

2019 Dicamba Updates: Cotton and Soybean

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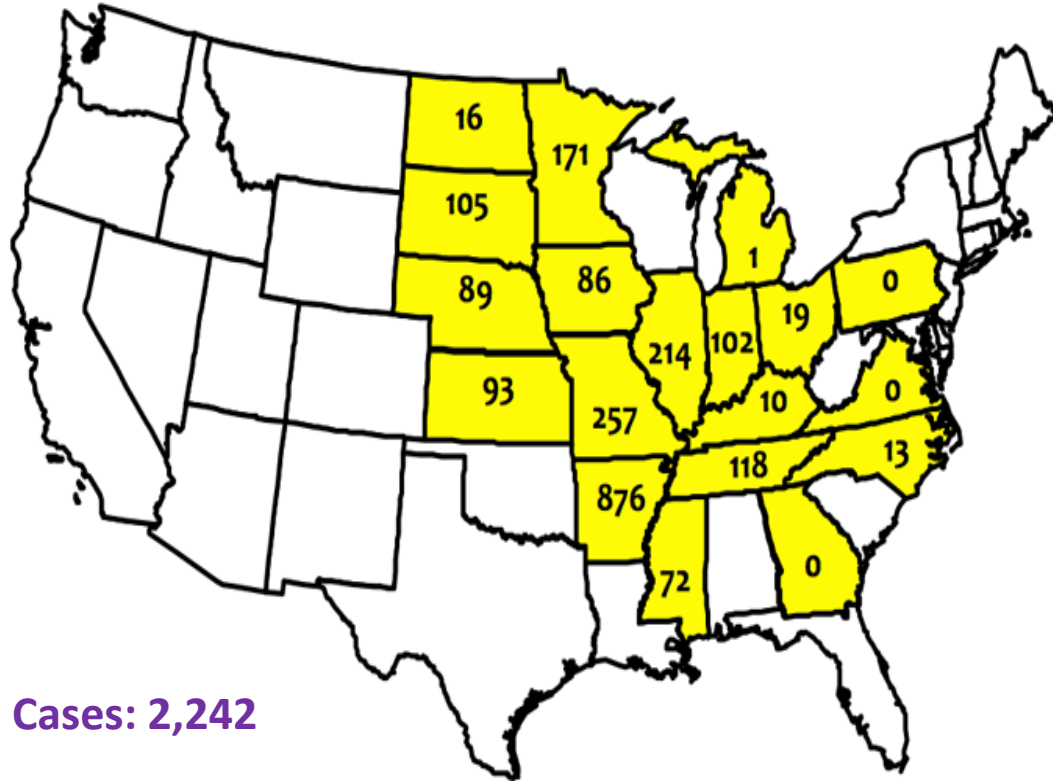


Dicamba and 2,4-D Crop Adoption

- Adoption of Enlist and Xtend crops in the South
 - Cotton – 90% of total acreage
 - Soybean – 80% of total acreage
- Why such high adoption?
 - Great germplasm
 - In season option for controlling tough weeds
- With wider adoption – numerous cases of off-target movement

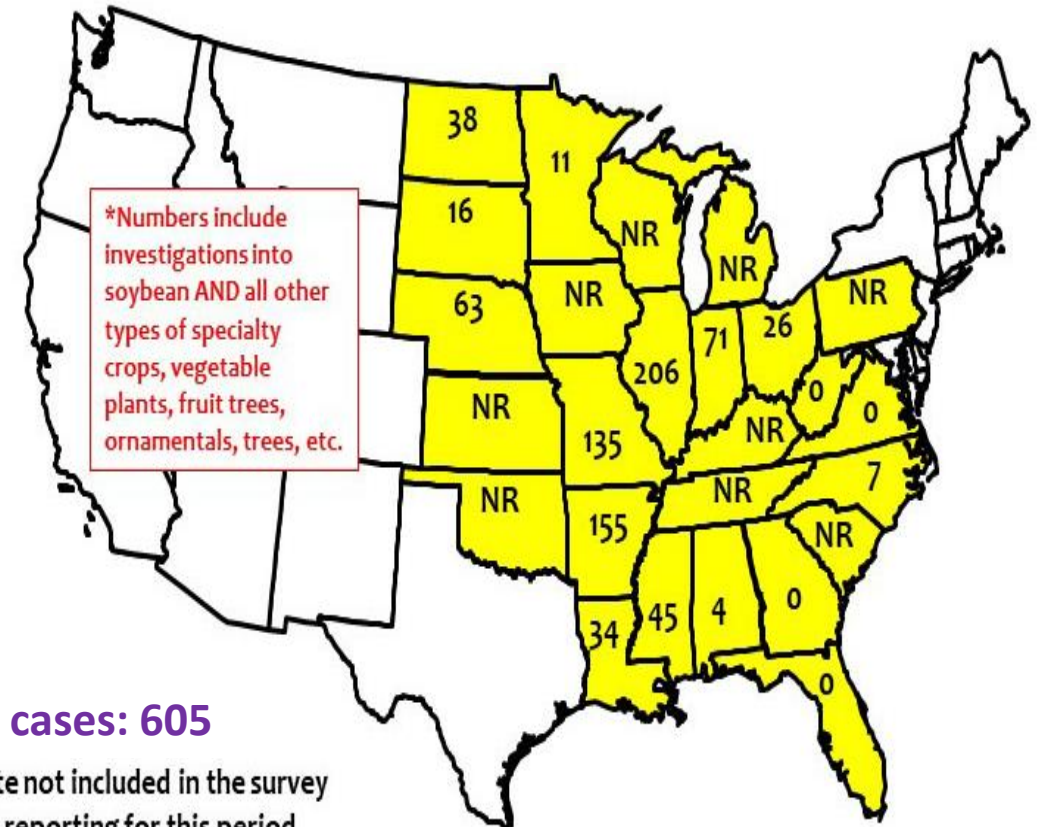
Dicamba Injury Cases

Year 2017



Total Cases: 2,242

Year 2018



Total cases: 605

□ = state not included in the survey
NR = not reporting for this period

Situation in Florida

- We are doing good in Florida
- **KEEP UP THE GOOD WORK!**
- **But Don't Think We Have It Figured Out!**
- **Keep updated with the label changes**
 - Follow label carefully

Off-Target Injury: Too Costly in Florida

Few Specialty Crop Values (Retail Value Per Acre 2014)

