

**TPSA**  
**18<sup>th</sup> Annual Pesticide**  
**Stewardship Conference**

**The Complexity of Herbicide  
Label Requirements:**

**BMPs & Restrictions**

*-Dave Scott-*


*Office of the Indiana State Chemist*

# SCOPE OF COMMENTS:

EPA & Manufacturers Agreed to Make These Products RUPs & to Add More Label Restrictions



# Frequently Used Label Terms

- Restrictions
  - Requirements
  - Recommendations
  - Product Stewardship Practices
  - Instructions
  - Methods
  - Information
  - Precautions
  - Directions
- 
- A decorative graphic consisting of several overlapping, wavy, light-colored lines that flow from the right side of the slide towards the left, creating a sense of movement and depth.

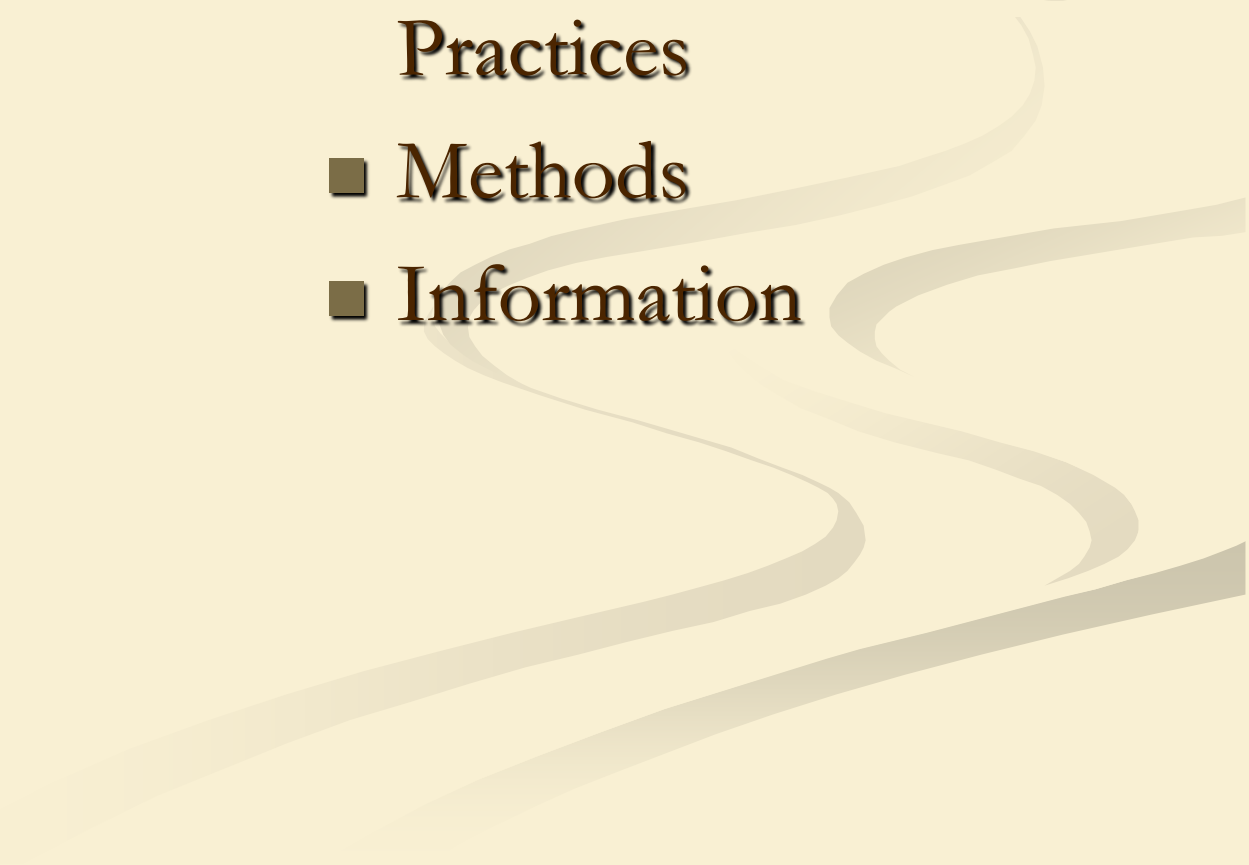
# Frequently Used Phrases

- It is a violation of federal law to use this product in a manner inconsistent with its labeling.
- Does that include inconsistent with:
  - Mandatory directive language?
  - Suggestive recommended language?
  - Informational language?
  - Vague ill-defined language?

# Frequently Used Phrases

- Observe all precautions, restrictions, and limitations in this label...
- All applicable directions, restrictions, precautions, and Conditions of Sale and Warranty are to be followed.
- Does this make all label-referenced precautions, restrictions, limitations, directions, & conditions of sale enforceable?

# Restrictions or BMPs?

- Restrictions
  - Requirements
  - Precautions
  - Directions
  - Instructions
  - Recommendations
  - Product Stewardship Practices
  - Methods
  - Information
- 

# Restriction, BMP, or Neither?

- DO NOT apply pesticide product within 50 feet of wells.
- DO NOT apply under conditions which favor runoff.
- DO NOT apply this product in a way that will contact workers or other persons, either directly or through drift.

