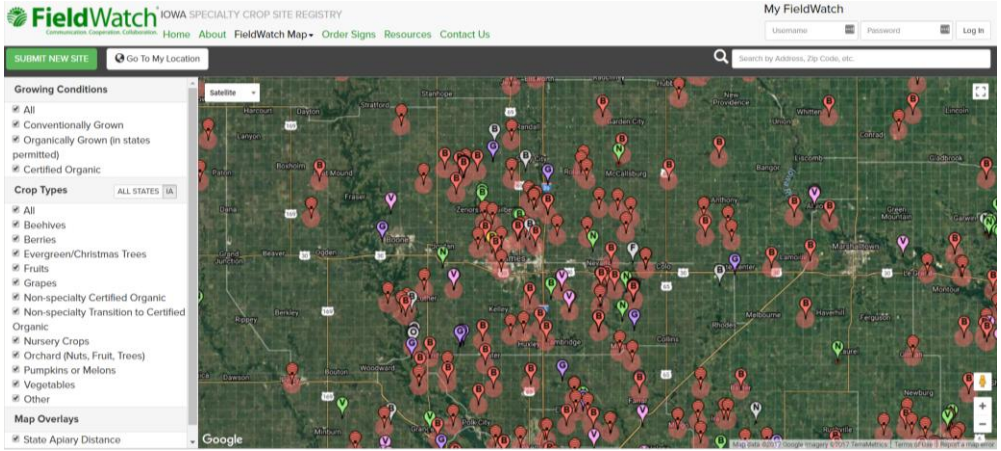


IDALS - Drift

- Primary enforcement agency – reports to EPA
- “Avoiding ALL off-site movement is the responsibility of the applicator”
- Partnered with *FieldWatch*™ to promote communication between producers and pesticide applicators

FieldWatch: new sensitive crops directory

- Access via www.fieldwatch.com or www.driftwatch.org
  - Register apiaries of any size
  - Register *commercial* specialty crops of at least ½ acre