1. Watermelon \$9,000 to \$14,400
3. Cantaloupe (small bed mulch): \$8,666
4. Snap beans: \$2,800
5. Pepper (raised mulch): \$22,400
6. Tomato (raised mulch): \$33,600
7. Blueberry (high bush): \$10,000 (20K re-plant)
8. Pecan: \$3,000

Changes to Dicamba Label for 2019

1. Applications must be made by a certified applicator
 - Cannot be made in the presence of a certified applicator
2. Maximum of 2 over-the-top applications per year
 - Cotton: OTT applications cannot be made 60 days after planting
 - Maximum use rate of 1.0 pounds ae per acre = no more than 44 fl oz per acre per year
 - Only 2 OTT applications for cotton per year (**no 4 OTT application**)
 - Soybean: OTT applications cannot be made 45 days after planting (2 OTT application)
3. Yearly required training for all applicators of dicamba

Changes to Dicamba Label for 2019

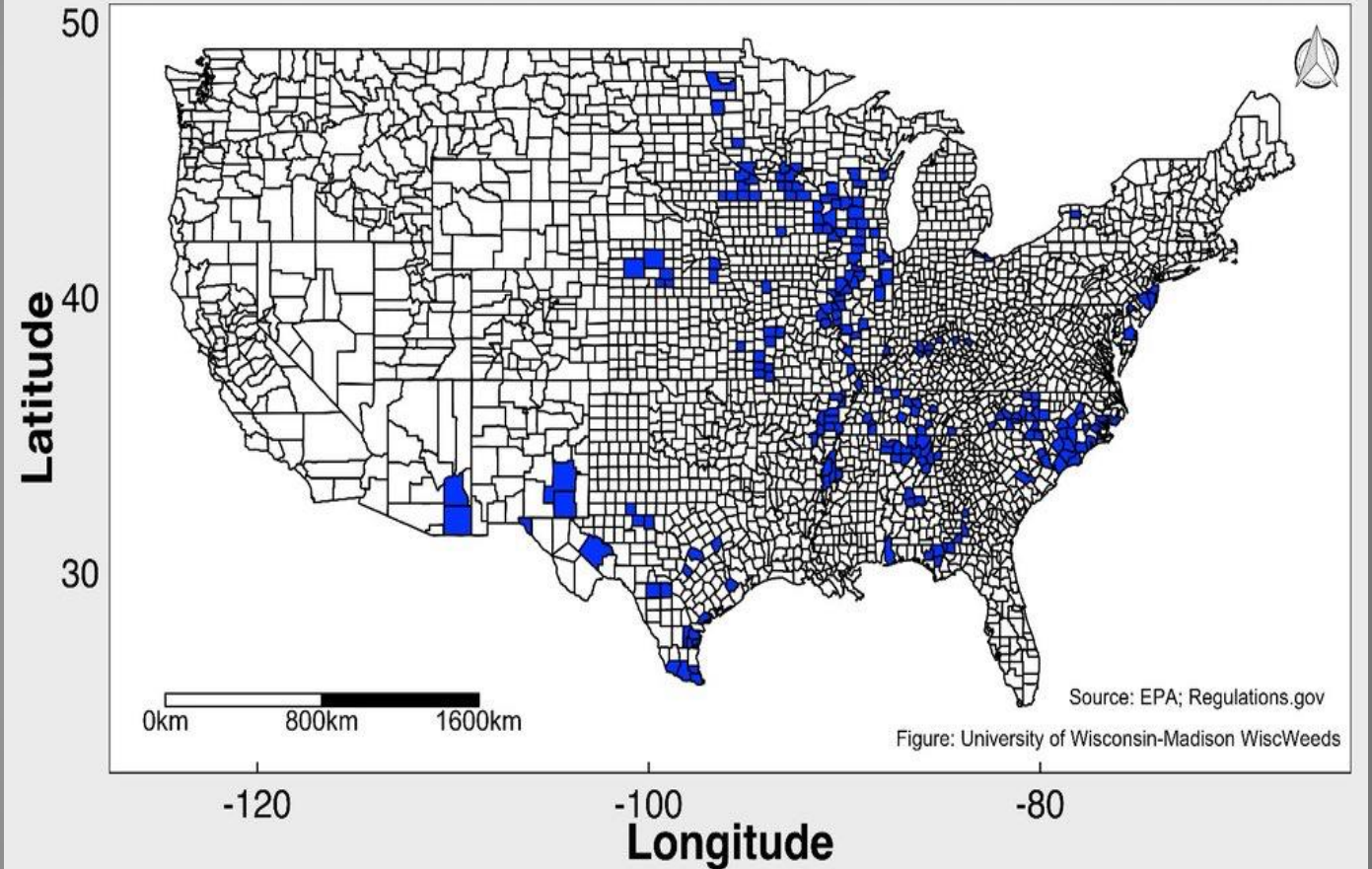
4. Applications must be made at least 1 hour after sunrise and 2 hours prior to sunset
 - Specifically to reduce likelihood of an inversion
5. Enhanced tank cleanout
6. Do not spray if rainfall within 24 hours will exceed field capacity to prevent run-off