# Restriction, BMP, or Neither?

- DO NOT apply pesticide product within 50 feet of wells. ...prescriptive, specific, enforceable = **RESTRICTION**
- DO NOT apply under conditions which favor runoff. ...prescriptive, vague, not enforceable if specifics are not defined on the label = **BMP?**
- DO NOT apply this product in a way that will contact workers or other persons, either directly or through drift. ...prescriptive, result defined, enforceable = **RESTRICTION**



# Restriction, BMP, or Neither?

- DO NOT allow herbicide solution to drip, physically drift, or splash onto desirable vegetation because severe injury or destruction to desirable broadleaf plants could result.
- Do not apply under circumstances where spray drift may occur to food, forage, or other plantings that may be damaged or the crops thereof rendered unfit for sale, use or consumption.

# Restriction, BMP, or Neither?

- DO NOT allow herbicide solution to drip, physically drift, or splash onto desirable vegetation because severe injury or destruction to desirable broadleaf plants could result.  
...prescriptive, result defined, enforceable = **RESTRICTION**
- Do not apply under circumstances where spray drift may occur to food, forage, or other plantings that may be damaged or the crops thereof rendered unfit for sale, use or consumption.  
...prescriptive, vague, not enforceable = **BMP?**

# Section Headings

- Record Keeping/Record Keeping Requirements
- Training/ Training Requirements
- Product Stewardship Practices
- Resistance Management/Weed Resistance Practices
- Tank Mixing Information/Tank Mixing Instructions
- Use Precautions
- Use Restrictions/Restrictions
- Spray Drift Management

# Spray Drift Management

- The following physical spray drift management requirements must be followed.
- ...list of over 5 mandatory requirements...
- **Hooded Spray Booms-** Hooded spray booms are another tool that can be used to minimize spray drift potential. ...
- **So is use of hooded spray booms a requirement like everything else listed in this section?**

# Wind Speed & Direction Requirements

- **Wind Speed** -3 to 10 mph
- **Wind Direction**- Local terrain can influence wind patterns. Every applicator must be familiar with local wind patterns and how they affect drift.
- So what is the “requirement” regarding wind direction in this section? Seems informational.

# Sensitive Areas

- Engenia should only be applied when the potential for drift to adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for threatened or endangered species, or sensitive crop plants) is minimal (e.g. when wind is blowing away from sensitive areas).
- Does this “should” make everything in this section advisory & unenforceable?

# Product Stewardship Practices

- Apply Engenia herbicide to weeds 4 inches or less in size for best performance.
- Apply Engenia at the labeled rate. **DO NOT apply at less than the labeled rate**
- Use Engenia as part of a herbicide program that includes the use of residual herbicides...
- Maintain boom height 24 inches or less from target.
- **This appears to be a mix of enforceable and advisory items written in directive terms.**



Office of  
**INDIANA STATE CHEMIST AND SEED COMMISSIONER**  
*Protecting Indiana's Agriculture and Environment - Feed, Fertilizer, Pesticide and Seed*  
Purdue University • 175 South University Street  
West Lafayette, IN 47907-2063  
Telephone (765) 494-1492 • Facsimile (765) 494-4331  
www.oisc.purdue.edu

Robert D. Waltz, Ph.D.  
State Chemist &  
Seed Commissioner

2018  
Guidance for Interpreting Dicamba Labeling Terms & Phrases (11 26 17)

OFF-TARGET MOVEMENT

"Do not allow herbicide solution to mist, drip, drift or splash onto desirable vegetation because severe injury or destruction to desirable broadleaf plants could result."

"Do not apply under circumstances where spray drift may occur to food, forage, or other plantings that may be damaged or the crops thereof rendered unfit for sale, use or consumption."

*These restrictions would apply to any off-target movement to any desirable vegetation by means of drift, including drift resulting from application during a temperature inversion. It would not apply if it can be determined that off-target movement was from volatility, runoff, or exposed windblown soil particles.*

TEMPERATURE INVERSIONS

"Do not apply this product during temperature inversion, as the off-target movement potential is high."

"Do not apply Engenia when temperature inversions exist at the field level."

"Do not apply this product between sunset and sunrise."

"Apply only during the following period: sunrise until sunset."

*Sunrise shall be defined as time of sunrise, and sunset shall be defined as time up to 30 minutes after sunset, as recorded by a reliable weather recording service. Temperature inversions shall be identified by reliably recorded calm or 0-3 mph winds during application.*

SENSITIVE/SUSCEPTIBLE CROPS

"Do not apply when wind is blowing in the direction of neighboring sensitive crops."

"Do not apply this product when wind is blowing toward adjacent non-dicamba tolerant crops. This includes non-dicamba tolerant soybeans and cotton."

"Sensitive/susceptible crops include, but are not limited to non-DT soybeans and cotton, cucumber and melons (EPA crop group 9), flowers, fruit trees, grapes, ornamentals including

The label is complex,  
requiring much from the  
user of these products.

Observe OISC's  
guidance for "Interpreting  
Dicamba Label Terms  
And Phrases."

Guidance was developed  
thru consultation & input  
with EPA & registrants.



# Precautions for Dicamba Use in Xtend Soybeans

**Bill Johnson**

*Professor of Weed Science*

**Joe Ikley**

*Weed Science Program Specialist  
Purdue University*



**Aaron Hager**

*Associate Professor of Weed Science  
University of Illinois*



UNIVERSITY OF ILLINOIS  
EXTENSION

**Mark Loux**

*Professor of Weed Science  
The Ohio State University*



THE OHIO STATE  
UNIVERSITY  
COLLEGE OF FOOD, AGRICULTURAL,  
AND ENVIRONMENTAL SCIENCES

This handout includes experience-based recommendations from University Extension Weed Specialists to assist with safe & effective dicamba applications.

