

ROUNDUP READY® **XTEND** *CROP SYSTEM*

WELCOME

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ROUNDUP READY®
XTEND
CROP SYSTEM

ROUNDUP READY® XTEND CROP SYSTEM



ROUNDUP READY 2 XTEND® SOYBEANS

- Built on the high yield potential of Roundup Ready 2 Yield® technology
- Provides tolerance to both **glyphosate** and **dicamba**



Roundup Ready 2 Xtend® Soybeans are tolerant to dicamba and glyphosate
Bayer Canada Market Development, Chatham ON, 2014
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ROUNDUP XTEND® WITH VAPORGRIP® TECHNOLOGY & XTENDIMAX® WITH VAPORGRIP® TECHNOLOGY HERBICIDES



OR



HERBICIDE GROUP 4 AND GROUP 9

A pre-mix of our low-volatility dicamba formulation and glyphosate.

HERBICIDE GROUP 4

A low-volatility dicamba formulation. Tank mix with a Roundup-brand agricultural herbicide product such as Roundup WeatherMAX® or Roundup Transorb® HC for optimal weed control.

Equivalent tank mix doses of glyphosate and dicamba when applying Roundup Xtend®

| Roundup Xtend® with VaporGrip® Technology | Roundup WeatherMAX® or Roundup Transorb® HC herbicide | XtendiMax® with VaporGrip® Technology |
|---|---|---------------------------------------|
| L/ac (g/ha) | L/ac (g/ha) | L/ac (g/ha) |
| 2 | 0.9 (1200) | 0.7 (600) |
| 1.5 | 0.67 (900) | 0.5 (450) |
| 1 | 0.45 (600) | 0.35 (300) |

- Short-term residual activity from dicamba on small-seeded broadleaf weeds*.
- Designed specifically for the Roundup Ready® Xtend Crop System

* *Performance may vary from location to location and from year to year, as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on the grower's fields

INTRODUCING THE NEW 450 L TOTE FOR ROUNDUP XTEND® HERBICIDE WITH VAPORGRIP® TECHNOLOGY



- Cover **more** area and help control **more** weeds* with the most effective premix on the market for burndown and residual weed control
- We recommend the 2 L/ac rate (high rate) as the best burndown option for no-till situations
- New tote size also available for XtendiMax® herbicide with VaporGrip® Technology

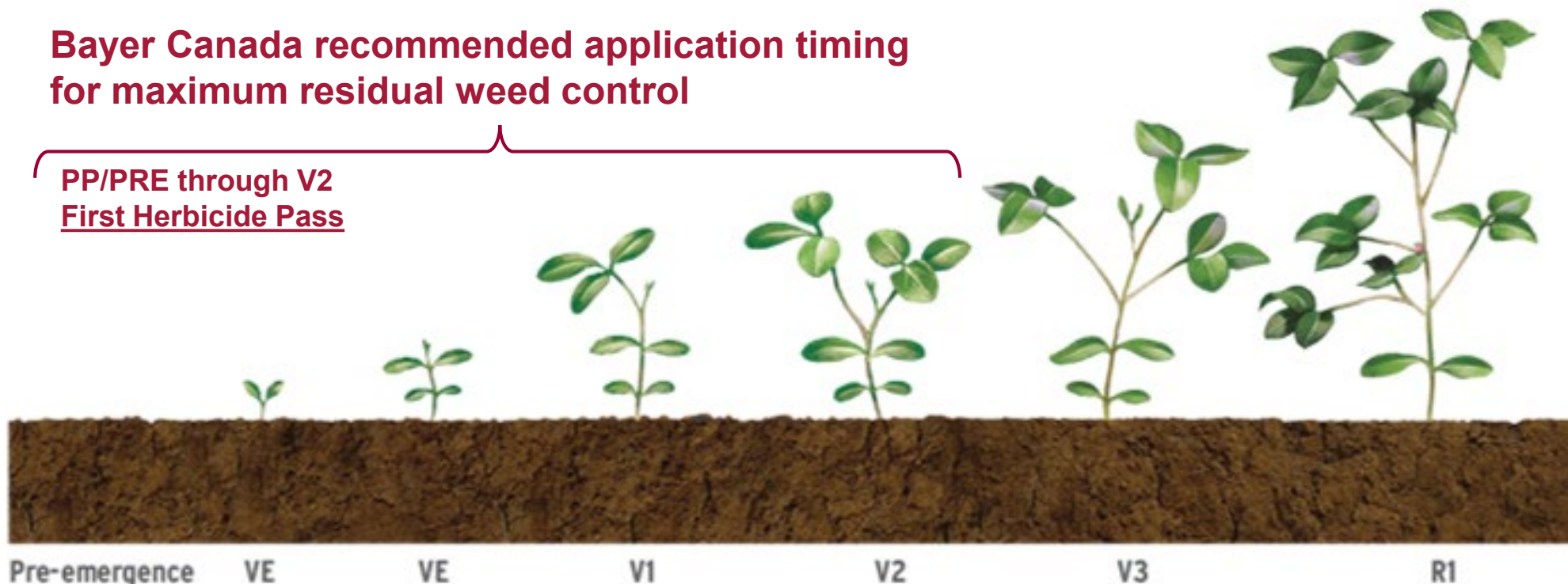
* When compared with the 10 L tote size

WINDOW OF APPLICATION

Application window for Roundup Xtend® herbicide with VaporGrip® Technology and XtendiMax® herbicide with VaporGrip® Technology

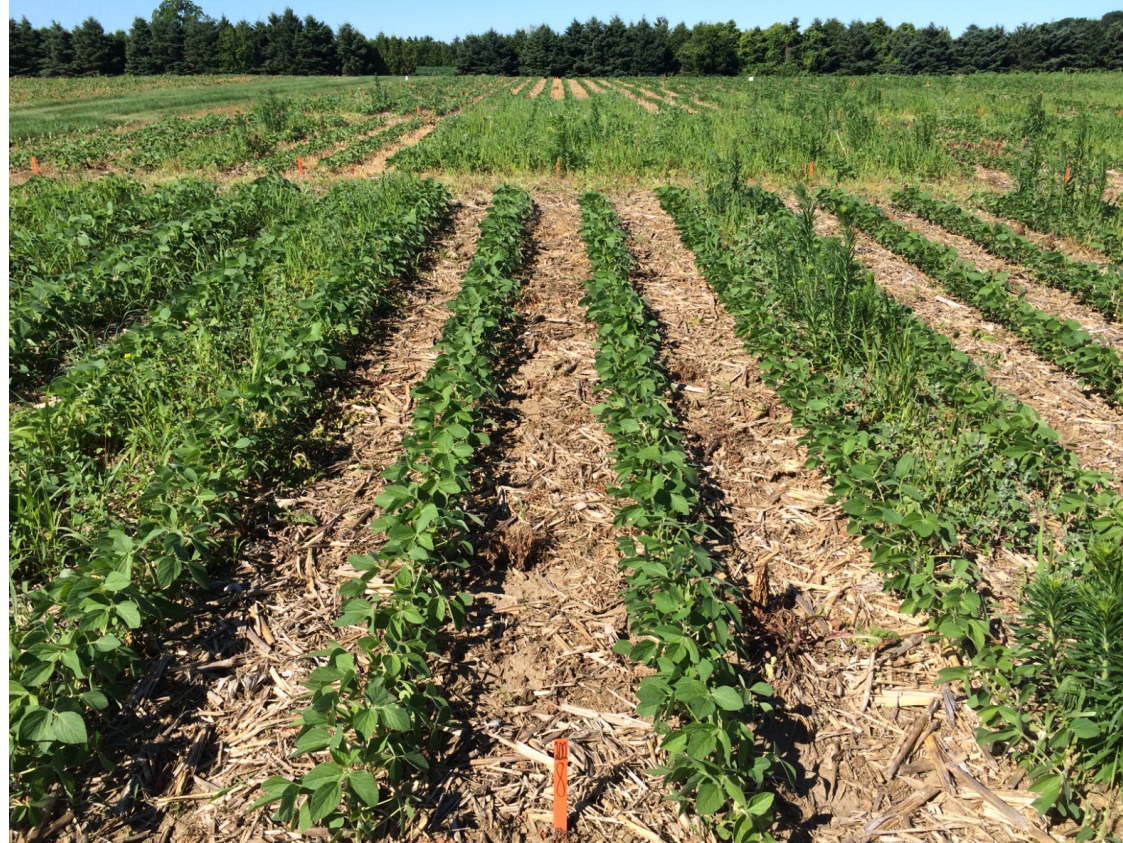
Bayer Canada recommended application timing for maximum residual weed control

**PP/PRE through V2
First Herbicide Pass**



DICAMBA IS THE FOUNDATIONAL HERBICIDE IN THE ROUNDUP READY® XTEND CROP SYSTEM

- Provides excellent control of tough-to-manage and herbicide resistant weeds*
 - Ladysthumb
 - Lambsquarters
 - Velvetleaf
 - Wild buckwheat
 - Canada fleabane**
 - Giant ragweed**
 - Kochia**
 - Waterhemp**
- Solid weed resistance management tool when used as part of a diversified weed management program.