Changes to Dicamba Label for 2019

7. Add omnidirectional buffer of 57 feet in addition to downwind buffer in counties where endangered species are present

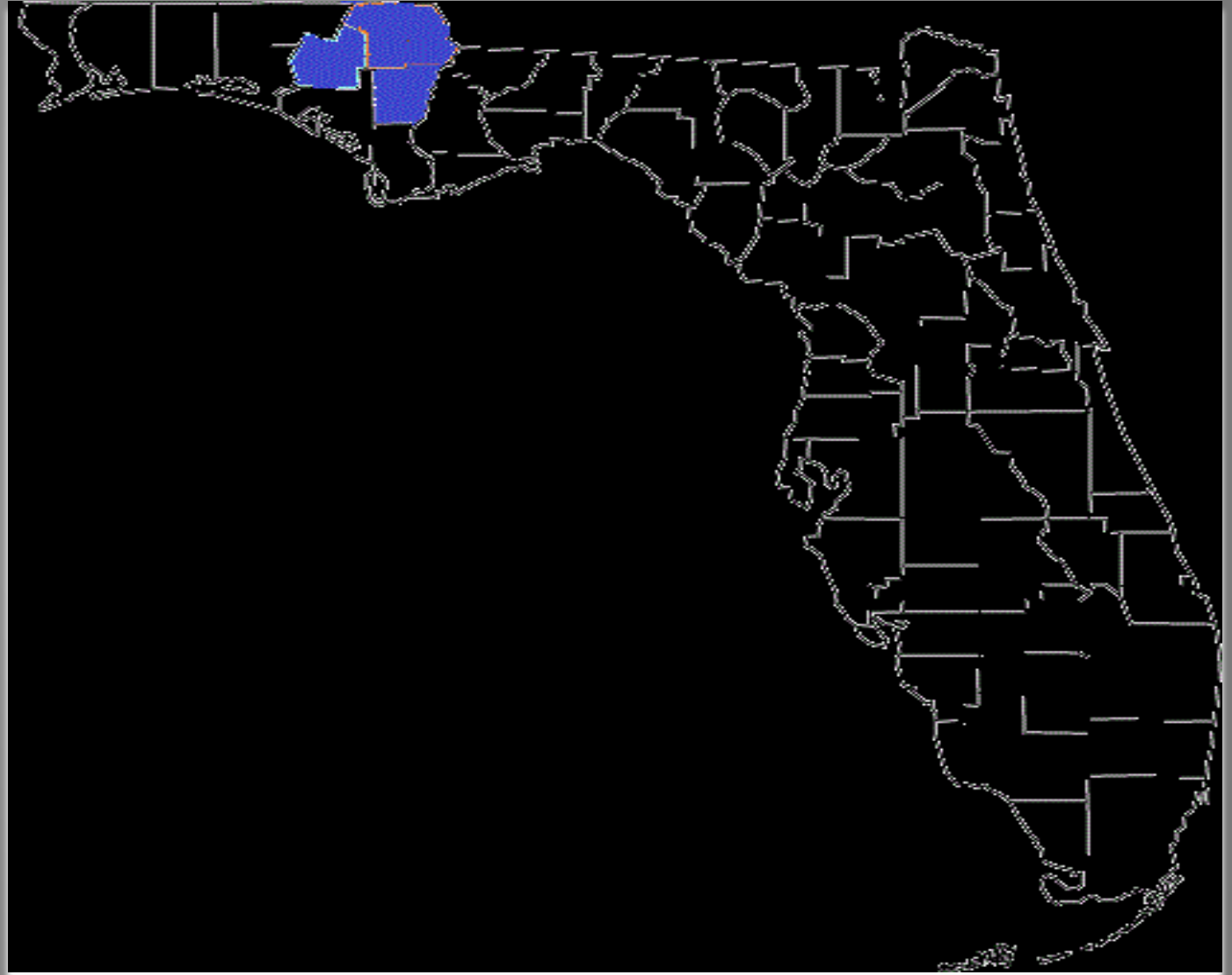
Dicamba Pesticide Use Limitation Areas - County list

US counties in which an omnidirectional 57-foot buffer must be included in addition to the 110-foot downwind buffer for dicamba applications in dicamba-tolerant soybeans to protect endangered species



Omnidirectional Buffer - Florida

- Jackson County
- Washington county
- Calhoun county
- **Need to add omnidirectional buffer of 57 feet in addition to 110 ft downwind buffer**



Additional Information

- XtendiMax[®] herbicide with VaporGrip[®] Technology (Monsanto)
xtendimaxapplicationrequirements.com
- DuPont[®] FeXapan[®] herbicide Plus VaporGrip[®] Technology
www.fexapanapplicationrequirements.dupont.com
- Engenia[®] Herbicide (BASF) Stewardship:
<http://agproducts.basf.us/campaigns/engenia/#stewardship>
Tank Mix: www.engeniatankmix.com

Main Issue is Off-Target Movement!



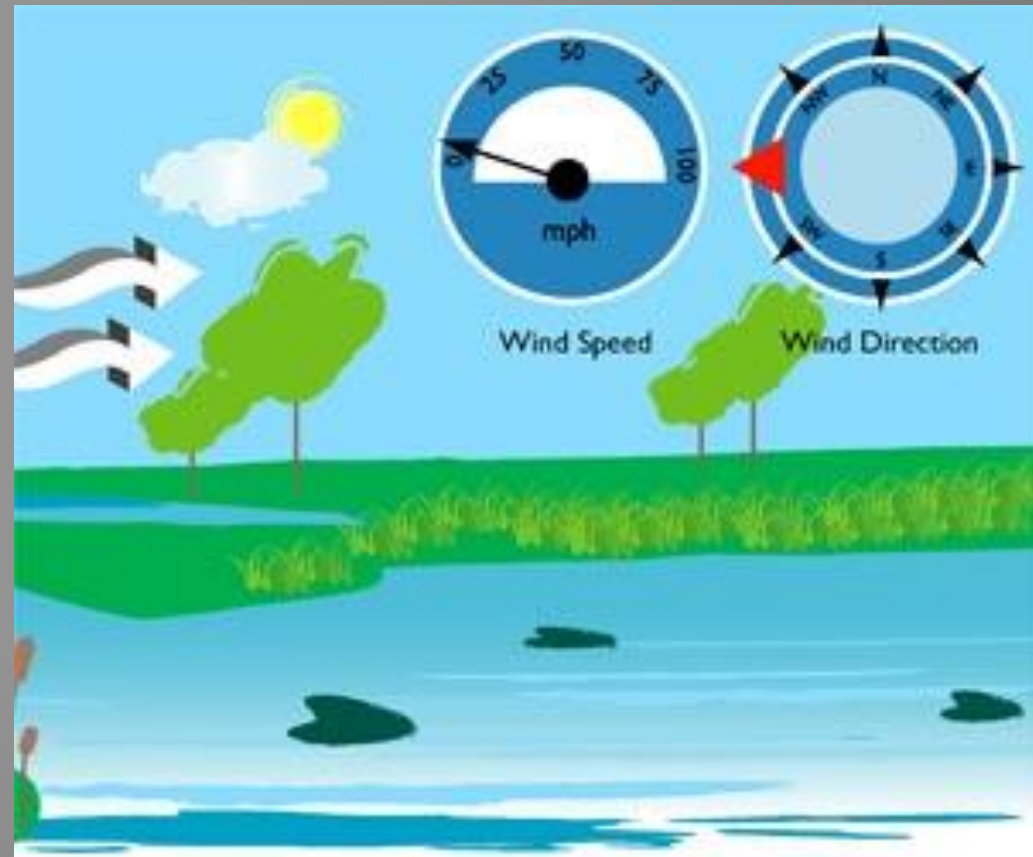
Off-Target Movement

- **Spray drift** – the movement of herbicide as **spray droplets**
 - Spray drift influenced by spray droplet size
 - Droplets smaller than 150 μm have the greatest ability to drift
- **Vapor drift** – the movement of herbicides as **gaseous vapors**
- **Particle (Dust) Drift** – the movement of herbicides as **solid particles**
- **Runoff** – surface movement off the herbicide