ALWAYS follow required, legal use restrictions...

***“The label is the law”***

## Dicamba use in soybean - general information

Ohio, Indiana, and Illinois are heavily infested with weeds resistant to glyphosate (group 9), PPO inhibitors (group 14), and ALS inhibitors (group 2). This has greatly reduced the number of effective postemergence herbicides for controlling these weeds in Roundup Ready 2 (RR2) soybeans. Adoption of Roundup Ready 2 Xtend (glyphosate and dicamba resistant – RR2 Xtend) soybeans and use of dicamba-based herbicides is one option for managing resistant weed populations. Keep in mind that selection for dicamba resistance occurs each time dicamba is applied, and over reliance on this technology will lead to the development of dicamba-resistant weed populations.

# And what do these phrases mean?

- Do not apply when wind is blowing in the direction of neighboring sensitive crops.
- Do not apply this product when wind is blowing toward adjacent non-dicamba tolerant crops, this includes non-dicamba tolerant soybeans and cotton.

# NEIGHBORING & ADJACENT: *(Indiana Definitions = Requirements)*

- Neighboring and adjacent fields/areas referenced on these labels shall mean those non-target areas immediately next to the target field, including those that butt up to or touch the target field. The term shall also include fields or sites separated by nothing more than a vegetative strip, fence row, tree row, farm lane, driveway, street, county road, state road, interstate road, railway corridor, residential area, drainage ditch, body of water, known habitat for threatened or endangered species, natural area, wooded lot, and other similar field boundaries.
- Specifically, not included in this definition are Conservation Reserve Program (CRP) lands that are not currently being utilized in agricultural production.
- **This is restrictive regulatory information for Indiana not found on the label.**

## NEIGHBORING & ADJACENT: *(Indiana Recommendation = BMP)*

Although the preceding legal definition of neighboring and adjacent shall be applied to these labels, University weed scientists and researchers strongly recommend that no-spray restrictions be extended to any sensitive crop within 1/2 mile of the downwind edge of the target treatment field.

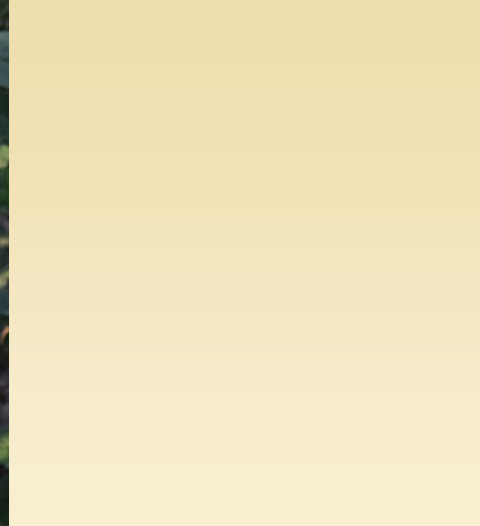
# ACCEPTABLE OUT-OF-FIELD BUFFERS:

Roads, paved, or gravel surfaces; agricultural fields that have been prepared for planting; planted agricultural fields containing asparagus, corn, DT cotton, DT soybeans, sorghum, proso millet, small grains, and sugarcane; areas covered by the footprint of a building, silo, shade house, feed crib, or other manmade structure with walls and a roof

# ACCEPTABLE OUT-OF-FIELD BUFFERS:

The above listed out-of-field areas can be used as part of the 110' or 220' buffer calculation, resulting in a buffer that: 1) will be completely (100%) within the target field, 2) partially within the target field and partially from the list of acceptable adjacent areas, or 3) completely within the acceptable adjacent areas listed above.

It should be noted that the use of “roads” as part of the acceptable buffer calculation is somewhat misleading in that most Indiana roads have a vegetative roadside shoulder area between the target field and the paved/gravel road surface. Therefore, the vegetative roadside area cannot be used as part of the buffer calculation area, so the required buffer would need to come from within the target field.