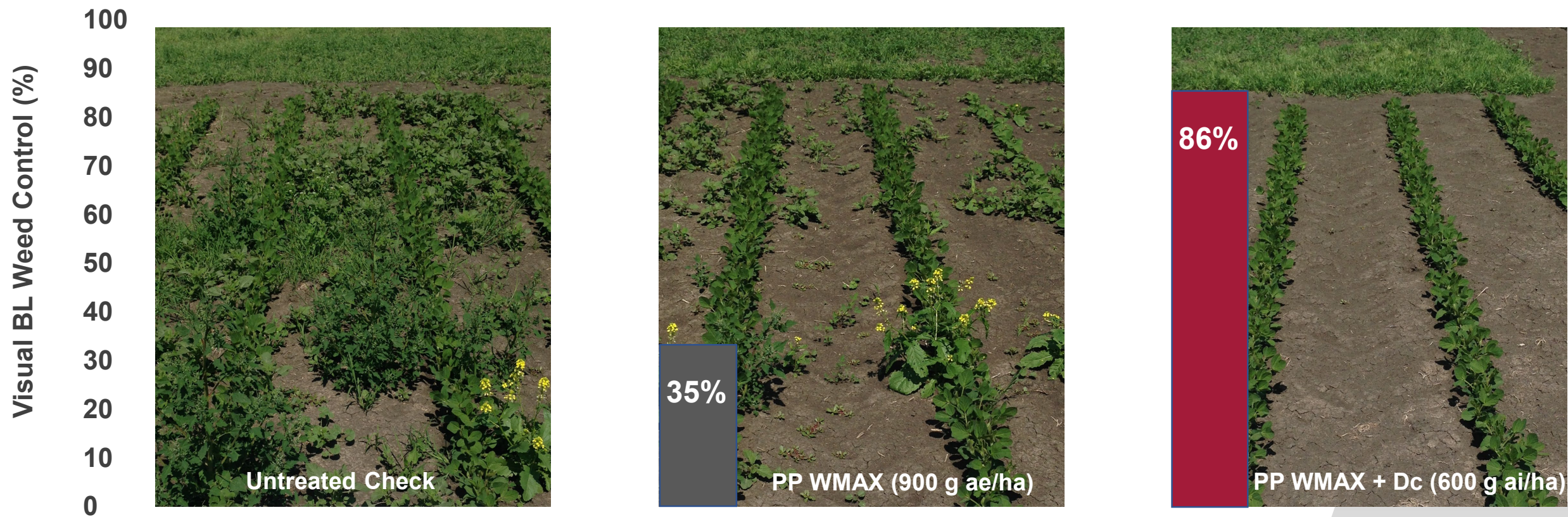


Roundup Xtend® with VaporGrip® Technology applied at 2 L/acre
University of Guelph, Ridgetown Campus, 20 DAT (June, 2016)

• * Source: OMAFRA Guide to Weed Control Publication 75 (2018)
• ** also controls glyphosate resistant biotypes.

SHORT-TERM RESIDUAL WEED CONTROL FROM XTENDIMAX® HERBICIDE WITH VAPORGRIP® TECHNOLOGY

Short term residual broadleaf weed control from dicamba applied pre-plant (weed control rated prior to POST (V3-V4) herbicide application)



Source: Bayer Canada MD research trials, MB, ON, QC 2008 – 2015

PP = preplant/pre-emerge, WMAX = Roundup WeatherMAX® (900 g ae/ha = 0.67 L/ac), Dc=Dicamba (DGA Salt) (600 g ai/ha is equivalent to 0.7 L/ac XtendiMax® with VaporGrip® Technology)

The % Control Ratings shown are the average of all the ratings in all the trials (n = 91) (BL weeds: CHEAL-34, AMARE-17, AMBEL-13, ABUTH-8, POLCO-8, SOLPT-7, POLPE-3, KCHSC-1)

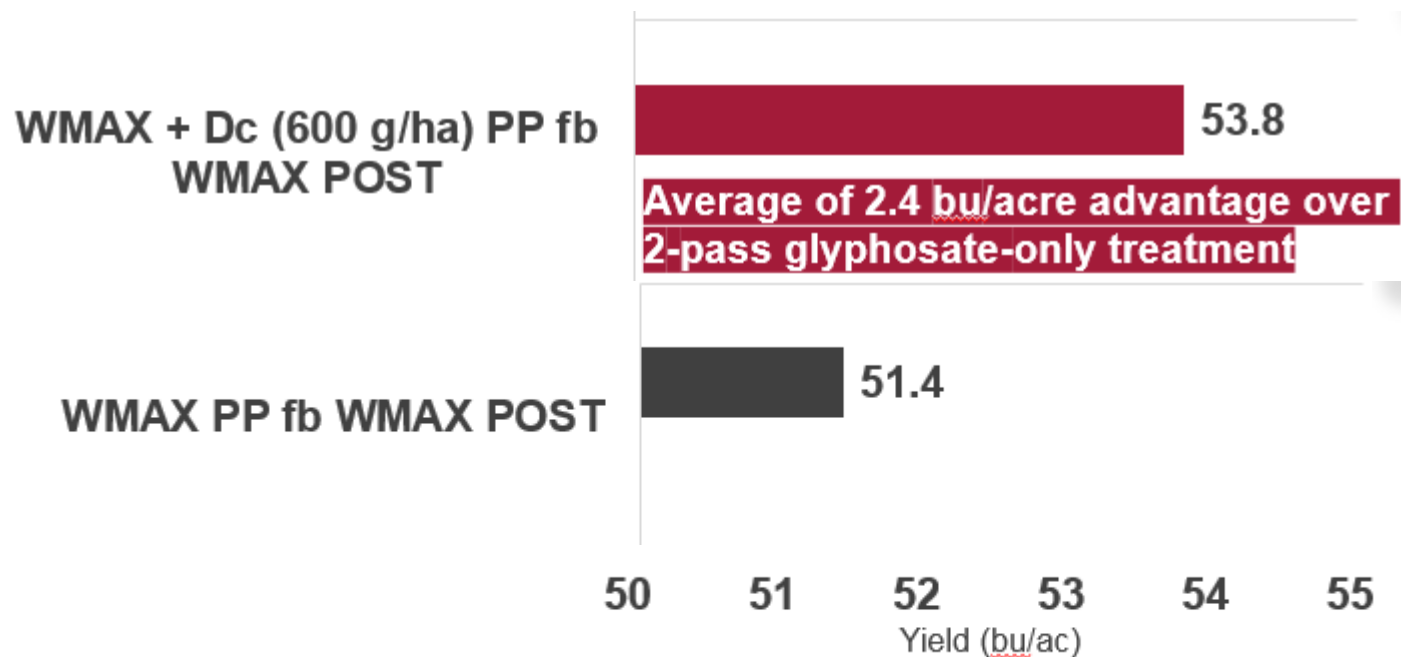
The photos above show higher control levels than the average ratings

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INCREASE IN YIELD POTENTIAL FROM EARLY SEASON WEED REMOVAL

Early weed removal & short-term soil residual weed control provides increased yield potential in Roundup Ready 2 Xtend® Soybeans



Bayer Canada Market Development, Simcoe, ON. 2008

PP = preplant/pre-emerge, WMAX = Roundup WeatherMAX® at 900 g/ha (0.67 L/ac), Dc=Dicamba (DGA salt), POST = post emerge at 3rd trifoliolate
600 g/ha is equivalent to 0.7 L/ac XtendiMax® with VaporGrip® Technology
Source: Bayer Canada MD research trials, 2008 – 2014 (n=39)

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WEEDS CONTROLLED BY ROUNDUP XTEND® HERBICIDE WITH VAPORGRIP® TECHNOLOGY (OR TANK MIX OF ROUNDUP WEATHERMAX® HERBICIDE & XTENDIMAX® HERBICIDE WITH VAPORGRIP® TECHNOLOGY) – East

- annual blue grass
- annual sow thistle
- barnyard grass
- biennial wormwood
- bur cucumber
- **Canada fleabane**
- **Canada thistle**
- chickweed
- cleavers
- cocklebur
- **common lambsquarters**
- **Common, false & giant ragweed**
- corn spurry
- cow cockle
- crabgrass (smooth, large)
- dandelion
- downy brome
- **Eastern black nightshade**
- fall panicum
- flixweed
- **green and yellow foxtail**
- green smartweed
- hempnettle
- kochia
- **ladysthumb**
- mustard (hare's ear, Indian, tumble, wormseed)
- narrow leaved hawk's beard
- night flowering catchfly
- Pennsylvania smartweed
- **perennial sow-thistle**
- Persian dandelion
- prickly lettuce
- quackgrass
- **redroot pigweed**
- **round-leaved mallow**
- Russian pigweed
- Russian thistle
- **shepherd's-purse**
- **smooth pigweed**
- stinkweed
- stork's bill
- **velvetleaf**
- **Narrowleaf vetch**
- volunteer adzuki beans
- volunteer barley
- volunteer canola (non-glyphosate-tolerant)
- volunteer flax
- volunteer wheat
- **wild buckwheat**
- wild mustard
- wild oats
- wild proso millet
- wild tomato

