

Herbicide



RESEARCH UPDATE CORN TRIALS 2019

ACTIVE INGREDIENTS:

Pyridate (Carbonothioic acid, O-(6-chloro-3-phenyl-4-pyridiziny) S-octyl ester):..... 56.1%

OTHER INGREDIENTS: 43.9%

TOTAL: 100.00%

* Contains 5 lbs of pyridate per gallon of product

QUICK FACTS:

- *Post-emergent, contact application only*
- *Rainfast within 1 hour*
- *No residual or rotation restrictions*
- *Controls key broadleaf weeds such as but not limited to: Common Waterhemp, Palmer amaranth, Kochia, Common Lambsquarters, Black Nightshade, Marestalk, (Horseweed)*

- *Tank-mixed: 8 oz/ac with other products active on the key weeds*

Mode of Action:

- *Photosynthesis II inhibitor*
- *Targets unique pathway within the PSII group of herbicides (Groups 5, 6 & 7)*
- *WSSA Classification: Group 6*
- *No known cross-resistance to other PSII's*

For the past several years, Belchim USA has coordinated with key universities across the US corn belt to evaluate **TOUGH® 5EC** in numerous research trials (>100 trials).

Results show significant increase in weed control when **TOUGH® 5EC** is included in the tank mix. Increased weed control of 5% to as much as 29% has been observed; especially when herbicide resistance to other classes of chemistry are present in the weed population.

Synergy with HPPD class of herbicides is glaringly evident. Enhancement of atrazine is also evident and the ability to increase the use of PSII class of chemistry while maintaining crop safety.

Glyphosate Resistant Palmer Amaranth			
University of Illinois 2019	% Percent Control		
Treatment	7 DAA	14 DAA	28 DAA
Roundup PowerMax 32 oz + Aatrex 2.4 pt	91	86	82
Roundup PowerMax 32 oz + TOUGH 5EC 8 oz	90	82	77
Roundup PowerMax 32 oz + Callisto 3 oz	85	80	75
Roundup PowerMax 32 oz + Callisto 3 oz + Aatrex 2.4 pt + TOUGH 5EC 8 oz	99	99	98
Purdue University 2019*	% Percent Control		
Treatment	7 DAA	14 DAA	
Roundup PowerMax 32 oz	84	88	
Halex GT 3.6 pt	85	93	
Halex GT 3.6 pt + TOUGH 5EC 8 oz	94	98	

* Timed for Large Pigweed- 5 inch average

Glyphosate Resistant Common Waterhemp	
Iowa State University 2019	% Percent Control
Treatment	8 DAA
Roundup 32 oz + TOUGH 5EC 8 oz	67
Roundup 32 oz + Callisto 3 oz	85
Roundup 32 oz + Callisto 3 oz + TOUGH 5EC 8 oz	99

PPO & Glyphosate Resistant Common Waterhemp		
University of Illinois 2019	% Percent Control	
Treatment	7 DAA	28 DAA
Roundup 32 oz + Callisto 3 oz	72	65
Roundup 32 oz + Callisto 3 oz + TOUGH 5EC 8 oz	86	80
Roundup 32 oz + Callisto 3 oz + Aatrex 2.4 pt + TOUGH 5EC 8 oz	99	98

HPPD Resistant Common Waterhemp			
Iowa State University 2019	% Percent Control		
Treatment	9 DAA	13 DAA	28 DAA
Callisto 3 oz	77	73	53
Roundup 32 oz + Callisto 3 oz	82	82	67
Roundup 32 oz + Callisto 3 oz + TOUGH 5EC 8 oz	95	93	87

Manufactured by:


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RESEARCH UPDATE

CORN TRIALS

2017-2018

Glyphosate Resistant Common Waterhemp		
Iowa State University 2017	% Percent Control	
Treatment	16 DAA	31 DAA
Roundup 32 oz + Callisto 3 oz	87	90
Roundup 32 oz + Callisto 3 oz + TOUGH 5EC 8 oz	98	98
Treatment	14 DAA	29 DAA
Callisto 3 oz	72	63
Callisto 3 oz + TOUGH 5EC 8 oz	87	80
University of Illinois 2018	% Percent Control	
Treatment	16 DAA	30 DAA
Roundup PowerMax 32 oz	63	67
Roundup PowerMax 32 oz + Aatrex 2.4 pt	68	68
Roundup PowerMax 32 oz + Aatrex 2.4 pt + TOUGH 5EC 8 oz	83	88

Palmer Amaranth			
University of Arkansas 2018	% Percent Control		
Treatment	14 DAA	28 DAA	42 DAA
Roundup PowerMax 32 oz + Callisto 3 oz	95	89	76
Roundup PowerMax 32 oz + Callisto 3 oz + TOUGH 5EC 8 oz	100	99	94
University of Illinois 2018	% Percent Control		
Treatment	7 DAA	14 DAA	28 DAA
Roundup PowerMax 32 oz + Callisto 3 oz	89	89	87
Roundup PowerMax 32 oz + Callisto 3 oz + TOUGH 5EC 8 oz	96	99	99
Treatment	7 DAA	14 DAA	28 DAA
Roundup PowerMax 32 oz + Aatrex 2.4 pt	85	86	82
Aatrex 2.4 pt + TOUGH 5EC 8 oz	92	94	93
Roundup PowerMax 32 oz + Aatrex 2.4 pt + TOUGH 5EC 8 oz	90	93	92

Glyphosate Resistant Palmer Amaranth		
Purdue University 2017	% Percent Control	
Treatment	7 DAA	14 DAA
Roundup 32 oz	53	54
Roundup 32 oz + Callisto 3 oz	60	82
Roundup 32 oz + Callisto 3 oz + TOUGH 5EC 8 oz	91	98
Purdue University 2018	% Percent Control	
Treatment	7 DAA	14 DAA
Roundup PowerMax 32 oz + Callisto 3 oz	76	83
Roundup PowerMax 32 oz + Callisto 3 oz + TOUGH 5EC 8 oz	94	97

This is a synopsis from research conducted in 2017, 2018 and 2019. In summary TOUGH® 5EC:

- Will enhance control of tank-mix partners for "tough" to control weeds and help moderate / prevent herbicide resistance selection
- Shows confirmed performance at all major universities in the corn belt
- Is flexible with lower chemical profile
- Has a wide window of application
- Exhibits no antagonism to commonly used herbicides on corn (glyphosate, HPPD's)
- Is rainfast within 1 hour
- Offers post-emergent, contact activity only
- Has no residual activity or concerns
- Requires no plant back restrictions
- Has no environmental concerns
- Shows no crop injury to corn
- Provides application flexibility to help control rapidly growing weeds such as pigweeds

For complete trial information, please contact your local Belchim USA Representative.

TOUGH® 5EC is not registered for sale or use in the United States. No sales will be made, or product commercially used prior to issuance of the required EPA and state registrations.
EPA Registration Pending- Estimated July 2020

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