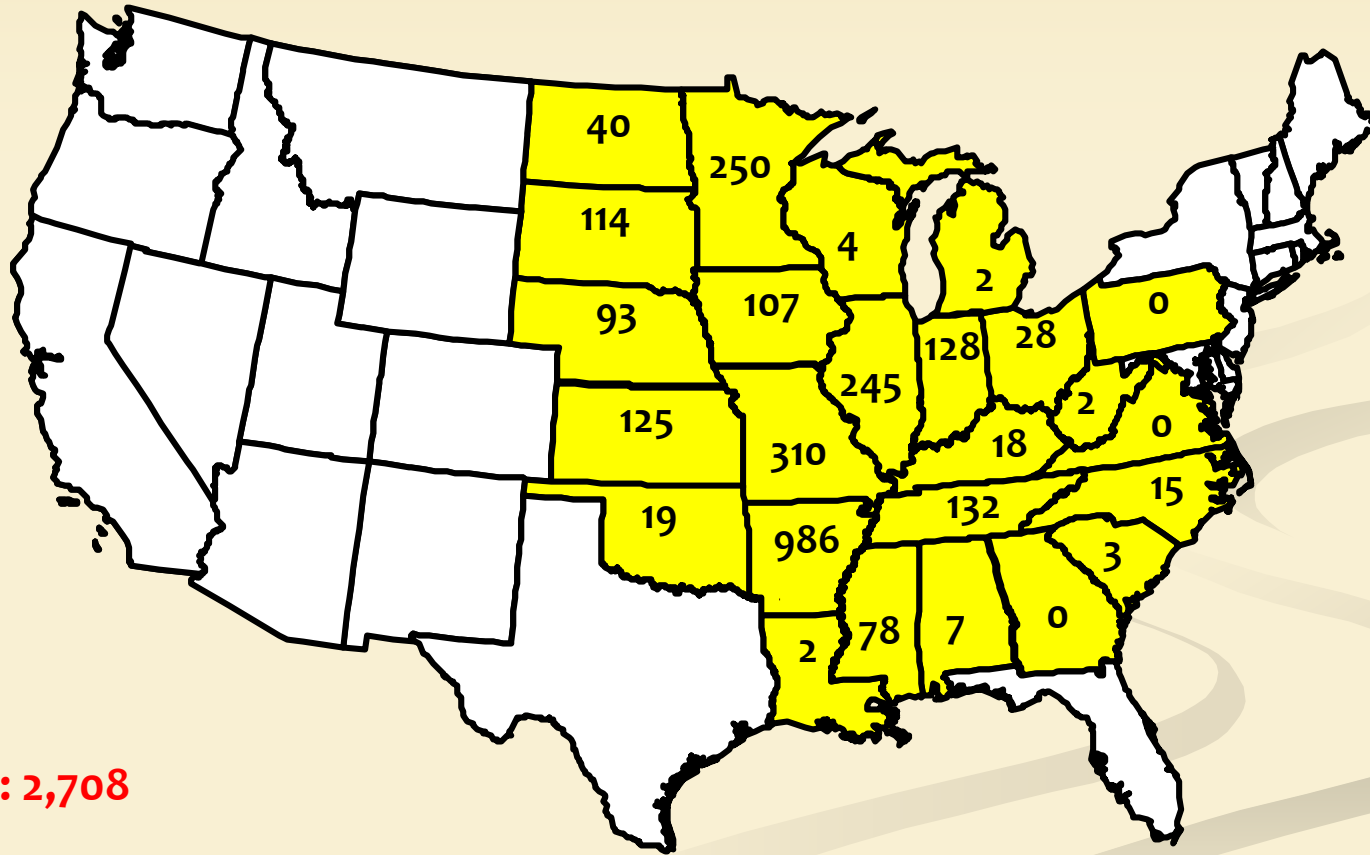
**Off Target Soybeans  
Case 17-0951**

# Dicamba – What Happened in 2017?



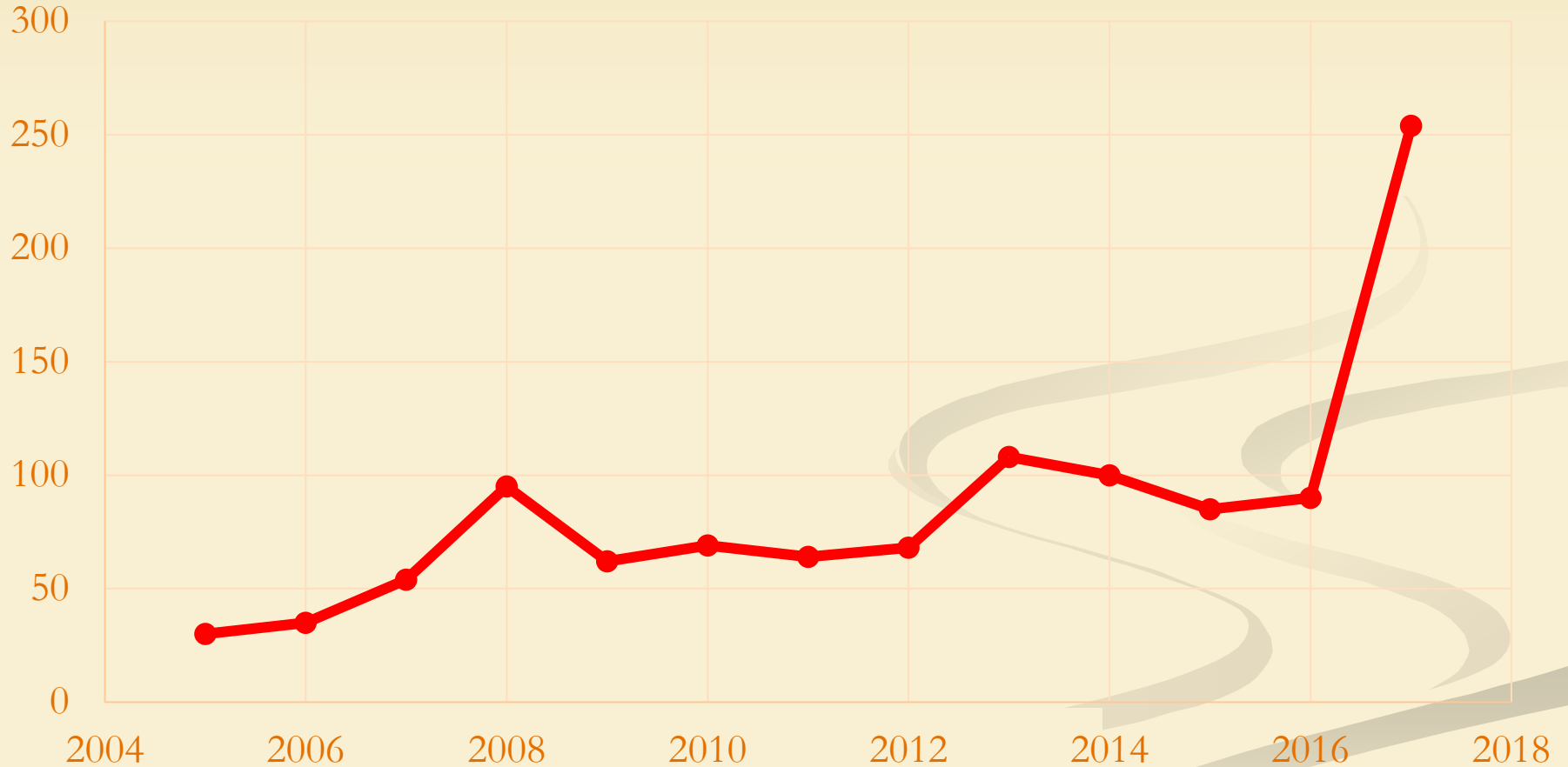


# Official Dicamba-related Injury Investigations as Reported by State Departments of Agriculture (\*as of October 15, 2017)

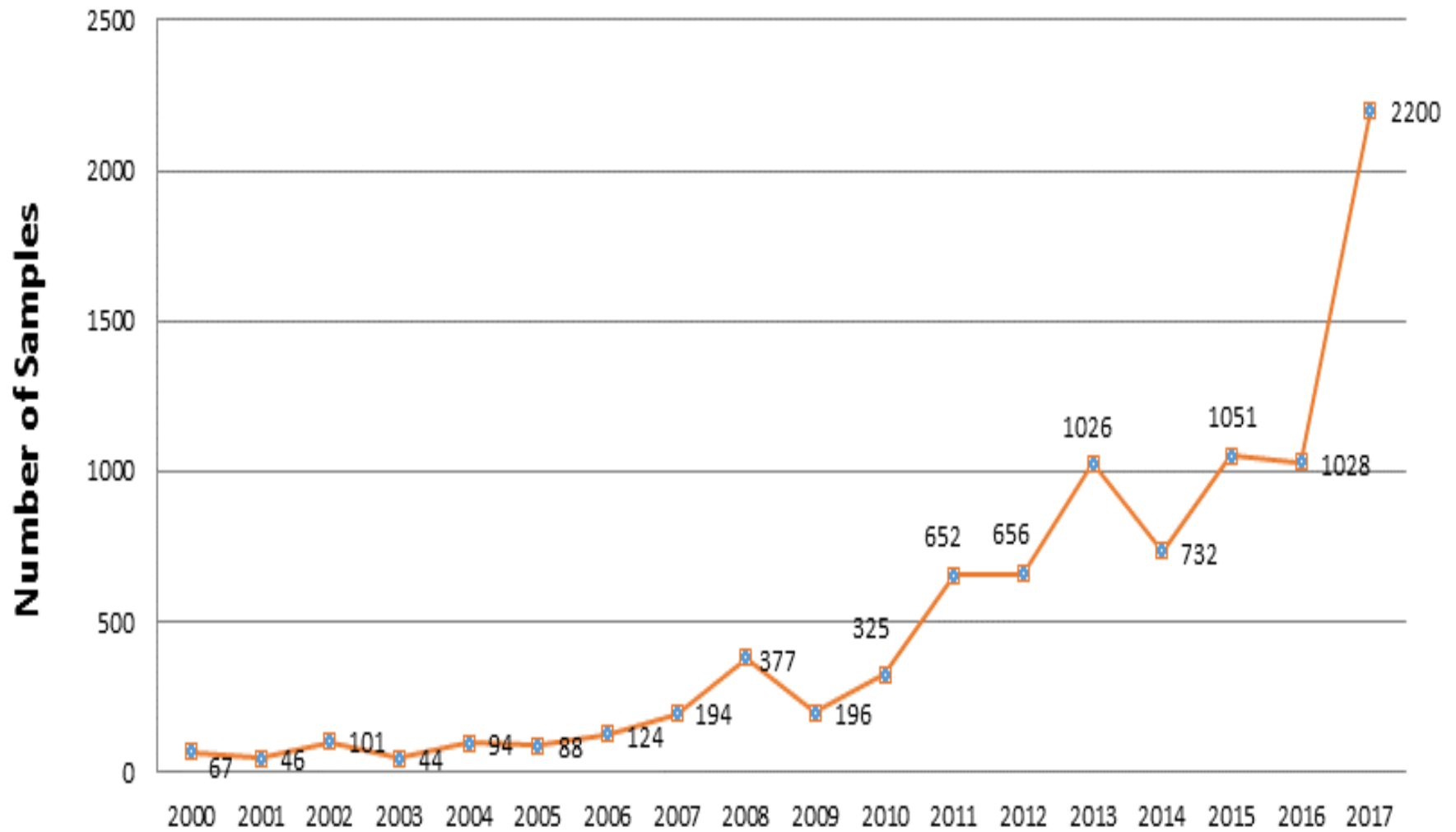


**\*Total: 2,708**

# Record-setting numbers of drift complaints in 2017 for ALL types of applications



## OISC Pesticide Residue Lab Total Sample Trend

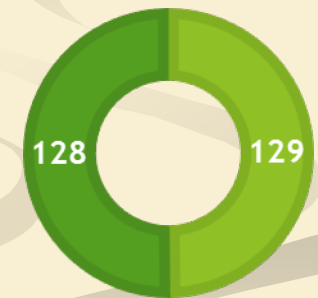


# Recent Drift & Dicamba Data

<u>Year</u>	<u>Total Drift</u>	<u>Dicamba</u>	<u>Percent</u>
2013	92	3	3%
2014	83	5	6%
2015	81	8	10%
2016	74	3	4%
2017	257	129	50%