WEEDS CONTROLLED BY ROUNDUP XTEND® HERBICIDE WITH VAPORGRIP® TECHNOLOGY (OR TANK MIX OF ROUNDUP WEATHERMAX® HERBICIDE & XTENDIMAX® HERBICIDE WITH VAPORGRIP® TECHNOLOGY) – West

- annual blue grass
- annual sow thistle
- **barnyard grass**
- biennial wormwood
- bur cucumber
- Canada fleabane
- Canada thistle
- chickweed
- **cleavers**
- cocklebur
- **common lambsquarters**
- Common, false and giant ragweed
- corn spurry
- cow cockle
- crabgrass (smooth, large)
- dandelion
- downy brome
- eastern black nightshade
- fall panicum
- flixweed
- **green and yellow foxtail**
- green smartweed
- hempnettle
- **kochia**
- ladythumb
- mustard (hare's ear, Indian, tumble, wormseed)
- **narrow leaved hawk's beard**
- night flowering catchfly
- Pennsylvania smartweed
- **perennial sow-thistle**
- Persian dandelion
- prickly lettuce
- quackgrass
- **redroot pigweed**
- **round-leaved mallow**
- Russian pigweed
- **Russian thistle**
- **shepherd's-purse**
- smooth pigweed
- **stinkweed**
- stork's bill
- **velvetleaf**
- Narrowleaf vetch
- volunteer adzuki beans
- volunteer barley
- **volunteer canola (non-glyphosate-tolerant)**
- volunteer flax
- volunteer wheat
- **wild buckwheat**
- wild mustard
- **wild oats**
- wild proso millet
- wild tomato

ROUNDUP XTEND® HERBICIDE WITH VAPORGRIP® TECHNOLOGY vs. ENLIST DUO® HERBICIDE FOR RESIDUAL WEED CONTROL



Roundup Xtend® herbicide with
VaporGrip Technology® at 2 L/ac



Enlist Duo® herbicide at 1.74 L/ac

Residual control of lambsquarters, purselane and Redroot pigweed 44 days after application.
Source: Bayer Canada Market Development 2018, Coteau-du-Lac, QC.

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ROUNDUP XTEND® HERBICIDE WITH VAPORGRIP® TECHNOLOGY vs. ENLIST DUO® HERBICIDE FOR RESIDUAL WEED CONTROL



Roundup Xtend® herbicide with
VaporGrip Technology® at 2 L/ac



Enlist Duo® herbicide at 1.74 L/ac

Residual control of glyphosate-resistant kochia at 37 days after application.

Source: Bayer Canada Market Development, Carseland, AB. 2018

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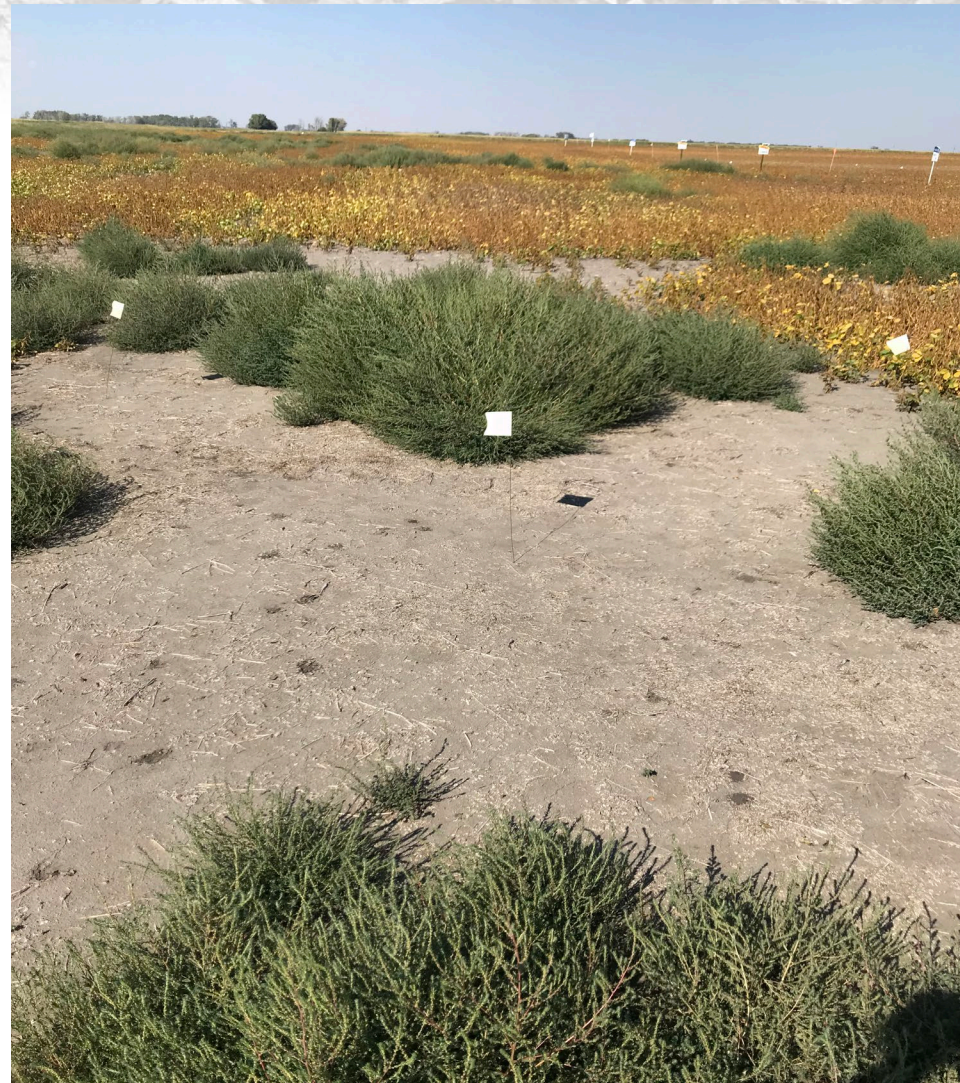
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HELPS CONTROL GLYPHOSATE RESISTANT KOCHIA

Glyphosate Resistant Kochia Control:

Roundup Xtend® herbicide with VaporGrip® Technology OR XtendiMax® herbicide with VaporGrip® Technology + Roundup WeatherMAX® herbicide or Roundup Transorb® HC herbicide plus one of the following (applied PP/PRE):

- Valtera®
- Fierce®
- Heat®
- Authority® 480



Bayer Canada Market Development, Melita, MB. 2018. Approximately 85 DAT of 2 L/ac Roundup Xtend.

HELPS CONTROL GLYPHOSATE RESISTANT WATERHEMP*

*As part of a 2-pass system with a full PRE-treatment option followed by Roundup Xtend® herbicide with VaporGrip® Technology early post at the 2 L/ac rate.



Untreated Check



**Fierce® (flumioxazin + pyroxasulfone) PRE
Roundup Xtend® with VaporGrip®
Technology POST**

HELPS CONTROL GLYPHOSATE RESISTANT CANADA FLEABANE



Glyphosate Resistant Canada Fleabane Control:

Roundup Xtend® herbicide with VaporGrip® Technology OR XtendiMax® herbicide with VaporGrip® Technology + Roundup WeatherMAX® herbicide or Roundup Transorb® HC herbicide plus one of the following (applied PP/PRE):

- BlackHawk®
- Bifecta™
- Fierce®
- Eragon®
- Integrity®

Roundup Xtend® with VaporGrip® Technology (2 L/ac) plus Integrity® (150 mL/acre) – 29 DAT

HELPS CONTROL GLYPHOSATE RESISTANT GIANT RAGWEED



0.67 L/ac Roundup WeatherMAX® herbicide PRE



**0.67 L/ac Roundup WeatherMAX® herbicide & Dicamba
600 g/ha PRE**

Source: Bayer Canada Market Development and University of Guelph research trial. Windsor, ON. 2010
600 g/ha of Dicamba is equivalent to 0.7 L/ac XtendiMax® with VaporGrip® Technology

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CONSIDERATIONS FOR VOLUNTEER CANOLA CONTROL

| Scenario | Pre-Seed Base Treatment | Pre-Seed Tank Mix Partner | In-Crop (up to V3 Soybeans) |
|---|---|---------------------------|---|
| High pressure situations following canola | Roundup Xtend® herbicide with VaporGrip® Technology (2 L/ac) | Express® SG (6 g/ac) | DAVAI™ 80SL (100 mL/ac) + Roundup WeatherMax® (0.67 L/ac) |
| | | Valtera™ (56 to 85 g/ac) | |
| | XtendiMax® herbicide with VaporGrip® Technology (0.7 L/ac) + Roundup WeatherMAX® herbicide (0.67 – 1.33 L/ac) | Express® SG (6 g/ac) | |
| | | Valtera™ (56 to 85 g/ac) | |
| Low pressure situations following crops other than canola | Roundup Xtend® with VaporGrip® Technology (2 L/ac) | | |
| | XtendiMax® with VaporGrip® Technology (0.7 L/ac) + Roundup WeatherMAX® (0.67 – 1.33 L/ac) | | |

Recommendations based on Bayer Market Development research trials 2013 – 2018 conducted in Western Canada.

