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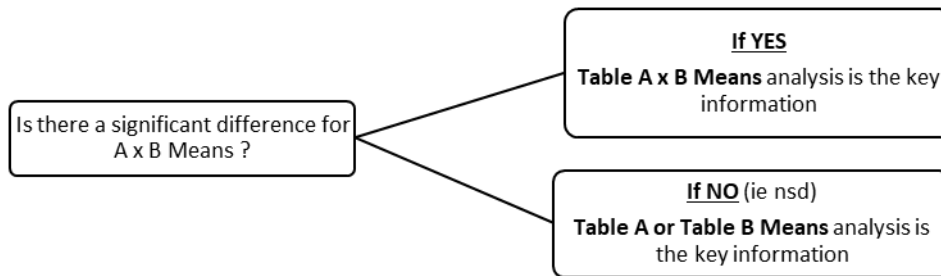
Knockdown Control of Common Sowthistle

Trial ID: **BD1904** Location: **Mullaley** Trial Year: **2019**
Investigator: **Branko Duric**

Objective:	To evaluate alternatives to glyphosate for the knockdown control of common sowthistle	
Situation:	Fallow	
Application:	A	B
	First Knock	Second Knock
Application Date:	22/05/2019	30/05/2019
Application Timing:	Early post emergent	8 days after Application A
Nozzles:	AIXR 110015	
Volume:	100L/ha	
Weed:	Common Sowthistle	
Weed Stage at Application:	60% population at 20 cm diameter with 6 true leaves	
Weed Population at Application:	1.9 plants/m²	
Keywords:	Common sowthistle, knockdown, double knock, fallow	

Trial designed and analysed as a Strip Plot

	In Simple Terms
Table of A Means:	Mean of 'First knock' performance with ALL 'Second knock' treatments
Table of B Means:	Mean of 'Second knock' performance with ALL 'First knock' treatments
Table of A x B Means:	'First knock' performance with EACH 'Second knock' treatment



NB: Assessment of first knock % burndown was analysed as a standard AOV. This assessment was conducted prior to second knock application.

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Table 1 - First Knock Burndown Assessment

Pest Scientific Name				<i>Sonchus oleraceus</i>
Pest Name				Common Sowthistle
Assessment Date				30/05/2019
Assessment Type				BURNDOWN
Assessment Unit				%
Treatment-Evaluation Interval				8 DAA
ARM Action Codes				AA
Trt No.	Treatment	Product Rate	Appln. Code	
1	Roundup CT	1000ml/ha	A	1.1g
2	Roundup CT	2000ml/ha	A	3.3fg
3	Roundup CT	2000ml/ha	A	20.0de
	Amicide 700	1600ml/ha	A	
	Hasten	1% v/v	A	
4	Amicide 700	1600ml/ha	A	26.5de
	Hasten	1% v/v	A	
5	Tordon 75-D	1000ml/ha	A	25.0de
6	Roundup CT	2000ml/ha	A	98.9a
	Sharpen	17g/ha	A	
	Hasten	1% v/v	A	
7	Amicide 700	1600ml/ha	A	93.5a
	Sharpen	9g/ha	A	
	Hasten	1% v/v	A	
8	Group HC V	600ml/ha	A	16.4e
	Hasten	1% v/v	A	
9	Gramoxone	1600ml/ha	A	90.0a
10	Paradigm	25g/ha	A	13.0ef
	Agritone	200ml/ha	A	
11	Group C A	2500g/ha	A	23.2de
	Group R R	3500ml/ha	A	
	Hasten	1% v/v	A	
12	Experimental	4000ml/ha	A	36.5cd
	Uptake	0.5% v/v	A	
13	Pixxaro	400ml/ha	A	14.1ef
14	Basta	3750ml/ha	A	36.1cd
15	Basta	5000ml/ha	A	53.4bc
16	Basta	3750ml/ha	A	63.9b
	Amicide 700	1600ml/ha	A	
LSD P=.05				12.3t
Treatment Prob.(F)=				0.0001

Means followed by same letter do not significantly differ (P=.05, LSD)

t=Mean descriptions are reported in transformed data units, and are not de-transformed.