OISC 2017 DRIFT CASES

■ Non Dicamba ■ Dicamba



# Details of 68 confirmed dicamba investigations to date

## Applicators involved:

- 24% Certified commercial applicators
- 66% Certified private applicators
- 10% Noncertified applicator

## Products applied:

- 47% Engenia
- 10% FeXapan
- 37% Xtendimax
- 6% Other

## Target crop/site:

- 94% Soybean
- 4% Corn
- 2% ROW

# Details of 68 confirmed dicamba investigations to date

## Off-Target Exposure Crop/Site

- 93% Non-DT Soybeans
- 3% Ornamentals
- 3% Garden
- 1% Person

## Route of Off-Target Exposure

- 19% Particle drift
- 0% Inversion
- 0% Volatilization
- 0% Dust particles
- 0 % Runoff
- 3% Tank contamination
- 78% Undeterminable

# 2017 Dicamba Complaint Violations to Date (1/30/18)

- Total violative cases...63/68...93%
- Drift... 19%
- Wind blowing toward adjacent sensitive crops...41%
- Wind (or gusts) greater than 15 mph ...16%
- Wind less than 3 mph...4%
- Did not maintain a 110 ft. buffer ...3%
- Did not visit website (registrant or DriftWatch)...81%
- Rain in forecast within 24 hours ...1%


01/30/2018

# So what about 2018 dicamba use?

- ▶ Engenia, FeXapan & Xtendimax will have more label restrictions including:
  - ▶ Detailed record keeping
  - ▶ Application 3-10 mph winds only
  - ▶ No winds blowing toward sensitive crops
  - ▶ No application during temp. inversion
  - ▶ No application if rain predicted in 24 hrs.
  - ▶ Specific spray equipment requirements
  - ▶ Required buffers (no-spray)
  - ▶ **Required dicamba training for all users**



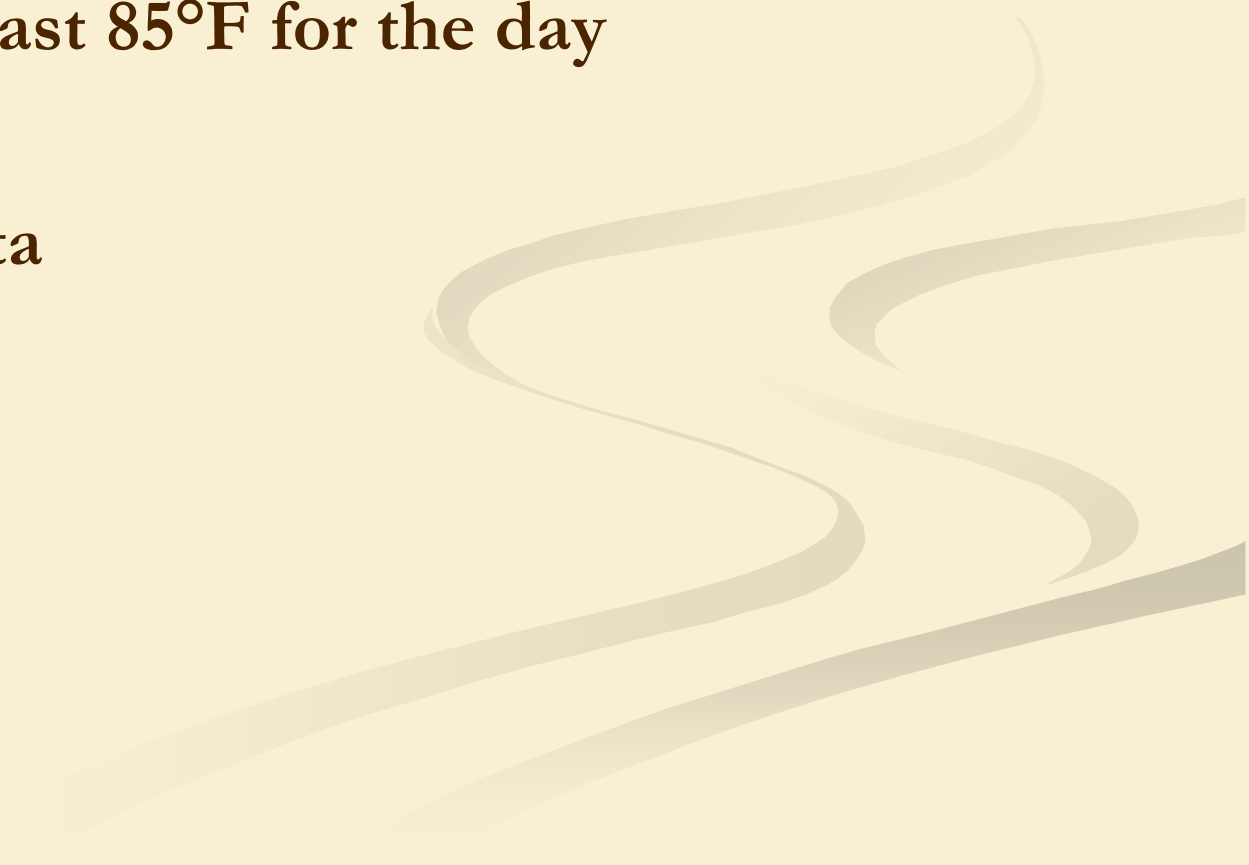
# State Specific Restrictions

- Training required to be delivered by a State Agency or University Extension?
    - Arkansas
    - Alabama
    - Georgia
    - Indiana
    - Mississippi
    - Missouri
- 
- A decorative graphic consisting of several overlapping, wavy, light-colored lines that flow from the right side of the slide towards the left, creating a sense of movement and depth.

