

# Updates On Surfactants: Changing Familiar Products Into Better Formulations

H. Carl Sostrom  
Wilbur-Ellis Company LLC  
Natural Resources Specialist  
Spokane, WA

Cell: (509)990-3396  
Office: (509)928-4512  
[csostrom@wilburellis.com](mailto:csostrom@wilburellis.com)



WILBUR-ELLIS®



---

WILBUR-ELLIS®

Ideas to Grow With®





Our scientists were given a difficult problem  
ECO ADVANTAGE product name

All new products will be aquatic labeled, NPE (Nonylphenol Ethoxylates) free and safer for applicators. While providing a superior product with less impact on the land.

Ideas to Grow With®



TM

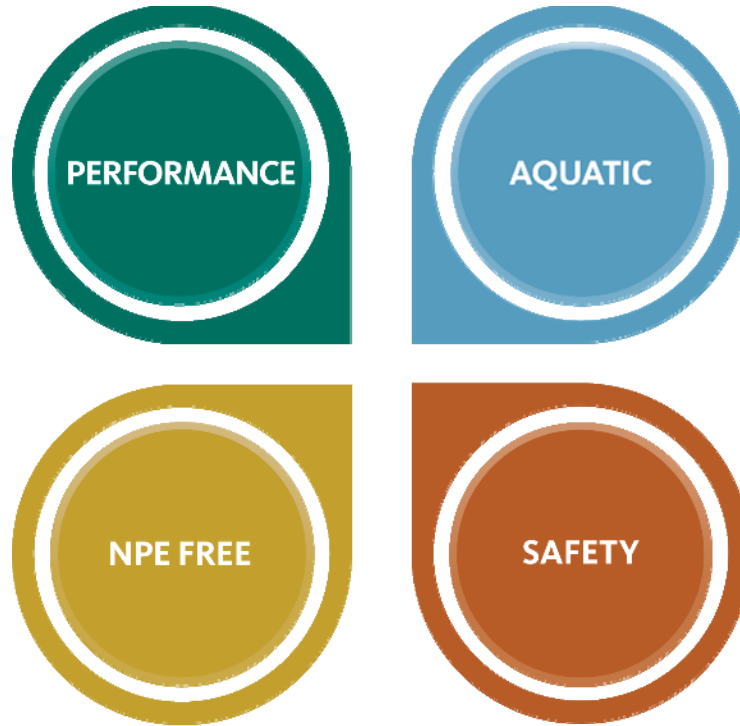
Eco *Luxury* Vodka

Materials.





# ECO ADVANTAGE™



Ideas to Grow With®





# ECO ADVANTAGE™

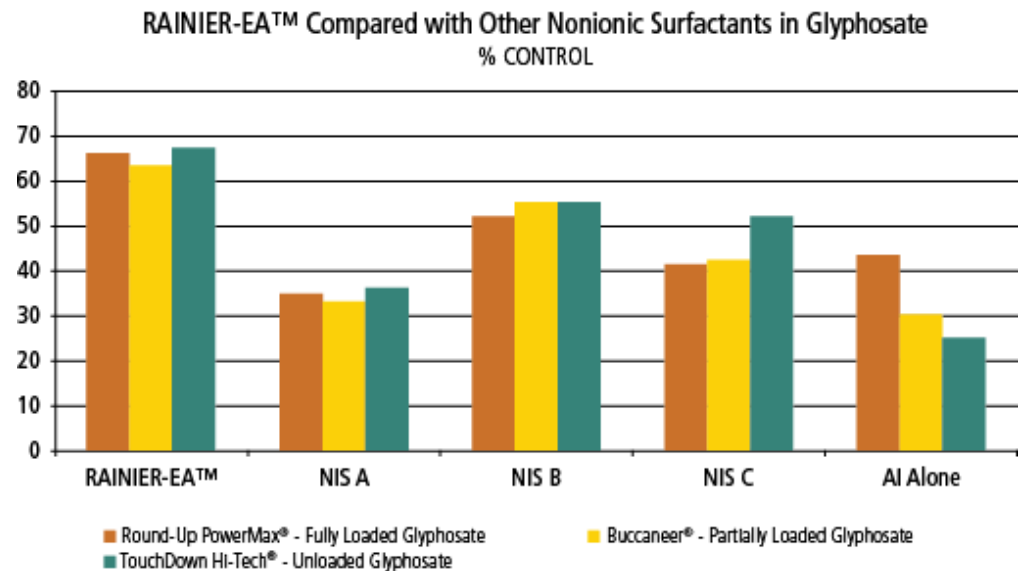
The newest portfolio of premier adjuvants.

