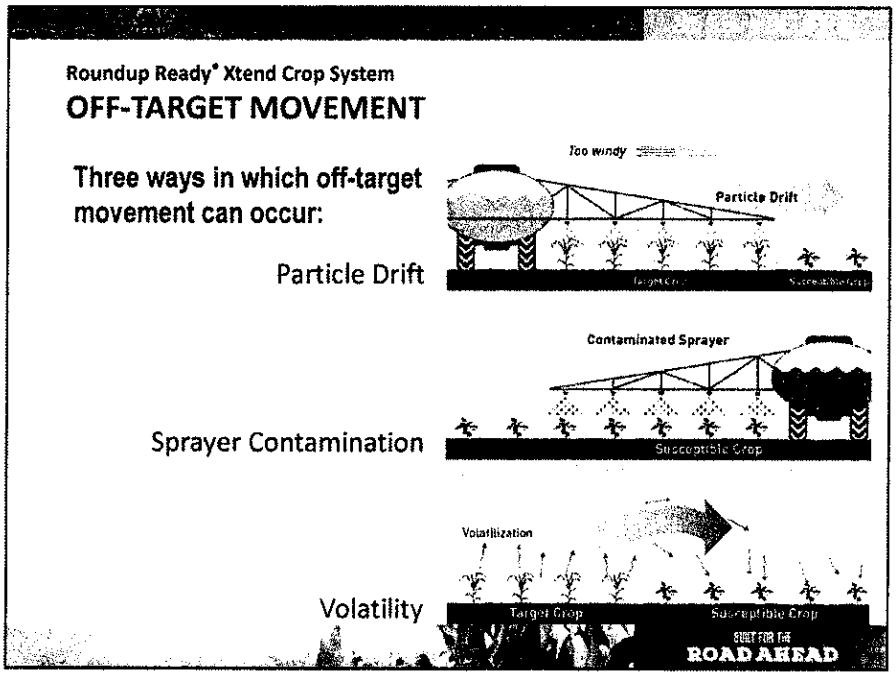
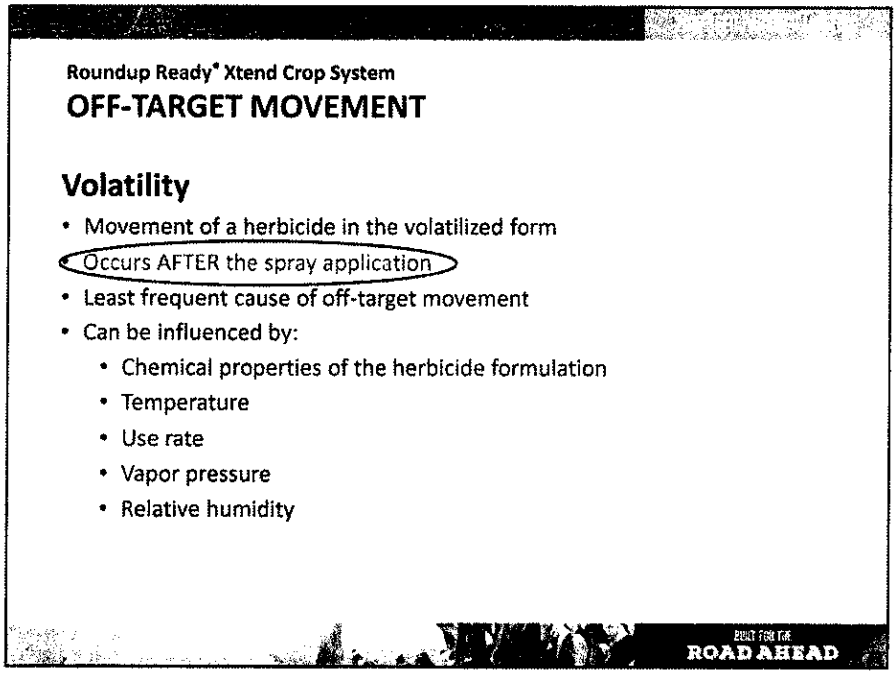