# State Specific Restrictions

- **Application Cut Off Dates**
  - **Arkansas – April 16**
  - **Minnesota – June 20**
  - **Missouri**
    - **June 1** in the 12 southeast counties
    - **July 15** all other counties
  - **North Dakota - June 30** or after the first bloom (whichever comes first)
  - **Tennessee – July 15** requires a hooded sprayer

# State Specific Restrictions

- **Application Cut Off Temperatures**
    - 85°F at time or if National Weather Service (NWS) forecast 85°F for the day
    - Minnesota
    - North Dakota
- 

# State Specific Restrictions

## ■ Application Time Restrictions

### ■ Missouri

- Do not apply before 7:30 am or after 5:30 pm

### ■ North Dakota

- Do not apply one hour after sunrise to one hour before sunset

# State Specific Restrictions

- **Florida – pre-existing rules**
  - Buffers based on wind speed/direction
- **Missouri**
  - online Notice of Application form prior to each application
- **North Dakota**
  - Prior notification is given to NDDA
- **North Carolina**
  - Do not apply when wind is blowing toward adjacent sensitive crops: tobacco, grapes, watermelon, sweet potato, peanut, pepper, beans, NDT cotton, NDT soybeans
- **South Dakota**
  - buffers based on application rate/product

# Is required dicamba training the same as certification?

- No, it is in addition to applicator certification.
- Some states will recognize BASF, DuPont, or Monsanto provided training; some will require state-specific training.
- Indiana will develop & require OISC-approved training.
- Registrant training did not seem to work in 2017.

2018 Indiana Required Training  
for Users of Engenia, FeXapan  
and Xtendimax dicamba products

*“Threading the Needle”*



Presenter:

# Pay attention to the labels.

















# The Quick Guide you received will help.

## ENGENIA®, XTENDIMAX®, AND FEXAPAN®

### APPLICATION QUICK GUIDE

Always read and follow all product labels.

PPP-119

			
<p><b>TRAINING</b></p> <p>Everyone who makes applications must attend dicamba-specific, state-approved training.</p>	<p><b>RECORD KEEPING</b></p> <ul style="list-style-type: none"> <li>You must keep more than just RUP application records.</li> <li>You must record temperature, wind speed, and direction before and after each application for each field.</li> </ul>	<p><b>SUSCEPTIBLE CROPS</b></p> <ul style="list-style-type: none"> <li>You must consult DriftWatch before each application.</li> <li>You must scout adjacent and neighboring fields for sensitive/susceptible crops (DriftWatch doesn't map non-DT soybeans).</li> </ul>	<p><b>NOZZLES</b></p> <p>Only use the nozzles specified on the products' websites.</p>
			
<p><b>TANK MIX PARTNERS</b></p> <p>Only tank mix with products listed on the products' websites — including adjuvants.</p>	<p><b>REQUIRED PPE</b></p> <p>Long-sleeved shirt, pants, shoes, socks, and waterproof gloves.</p>	<p><b>GROUND SPEED</b></p> <ul style="list-style-type: none"> <li>Never exceed 15 mph ground speed.</li> <li>5 mph recommended in downwind field edges.</li> </ul>	<p><b>BOOM HEIGHT</b></p> <p>Set spray booms above the canopy 24 inches or less.</p>
			
<p><b>SETBACKS</b></p> <p>Do not mix these products within 50 feet of wells, sinkholes, streams, and rivers (some exception for impervious pads).</p>	<p><b>APPLICATION TIMING</b></p> <p>Only apply between sunrise and sunset.</p>	<p><b>TEMPERATURE</b></p> <p>Do not apply if a temperature inversion exists.</p>	<p><b>RAIN</b></p> <p>Do not apply if rain is predicted (51% chance or greater) within 24 hours.</p>
			
<p><b>WIND SPEED</b></p> <ul style="list-style-type: none"> <li>Apply only when wind speeds are 3-10 mph, including gusts.</li> <li>You cannot apply at all when the wind is blowing toward a neighboring sensitive crop.</li> </ul>	<p><b>SPRAYER CLEANING</b></p> <p>Clean all traces of AMS from equipment before application, and clean all traces of dicamba from equipment after application according to label directions.</p>	<p><b>SPRAY VOLUMES</b></p> <p>Minimum spray solution per acre:</p> <ul style="list-style-type: none"> <li>BASF Engenia® — 10 gallons</li> <li>Monsanto Xtendimax® — 15 gallons</li> <li>DuPont FeXapan® — 15 gallons</li> </ul>	<p><b>DOWNWIND BUFFERS</b></p> <p>You must always maintain a downwind buffer in your field except when next to DT beans, corn, sorghum, small grains, proso millet, and fields prepared for planting.</p>
<p>The buffers are:</p> <ul style="list-style-type: none"> <li>BASF Engenia® — 110 feet</li> <li>Monsanto Xtendimax® — 110 or 220 feet (depending on rate)</li> <li>DuPont FeXapan® — 110 or 220 feet (depending on rate)</li> </ul>			

**PURDUE**  
EXTENSION



Reference in this publication to any specific commercial product, process, or service, or the use of any trade, firm, or corporation name is for general informational purposes only and does not constitute an endorsement, recommendation, or certification of any kind by Purdue Extension or Office of Indiana State Chemist. Individuals using such products assume responsibility for their use in accordance with current directions of the manufacturer.