All **ECO ADVANTAGE** products have the four EA pillars in order to provide a superior product with less impact on the land.



**ECO ADVANTAGE** products have as good as or better performance than non-EA products.

- Critical for the success of EA
- It's "green" AND it works!
- Up to 20% improvement with Rainer-EA™ over other products



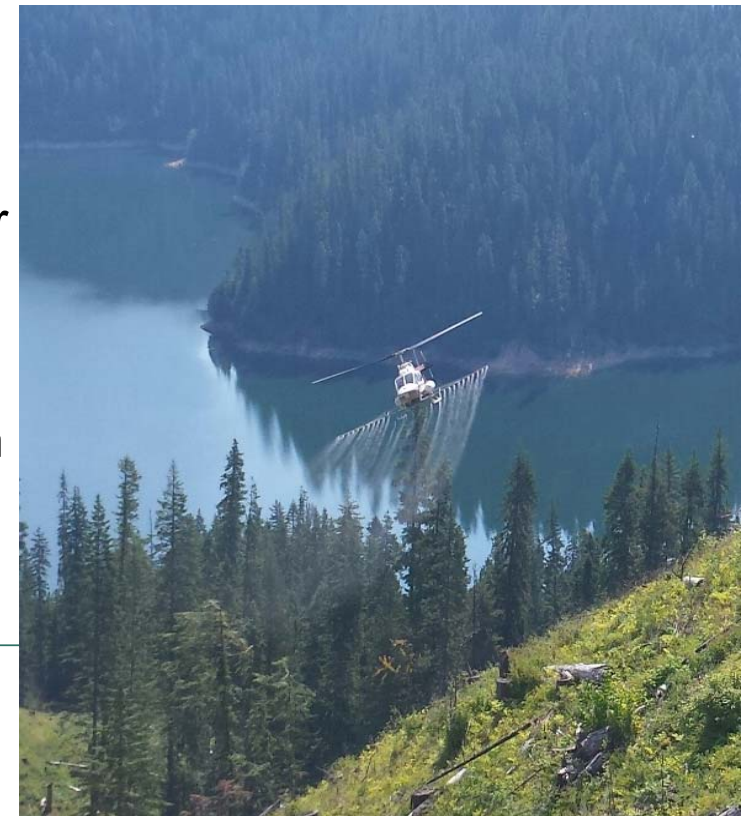
**Multi-Species applied at sub lethal dose, 12-24" tall weeds in 8 GPA  
Dr. Zollinger, NDSU 2013**



All **ECO ADVANTAGE** products are approved for aquatic use!

What does an aquatic rating mean?

- Safe for use in and around bodies of water
- Allows for broader use
- No limitations from runoff or contamination







Improved safety handling means all **ECO ADVANTAGE** products have:

- Undergone rigorous testing, submitted for state registration
- Signal word "Caution" vs. "Warning" or "Danger"
- Lower eye toxicity
- No special handling equipment required
- Reduced PPEs





Many Wilbur-Ellis customers are impacted by the ability (or inability) to export products to other countries because they ban NPEs.

What are NPEs and why are they important?

- Nonylphenol Ethoxylates
- Effective wetting agents, dispersants and emulsifiers
- European ban, restrictions in Canada, Central and South America
- No restrictions in U.S. at this time



- **NPE (nonylphenol ethoxylates) Free**
  - NPEs are effective wetting agents, dispersants and emulsifiers.
  - NPEs are primarily used as surfactants in many common cleaning agents and are found in both household products and agricultural chemicals.
  - Europe has banned the use of NPEs and Canada has restrictions on their use.
  - At this time, there are no restrictions against using NPEs in the United States, however, at some time in the future NPEs may no longer be allowed, and alternatives will be needed.