CONSIDERATIONS FOR VOLUNTEER CANOLA CONTROL

- **For high pressure situations following canola:**

- **PRE-SEED:**

Express® SG (6 g/ac) or Valtera™ (56 to 85 g/ac) + Roundup Xtend® with VaporGrip® Technology at (2 L/ac)

OR

Express® SG (6 g/ac) or Valtera™ (56 to 85 g/ac) + XtendiMax® with VaporGrip® Technology (0.7 L/ac) + Roundup WeatherMAX® (0.67 to 1.33 L/ac)

- **POST (up to V3 stage):**

- DAVAI™ 80SL (100 mL/ac) + Roundup WeatherMAX® (0.67 L/ac)

- **For low pressure situations following crops other than canola:**

- **PRE-SEED:**

Roundup Xtend® with VaporGrip® Technology (2 L/ac)

OR

XtendiMax® with VaporGrip® Technology (0.7 L/ac) + Roundup WeatherMAX® (0.67 to 1.33 L/ac)

- **POST (up to V3 stage):**

DAVAI™ 80SL (100 mL/ac) + Roundup WeatherMAX® (0.67 L/ac)

Recommendations based on Bayer Market Development research trials 2013 – 2018 conducted in Western Canada.

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EXAMPLE ROTATION MANAGING KEY HERBICIDE RESISTANT WEEDS

** KEY DRIVER WEEDS

GR 1 Resistant WILD OATS;
GR 9 Resistant KOCHIA

4 Year Western Canada Crop Rotation
Sustainable Weed Management, Volunteer Canola Control, and Pre-Seed strategies



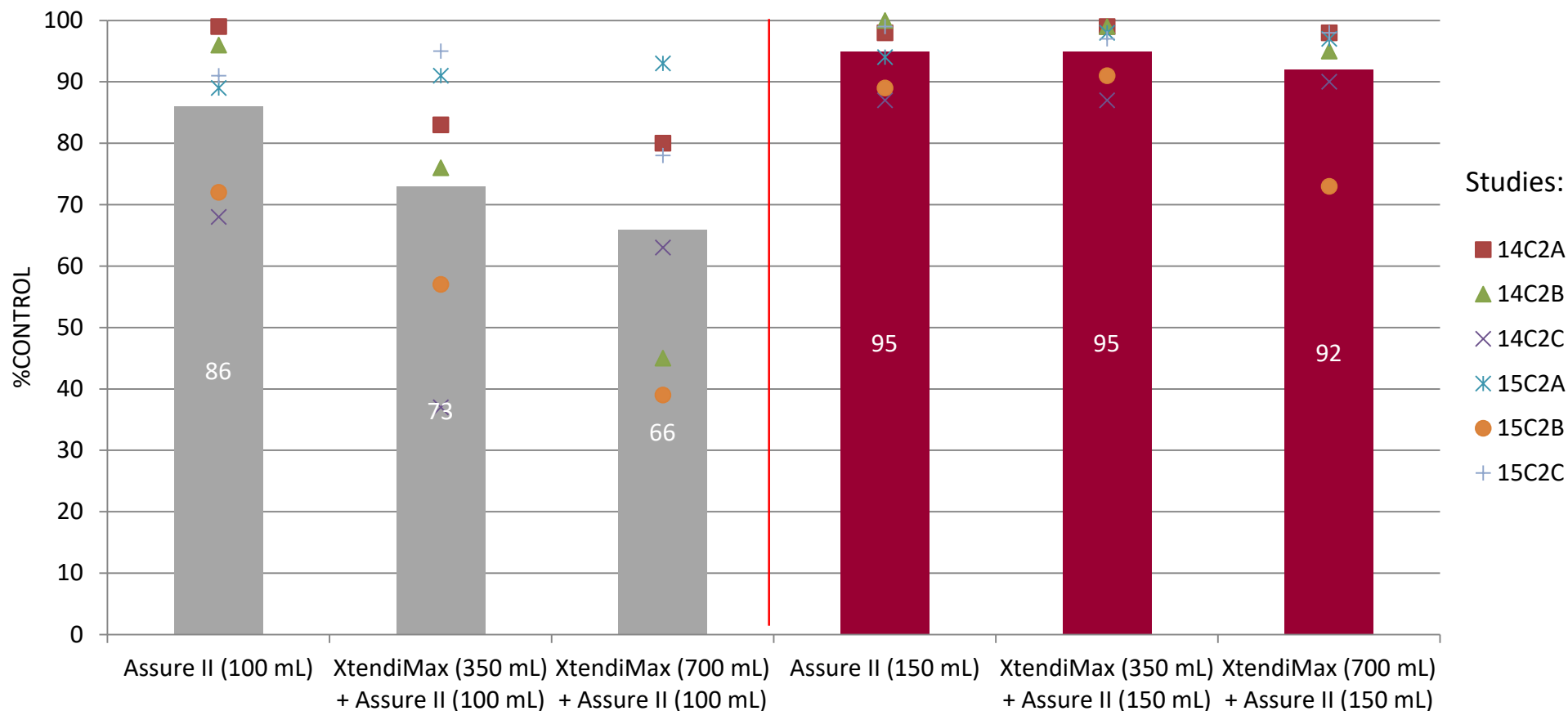
| Crop | Year 1 TruFlex™ CANOLA | Year 2 WHEAT | Year 3 CORN | Year 4 SOYBEANS |
|---------------------------|--|---|--|--|
| Pre-Seed Products | Conquer® + Edge™ + Roundup Transorb® HC Residual WO control, Vol Canola control with no restrictions | Avadex® + Roundup Transorb® HC Residual WO and Vol Can Control | Roundup Transorb® HC + Focus® Residual Control, | Xtendimax®/ Roundup Xtend® with VaporGrip® Technology + Fierce® / Sencor® Residual control - early weed removal yield advantage |
| POST Products | Roundup WeatherMAX® Flexibility. Control of hard to kill weeds | Velocity m3 Vol Canola control, several MOA's | Roundup WeatherMAX®+ Armezon® Vol Canola control, good crop safety window | Roundup WeatherMAX®+ Viper® ADV/Davai™ Vol Canola control, excellent crop safety |
| Pre/Post Harvest Products | Distinct® or Roundup Xtend® with VaporGrip® Technology Residual Kochia control, no re-cropping restrictions on wheat | Heat® + Roundup Transorb® HC Late season weed control, acts as a desiccant | | |
| Cultural Practices | Combine Settings. Pod Shatter varieties. Heavy harrow. * Reduce volunteer pressure. Encourage volunteer germination in fall | Winter Wheat. Increased wheat seeding rates. Tillage. Cover crops. *Increase crop competitiveness. Weed seed bank management | Early season weed control. *Increase crop competitiveness. | Tillage/ Disc ripper. Increased seeding rates/ narrower rows *Increase crop competitiveness. Weed seed bank management |
| Total Modes of Action | 5 Groups 3 and 9 on WO Groups 14, 4 and 3 on KO | 6 Groups 2,8,9 on WO Groups 6,27,14 on KO | 5 Groups 9, 15 on WO Groups 14,15, 27 on KO | 6 Groups 2, 9 on WO Groups 5/4, 27, 14, 15 on KO |

Goal: at least 2 effective MOA on each driver weed per season: Sustainability, vol. management and herbicide resistance management

CONSIDERATIONS FOR VOLUNTEER CORN CONTROL

- Bayer Canada and University of Guelph established trials in 2014-2015 to evaluate control of volunteer corn with XtendiMax[®] herbicide with VaporGrip[®] Technology plus either Assure[®] II (quizalofop-p-ethyl) or Select[®] (clethodim), both group 1 herbicides.
- XtendiMax[®] with VaporGrip[®] Technology can antagonize volunteer corn control with group 1 herbicides.
- It is NOT recommended to tank mix Xtendimax[®] with VaporGrip[®] Technology or Roundup Xtend[®] with VaporGrip[®] Technology with a group 1 to control volunteer corn since typical timing for volunteer corn control is late post emerge in soybeans during the last herbicide application.

VOLUNTEER CORN CONTROL USING XTENDIMAX® HERBICIDE WITH VAPORGRIP® TECHNOLOGY + ASSURE® II



Bayer Canada Market Development and University of Guelph (2014-2015), Ridgetown, Woodstock and Exeter ON, N=6

Herbicide rates reported in mL/acre

Roundup WeatherMAX® included with all treatments at 0.67 L/acre

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KEY APPLICATION REQUIREMENTS



- Use only spray nozzles that produce extremely coarse to ultra-course spray qualities (preferably Ultra Coarse)



- Triple rinse clean-out is required with an ammonia-based tank cleaner



- Do not apply this product during a temperature inversion (“dead calm” conditions) as the off-target movement potential is high. In general, temperature inversions are more likely during nighttime hours.