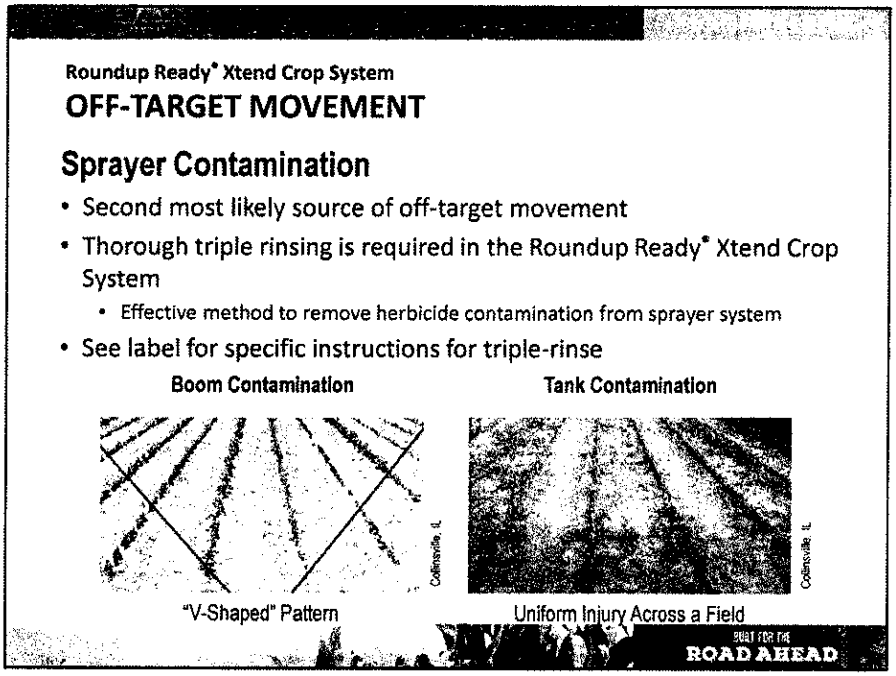
OFF-TARGET MOVEMENT

- There are three ways in which off-target movement can occur: particle drift, sprayer contamination and volatility
    - Particle Drift:
        - Movement of spray droplets on the wind
        - Occurs DURING application
        - Impacts adjacent fields
        - By far the most common source of off-target movement
    - Sprayer Contamination:
        - When improperly rinsed spray equipment is used to treat a crop that is sensitive to herbicides in previous loads
        - Second most common form of off-target movement
    - Volatility:
        - Movement of a herbicide in the form of gas vapors
        - Can impact adjacent fields or fields far away from where it was applied
        - Occurs AFTER application
        - By far the least common source of off-target movement
- This section discusses each of these in detail and provides recommendations for reducing the risk of off-target movement



OFF-TARGET MOVEMENT: VOLATILITY

- Movement of a herbicide in the form of gas vapors
- Occurs AFTER the spray application
- By far the least frequent source of off-target application
- Influenced by:
  - Chemical properties of the herbicide formulation
  - Temperature
  - Use rate
  - Vapor pressure
  - Relative humidity
- While Monsanto does not anticipate restrictions related to temperature on the chemistry labels, vapor pressure or relative humidity, it is a sound best practice for applicators to pay attention to the impact of these factors with any herbicide they spray