# SPRAY LIKE YOU MEAN IT.<sup>®</sup>

## What Does It Mean To You?



### Wilbur-Ellis NPE Free Products

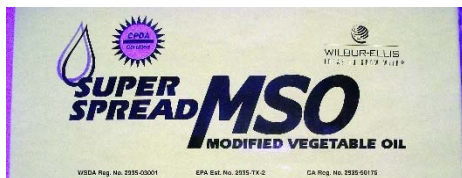
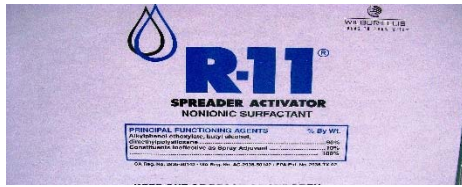
- Advantage<sup>®</sup>
- Brimstone<sup>™</sup>
- Bronc<sup>®</sup>
- Bronc<sup>®</sup> Max
- Bronc<sup>®</sup> Plus Dry
- Cayuse<sup>®</sup> Plus
- CLIMB<sup>®</sup>
- Competitor<sup>®</sup>
- CROSSHAIR<sup>™</sup>
- FTF DEFOAMER<sup>™</sup>
- High Load<sup>®</sup>
- IN-PLACE<sup>®</sup>
- NIS-EA<sup>™</sup> (Rainer-EA<sup>™</sup>)
- R-900<sup>®</sup>
- Reguard<sup>®</sup> O
- Renegade<sup>®</sup> 2.0 (Renegade-EA<sup>™</sup>)
- SYL-COAT<sup>™</sup>
- SYL-TAC<sup>™</sup>
- Tri-Fol<sup>®</sup>