Mean comparisons performed only when AOV Treatment P (F) is significant at mean comparison OSL.

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Table 2 – Surviving Common Sowthistle Count

Pest Scientific Name				<i>Sonchus oleraceus</i>
Pest Name				Common Sowthistle
Assessment Date				3/07/2019
Assessment Type				COUNT
Assessment Unit				/m ²
Treatment-Evaluation Interval				42 DAA/ 34 DAB
Trt No.	Treatment	Product Rate	Appln. Code	
TABLE OF A MEANS (First Knock)				
1	Roundup CT	1000ml/ha	A	0.08ef
2	Roundup CT	2000ml/ha	A	0.18def
3	Roundup CT	2000ml/ha	A	0.25c-f
	Amicide 700 Hasten	1600ml/ha 1% v/v	A A	
4	Amicide 700	1600ml/ha	A	0.47abc
	Hasten	1% v/v	A	
5	Tordon 75-D	1000ml/ha	A	0.44a-d
6	Roundup CT	2000ml/ha	A	0.00f
	Sharpen	17g/ha	A	
	Hasten	1% v/v	A	
7	Amicide 700	1600ml/ha	A	0.11ef
	Sharpen	9g/ha	A	
	Hasten	1% v/v	A	
8	Group HC V	600ml/ha	A	0.03f
	Hasten	1% v/v	A	
9	Gramoxone	1600ml/ha	A	0.33b-e
10	Paradigm	25g/ha	A	0.61a
	Agritone	200ml/ha	A	
11	Group C A	2500g/ha	A	0.19def
	Group R R	3500ml/ha	A	
	Hasten	1% v/v	A	
12	Experimental	4000ml/ha	A	0.05f
	Uptake	0.5% v/v	A	
13	Pixxaro	400ml/ha	A	0.54ab
14	Basta	3750ml/ha	A	0.00f
15	Basta	5000ml/ha	A	0.00f
16	Basta	3750ml/ha	A	0.00f
	Amicide 700	1600ml/ha	A	
TABLE OF B MEANS (Second Knock)				
1	First knock only	-	-	0.41a
2	Gramoxone	1600ml/ha	B	0.01b
	Sharpen	9g/ha	B	
	Hasten	1% v/v	B	
TABLE OF A x B MEANS (First Knock x Second Knock)				
1	Roundup CT	1000ml/ha	A	0.17ef
1b	Roundup CT	1000ml/ha	A	0.00f
	Gramoxone	1600ml/ha	B	
	Sharpen	9g/ha	B	
	Hasten	1% v/v	B	
2	Roundup CT	2000ml/ha	A	0.35def
2b	Roundup CT	2000ml/ha	A	0.00f
	Gramoxone	1600ml/ha	B	
	Sharpen	9g/ha	B	
	Hasten	1% v/v	B	

Means followed by same letter do not significantly differ (P=.05, LSD)