KEY RECOMMENDATIONS FOR SUCCESS WITH THE ROUNDUP READY® XTEND CROP SYSTEM



PRE-EMERGENCE



ULTRA COARSE



CORRECT PRESSURE



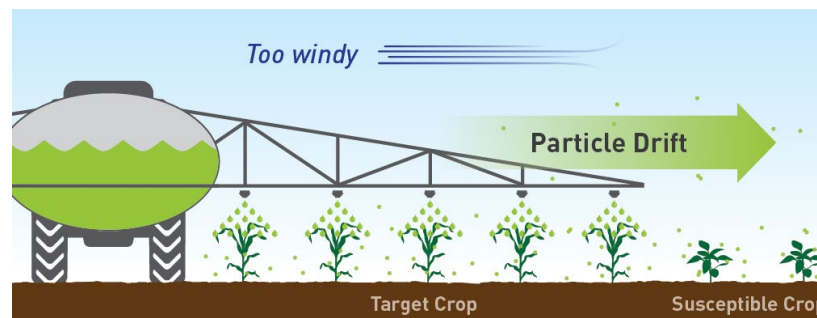
- Apply the **high** label rate of Roundup Xtend® herbicide with VaporGrip® Technology **or** XtendiMax® herbicide with VaporGrip® Technology along with Roundup WeatherMAX® herbicide as part of the **first herbicide application** in the field
- Use Ultra Coarse (UC) spray quality and follow the application requirements: it is important to maintain proper operating pressure to maintain adequate pattern and droplet size
- Include an additional effective site of action when targeting glyphosate-resistant weeds for effective weed control and proper herbicide stewardship.
- For complete application requirements read and follow product labels on [Traits.Bayer.ca](https://www.traits.com/bayer)

APPLICATION REQUIREMENTS: *WHAT YOU NEED TO KNOW*

THERE ARE THREE DIFFERENT TYPES OF OFF-TARGET MOVEMENT

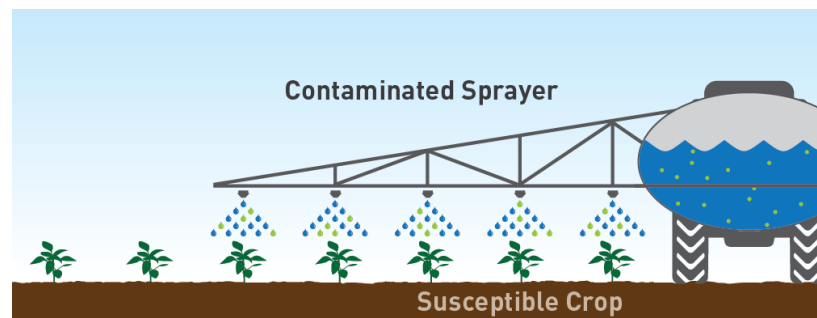
Physical Drift

- Physical movement of spray particles DURING application. **Most common and significant type** of off-target movement for any herbicide



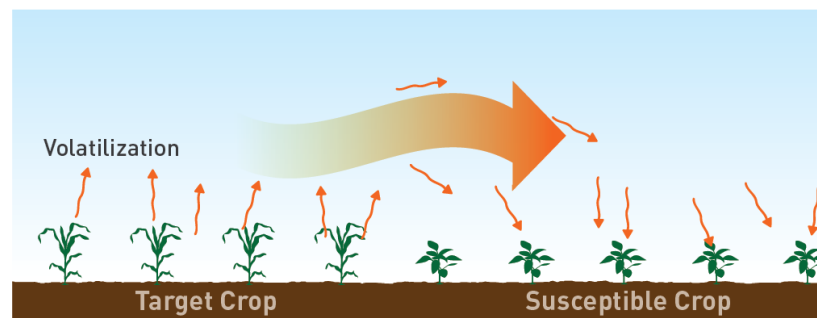
Sprayer Contamination

- Off-target movement from herbicide residue remaining in sprayer components



Volatility

- Movement of a herbicide in a volatilized form as a gas or vapor AFTER spray application. **Least frequent type** of off-target movement


















SPRAYER SET-UP

- The best way to reduce spray drift potential is to apply coarser spray qualities that provide sufficient coverage and weed control
 - Use only spray nozzles that produce EXTREMELY COARSE (XC) TO ULTRA COARSE (UC) SPRAY QUALITIES
 - Adjust pressure to maintain XC to UC spray qualities and do not exceed the nozzle manufacturers recommended pressures
 - Nozzle selection and pressure combined determine droplet size and percentage of driftable fines (<141 microns)
- Bayer Canada suggests the Turbo TeeJet® Induction (TTI) nozzle or other nozzles/spray systems that meet XC to UC spray qualities



PHYSICAL DRIFT CAN CAUSE BROAD UNIFORM SYMPTOMOLOGY

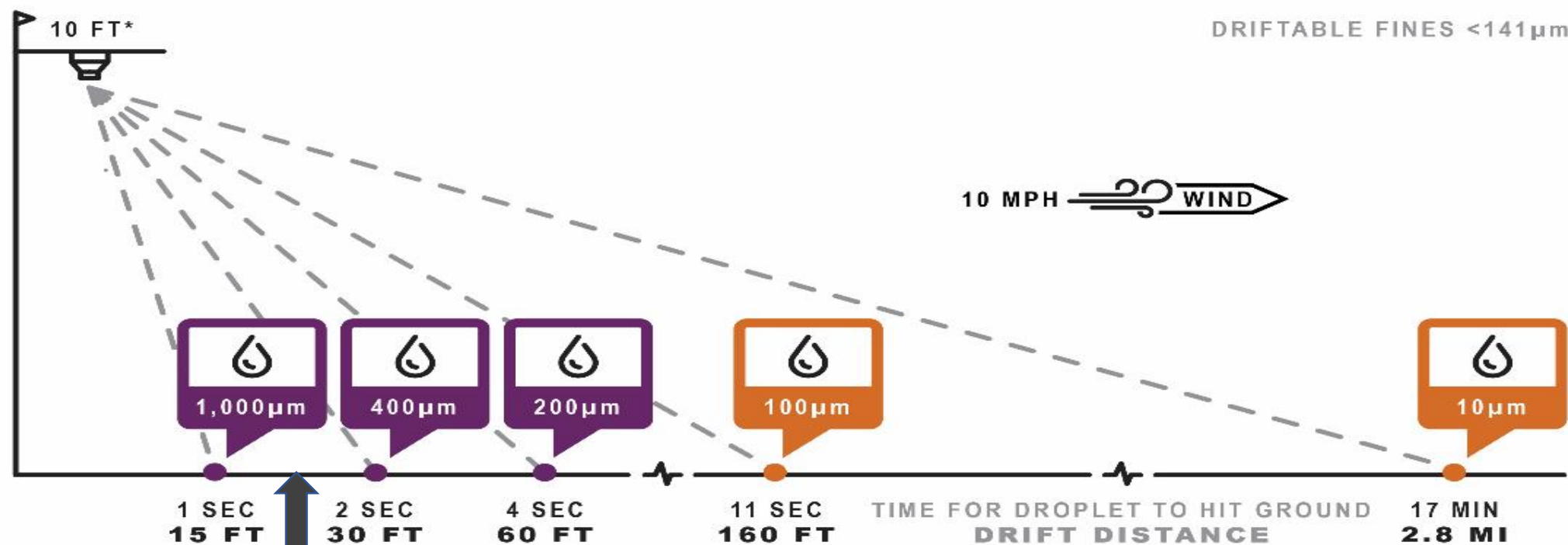
Bayer Deposition Trials Predict Effects from Off-Label Nozzle Selection & Boom Height

| DROPLETS | | DISTANCE | | DRIFTABLE FINES | NOZZLES | NOZZLES |
|-------------------------------|--|--------------|--------------|-----------------|--|--|
| Category | Microns | Boom Ht. 20" | Boom Ht. 50" | % Fines | Type | Type |
| UC Ultra-Coarse |  > 622 | 50 ft. | 90 ft. | < 1.5% |  | Turbo Tee-Jet® Induction (TTI) |
| XC Extremely Coarse |  428-622 | 69 ft. | 138 ft. | 1.5-3.3% |     | Hypro Ultra Low-Drift, UR & DR Wilger®, AI/AIC Tee-Jet® |
| VC* Very Coarse |  349-428 | 108 ft. | 207 ft. | 3.4-5.6% |      | Air Bubble Jet, AIXR Tee-Jet®, DR Wilger®, Airmix Greenleaf, TDXL Greenleaf, AI/AIC Tee-Jet® |
| M Medium Coarse |  177-218 | 358 ft. | 544 ft. | 11.7-22.3% |  | XR Tee-Jet® |

Distance to 15% visual response were estimated from spray drift models and Bayer field studies at wind speeds of ~16 kph