Ideas to Grow With<sup>®</sup>

# What Are The Wilbur-Ellis Recommendations ?

# CURRENT CHOICES

# ECO ADVANTAGE™



 ADJUVANTS  
*NPE Free Surfactant*

**RAINIER-EA™**

 ADJUVANTS  
*NPE Free Oil*

**SYL-TAC-EA™**

 ADJUVANTS  
*NPE Free Oil*

**HASTEN-EA™**

 ADJUVANTS  
*NPE Free Surfactant*

**DENALI-EA™**

Ideas to Grow With®



# RAINIER-EA™

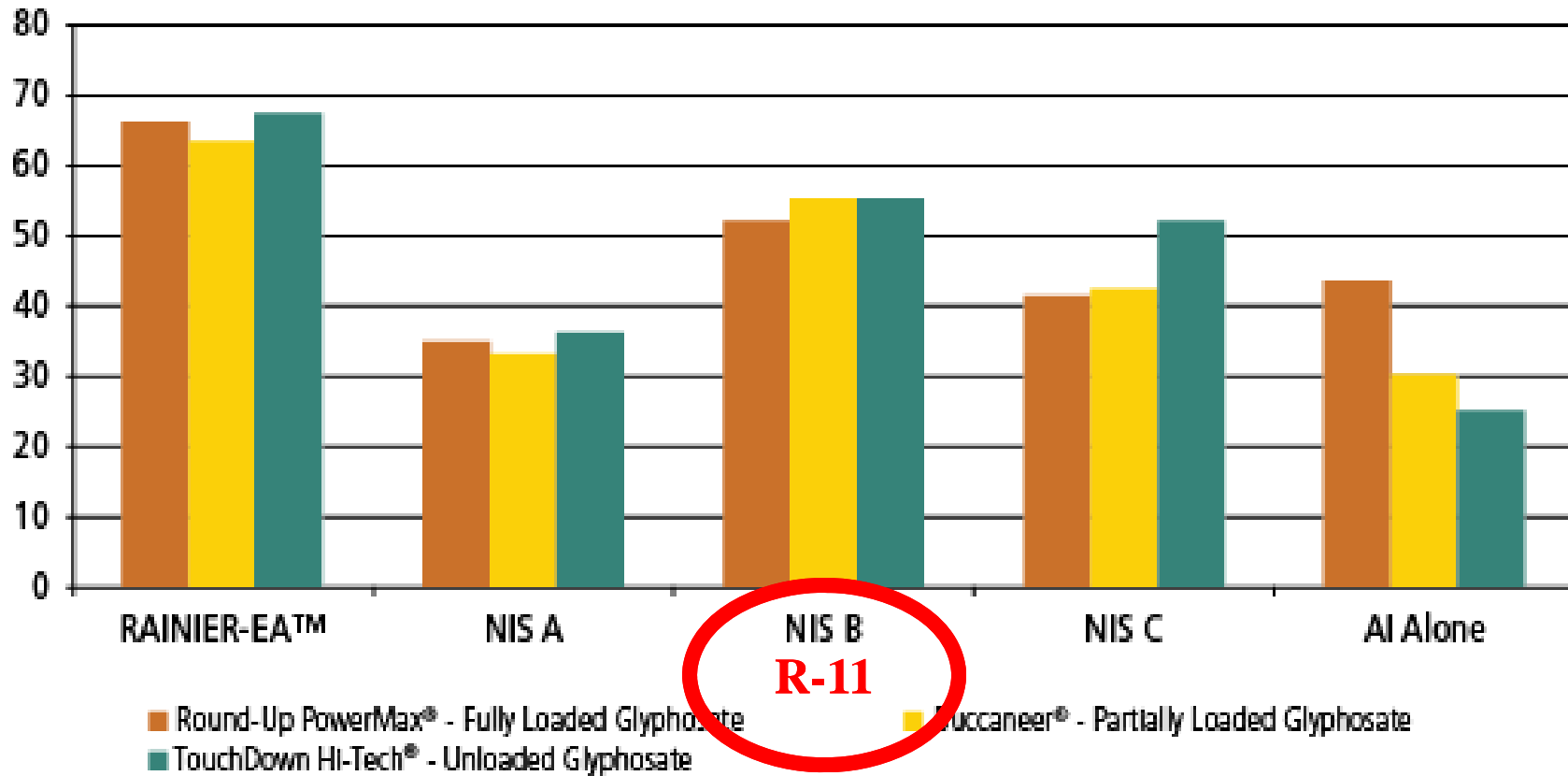
**RAINIER-EA** is part of the ECO ADVANTAGE platform that provides outstanding efficacy, approved for aquatic use, improves safety and handling and is NPE free.

**RAINIER-EA** is designed for use where quick wetting and uniform coverage is required and increases the efficacy of various agricultural chemicals.

## **RAINIER-EA Benefits:**

- **High load surfactant 88%**
- Approved for aquatic use
- Improves wetting and allows for uniform coverage
- **Increases absorption and translocation of systemic products**
- NPE Free

## RAINIER-EA™ Compared with Other Nonionic Surfactants in Glyphosate % CONTROL



Multi-Species applied at sub lethal dose, 12-24" tall weeds in 8 GPA – Dr. Zollinger, NDSU 2013





## R-11<sup>®</sup>



- 90% NIS (Non-Ionic Surfactant)
- 80% adjuvant per CPDA Registration
- Spreader-Activator
- Quick spreading and uniform coverage
- Increases absorption and translocation
- Reduces the dynes/cm to the 30's
- Standard NIS at Oregon State University, University of Idaho and North Dakota State University
- Excellent performance across a range of conditions for over 35 years
- CPDA Certified
- **Add it to the spray water last.**

Ideas to Grow With<sup>®</sup>

# NIS Comparison

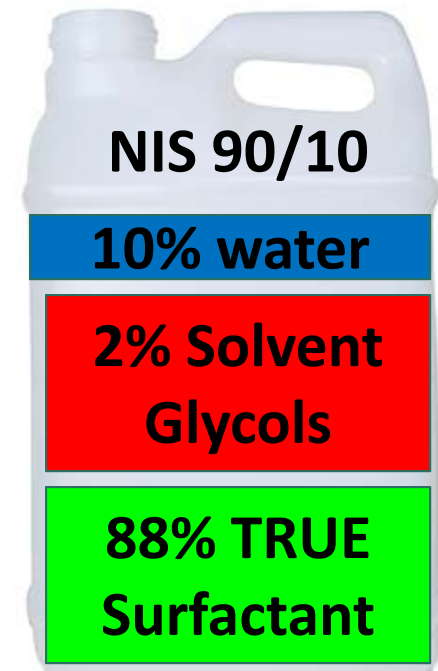
## SOLVENT or SURFACTANT?