Knockdown Control of Common Sowthistle

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Location: Mullaleys

Trial Year: 2019

Pest Scientific Name				<i>Sonchus oleraceus</i>
Pest Name				Common Sowthistle
Assessment Date				3/07/2019
Assessment Type				COUNT
Assessment Unit				/m ²
Treatment-Evaluation Interval				42 DAA/ 34 DAB
Trt No.	Treatment	Product Rate	Appln. Code	
3	Roundup CT	2000ml/ha	A	0.50cde
	Amicide 700	1600ml/ha	A	
	Hasten	1% v/v	A	
3b	Roundup CT	2000ml/ha	A	0.00f
	Amicide 700	1600ml/ha	A	
	Hasten	1% v/v	A	
	Gramoxone	1600ml/ha	B	
	Sharpen	9g/ha	B	
4	Amicide 700	1600ml/ha	A	0.94ab
	Hasten	1% v/v	A	
4b	Amicide 700	1600ml/ha	A	0.00f
	Hasten	1% v/v	A	
	Gramoxone	1600ml/ha	B	
	Sharpen	9g/ha	B	
	Hasten	1% v/v	B	
5	Tordon 75-D	1000ml/ha	A	0.85abc
5b	Tordon 75-D	1000ml/ha	A	0.02f
	Gramoxone	1600ml/ha	B	
	Sharpen	9g/ha	B	
	Hasten	1% v/v	B	
6	Roundup CT	2000ml/ha	A	0.00f
	Sharpen	17g/ha	A	
	Hasten	1% v/v	A	
6b	Roundup CT	2000ml/ha	A	0.00f
	Sharpen	17g/ha	A	
	Hasten	1% v/v	A	
	Gramoxone	1600ml/ha	B	
	Sharpen	9g/ha	B	
7	Amicide 700	1600ml/ha	A	0.23ef
	Sharpen	9g/ha	A	
	Hasten	1% v/v	A	
7b	Amicide 700	1600ml/ha	A	0.00f
	Sharpen	9g/ha	A	
	Hasten	1% v/v	A	
	Gramoxone	1600ml/ha	B	
	Sharpen	9g/ha	B	
8	Group HC V	600ml/ha	A	0.06f
	Hasten	1% v/v	A	
8b	Group HC V	600ml/ha	A	0.00f
	Hasten	1% v/v	A	
	Gramoxone	1600ml/ha	B	
	Sharpen	9g/ha	B	
	Hasten	1% v/v	B	

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Pest Scientific Name				<i>Sonchus oleraceus</i>
Pest Name				Common Sowthistle
Assessment Date				3/07/2019
Assessment Type				COUNT
Assessment Unit				/m ²
Treatment-Evaluation Interval				42 DAA/ 34 DAB
Trt No.	Treatment	Product Rate	Appln. Code	
9	Gramoxone	1600ml/ha	A	0.65bcd
9b	Gramoxone	1600ml/ha	A	0.02f
	Gramoxone	1600ml/ha	B	
	Sharpen	9g/ha	B	
	Hasten	1% v/v	B	
10	Paradigm	25g/ha	A	1.23a
	Agritone	200ml/ha	A	
10b	Paradigm	25g/ha	A	0.00f
	Agritone	200ml/ha	A	
	Gramoxone	1600ml/ha	B	
	Sharpen	9g/ha	B	
	Hasten	1% v/v	B	
11	Group C A	2500g/ha	A	0.38def
	Group R R	3500ml/ha	A	
	Hasten	1% v/v	A	
11b	Group C A	2500g/ha	A	0.00f
	Group R R	3500ml/ha	A	
	Hasten	1% v/v	A	
	Gramoxone	1600ml/ha	B	
	Hasten	1% v/v	B	
12	Experimental	4000ml/ha	A	0.06f
	Uptake	0.5% v/v	A	
12b	Experimental	4000ml/ha	A	0.04f
	Uptake	0.5% v/v	A	
	Gramoxone	1600ml/ha	B	
	Sharpen	9g/ha	B	
	Hasten	1% v/v	B	
13	Pixxaro	400ml/ha	A	1.08a
13b	Pixxaro	400ml/ha	A	0.00f
	Gramoxone	1600ml/ha	B	
	Sharpen	9g/ha	B	
	Hasten	1% v/v	B	
14	Basta	3750ml/ha	A	0.00f
14b	Basta	3750ml/ha	A	0.00f
	Gramoxone	1600ml/ha	B	
	Sharpen	9g/ha	B	
	Hasten	1% v/v	B	
15	Basta	5000ml/ha	A	0.00f
15b	Basta	5000ml/ha	A	0.00f
	Gramoxone	1600ml/ha	B	
	Sharpen	9g/ha	B	
	Hasten	1% v/v	B	
16	Basta	3750ml/ha	A	0.00f
	Amicide 700	1600ml/ha	A	
16b	Basta	3750ml/ha	A	0.00f
	Amicide 700	1600ml/ha	A	
	Gramoxone	1600ml/ha	B	
	Sharpen	9g/ha	B	
	Hasten	1% v/v	B	