CONTROL THE CONTROLLABLE

Effect of droplet size over fall of 10 feet



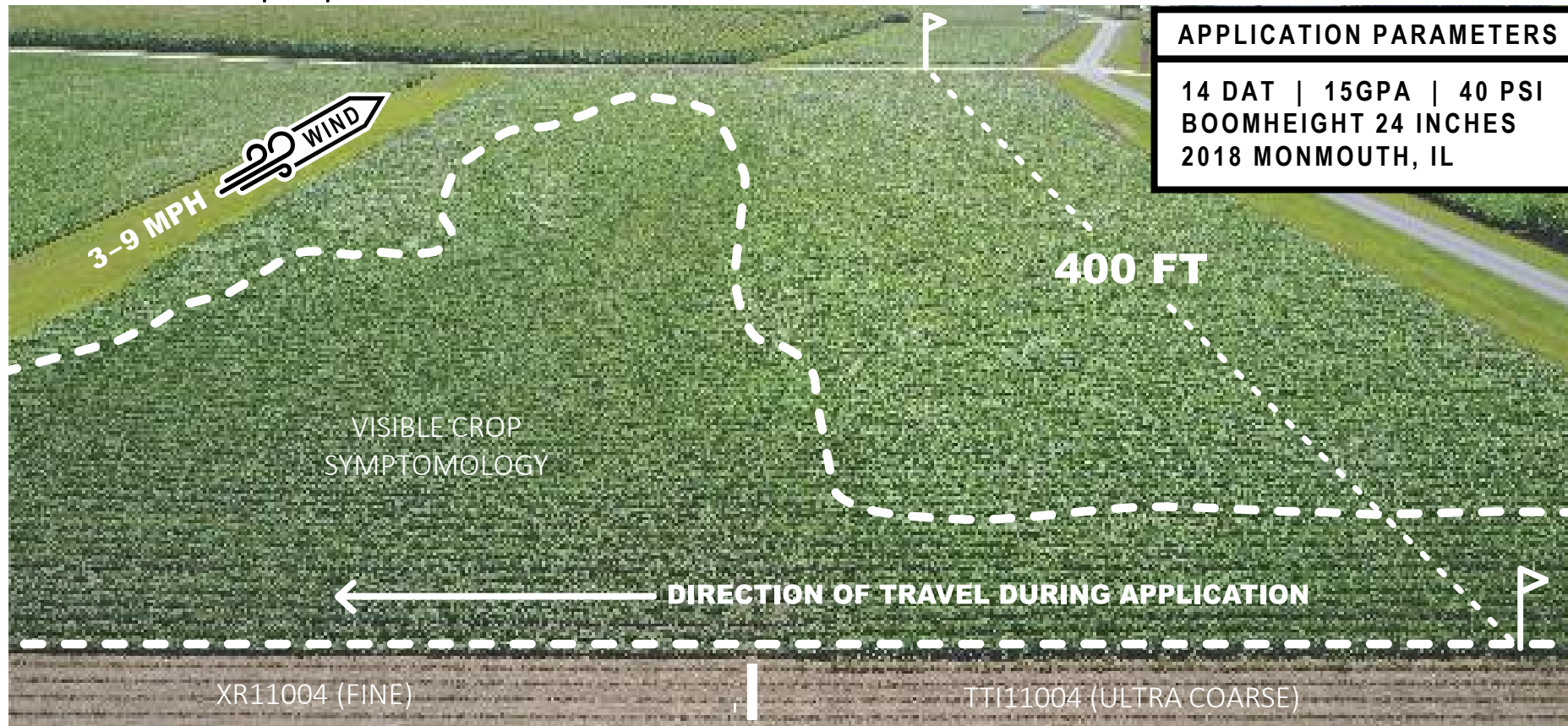
Turbo TeeJet® Induction (TTI) Nozzle, average droplet size ~ 650 microns at 60 psi

Adapted from: Ross and Lembi, 1985. *Ten foot boom height for illustrative purposes only.

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DEMONSTRATION ON IMPORTANCE OF PROPER NOZZLES

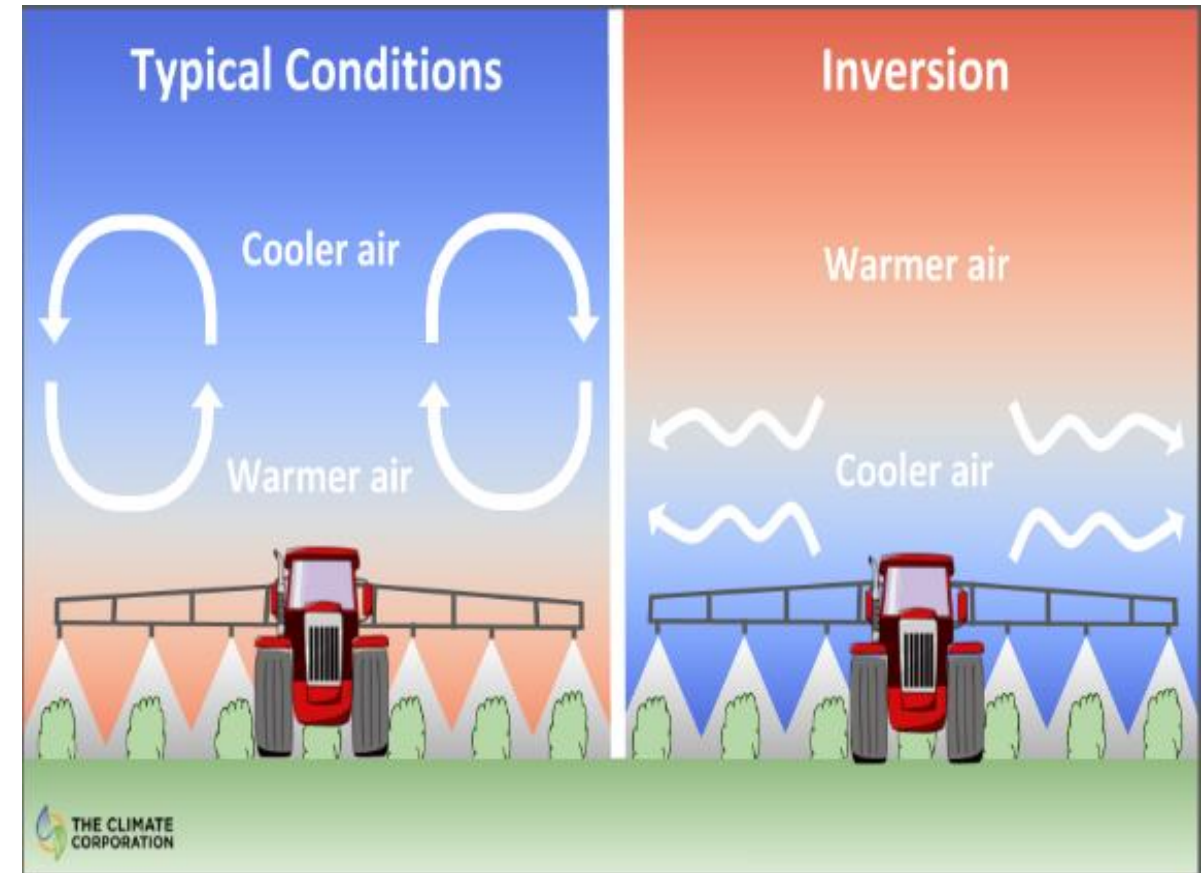
Nozzle Tip Impact on Drift



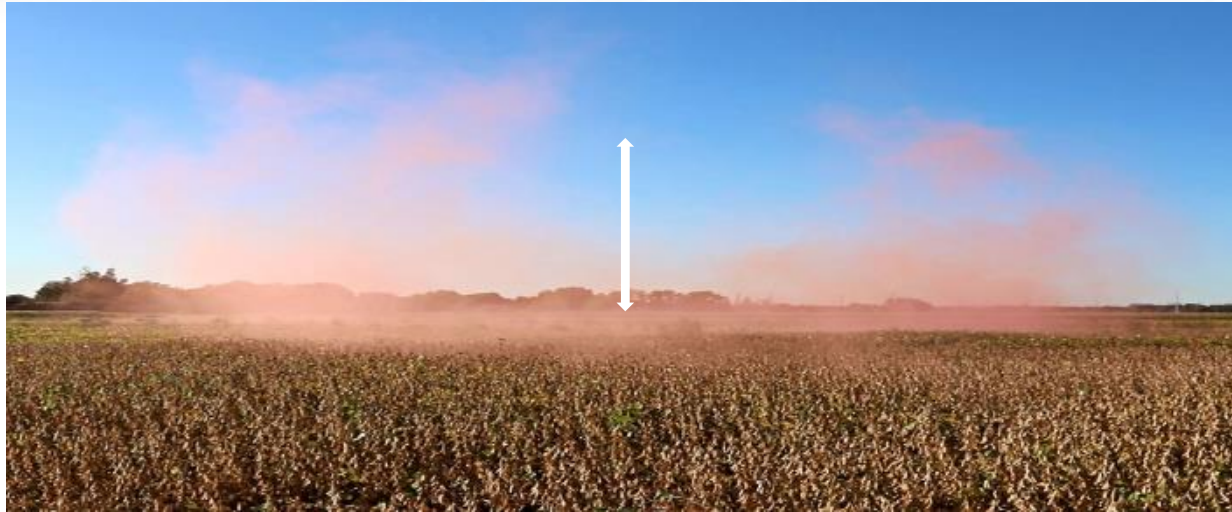
TEMPERATURE INVERSIONS

A LAYER OF COOL AIR TRAPPED BELOW A LAYER OF WARMER AIR

- During a temperature inversion, the atmosphere is very stable and vertical air mixing is restricted, which can cause small, suspended droplets to remain in a concentrated cloud which can move in unpredictable directions due to light wind.
- The inversion will typically dissipate with increased winds (>4.8 km/h) or at sunrise when the surface air begins to warm (~1.6°C from morning low)
- Symptoms of an inversion can include:
 - 'Dead calm' wind conditions
 - Ground fog in low-lying areas
 - Dew or frost present



WHICH IMAGE DEMONSTRATES A TEMPERATURE INVERSION?