**R-11<sup>®</sup>**



**RAINIER-EA<sup>™</sup>**



Ideas to Grow With<sup>®</sup>



## Farwell Texas Adjuvant/RUPM Trial:

- 2-replicated studies 26 and 21 reps: 5/20/14 and 6/24/14
- All plots 10' X 100'
- All 10 GPA @ 40 PSI. Nozzle: flat fan.
- Conditions: #1 hot, dusty and dry. #2 wet and high humidity.
- Weeds: #1 Kochia, Russian Thistle and Mares Tail. #2 Pigweed, grass, Russian Thistle and Kochia.
- All 24 OZ/ac of RUPM: **show the efficacy of the adjuvant.**
- Applied in Non-Crop/burn-down.

# Rainier-EA VS R-11



**2.5 oz. / ac.**

**3.2 oz. / ac.**

**Kochia, Russian Thistle, Mares Tail  
24 oz. / ac. Roundup PowerMax - 10 GPA 40 PSI  
10 DAT**



Ideas to Grow With<sup>®</sup>



# Rainier-EA VS R-11



**2.5 oz. / ac.**

**3.2 oz. / ac.**

**Pigweed, grass, Russian Thistle, Kochia  
24 oz. / ac. Roundup PowerMax – 10 GPA 40 PSI  
11 DAT**



Ideas to Grow With®



**ADJUVANTS**  
*NPE Free Surfactant*

# RAINIER-EA™

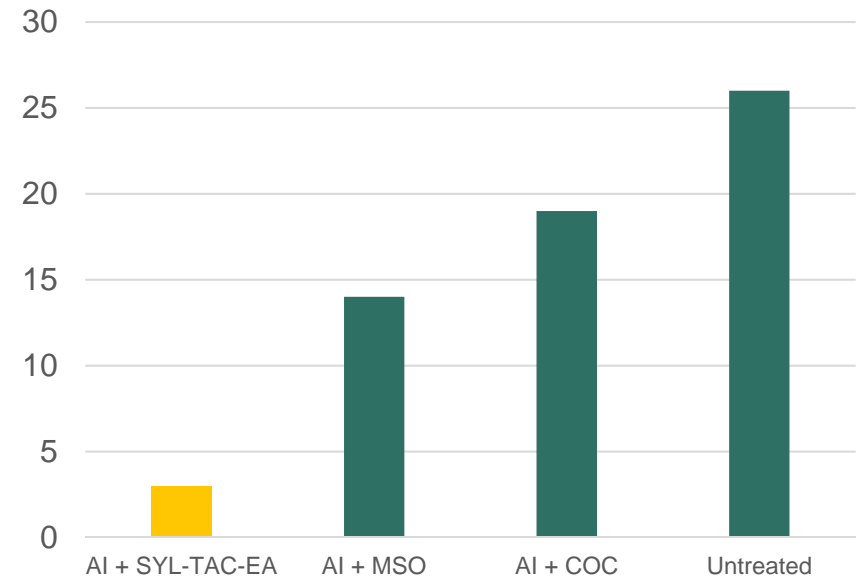
- **Features & Benefits:**
- High load surfactant
- Approved for aquatic use
- Improves wetting and allows for uniform coverage
- Increases absorption and translocation of systemic products
- NPE Free



  
**ADJUVANTS**  
*NPE Free Oil*  
**SYL-TAC-EA™**

**Aphid Count – 8 DAT**  
Adjuvant with Active Ingredient

- **Features & Benefits:**
- Excellent spreading, wetting and penetration properties
- Enhances insecticide/fungicide/herbicide uptake
- Use in place of conventional nonionic surfactant or crop oil concentrate
- Aquatic approved
- Improved safety & handling
- NPE Free



