



2018-2019 Seasons:

Roundup Ready® Xtend Crop System Delivers On-Target Control of Weeds

IN THIS TOOLKIT:

Roundup Ready Xtend
Crop System Adoption

Off-Target Movement Inquiries

Bayer-Led Dicamba Field Trials

After Three Seasons, Roundup Ready 2 Xtend® Soybeans & Cotton with XtendFlex® Technology Acres Continue to Increase – to 60M Acres in 2019

The Roundup Ready® Xtend Crop System controls more weeds than any other soybean system.*

IN 2019, DICAMBA WAS APPLIED OVER NEARLY 40M ACRES OF DICAMBA-TOLERANT SOYBEANS AND COTTON

YEAR	ROUNDUP READY 2 XTEND SOYBEANS			COTTON WITH XTENDFLEX TECHNOLOGY		
	Acres Planted	Acres that received a Dicamba** application		Acres Planted	Acres that received a Dicamba** application	
		Pre-Emergent	Post-Emergent		Pre-Emergent	Post-Emergent
2017	21M	1M	12M	7M	0.5M	6M
2018	44M	4M	25M	8M	1M	7M
2019	50M (expected)	5M*** (expected)	26M*** (expected)	10M (expected)	0.5M*** (expected)	8M*** (expected)

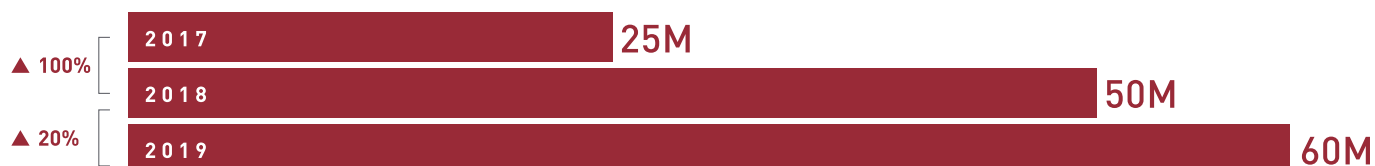
* Based on approved EPA herbicide labels as of Aug. 2018.

** Any dicamba herbicide approved for use over the top of dicamba-tolerant soybeans and cotton.

*** Estimate based on internal Bayer data.

Significant Decrease in Off-Target Movement Inquiries Reported to Bayer Over Three Seasons

ROUNDUP READY XTEND CROP SYSTEM ACRES*



OFF-TARGET MOVEMENT INQUIRIES**



INQUIRIES PER MILLION ACRES PLANTED*



* Acres includes Roundup Ready 2 Xtend® Soybeans and Cotton with XtendFlex® Technology.

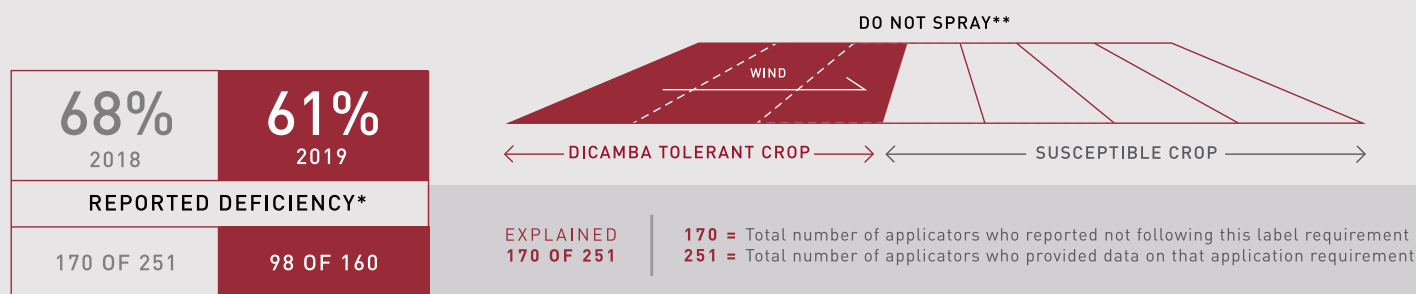
** Inquiry figures reflect all inquiries received to 1-844-RRXTEND, regardless of final findings regarding symptomology causes or sources.

Note: Figures reflect only those inquiries received by Bayer and do not account for inquiries received by State Departments of Agriculture. Bayer is one of four registrants of over-the-top dicamba technologies.

Key Findings from Applicator Reported Off-Target Movement Inquiries

Based on evaluations of 2018 and 2019 inquiries, Bayer found that the majority of farmers and applicators followed XtendiMax® Herbicide with VaporGrip® Technology, a restricted use pesticide, label requirements, resulting in successful on-target applications. Instances where off-target movement did occur were almost always linked to not following label requirements, such as spraying downwind toward a susceptible crop, boom height, not using proper spray nozzles and sprayer hygiene.