Off-Target Movement

Weather Factors Contribute to Off-Target Movement

- Wind speed
 - Wind direction
- Inversions
- Rainfall



Wind Direction > Wind Speed

- While labels specify wind speed limitations, any wind blowing towards a sensitive area will be a risk for drift damage
 - DO NOT APPLY when winds blowing towards sensitive area
- Watching wind direction during application is critical
- Applying within label recommendations AND following wind limitations, best way to reduce risk of off-target movement

Wind Speed and Direction



What about Wind Gusts

- Xtendimax & Engenia Label
 - Spray when winds are between 3 and 10 MPH
- Labels refer to average wind speeds
- While spraying at 10 MPH - wind gusts might be >10 MPH

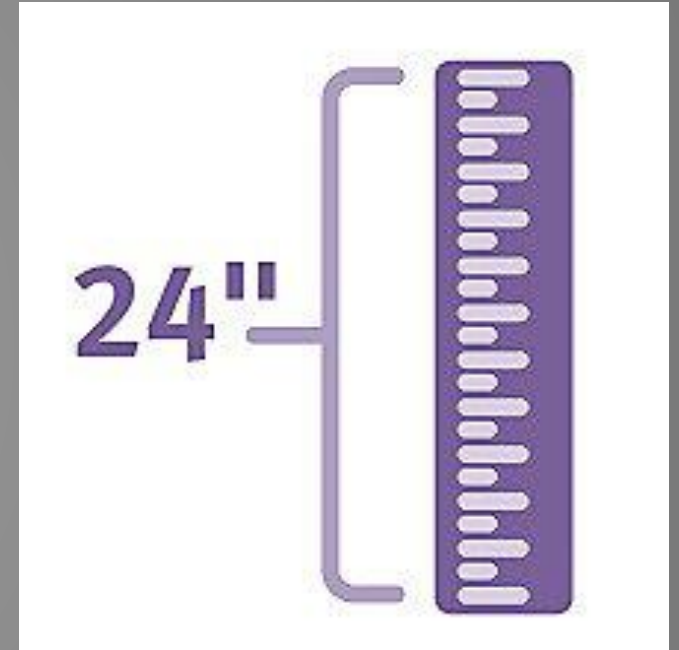
Things to Remember for Dicamba Application



