

Pre-Plant Burndown Trial Summary



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

ACTIVE INGREDIENT:

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

OTHER INGREDIENTS: 43.9%

TOTAL: 100.00%

* Contains 5 lbs of pyridate per gallon of product

Observing an increase in herbicide resistance across the USA, Belchim Crop Protection revitalized a valuable chemistry, **TOUGH® 5EC**, (pyridate) in effort to preserve the long-term use of the valuable class of HPPD herbicides in corn.

Beginning in 2017, Belchim Crop Protection USA coordinated with key universities across the corn belt, implementing trials evaluating the effectiveness of **TOUGH 5EC** as part of a post emergent program in corn. As research showed an evident synergy* with the HPPD class of herbicides, and significant increased control in post emergent applications, a discussion to include **TOUGH 5EC** in a pre-plant burndown program began. As a result, trials evaluating the effectiveness of **TOUGH 5EC** as part of a pre-plant burndown program were conducted at various universities focusing on Marestail. A few of the trials also included Giant Ragweed. The results of these trials confirmed that including **TOUGH 5EC** in a pre-plant burndown program increases control of these tough to kill weeds. A synopsis of the results of trials conducted in 2019-2022 is below.

Marestail 3-6" Tall; 7/ft ²		
Iowa State University	% Percent Control	
Treatment	7 DAA	14 DAA
Gramoxone 3.0 pt + ShieldEx 0.68 oz	62	57
Gramoxone 3.0 pt + ShieldEx 0.68 oz + TOUGH 5EC 8 oz	73	75
Gramoxone 3.0 pt + ShieldEx 1.0 oz	67	68
Gramoxone 3.0 pt + ShieldEx 1.0 oz + TOUGH 5EC 8 oz	73	82
COC added		

Marestail 1-8" Tall; 8/ft ²			
Purdue University	% Percent Control		
Treatment	7 DAA	14 DAA	28 DAA
Gramoxone 1.0 pt + ShieldEx 0.68 oz	80	77	73
Gramoxone 1.0 pt + ShieldEx 0.68 oz + TOUGH 5EC 8 oz	96	96	94
Gramoxone 1.0 pt + ShieldEx 1.0 oz	83	84	81
Gramoxone 1.0 pt + ShieldEx 1.0 oz + TOUGH 5EC 8 oz	94	95	94
COC added			

Marestail 1-8" Tall; 8/ft ²		
Purdue University	% Percent Control	
Treatment	7 DAA	14 DAA
Gramoxone 1.0 pt	71	66
Gramoxone 1.0 pt + Tricor 75DF 0.33 lb	89	85
Gramoxone 1.0 pt + Tricor 75DF 0.33 lb + TOUGH 5EC 8oz	94	90
COC added		

Marestail			
University of Missouri	% Percent Control		
Treatment	7 DAA	14 DAA	28 DAA
Gramoxone 2.7 pt	56	54	60
Gramoxone 2.7pt + Callisto 3oz + TOUGH 5EC 8oz	58	90	94
NIS added			



CORN RESEARCH UPDATE

Pre Plant Burndown Trial Summary

Marestail 1-5" Tall			
University of Illinois	% Percent Control		
Treatment	7 DAA	14 DAA	28 DAA
Roundup PowerMAX 22oz	57	58	58
Roundup PowerMAX 22 oz + Callisto 3 oz + TOUGH 5EC 8 oz	75	91	87
Soil Moisture: Normal, AMS added			

Marestail 3-7" Tall; 10/ft ²			
Purdue University	% Percent Control		
Treatment	7 DAA	14 DAA	28 DAA
Roundup PowerMAX 22oz	18	13	15
Roundup PowerMAX 22 oz + Callisto 3 oz + TOUGH 5EC 8 oz	100	100	100
Soil Moisture: Very Dry, AMS added			

Marestail			
University of Missouri	% Percent Control		
Treatment	7 DAA	14 DAA	28 DAA
Roundup PowerMAX 22oz	0	14	10
Roundup PowerMAX 22 oz + Callisto 3 oz + TOUGH 5EC 8 oz	3	66	72
Soil Moisture: Wet, AMS not added			

Marestail 3-9" Tall; 2/ft ²			
Iowa State University	% Percent Control		
Treatment	7 DAA	14 DAA	28 DAA
Roundup PowerMAX 22oz	33	43	43
Roundup PowerMAX 22 oz + Callisto 3 oz + TOUGH 5EC 8 oz	90	97	97
Soil Moisture: Wet, AMS not added			

Marestail 3" Tall,		
Ohio State	% Percent Control	
Treatment	7 DAA	14 DAA
Roundup PowerMAX 22oz	30	70
Roundup PowerMAX 22 oz + Callisto 3 oz + TOUGH 5EC 8 oz	42	91

Giant Ragweed 1-2" Tall		
Ohio State	% Percent Control	
Treatment	14 DAA	28 DAA
Roundup PowerMAX 22oz	27	28
Roundup PowerMAX 22 oz + Callisto 3 oz + TOUGH 5EC 8 oz	93	95
AMS not added		

Giant Ragweed 4-10" Tall; 5/ft ²		
Iowa State University	% Percent Control	
Treatment	14 DAA	42 DAA
Roundup PowerMAX 22oz	40	37
Roundup PowerMAX 22 oz + Callisto 3 oz + TOUGH 5EC 8 oz	82	75
Soil Moisture: Wet, AMS not added		

Note: TOUGH 5EC is currently labeled for pre-plant burndown on field corn, seed corn, and popcorn.

A label extension to add crops for pre-plant burndown has been submitted to EPA - expected approval later in 2023.

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

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