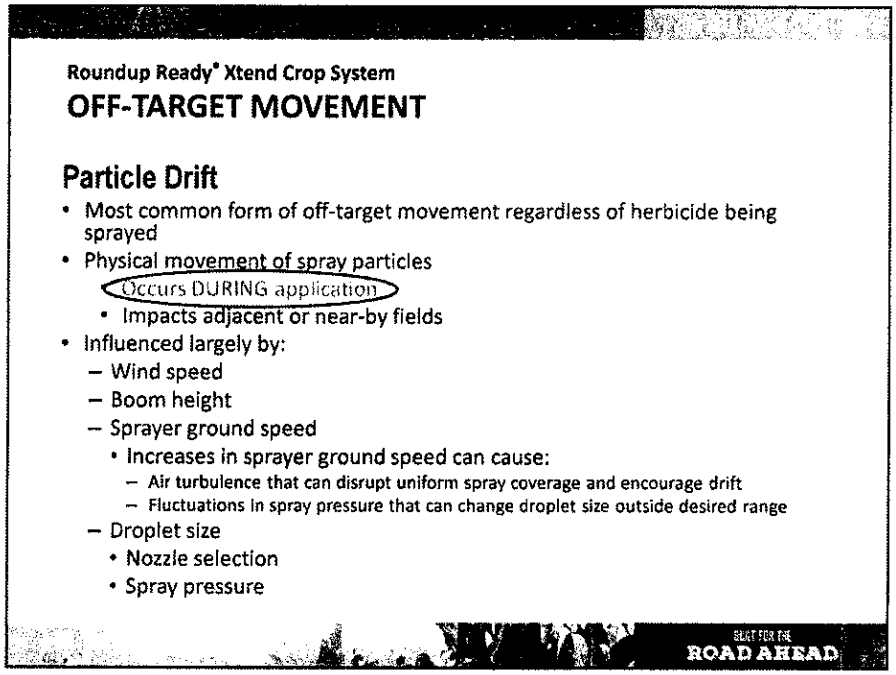


OFF-TARGET MOVEMENT: SPRAYER CONTAMINATION

- Second most likely source of off-target movement
- Thorough triple rinsing is required in the Roundup Ready® Xtend Crop System
  - Effective method for removing herbicide contamination from sprayer system
- See label for specific instructions for triple-rinse

[IF ASKED:]

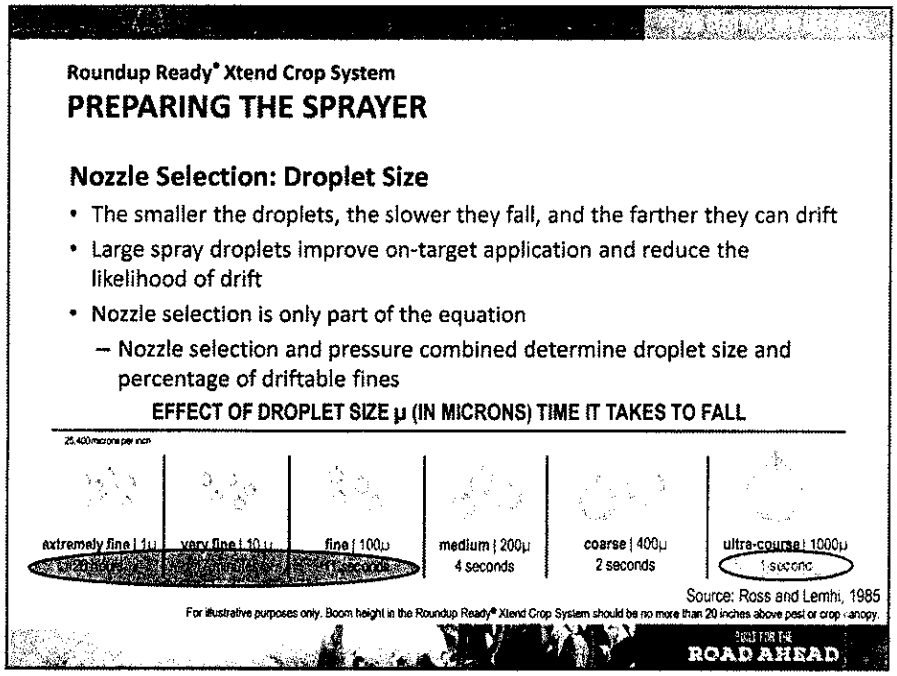
- Commercial tank cleaner is required as part of the triple-rinse process