Low drift
nozzles



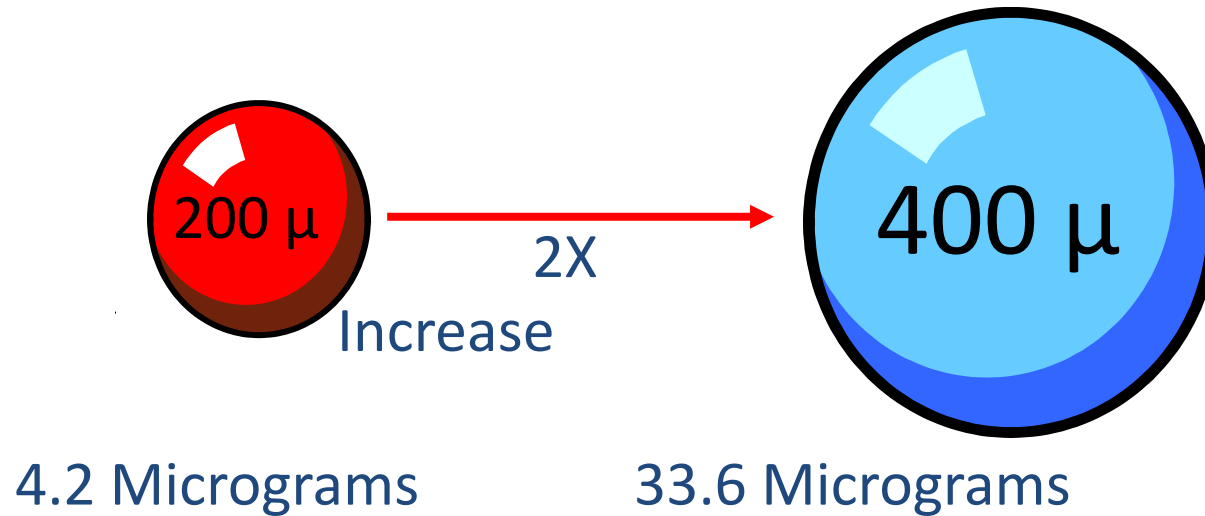
15 MPH max
sprayer speed



Boom height
24" - max

Droplet Size to Weight Relationship

Result of Doubling the Diameter of a Spray Drop



2X Increase in Diameter Equals 8X Increase in Weight

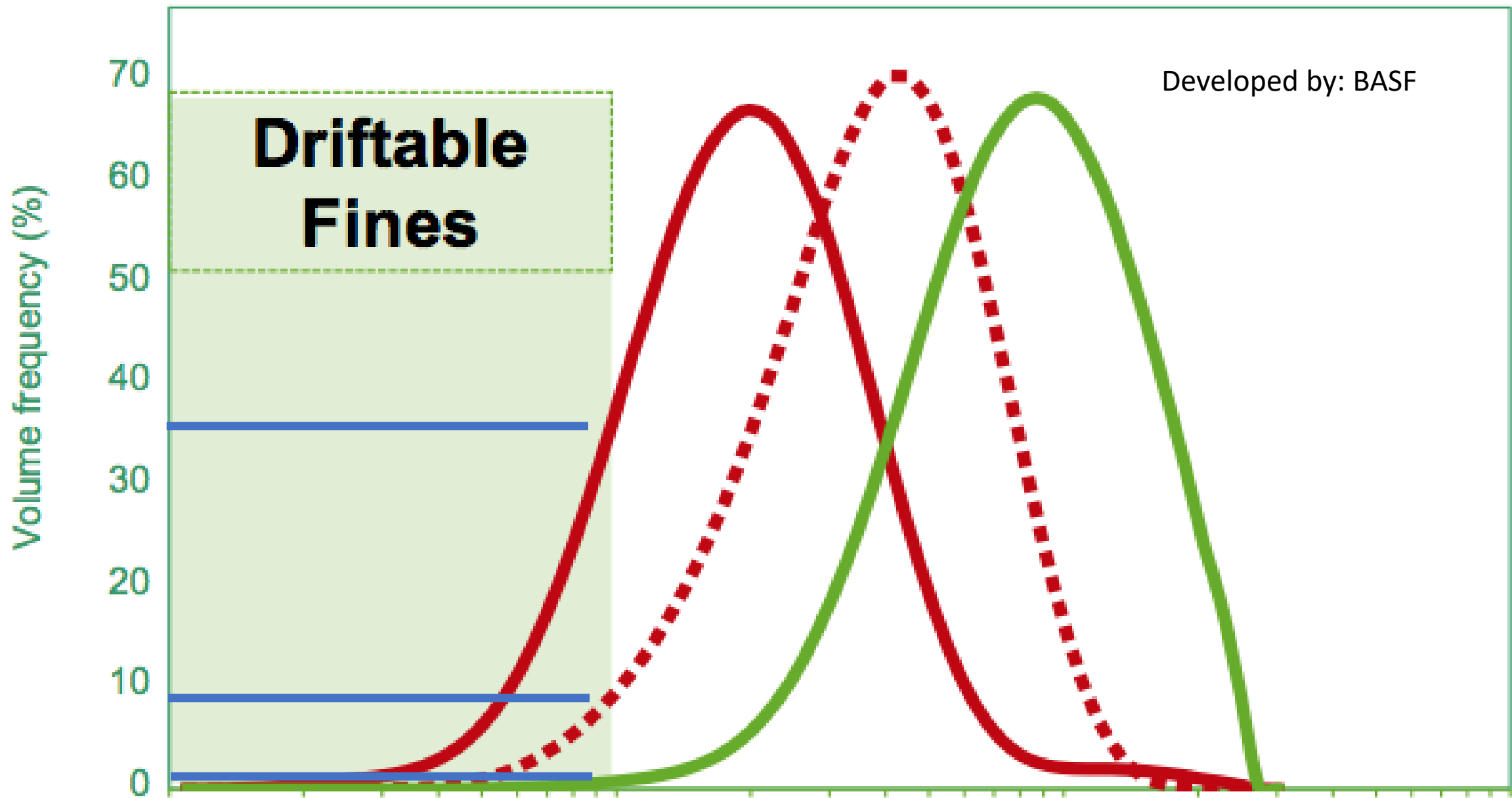
Droplet Size and Travel Distance

Droplet	Diameter (in μm)	Time to fall 10 ft	Travel distance in 3 mph wind
Fog	5	66 min	15,840 ft
Extremely fine	20	4.2 min	1,100 ft
Fine	100	10 sec	44 ft
Medium	240	6 sec	28 ft
Coarse	400	2 sec	8.5 ft
Fine rain	1,000	1 sec	< 5 ft

XR 11004

AIXR 11004

TTI 11004



Developed by: BASF

Nozzles

- Various options to choose
- BASF – about 13 options
 - <http://agproducts.basf.us/campaigns/engine/tankmixselector/>
- Monsanto – about 26 choices
 - <http://www.xtendimaxapplicationrequirements.com/Pages/nozzles.aspx>
- DuPont – about 26 choices
 - <http://www.dupont.com/products-and-services/crop-protection/soybean-protection/articles/nozzle.html>



DEMONSTRATION ON IMPORTANCE OF PROPER NOZZLES



RATE: 0.5lb ae/acre dicamba

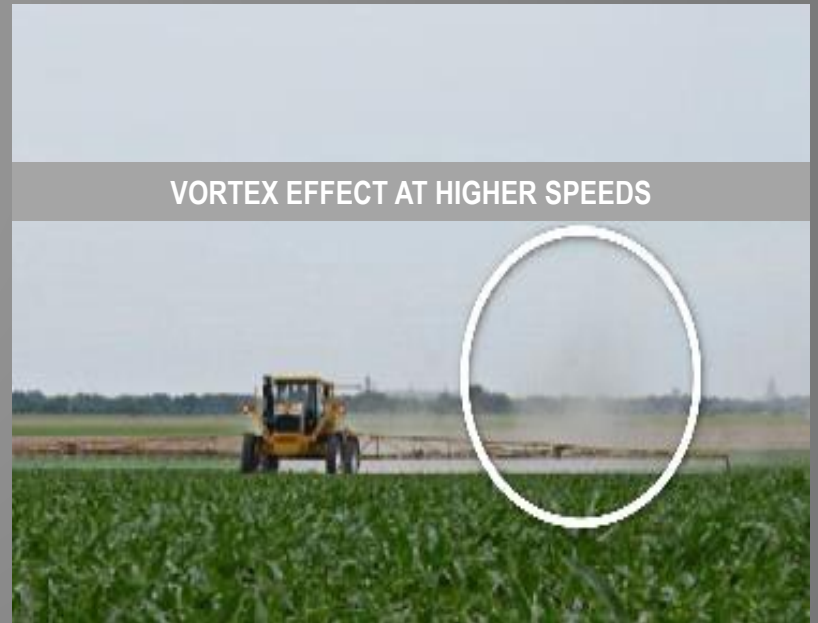
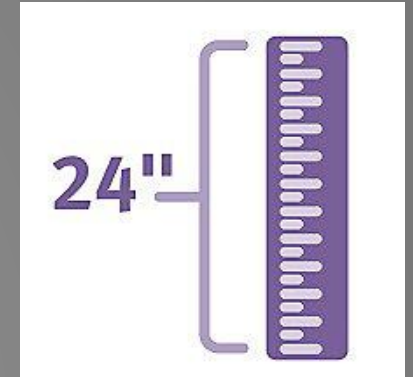
Large Droplet Will not Work for Other Herbicides