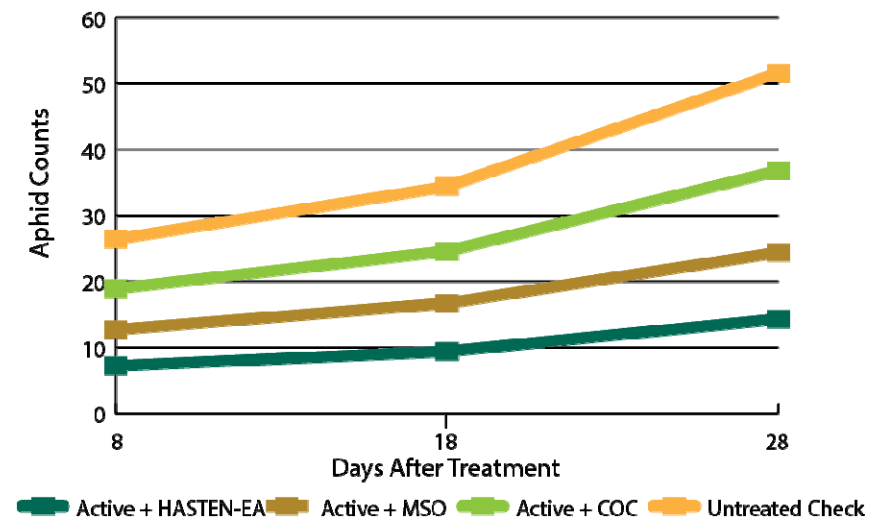
Kootenai Valley Trials – Scott Cook

**Ideas to Grow With®**

# HASTEN-EA™

- **Features & Benefits:**
- High quality formulation for consistent emulsion
- 100% esterified vegetable oil/surfactant blend
- Excellent wetting and penetrating properties
- Aids in transportation through waxy cuticle
- Minimizes separation and emulsion breakage
- Formulation contains canola oil

Aphid Counts at 3 Rating Intervals with Different Adjuvant Formulations Versus an Untreated Check

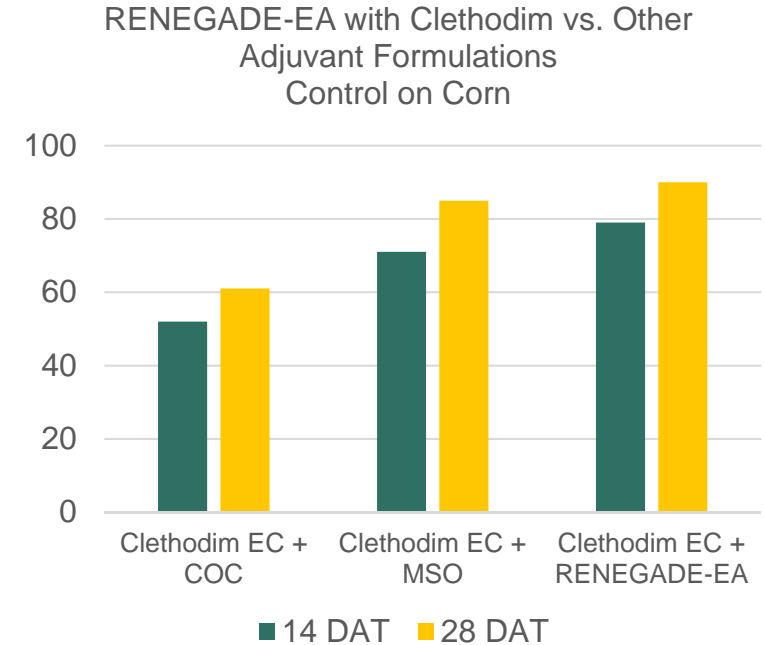




ADJUVANTS  
NPE Free Oil

# RENEGADE-EA™

- **Features & Benefits:**
- Broad use with neutral pH
- Increased MSO, improves transportation through waxy cuticle
- Improved wetting and stability in the spray tank
- Improved viscosity, especially in cold water temperatures
- NPE Free