OFF-TARGET MOVEMENT: PARTICLE DRIFT

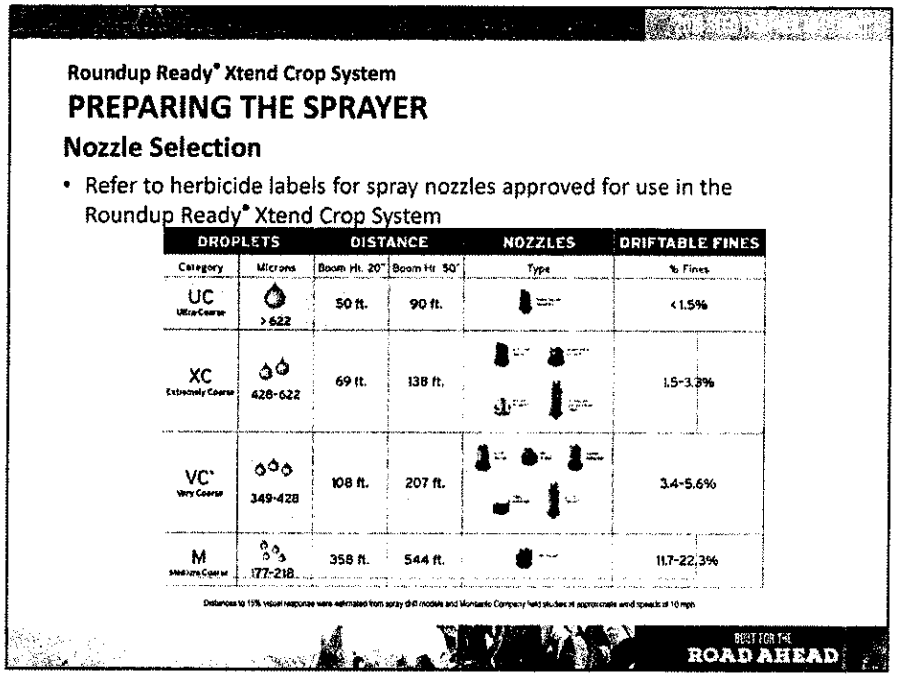
May also be referred to as "physical drift"

- Most common form of off-target movement
- Physical movement of spray particles
    - Occurs during application
    - Impacts adjacent or nearby fields
- Influenced largely by:
    - Wind speed
    - Boom height
    - Sprayer ground speed
        - Increases in sprayer ground speed can cause:
            - Air turbulence that can disrupt uniform spray coverage and encourage drift
            - Fluctuations in spray pressure that can change droplet size outside desired range
    - Droplet size
        - Nozzle selection
        - Spray pressure
        - Droplet size will covered in more detail later in this presentation



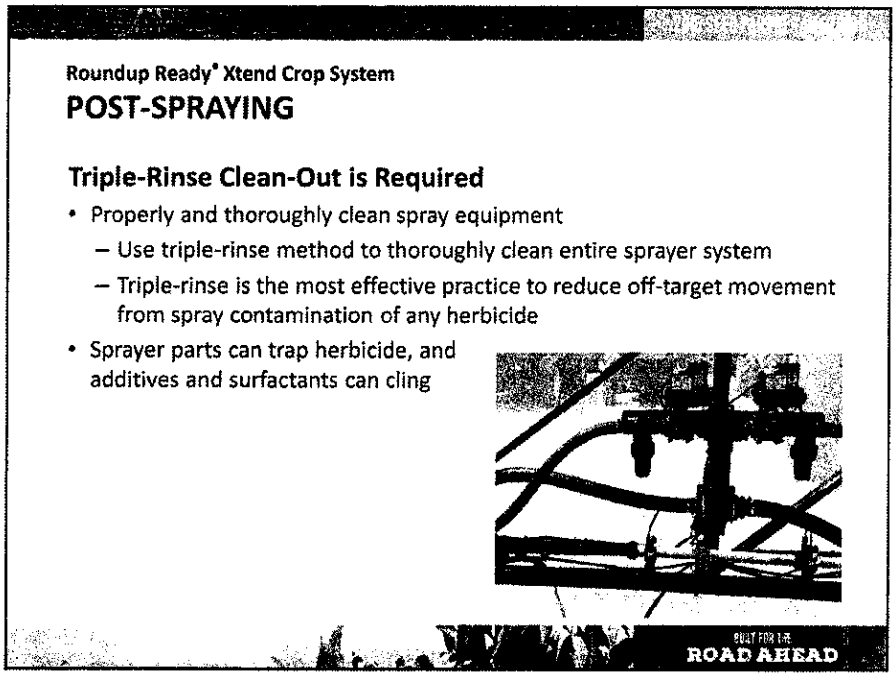
PREPARING THE SPRAYER: NOZZLE SELECTION: DROPLET SIZE

- The smaller the droplets, the slower they fall, and the farther they can drift
- Large spray droplets improve on-target application and reduce the likelihood of drift
- Nozzle selection is only part of the equation
    - Nozzle selection and pressure combined determine droplet size and the percentage of driftable fines