1. Paraquat mixtures
2. Liberty
3. Reflex, Storm, etc.
4. Insecticides
5. Fungicides



Sprayer Speed and Boom Height

- 15 MPH and 24" above the canopy
- Lower speed at field edges



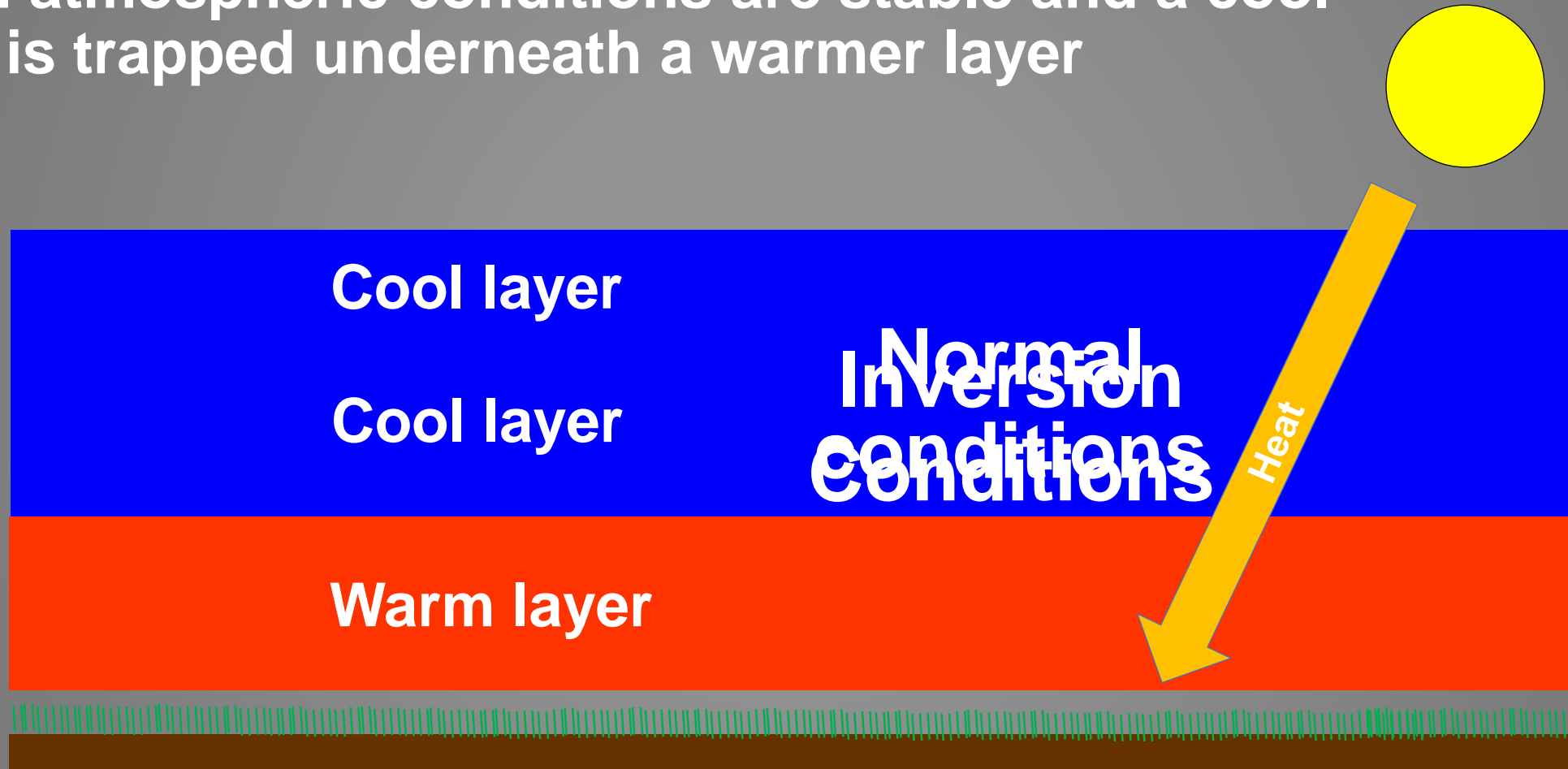
Cleaning the Sprayer

- Follow the label.
- Proper tank-cleanout procedure
- DO NOT allow herbicide to sit in the lines