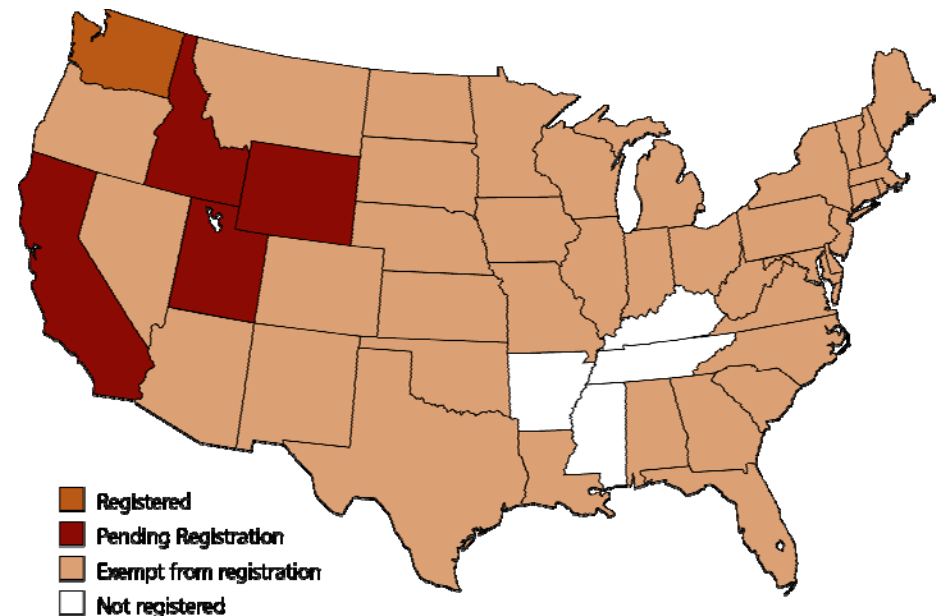
Dr. Zollinger, NDSU

Ideas to Grow With®

 **ADJUVANTS**  
NPE Free Surfactant  
**DENALI-EA™**

• **Launching in 2016!**

- **Features & Benefits:**
- Increases efficacy of actives
- Excellent spreading for uniform coverage
- Buffering agent, lowers and maintains pH
- Aquatic approval
- Improved safety and handling
- NPE Free



Reg. No. 2935-50204 (CA)



# CROSSHAIR®

# Wilbur-Ellis DRT Choices



- **CROSSHAIR™**

- Micro Emulsion product
- Treats the water
- Doesn't change the viscosity of the water
- Easy to use, No special mixing
- One use rate – 4 oz/ac in the tank last **ALWAYS**
- Compatible with all pesticides and fertilizers



**CROSSHAIR®**



## CROSSHAIR®

**CROSSHAIR** is a consistently high performing drift and deposition control agent which offers a single rate, last in tank usage and is part of a best-in-class drift reduction technology portfolio. **CROSSHAIR** reduces driftable fines (less than 105 microns), increases deposition and has a broad use with most products.