PRIMARY APPLICATOR REPORTED DEFICIENCY: SPRAYING DOWNWIND TOWARDS SUSCEPTIBLE CROPS



OTHER DEFICIENCIES REPORTED BY APPLICATORS

IMPROPER SPRAYER HYGIENE	UNAPPROVED TANK MIX: AMS	UNAPPROVED NOZZLES	INCORRECT BOOM HEIGHT
12% 2018 4% 2019	5% 2018 0.6% 2019	7% 2018 7% 2019	8% 2018 8% 2019
REPORTED DEFICIENCY	REPORTED DEFICIENCY	REPORTED DEFICIENCY	REPORTED DEFICIENCY
31 OF 260	13 OF 260	18 OF 251	19 OF 244
7 OF 160	1 OF 160	11 OF 160	13 OF 160

* Results based on total number of applicator evaluations completed related to specific application requirement.

** Applications associated with Do Not Spray only include those dicamba applications that took place immediately adjacent to a downwind susceptible crop.

Note: Not all applicators provided data on each requirement. 2018 total applicator inquiries evaluated as of 10/19/18 = 260. 2019 total applicator inquiries evaluated as of 9/25/19 = 160.

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XtendiMax® herbicide with VaporGrip® Technology is part of the Roundup Ready® Xtend Crop System and is a restricted use pesticide. ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. It is a violation of federal and state law to use any pesticide product other than in accordance with its labeling. XtendiMax® herbicide with VaporGrip® Technology and products with XtendFlex® Technology may not be approved in all states and may be subject to use restrictions in some states. Check with your local product dealer or representative or U.S. EPA and your state pesticide regulatory agency for the product registration status and additional restrictions in your state. For approved tank-mix products and nozzles visit XtendiMaxApplicationRequirements.com.

NOT ALL formulations of dicamba or glyphosate are approved for in-crop use with Roundup Ready 2 Xtend® soybeans. NOT ALL formulations of dicamba, glyphosate or glufosinate are approved for in-crop use with cotton with XtendFlex® Technology. ONLY USE FORMULATIONS THAT ARE SPECIFICALLY LABELED FOR SUCH USES AND APPROVED FOR SUCH USE IN THE STATE OF APPLICATION. Contact the U.S. EPA and your state pesticide regulatory agency with any questions about the approval status of dicamba herbicide products for in-crop use with Roundup Ready 2 Xtend® soybeans or cotton with XtendFlex® Technology.

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.

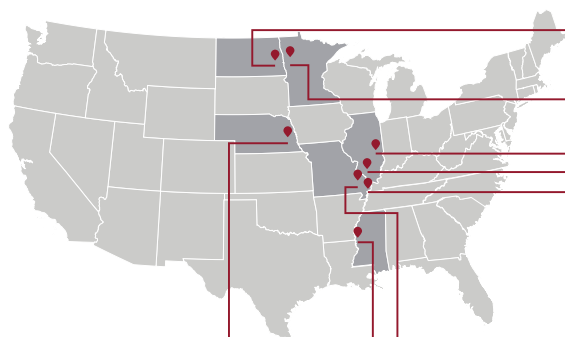
Roundup Ready 2 Xtend® soybeans contain genes that confer tolerance to glyphosate and dicamba. Cotton with XtendFlex® Technology contains genes that confer tolerance to glyphosate, glufosinate and dicamba. Glyphosate will kill crops that are not tolerant to glyphosate. Dicamba will kill crops that are not tolerant to dicamba. Glufosinate will kill crops that are not tolerant to glufosinate. Contact your seed brand dealer or refer to the Monsanto Technology Use Guide for recommended weed control programs.

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2018-2019 Bayer Regulatory Field Trials Tested Off-Target Movement Potential in a Range of Environments

Bayer conducted a series of field trials* across key growing regions in a variety of environmental conditions to measure off-target movement, including volatility, spray drift and plant effects following spray applications of XtendiMax® Herbicide with VaporGrip® Technology, a restricted use pesticide, + Roundup PowerMAX® + an approved DRA.