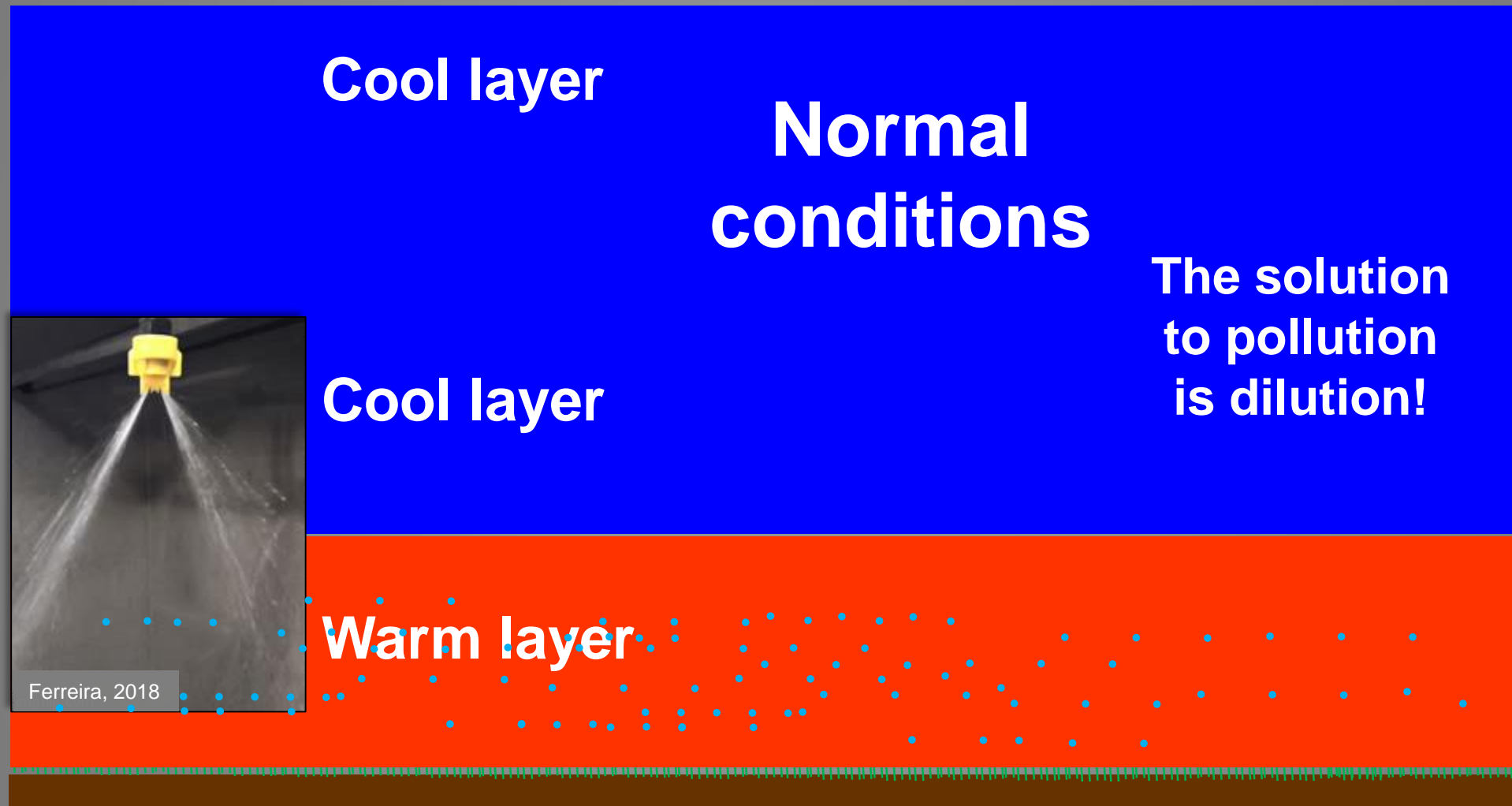


Inversions

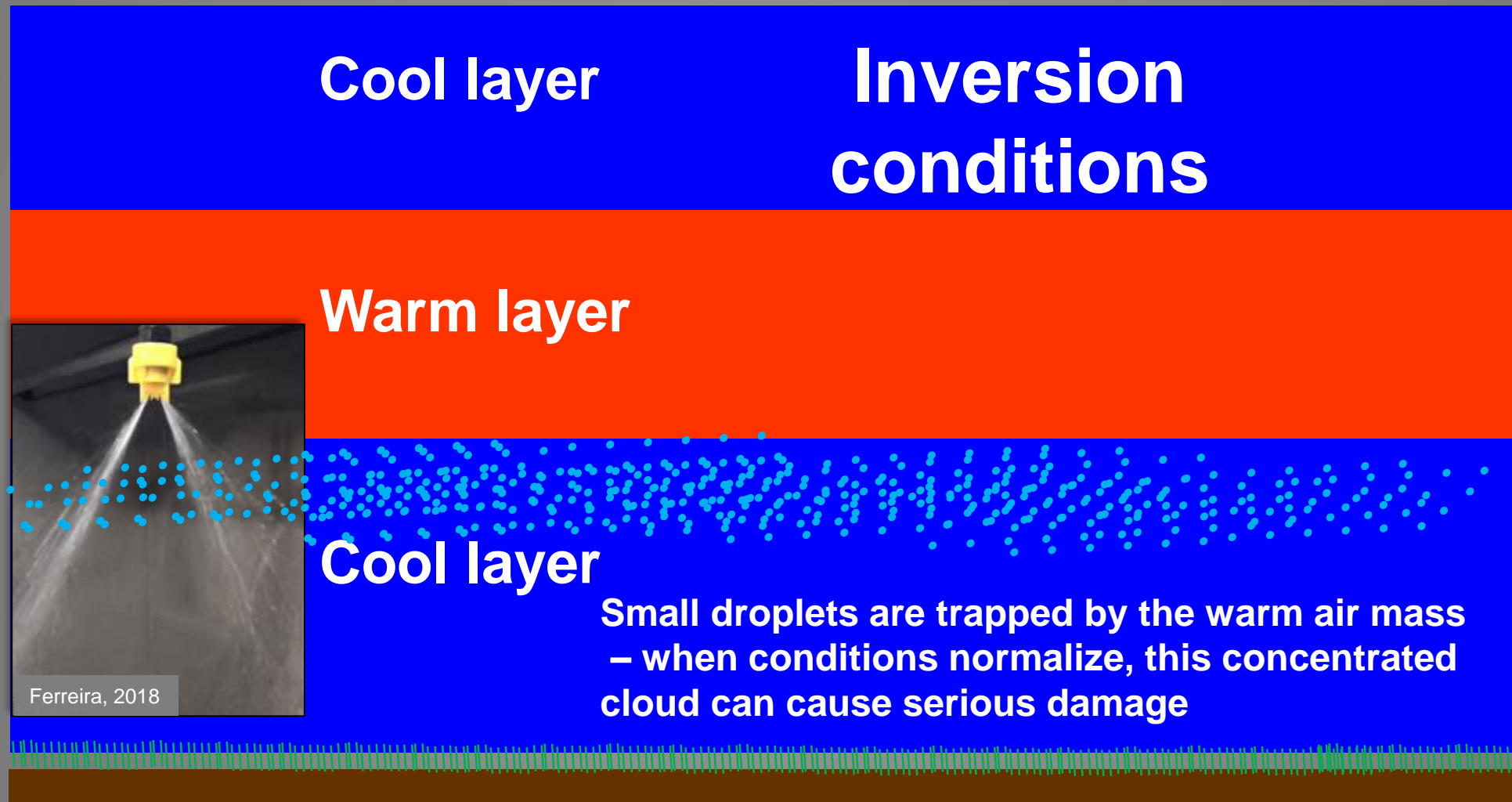
- When atmospheric conditions are stable and a cool layer is trapped underneath a warmer layer



Spraying in Normal Conditions



Spraying in an Inversion



Inversions Always Exist

- Inversions are a risk when they are low lying
- High lying inversions are always there, but unless aerially applying, high level inversions do not affect application
- Thus when we talk about inversions, we mean low lying inversions

Is It an Inversion Condition??