PREPARING THE SPRAYER: NOZZLE SELECTION

- Notice the increase in distance that droplets can travel when booms are raised higher than 20 inches
- Note the high percentage of fines in medium-coarse droplets as opposed to the very low number of fines in ultra-coarse droplets
- Fines are responsible for a great deal of particle drift
- Nozzle manufacturers are continuing to develop new nozzles with superior coverage that deliver large droplets with minimal fines
- Refer to herbicide labels for spray nozzles approved for use in the Roundup Ready® Xtend Crop System



POST-SPRAYING: TRIPLE-RINSE CLEAN-OUT

- Properly and thoroughly clean spray equipment
    - Use triple-rinse method to thoroughly clean entire sprayer system
    - Triple-rinsing is the most effective practice to reduce off-target movement from spray contamination of any herbicide
- Sprayer parts can trap herbicide and additives and surfactants can cling

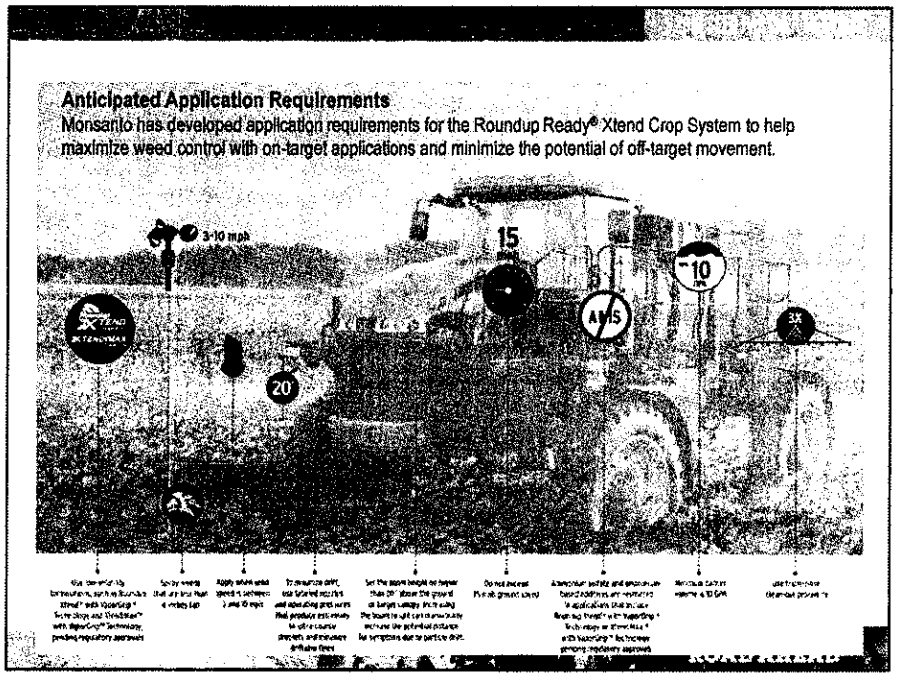
Prevent Off Target Movement

- Do not spray when drift is likely and take caution near susceptible crops
- ***Follow Application Requirements & Label***
- Use low volatility registered products

- Approved drift reductions agents are recommended

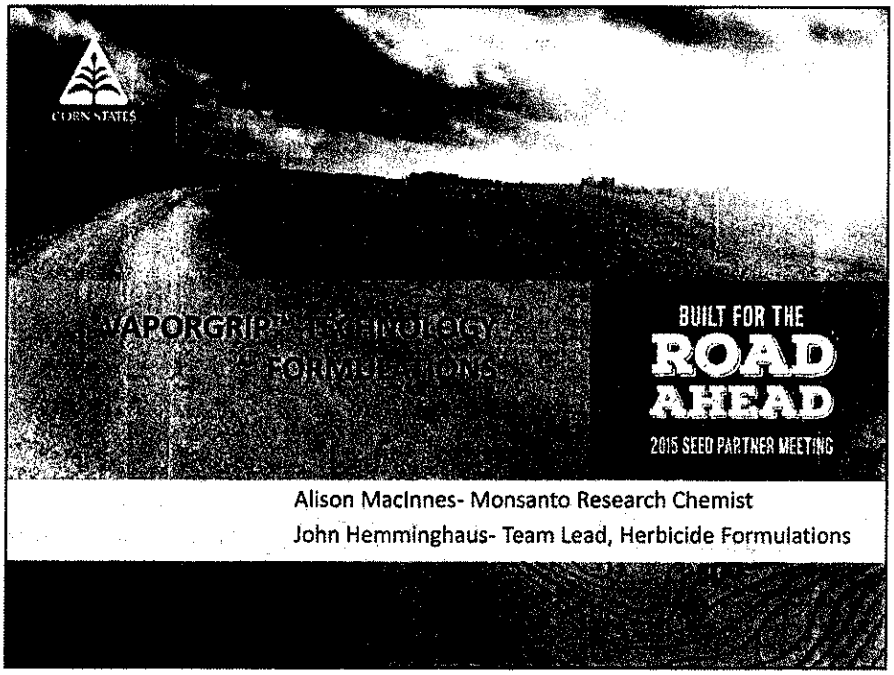
This information is for educational purposes only and is not an offer to sell Roundup Xtend™, XtendiMax™, or Roundup Ready 2 Xtend™. These products are not yet registered or approved for sale or use anywhere in the United States.