VERTICAL MIXING OF AIR

Smoke test demonstration in
6-13 km/h winds at 11:00 a.m.
(Nebraska)

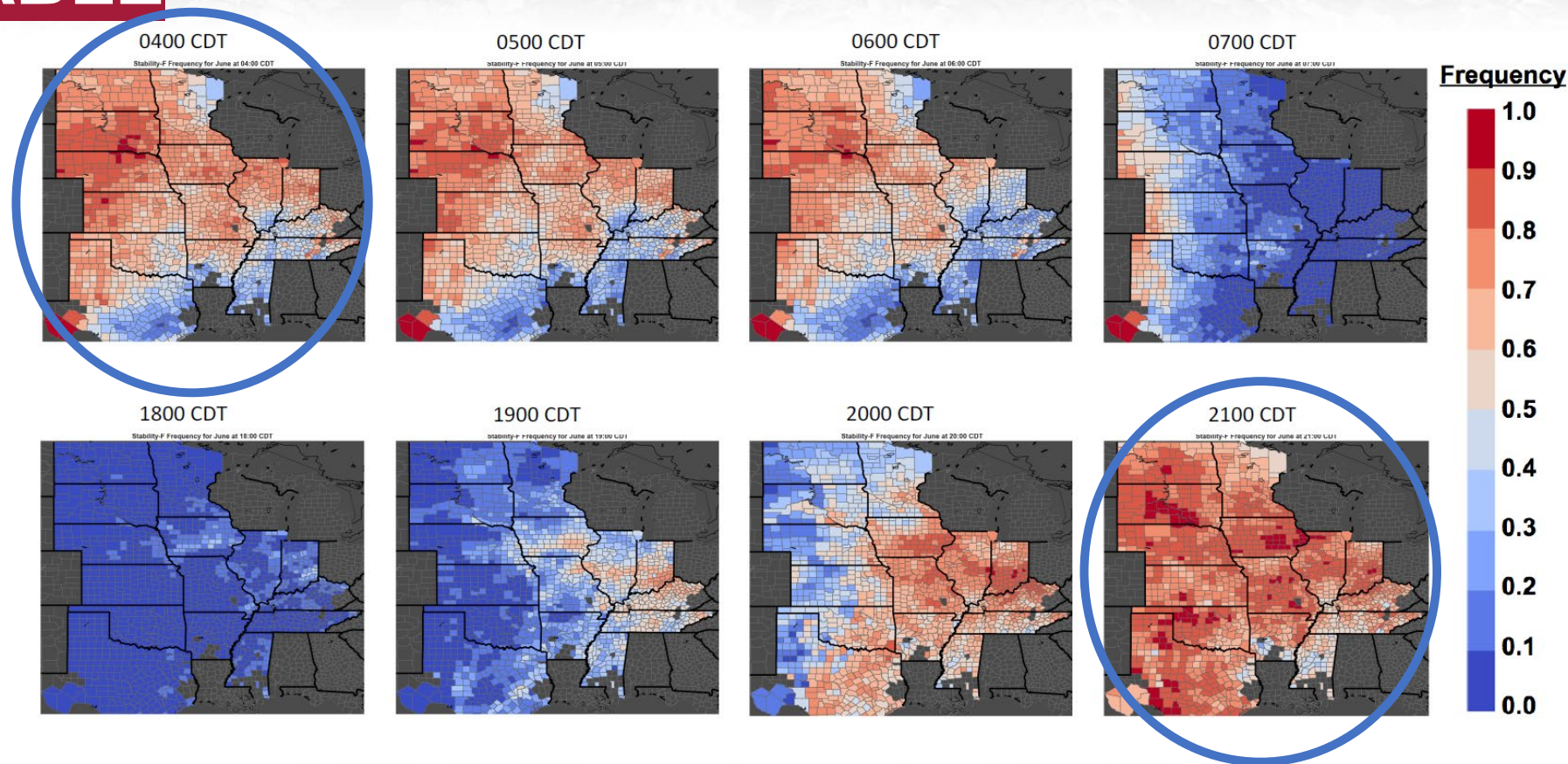


INVERSION LAYER NEAR SURFACE

Smoke test demonstration in
< 1.6 km/h winds at 7:15 a.m.
(Nebraska)

TEMPERATURE INVERSIONS – CONSISTENT & PREDICTABLE

Temperature inversions are common especially during night time hours

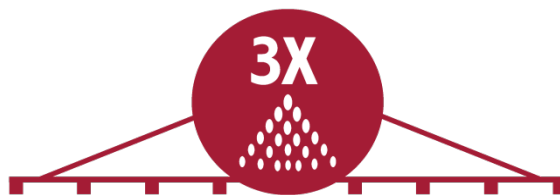


Stability Class-F Frequency for a given hour in June, 2017

SPRAYER SYSTEM CLEAN-OUT

Triple-Rinse Clean-Out is Required

- Properly and thoroughly clean spray equipment before & immediately after spraying dicamba per label instructions:
 - Use triple-rinse method to thoroughly clean entire sprayer system
 - Triple-rinse is the most effective practice to reduce off-target movement from spray contamination of any herbicide
 - Use a commercial based tank cleaner as part of the triple-rinse clean-out
- Sprayer parts can trap herbicide, and additives and surfactants can cling to surfaces
- Other contamination sources to be considered include nurse tanks, inductors, hoses, and connections at mixing sites



SINGLE RINSE WITH WATER OVER SENSITIVE SOYBEANS



Source: Bayer Canada Market Development, Chatham. ON. 2014
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SECOND RINSE WITH WATER OVER SENSITIVE SOYBEANS (AFTER USING A COMMERCIAL CLEANER)



Source: Bayer Canada Market Development, Chatham, ON. 2014

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THIRD RINSE WITH WATER OVER SENSITIVE SOYBEANS



Source: Bayer Canada Market Development, Chatham, ON. 2014

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ADDITIVES AND TANK MIXTURES

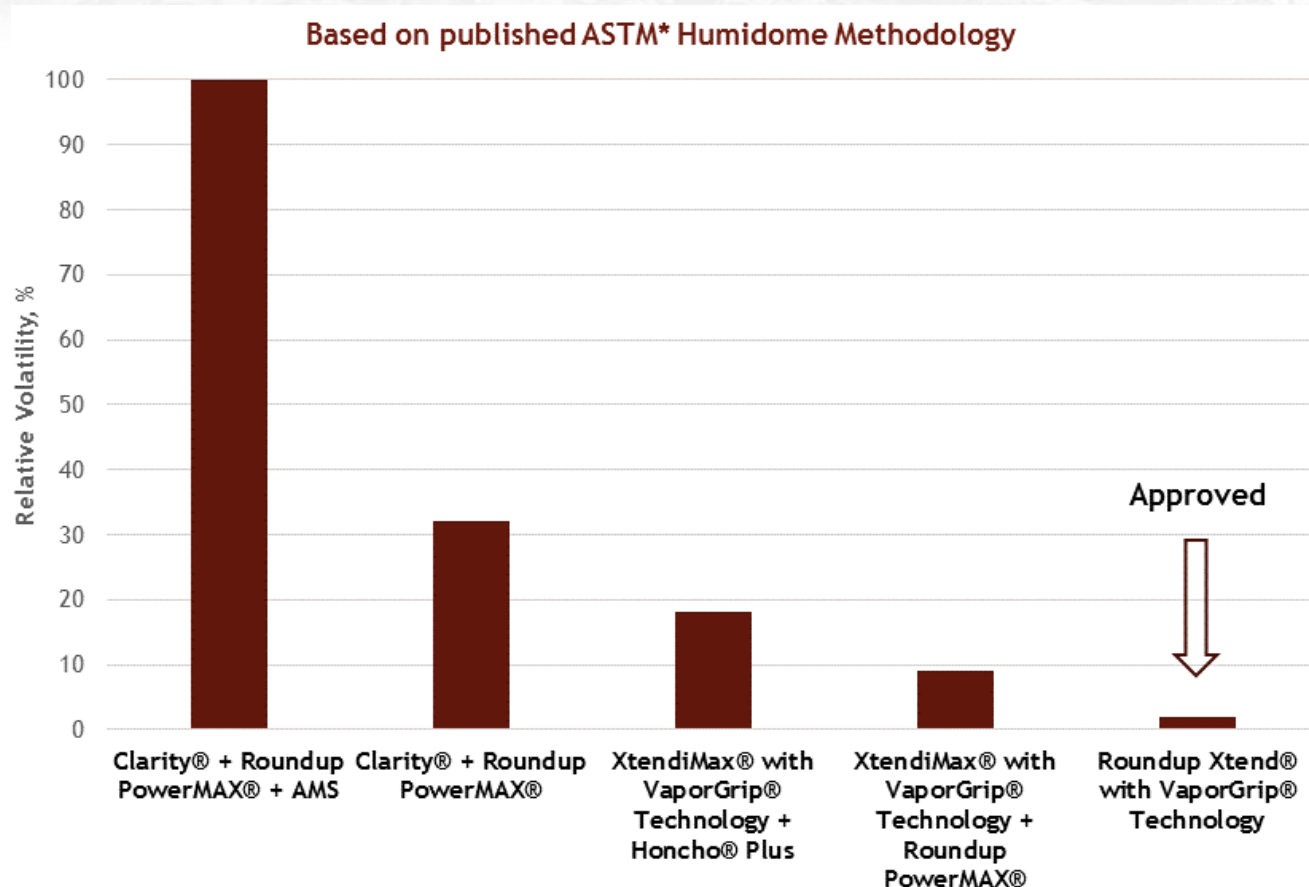
- **DO NOT USE** the following products with Roundup Xtend® herbicide with VaporGrip® Technology or XtendiMax® herbicide with VaporGrip® Technology:

- Ammonium Sulfate (AMS) and AMS-containing adjuvants
- Sprayable fluid fertilizers or fungicides
- ANY water conditioners or buffering agents that acidify the spray solution



The use of AMS or other additives that acidify a dicamba spray solution can increase the potential for volatility

IMPACT OF AMMONIUM SULFATE ON POTENTIAL VOLATILITY



Honcho® Plus herbicide = IPA salt of glyphosate tested

Roundup PowerMAX® herbicide = K salt of glyphosate tested

Clarity® herbicide is a U.S. dicamba herbicide product. It is registered in Canada as Banvel® II.
Roundup PowerMAX is not approved for use in Canada. Monsanto Company St. Louis MO, 2017.

*ASTM is the American Society for Testing and Materials

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- Older formulations of dicamba **are NOT approved** for in-crop use in the Roundup Ready® Xtend Crop System.
- IPA glyphosate salts and Ammonium Sulfate (AMS) **are NOT approved** tank mixes with XtendiMax® herbicide with VaporGrip® Technology
- Utilizing Roundup Ready® branded products ensures compatibility and lowest potential for off target movement

OTHER ADDITIVES AND TANK MIXTURES

- **A drift reduction additive (DRA) can reduce driftable fines but is not required**
 - Not all DRAs are compatible with every nozzle and pesticide/adjuvant combination
 - DRAs can create a thicker spray solution making sprayer cleanout more difficult.
 - Increased water volume is recommended if using a DRA to maintain coverage; use at least 15 GPA.
 - Need to operate in mid to upper pressure range of nozzle to maintain pattern
 - A DRA is **NOT** a substitute for upgrading to the proper nozzle.
- **A quality non-ionic surfacant (NIS) of at least 70% active may be added at 0.25% v/v**
- **Bayer Canada always recommends the addition of Roundup WeatherMAX[®] herbicide or Roundup Transorb[®] HC herbicide when using XtendiMax[®] herbicide with VaporGrip[®] Technology to improve overall weed control.**

OTHER KEY CONSIDERATIONS

- Confirm proper herbicide resistant trait technology is in the field (Roundup Ready 2 Xtend® Soybeans)
- Application awareness
 - Survey the application site for neighboring sensitive crops (e.g. non-glyphosate and dicamba tolerant soybean, tomatoes, potatoes, grapes, peas, fruit trees, flowers and other broadleaf plants)
 - Talk and coordinate with neighbors where possible
- Apply to small actively growing weeds (<10 cm or 4" tall)
 - Early applications help protect yield potential
 - Smaller weeds are easier to control than big weeds
- It is recommended that speed is reduced at field edges if the applicator can maintain the required nozzle pressure and ensure proper boom height
- It is recommended to keep detailed application records including date & time of application, wind speed & direction, nozzle type, spray pressure & volume, sprayer speed, crop stage, etc.

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KEY WEATHER CONDITIONS TO CONSIDER

- **DO NOT APPLY** when weather conditions may cause drift to sensitive crops (e.g. gusty wind toward adjacent sensitive areas or crops; ex non-Roundup Ready 2 Xtend® Soybeans)
 - Apply when wind is blowing away from sensitive areas or crops
- Avoid applications when the temperature is expected to exceed 30°C
- **DO NOT APPLY** during a Temperature Inversion as potential for Off Target Movement increases
 - Dead Calm conditions indicate a potential temperature inversion
 - Application during daylight hours is recommended

APPLICATION REQUIREMENTS



NOZZLES

Use nozzles and operating pressures that produce extremely coarse to ultra-coarse droplets to minimize drift



WIND SPEED

Optimal wind speeds for application typically occur between 5 and 15 km/h



WATER VOLUME

Minimum carrier volume is 10 GPA (15 GPA is recommended when using a DRA)



BOOM HEIGHT

Maintain boom height 50 cm above crop canopy to reduce the risk of drift



LABEL BUFFER

Maintain the required label buffer to protect sensitive areas



AMMONIUM SULFATE

Ammonium sulfate and ammonium-based additives are restricted in applications



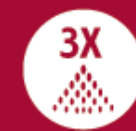
WEED HEIGHT

Spray weeds less than 10 cm tall



GROUND SPEEDS

Make sure ground speed is less than 25 km/h



TRIPLE RINSE

Use triple rinse tank clean-out procedure

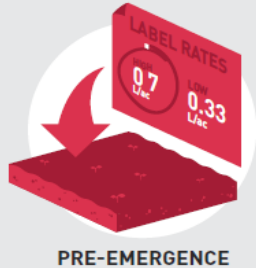
SUMMARY OF KEY LABEL APPLICATION REQUIREMENTS

- Use nozzle and spray pressure combinations that produce Extremely Coarse to Ultra Coarse Droplets and minimize driftable fines
- Spray early before weeds get large (<10cm)
- Keep boom height ≤ 50 cm from target crop or weed canopy
- Apply when wind speeds are between 5-15 km/h and when wind is blowing away from sensitive areas or crops
- Do not exceed a ground speed of 25 km/h
- Use a minimum of 100 L/ha (10 GPA) of spray solution per acre for optimal performance
 - It is recommended to Increase application volume to 150 L/ha (15 GPA) when targeting large weeds or using a Drift Reduction Additive (DRA)
- Do not apply during a Temperature Inversion as potential for Off Target Movement increases
 - Application during daylight hours is recommended
- Do not mix with Ammonium Sulfate and other ammonium-based additives
- Use triple rinse clean-out procedure

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KEY RECOMMENDATIONS FOR SUCCESS WITH THE ROUNDUP READY® XTEND CROP SYSTEM



- Apply the **high** label rate of Roundup Xtend® herbicide with VaporGrip® Technology **or** XtendiMax® herbicide with VaporGrip® Technology along with Roundup WeatherMAX® herbicide as part of the **first herbicide application** in the field



ULTRA COARSE



CORRECT PRESSURE

- Use Ultra Coarse (UC) spray quality and follow the application requirements: it is important to maintain proper operating pressure to maintain adequate pattern and droplet size



- Include an additional effective site of action when targeting glyphosate-resistant weeds for effective weed control and proper herbicide stewardship.

* For complete application requirements read and follow product labels



THANK YOU!

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Performance may vary from location to location and from year to year, as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on the grower's fields.

ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. Roundup Ready® 2 Technology contains genes that confer tolerance to glyphosate. Roundup Ready 2 Xtend® soybeans contains genes that confer tolerance to glyphosate and dicamba. Glyphosate will kill crops that are not tolerant to glyphosate. **Dicamba** will kill crops that are not tolerant to dicamba. Contact your local crop protection dealer or call the technical support line at 1-800-667-4944 for recommended Roundup Ready® Xtend Crop System weed control programs. Roundup Ready 2 Xtend®, Roundup Ready 2 Yield®, Roundup Ready®, Roundup Transorb®, Roundup WeatherMAX®, Roundup Xtend®, Transorb®, VaporGrip® and XtendiMax® are registered trademarks of Bayer Group, Monsanto Canada ULC licensee. BlackHawk® and Bifecta™ are registered trademarks of Nufarm Agriculture Inc. Fierce® is a registered trademark of Valent U.S.A LLC and Valtera™ is a trademark of Valent U.S.A. LLC. All other trademarks are the property of their respective owners. ©2020 Bayer Group. All rights reserved.