





## Herbicide Drift Management (DRT) John Frieden

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# Wilbur-Ellis Company and DRT

#### **Wilbur-Ellis Company and DRT**



- Leader in custom spray application from 161 branches in 26 states
- Own and operate 1,000 towed spray rigs, 385 self-propelled units, and the nation's largest fleet of aerial application equipment
- Herbicide drift reduction technology and strategies have been a major focus of W-E adjuvant technology for 22 years, including wind tunnel research to improve herbicide A.I. efficiency, and reduce drift







#### **Wilbur-Ellis Company and DRT**



- W-E is a privately held company, founded in 1922.
   #4 in the CropLife 100
- Goals for adjuvant research and DRT include improving A.I. performance while mitigating / reducing DRIFT.
  - Deposition on average a 20% increase
  - Spreading
  - Sticking
  - Penetration
  - Reducing sub 105 micron spray particles
  - Nozzle selection



### <u>D</u>rift <u>R</u>eduction <u>T</u>echnology

#### **Drift Reduction Keywords**



**Drift**Movement of spray solution to non-targeted area

**Driftable Fines** Particle sizes less than 105 microns

**VMD** Volume Median Diameter = droplet size from nozzle

Speed Rate of equipment speed

Weather Ambient conditions that are not controlled by applicator

Crop Oils COC, MSO technologies (Micro/Macro emulsions, Invert

suspensions)

Polymers Synthetic (polyacrylimide), Natural (guar)

#### DRT – WHY NOW?



- Auxin Genetics primary mitigation for Glyphosate Weed Resistance.
  - No effect levels for most auxins very low.
  - High level drift control is essential for stewardship of these A.I.'s on increased spray acres.
- **GM cropping systems** are responsible for significant productivity gains in the past 10 years and will be required for

future productivity to feed a growing population.

 Planted acres for drift sensitive crops, such as tomatoes, are growing.





#### **Industry DRT Focus is on What We Can Control:**

- Nozzle Choice and sprayer operating parameters
- Reduced Volatility formulation
- Buffer Zones

#### Wilbur-Ellis DRT Extended Focus is:

Matching "Best in Class" DRT adjuvant to the A.I.,
 Nozzle, operating parameters and weather conditions

#### Need for DRT.....BY THE NUMBERS:



- 9,000 % increase in GM acres from 1996 to 2011 worldwide
- **94** GM % of all soy, 2011 US USDA NASS
- **72** GM % of all corn, 2011 US USDA NASS
- **74** GM % of all cotton, 2011 US USDA NASS
- 2050 Year global food production will need to reach a 70% increase from 2011 levels
- 20 % of row crop growers who know only GM systems

#### Need for DRT.....BY THE NUMBERS:



- 200+ Herbicides for GM systems carry drift control advisories
- 73 Resistant weeds as of Fall 2013
- MOAs effected by weed resistance
- Pending GM Systems with auxin-responsive herbicides –
   2,4-D and dicamba -- Dow, BASF, Bayer, Monsanto



#### Wilbur Ellis DRT Research....BY THE NUMBERS:



- 23 years of wind tunnel & drift tunnel testing (Bagley)
- tunnels New Mexico State Univ, the United Kingdom,
  Queensland, Australia and Univ of Nebraska, North Platte
- >1,000,000 acres research support through air and ground application

Univ. of Nebraska, North Platte Wind Tunnel. Completed in 2012, for evaluating both ground and air application



## DRT – State of the Industry



#### **DRT** Adjuvant Classes

- **Polymers** Natural and Synthetic and Spray thickeners
  - EDT
- Oil Emulsions Micro and Macro
  - Crosshair and Interlock
- Invert Suspensions Encapsulators
  - InPlace



#### **DRT** Adjuvant Classes

Invention is still required. Best case drift control for Auxin A.I.'s =

Air Induction (coarse to very coarse nozzle)+40 PSI+10 gpa+max 15mph+Invert suspension adjuvant. Still have .2-.3% sub 105 microns (driftable fines).

Zero is the target.



## Summary

## So what does any of this have to do with Pesticide Stewardship??



- •GM systems...in particular current glyphosate crop systems are important to the highly productive agriculture today.
- •These crop systems are in jeopardy due to WEED resistance.
- •The foundation of resistant weed control mitigation for now...appears to be Auxin Genetics.
- •The largest weakness of Auxin Genetics is the potential for drift of these low no-effect level herbicides.
- •Our Goal at Wilbur is to continue work towards elimination of drift of these auxin herbicides (stewardship) in order for the industry to continue to benefit by these highly productive crop systems (stewardship).

#### **P.S.**

# First Resistance media campaign appeared 15 years ago - January 1999 – Think Residual! It is time for action!



Campaign supported residual herbicides from Griffin LLC







### Thanks