BUILT FOR THE ROAD AHEAD


Anticipated Application Requirements
Monsanto has developed application requirements for the Roundup Ready® Xtend Crop System to help maximize weed control with on-target applications and minimize the potential of off-target movement.
3-10 mph
15
20
10
AMS
3X

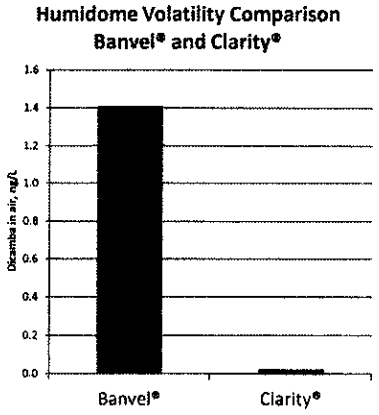
Field Support

- Crop Response
  - Similar to current herbicide products
- Lack of Performance
  - Similar to current herbicide products
  - Approved label conditions may require additional information in some cases
- Off Target Movement
  - Anticipate label language will be similar to Enlist™ Duo for sensitive crops
  - Following Application Requirements should mitigate most risk
  - Final plan cannot be developed and communicated until label is registered

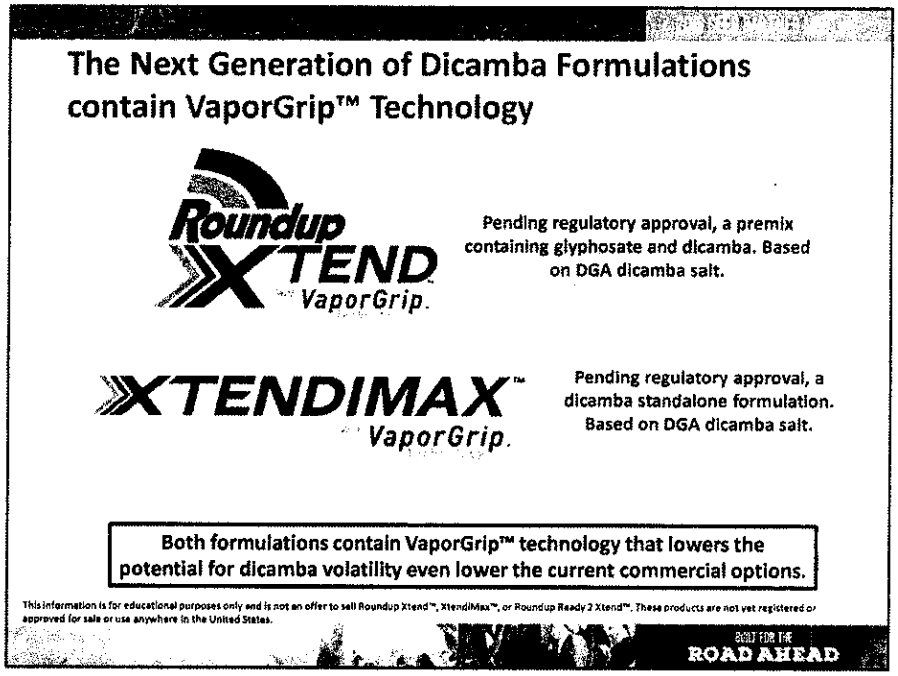

CORN STATES
VAPORGRIP
FORMULATIONS
BUILT FOR THE
ROAD
AHEAD
2015 SEED PARTNER MEETING
Alison MacInnes- Monsanto Research Chemist
John Hemminghaus- Team Lead, Herbicide Formulations