\* Not approved for aquatic use in Washington



## CROSSHAIR®

### Features and Benefits:

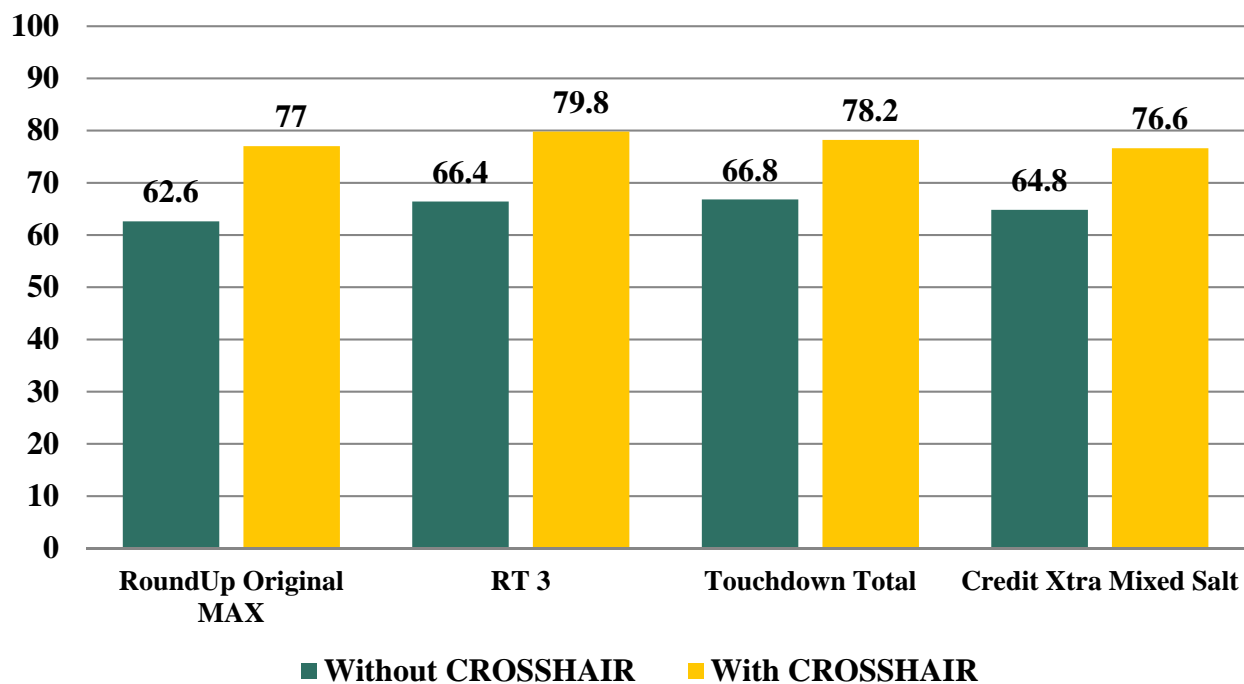
- Broad use, last in tank
- Reduces driftable fines (less than 105 microns)
- Increases deposition (average of 20%)
- Approved for aquatic use\*
- NPE Free

\* Not approved for aquatic use in Washington



# CROSSHAIR®

## Improved Herbicide Efficacy



NDSU 2007



## CROSSHAIR®

### CROSSHAIR Product Info:

- Always use **4** fluid ounces of **CROSSHAIR** per acre
- **CROSSHAIR** must be added **LAST** in the tank
- When water conditioning products are used, always add the water conditioning product as the first product in the spray mixture
- Add any additional adjuvants to the spray tank before **CROSSHAIR**





**CROSSHAIR®**

## Site Prep Application

With **CROSSHAIR**

Without **CROSSHAIR**



10 GPA 35 PSI Accu-Flo Double Row .028

B. Alber - 2013

# Wilbur-Ellis DRT Choices



- **IN-PLACE<sup>®</sup>**



- Invert Emulsion product
- **Only DRT product that treats the pesticide**
- **Encapsulates the pesticide**
- Uniform capsules of pesticide within the spray droplet
- **Reduces the fine spray droplets less than 105 micron to lower levels than the other DRT products**
- Compatible with all pesticides and fertilizers
- **Best DRT product in the market today**

---

Ideas to Grow With<sup>®</sup>

TRANSFORM  
TOMORROW,  
**TODAY**

2016  
REGIONAL  
MEETINGS

# AccuStrike™ Technology





## WHAT IS ACCUSTRIKE™ TECHNOLOGY?

---

- This is the latest in our drift reduction technology platform
  - Discovered using non-traditional industry methods
    - Showing promise of being better than our current standards (IN-PLACE and CROSSHAIR)
  - Improving:
    - Reduction of driftable fines
    - Deposition of actives into plant canopy
    - On target applications of agriculture chemicals
- Use rate is proving to be significantly less than current products
- DRT Technology for Aerial, Ground, and AIRBLAST
- To be launched over the next year



WILBUR-ELLIS®

Ideas to Grow With™

**EVERY TANK  
EVERY TIME**



---

WILBUR-ELLIS®

Ideas to Grow With®

Thank You!!



Ideas to Grow With®