Alternative Second Knocks for Broadleaf Weeds

Trial ID: LB1821 **Location:** Irvingdale **Trial Year:** 2018
Investigator: Linda Bailey

Objective:	**To evaluate alternative second knock options for broadleaf weeds**		
Situation:	**Fallow**		
Application:	**A (First Knock)**	**B (Second Knock)**	
Application Date:	**31/10/2018**	**07/11/2018 (7 Days after Application A)**	
Nozzles:	**AIXR110015**		
Volume and Pressure:	**100 L/ha, 300 kPa**		
Weed:	**Flaxleaf Fleabane**	**Common Sowthistle**	**Yellow vine**
Weed Population:	**1.1 plants/m²**	**1.7 plants/m²**	**11.2 plants/m²**
Main Stage at Application:	**Buds visible, pre flowering, 20-25 cm tall**	**Early flowering, to 60cm tall**	**9 leaf, 10-35 cm diameter**
Keywords:	**Flaxleaf fleabane, yellow vine, common sowthistle, knockdown, double knock, fallow**		

NB: First knock was Roundup CT 2 L/ha + Zulu 750 mL/ha + Hasten 1% v/v.

Pest Scientific Name				***Conyza bonariensis***		***Sonchus oleraceus***	
Pest Name				**Flaxleaf Fleabane**		**Common Sowthistle**	
Assessment Date				**17/11/2018**	**13/12/2018**	**17/11/2018**	**13/12/2018**
Assessment Type				**BURNDOWN**	**COUNT**	**BURNDOWN**	**COUNT**
Assessment Unit				**%**	**/m²**	**%**	**/m²**
Treatment-Evaluation Interval				**17 DAA/ 10 DAB**	**43 DAA/ 36 DAB**	**17 DAA/ 10 DAB**	**43 DAA/ 36 DAB**
ARM Action Codes						**AA**	**AA**
Trt No.	**Treatment**	**Product Rate**	**Appln. Code**				
1	First Knock only	-	-	25 c	0.10 -	43 cd	0.09ab
2	Gramoxone 250	800ml/ha	B	22 c	0.23 -	22 d	0.12a
3	Gramoxone 250	1600ml/ha	B	40 bc	0.10 -	57 bcd	0.02bc
4	Gramoxone 250	2000ml/ha	B	85 a	0.02 -	84 ab	0.01c
5	Gramoxone 250	2400ml/ha	B	88 a	0.00 -	98 a	0.00c
6	Sharpen Hasten	9g/ha 1% v/v	B	88 a	0.00 -	90 ab	0.00c
7	Sharpen Hasten	17g/ha 1% v/v	B	95 a	0.00 -	91 a	0.00c
8	Sharpen Hasten	26g/ha 1% v/v	B	92 a	0.00 -	94 a	0.00c
9	Sharpen Hasten	34g/ha 1% v/v	B	92 a	0.00 -	89 ab	0.00c
10	Gramoxone 250 Sharpen	800ml/ha 9g/ha	B	45 bc	0.12 -	79 abc	0.00c
11	Gramoxone 250 Sharpen Hasten	800ml/ha 9g/ha 1% v/v	B	87 a	0.00 -	92 a	0.00c
12	Gramoxone 250 Sharpen Hasten	1600ml/ha 9g/ha 1% v/v	B	87 a	0.00 -	95 a	0.00c
13	Gramoxone 250 Sledge Hasten	1600ml/ha 80ml/ha 1% v/v	B	68 ab	0.02 -	98 a	0.00c
14	Gramoxone 250 Starane Advanced	1600ml/ha 400ml/ha	B	50 bc	0.00 -	79 abc	0.01c
			LSD P=.05	32.7	nsd	23.4t	1.023t
			Treatment Prob.(F)=	<0.01	0.14	<0.01	<0.01