Historical Dicamba Formulations

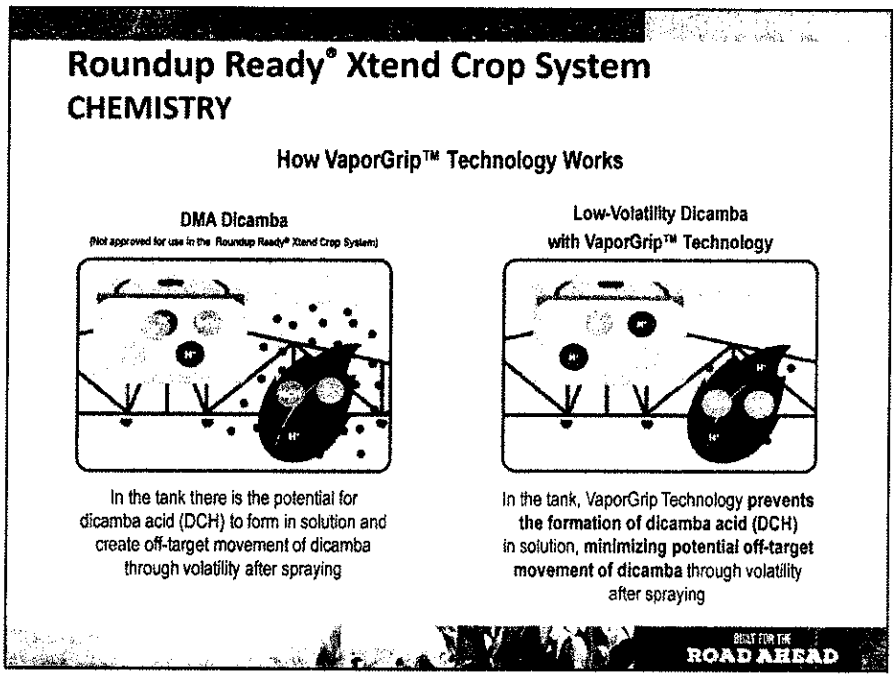
- Banvel® – launched in the 1960s
  - DMA (dimethylamine) salt of dicamba
  - Most volatile salt form of dicamba that is commercially available (based on humidome testing)
- Clarity®– launched in 90s
  - DGA (diglycolamine) salt of dicamba
  - Significantly lower volatility potential than Banvel
- Monsanto invested in dicamba formulation development for several years, developing an industry leading expertise
  1. Dicamba salt effect
  2. Adjuvant impact
  3. Volatility reduction



Can mention that in adding AMS volatility of Clarity increases to be similar to that of Banvel alone. This was recommended on Clarity label



Share story on how VG was discovered



ROUNDUP READY® XTEND CROP SYSTEM CHEMISTRY: HOW VAPORGRIP™ TECHNOLOGY WORKS

- Roundup Xtend™ and XtendiMax™ herbicides will feature VaporGrip™ Technology
- A proprietary technology discovered and developed by Monsanto
- VaporGrip™ Technology, along with the specific salt of dicamba and all of the product components, work together to make Monsanto's proprietary formulations so effective
    - VaporGrip™ Technology is not a stand-alone additive, but rather a part of the formulation of Roundup Xtend™ and XtendiMax™ herbicides
    - VaporGrip™ Technology is NOT part of the M1691 herbicide formulations for 2015

How VaporGrip™ Technology Works

- In the tank, there is the potential for dicamba acid (DCH) to form in solution and create off-target movement of dicamba through volatility after spraying
- In the tank, VaporGrip™ Technology prevents the formation of dicamba acid (DCH) in solution, minimizing potential off-target movement of dicamba through volatility after spraying
- In other words, VaporGrip™ Technology effectively blocks free H+ ions from combining with dicamba anions, thus reducing the potential for volatilization
- Herbicide volatility, which occurs after application, is influenced by the type of salt used in the herbicide formulation, temperature, use rate and vapor pressure
- Roundup Xtend™ and XtendiMax™ herbicides utilize a low-volatility salt of dicamba and VaporGrip™ Technology to further reduce the potential for volatilization