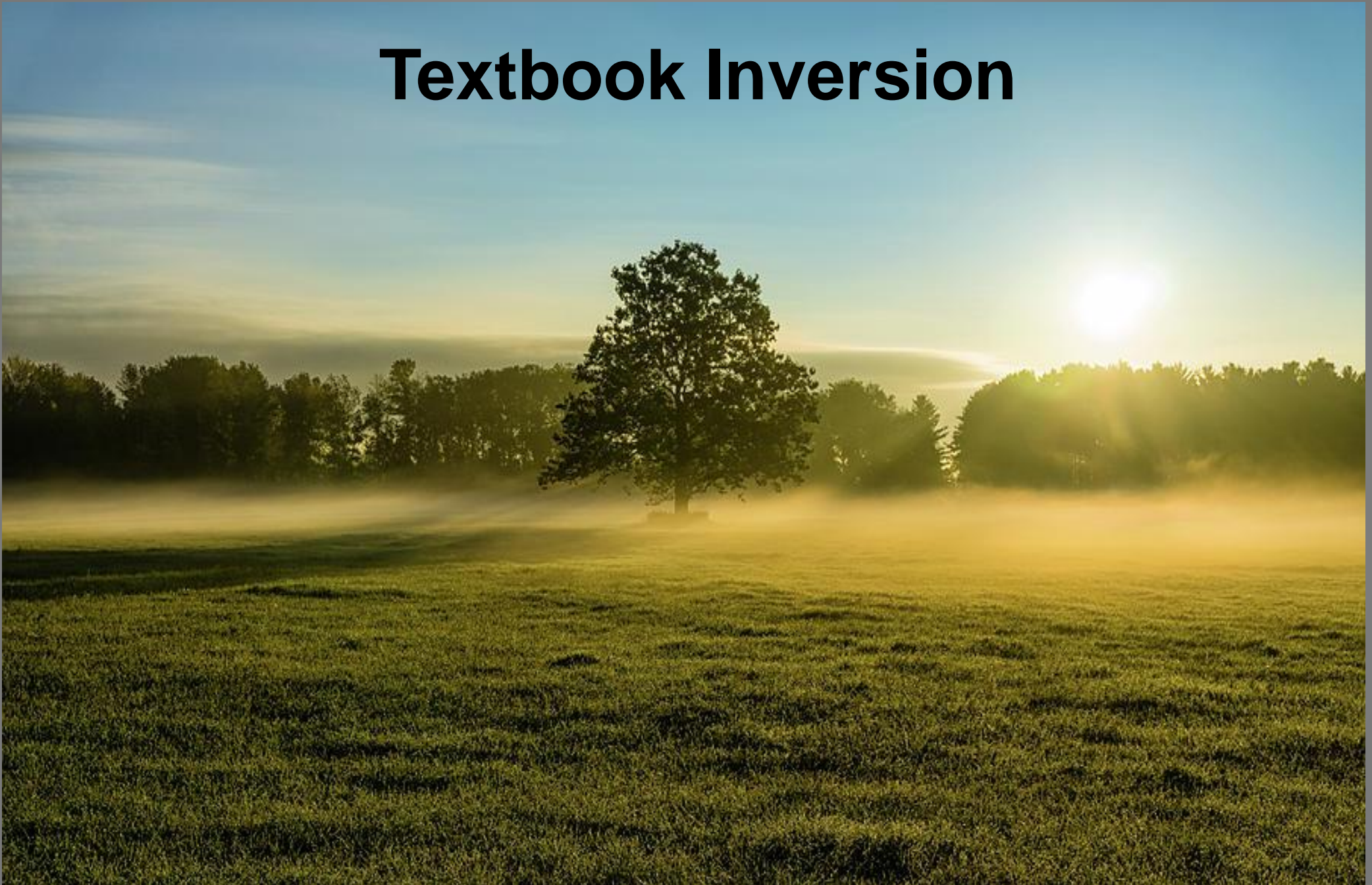
1. What time of day
 - Sunrise just happened < ----- > Sunset about to occur
2. Is there dew on the ground?
 - Presence of dew indicates cool conditions near ground
3. Is visible layers of fog present?
 - Not the same thing as a foggy day

Not likely an inversion



Source: Dr. Connor Ferguson

Textbook Inversion



Fog and Dew -- can be both/and



Source: Dr. Connor Ferguson

You Need to Place Your Fields in 3 Groups

- Dicamba always fields
 - Bordered by your own fields, surrounded by pasture, etc.
- Dicamba maybe fields
 - Sensitive crops are in the area, but not close. Application of dicamba depends on wind speed and direction.
- Dicamba never fields
 - Bordered by sensitive crops that are owned by a contentious neighbor.

Take Home Messages!

1. The best way to reduce off-target movement is to apply following all aspects of the label
2. Check conditions for inversion
3. Wind direction and wind speed can be the difference in being able to spray or not
 - Check for changes in wind speed and direction during the spraying course
4. Factor your field situation and surrounding contexts
5. Ok to apply dicamba products:
 - Take action to prevent unwanted (in some cases legal) consequences

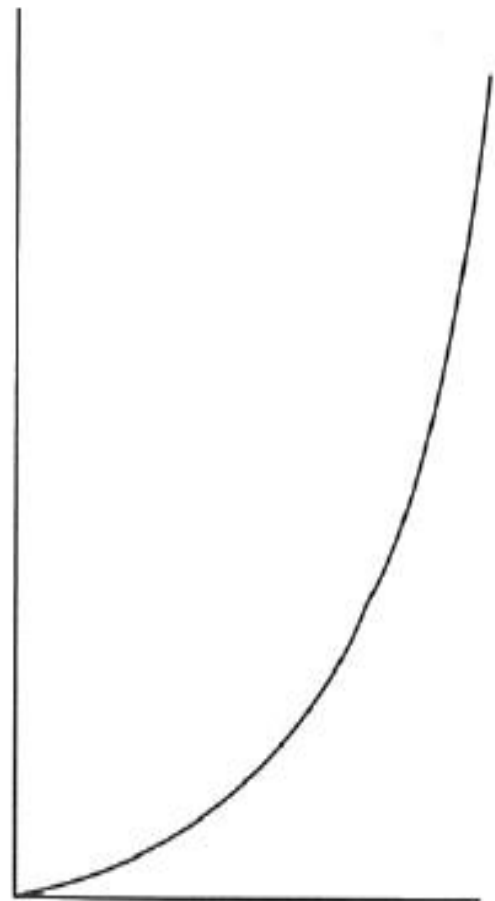
Thank you!

Pratap Devkota

Extension Weed Scientist

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Height



Windspeed

Airflow