Knockdown Control of Common Sowthistle

Trial ID: **BD1904**Location: **Mullaley**Trial Year: **2019****Assessment Type**

BURNDOWN = % Burndown/brown out

ARM Action Codes

AA = Automatic arcsine square root % transformation

DAA = Days after Application A

DAB = Days after Application B

COMPLETE STRIP-BLOCK AOV*Sonchus oleraceus* - Common Sowthistle

3/07/2019

COUNT /m² DAA 42 DAB 34

Source	DF	Sum of Squares	Mean Square	F	Prob.(F)	LSD (.05)
Total	95	16.132161				
R	2	0.466878	0.233439	4.115	0.0264	
A	15	4.013672	0.267578	4.837	0.0001	0.28
RA	30	1.659424	0.055314			
B	1	3.860026	3.860026	18.532	0.0500	0.40
RB	2	0.416585	0.208293			
AB	15	4.013672	0.267578	4.717	0.0002	0.40
RAB	30	1.701904	0.056730			

Conclusions:

This trial was conducted to evaluate alternatives to glyphosate for the knockdown control of common sowthistle. First knock treatments were applied to a population of ~1.9/m² common sowthistle at the 6 leaf stage (~20cm diameter) with a second knock of Gramoxone 1600 mL/ha + Sharpen 9 g/ha + Hasten 1%, applied 8 days later.

A burndown assessment was done just before second knock application. Roundup CT 2000 mL/ha + Sharpen 17 g/ha, Amicide 700 1600 mL/ha + Sharpen 9 g/ha and Gramoxone 1600 mL/ha all provided >90% burndown.

Surviving counts were made 34 days after the second knock application. Complete control was provided by first knock treatments alone of Roundup CT + Sharpen, Basta at both rates and Basta + Amicide 700. All double knocked treatments provided >98% control of common sowthistle.

In this situation, a large number of non-glyphosate options provided complete control of common sowthistle at the 6 leaf stage when followed by a second knock of Gramoxone + Sharpen + Hasten. Only Basta alone or Basta + Amicide provided complete control as a single knock option.

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Trial Year: 2019

Application Description		
	A	B
Application Date:	22/05/2019	30/05/2019
Application Start Time:	11:30 AM	10:00 AM
Application Stop Time:	2:00 PM	12:00 PM
Application Method:	SPRAY	
Application Placement:	FOLIAR	
Air Temperature, Unit:	22 C	12 C
% Relative Humidity:	47	49
Wind Velocity, Unit:	1.0 m/s	3.0 m/s
Wind Direction:	SW	
Dew Presence (Y/N):	No	
% Cloud Cover:	20%	70%

Pest Stage at Each Application				
	A		B	
Pest:	<i>Sonchus oleraceus</i> Common Sowthistle			
Stage Majority, %:	16	60%	16	60%
Stage Minimum, %:	13	20%	13	20%
Stage Maximum, %:	18	20%	18	20%
Diameter, Unit:	20 cm		20 cm	
Density, Unit:	1.9 m ²		1.9 m ²	

Application Equipment		
	A	B
Application Equipment:	Polaris	
Equipment Type:	BOOM	
Operation Pressure, Unit:	300 kPa	
Nozzle Type:	AIXR	
Nozzle Size:	110015	
Nozzle Spacing, Unit:	50 cm	
Boom Length, Unit:	4 m	
Boom Height, Unit:	50 cm	
Ground Speed, Unit:	7.2 km/h	
Carrier:	WATER	
Spray Volume, Unit:	100 L/ha	