# Required Record Keeping for Each Application of these new Dicamba Products.

## Required Records for Engenia, Xtendimax, FeXapan Applications

Personal Information			
Name & license number of certified applicator			
Name (and RT number if applicable) of person making application (if different from above)			
Dicamba training (mm/dd/yy, city, CCH or PARP number)			
Pre-application	Date(s) (mm/dd/yy)		
Checked DriftWatch for nearby sensitive sites/crops			
Checked registrant website for tank-mix partners			
Dicamba purchase (include the receipt)			
Sprayer cleaned of all traces of AMS			
Application			
Date (mm/dd/yy)			
Target crop			
Field location/description			
Field size			
Pre- or post-emergent (circle one)	Pre-emergent	Post-emergent	
Date crop planted (mm/dd/yy)			
List all pesticide trade names applied (include EPA registration numbers)			
List all adjuvant trade names			
Downwind buffer (circle one)	100% my field	____ ft. in my field + ____ ft. in adjacent property	100% adjacent property
Application Weather Conditions			
	Start of Application	End of Application	
Time			
Temperature at boom height			
Average wind speed over 2-minute span, facing wind at boom height			
Average wind direction over 2-minute span (0-360 degrees preferred over N, S, SW, etc.)			
Method or equipment used to measure weather			
Post-application			
Date sprayer cleaned of all dicamba residue (mm/dd/yy)			
Cleanout method according to label directions			

### Websites

BASF Engenia® Herbicide Tank Mix: [www.engeniatankmix.com](http://www.engeniatankmix.com)

Monsanto Xtendimax® Application Requirements: [www.xtendimaxapplicationrequirements.com](http://www.xtendimaxapplicationrequirements.com)

DuPont FeXapan® Application Requirements: [www.fexapanapplicationrequirements.dupont.com](http://www.fexapanapplicationrequirements.dupont.com)

DriftWatch: [driftwatch.org](http://driftwatch.org)

Office of Indiana State Chemist Dicamba Update (downloadable PDF available here): [www.oisc.purdue.edu/pesticide/dicamba.html](http://www.oisc.purdue.edu/pesticide/dicamba.html)



Office of  
INDIANA STATE CHEMIST AND SEED COMMISSIONER

*Protecting Indiana's Agriculture and Environment - Feed, Fertilizer, Pesticide and Seed*

Purdue University • 175 South University Street  
West Lafayette, IN 47907-2063  
Telephone (765) 494-1492 • Facsimile (765) 494-4331  
www.oisc.purdue.edu

Robert D. Waltz, Ph.D.  
State Chemist &  
Seed Commissioner

The label is complex,  
requiring much from  
the user of these  
products.

Observe OISC's  
guidance for  
“Interpreting Dicamba  
Label Terms And  
Phrases.”

12/04/2017

2018

Guidance for Interpreting Dicamba Labeling Terms & Phrases (11 26 17)

OFF-TARGET MOVEMENT

“Do not allow herbicide solution to mist, drip, drift or splash onto desirable vegetation because severe injury or destruction to desirable broadleaf plants could result.”

“Do not apply under circumstances where spray drift may occur to food, forage, or other plantings that may be damaged or the crops thereof rendered unfit for sale, use or consumption.”

*These restrictions would apply to any off-target movement to any desirable vegetation by means of drift, including drift resulting from application during a temperature inversion. It would not apply if it can be determined that off-target movement was from volatility, runoff, or exposed windblown soil particles.*

TEMPERATURE INVERSIONS

“Do not apply this product during temperature inversion, as the off-target movement potential is high.”

“Do not apply Engenia when temperature inversions exist at the field level.”

“Do not apply this product between sunset and sunrise.”

“Apply only during the following period: sunrise until sunset.”

*Sunrise shall be defined as time of sunrise, and sunset shall be defined as time up to 30 minutes after sunset, as recorded by a reliable weather recording service. Temperature inversions shall be identified by reliably recorded calm or 0-3 mph winds during application.*

SENSITIVE/SUSCEPTIBLE CROPS

“Do not apply when wind is blowing in the direction of neighboring sensitive crops.”

“Do not apply this product when wind is blowing toward adjacent non-dicamba tolerant crops. This includes non-dicamba tolerant soybeans and cotton.”

“Sensitive/susceptible crops include, but are not limited to non-DT soybeans and cotton, cucumber and melons (EPA crop group 9), flowers, fruit trees, grapes, ornamentals including

## Engenia, FeXapan, and Xtendimax Federally Registered Until November 2018

**EPA will decide whether the products should continue to be registered. It appears this will depend partially on the number of off-target incidents in 2018.**

This is our chance to get it right for 2018 or growers may lose these new-use dicamba products. Dicamba-tolerant seed may be available, but these herbicides may not.

# Questions ?

Dave Scott

[scottde@purdue.edu](mailto:scottde@purdue.edu)

(765) 494-1593