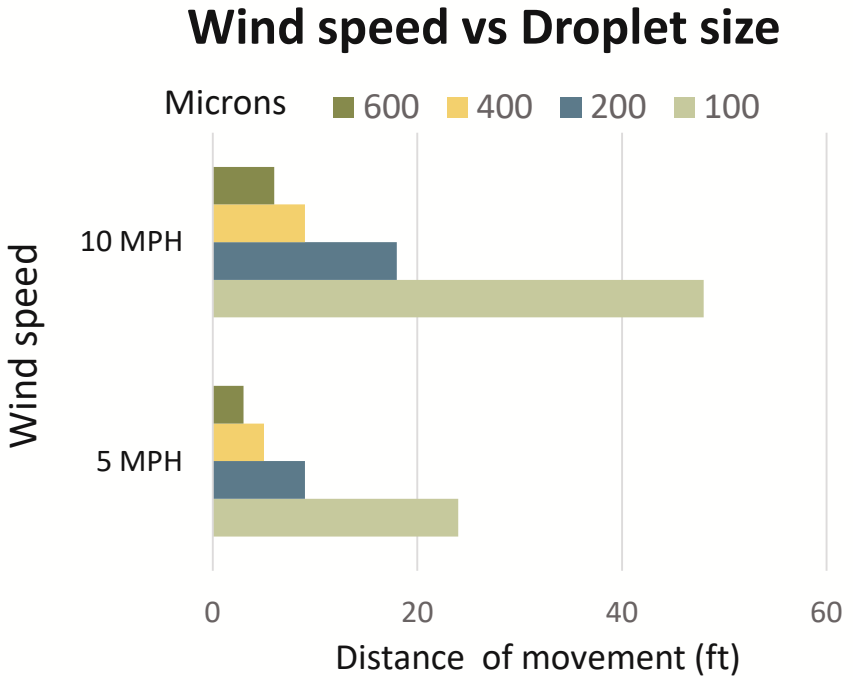


Factors influencing particle drift

- Droplet size
  - Nozzle type
  - Spray pressure
- Wind speed
- Boom height

Applicator judgement overrides all other factors

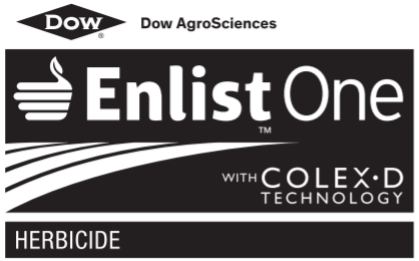
Importance of droplet size

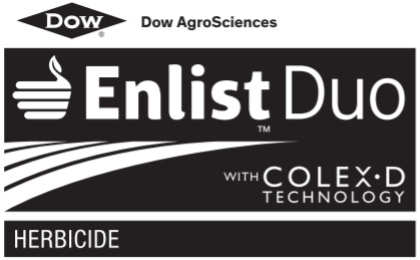


Nozzle type	% Driftable droplets (<150 microns)	
	15 PSI	40 PSI
XR flat fan	19	30
Turbo TeeJet	4	13
AI TeeJet	-	5
Turbo TeeJet AI	<1	2

A new era of labeling

- New products have much more specific requirements on labels
- Limited to five “Group 4” products right now
  - Plant growth regulators