PAGE, ND
10 ACRES / JULY 24, 2018

+ Max Soil Temp (°F): 111
+ Max Air Temp (°F): 81
+ Humidity: 40-100%
+ Soil: Sandy loam, pH: 6.0

ADA, MN
10 ACRES / JUNE 20, 2018

+ Max Soil Temp (°F): 116
+ Max Air Temp (°F): 94
+ Humidity: 37-92%
+ Soil: Silt loam, pH: 6.7

EFFINGHAM, IL
19 ACRES / AUGUST 8, 2019

+ Max Soil Temp (°F): 106
+ Max Air Temp (°F): 89
+ Humidity: 38-100%
+ Soil: Silt loam, pH: 6.1

SHATTUC, IL
10 ACRES / JULY 7, 2018

+ Max Soil Temp (°F): 108
+ Max Air Temp (°F): 95
+ Humidity: 31-100%
+ Soil: Silt loam, pH: 6.0

SEWARD, NE
100 ACRES / JUNE 8, 2018

+ Max Soil Temp (°F): 127
+ Max Air Temp (°F): 91
+ Humidity: 58-93%
+ Soil: Silt loam, pH: 4.9

GREENVILLE, MS
25 ACRES / JUNE 22, 2019

+ Max Soil Temp (°F): 132
+ Max Air Temp (°F): 97
+ Humidity: 45-99%
+ Soil: Clay, pH: 7.3

MATTHEWS, MO
19 ACRES / SEPTEMBER 11, 2019

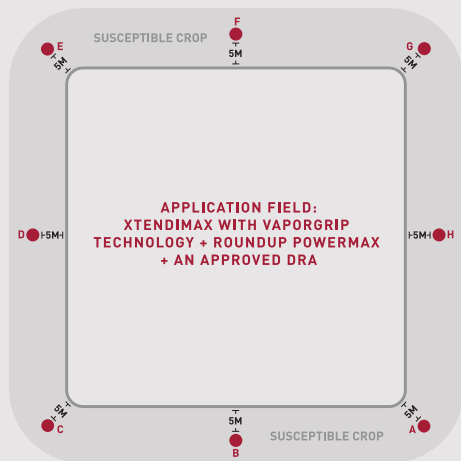
+ Max Soil Temp (°F): 117
+ Max Air Temp (°F): 100
+ Humidity: 30-95%
+ Soil: Sandy loam, pH: 6.7

CHARLESTON, MO
10 ACRES / JUNE 5, 2018

+ Max Soil Temp (°F): 135
+ Max Air Temp (°F): 95
+ Humidity: 29-93%
+ Soil: Silt loam, pH: 6.7

* These trials were conducted under Good Laboratory Practice (GLP), an EPA compliance program, that is the gold seal of testing as it imposes stringent, international standards that are subject to EPA oversight and severe penalties for non-compliance.

FIELD TRIAL DESIGN

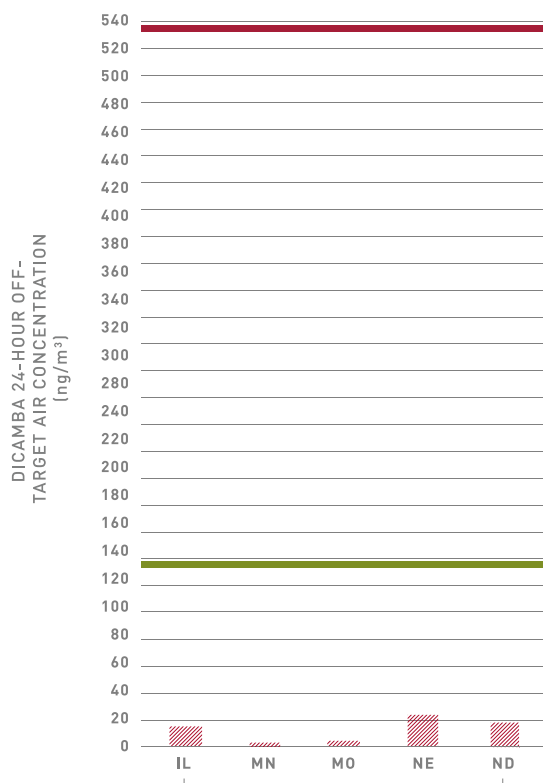


- PERIMETER SAMPLER WITHIN 5M OF FIELD
- TEST PLOT
- SUSCEPTIBLE CROP

- + Air concentrations were measured at 5M from edge of field for 3-7 days, depending on the trial
- + Peak volatility occurs within 24 hours of application
- + All trials followed Good Laboratory Practices

RESULTS (2018 FIELD TRIALS)**

Extended volatility monitoring demonstrated minimal symptomology using application protocols.



50%
No expansion of terminal leaf.



10-15%
Slight crinkle of leaflets on terminal leaf.

XtendiMax with VaporGrip Technology + Roundup PowerMAX Herbicide + Intact (DRA)

** 2019 field trial results are currently being compiled.