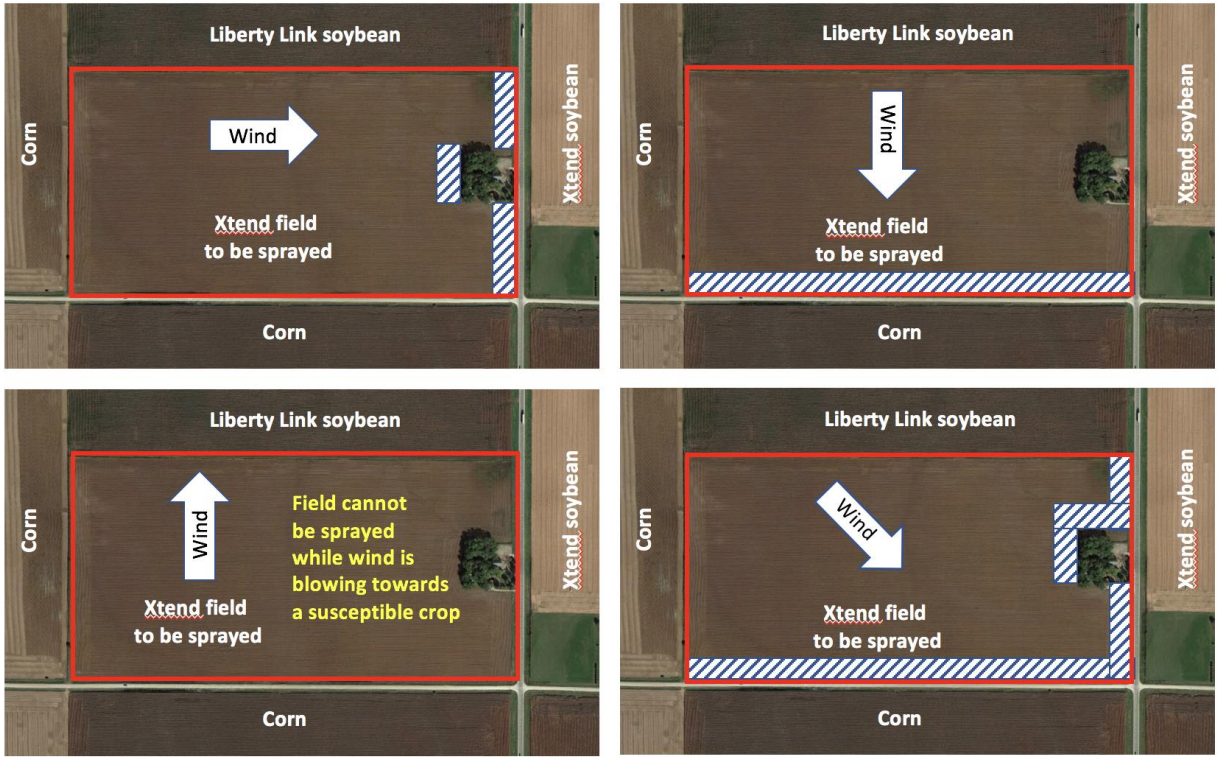
EPA's New Approach

- Only use nozzles and PSI specified on label

			Operating Pressure (psi)						
Manufacturer	**Nozzle Type**	**Part Number**	**10**	**20**	**30**	**40**	**50**	**60**	**70**
Greenleaf Technologies	TADF03-D	TADF03-D		Min 20		Max 40			
	TADF06-D	TADF06-D		Min 20			Max 50		
	TDXL 11003-D	TDXL 11003-D		Min 20		Max 40			
	TDXL 11004-D	TDXL 11004-D		Min 20			Max 50		
	TDXL 11005-D	TDXL 11005-D		Min 20				Max 60	
	TDXL 11006-D	TDXL 11006-D		Min 20				Max 60	
Hypro	ULD120-04	ULD120-04 / FC-ULD120-04		Min 20		Max 40			
	ULD120-05	ULD120-05 / FC-ULD120-05		Min 20		Max 40			
John Deere	ULD120-04	PSULD2004 / PSULDQ2004		Min 20		Max 40			
	ULD120-05	PSULD2005 / PSULDQ2005		Min 20		Max 40			
Lechler	ID 110-03	ID 110-03 / ID 110-03C			Min 30	Max 40			
	ID 110-04	ID 110-04 / ID 110-04C			Min 30	Max 40			

- Only tank mix w/products listed on label

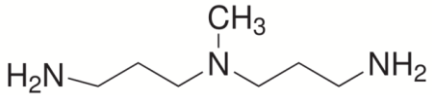
EPA's New Approach



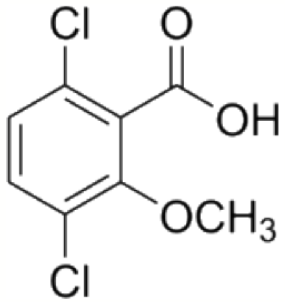
30 ft buffer for Enlist products;
110 to 220 ft for dicamba products.

What went wrong in 2017?

Year	Misuse	Ag
2012	120	89
2013	122	102
2014	89	67
2015	108	90
2016	105	87
2017	**253**	**175 GR**



BAPMA - Engenia



dicamba parent acid

Iowa vs Arkansas/Missouri

Factor	Dunklin County, MO	Chickasaw County, IA
% soybean and cotton	80.2	35.7
% Xtend varieties	65	<50
% Xtend treated with dicamba	> 95 %	<50
Soybean planting period	9 weeks	5 weeks

Indiana Investigations (11/26/17)

- **Violations**
  - Wind towards sensitive crop 11
  - Lack of buffer 3
  - Wind < 3MPH 2
  - Wind > 15 MPH 1
  - Rain 1
  - Did not visit Drift Watch 11
  - Did not visit registrant web site 13

Type of exposure			
	Yes	No	?
Particle drift	6	4	11
Vapor drift	1	7	13
Contamination	0	21	0

- Avg 2.2 violations per investigation

Moving forward in 2018

- Federal label changes for **new** dicamba products
  - RUP, restricted hours and wind speed, training, record keeping, etc.
- MO, MN, ND, IN, TN, AR more restrictive labels
  - Date restriction (e.g. MN – Do not apply after June 20)
  - Temperature restriction (e.g. MN, ND: Do not apply when >85 F)
- ISU only recommends PRE application in soybean

Reducing drift risk

- Applicators
  - Read/follow labels
  - Sprayer setup
  - Monitor weather
  - Communicate with neighbors
  - Use *FieldWatch*
  - **Use good judgement**
- Producers
  - Communicate with neighbors
  - Register crops on *FieldWatch*

Resources

- IDALS - Pesticide Bureau

- PFI – Pesticide drift