Means followed by same letter do not significantly differ (P=.05, LSD) Missing data estimates are included in columns: Average=1
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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Pest Scientific Name				*Tribulus micrococcus*	
Pest Name				Yellow vine	
Assessment Date				17/11/2018	13/12/2018
Assessment Type				BURNDOWN	COUNT
Assessment Unit				%	/m²
Treatment-Evaluation Interval				17 DAA/ 10 DAB	43 DAA/ 36 DAB
ARM Action Codes					AA
Trt No.	Treatment	Product Rate	Appln. Code		
1	First Knock only	-	-	100-	0.01-
2	Gramoxone 250	800ml/ha	B	90-	0.12-
3	Gramoxone 250	1600ml/ha	B	100-	0.04-
4	Gramoxone 250	2000ml/ha	B	100-	0.00-
5	Gramoxone 250	2400ml/ha	B	100-	0.00-
6	Sharpen Hasten	9g/ha 1% v/v	B	100-	0.00-
7	Sharpen Hasten	17g/ha 1% v/v	B	100-	0.00-
8	Sharpen Hasten	26g/ha 1% v/v	B	100-	0.00-
9	Sharpen Hasten	34g/ha 1% v/v	B	100-	0.00-
10	Gramoxone 250 Sharpen	800ml/ha 9g/ha	B	100-	0.00-
11	Gramoxone 250 Sharpen Hasten	800ml/ha 9g/ha 1% v/v	B	100-	0.00-
12	Gramoxone 250 Sharpen Hasten	1600ml/ha 9g/ha 1% v/v	B	100-	0.00-
13	Gramoxone 250 Sledge Hasten	1600ml/ha 80ml/ha 1% v/v	B	100-	0.00-
14	Gramoxone 250 Starane Advanced	1600ml/ha 400ml/ha	B	100-	0.00-
			LSD P=.05	nsd	nsd
			Treatment Prob.(F)=	0.48	0.59

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

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Conclusions:

The trial was established to screen second knock options for broadleaf weed control. A first knock of Roundup CT 2 L/ha + Zulu 750 mL/ha + Hasten 1% v/v was applied to a mixed population of broadleaf weeds: flaxleaf fleabane (~1 weed/m^2, 35 cm diameter), yellow vine (~11 weeds/m^2, 10 cm diameter) and common sowthistle (~2 weeds/m^2, 30 cm diameter, 60 cm height). The second knock treatments were applied 7 days after the first knock application.

A burndown assessment was carried out 10 days after the second knock application. No significant burndown benefit was provided from using Gramoxone at 800 or 1600 mL/ha, Gramoxone + Sharpen (excluding oil) or Gramoxone + Starane Advanced as second knock treatments on fleabane or common sowthistle. The inclusion of Hasten with the Gramoxone + Sharpen tank mix resulted in a significant improvement in fleabane burndown. The first knock alone provided complete burndown of yellow vine with no difference apparent between second knock options.

By 36 days after the second knock application, the first knock alone had provided >90% control of all three broadleaf weed species with no significant benefit from any second knock on fleabane or yellow vine. Against common sowthistle, all second knock treatments except Gramoxone at 800 or 1600 mL/ha or Gramoxone + Starane Advanced, significantly improved control compared to the first knock alone.

In this situation, the level of benefit from second knock application was small with only minor differences apparent between second knock options. Gramoxone at 800 or 1600 mL/ha was generally inferior to higher Gramoxone rates with Gramoxone + Sharpen (excluding oil) generally inferior to the same mixture with Hasten included.

Application Description		
	A	B
Application Date:	31/10/2018	7/11/2018
Application Start Time:	2:40 PM	11:00 AM
Application Stop Time:	3:40 PM	12:50 PM
Application Method:	SPRAY	
Application Timing:	LATE POST-EM	
Application Placement:	FOLIAR	
Air Temperature, Unit:	28 C	
% Relative Humidity:	32	34 C
Wind Velocity, Unit:	2 km/h	40
Wind Direction:	E	11 km/h
Dew Presence (Y/N):	No	NW
Soil Moisture:	DRY	
% Cloud Cover:	10	
Next Moisture Occurred On:	8/11/2018	

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Pest Stage At Application		
	A	B
Pest 1:	Flaxleaf Fleabane	
Stage Majority:	Buds visible	
Diameter, Unit:	30 cm	
Height, Unit:	20 cm	
Density, Unit:	1.1 m^2	
Pest 2:	Common Sowthistle	
Stage Majority:	Early flowering	
Diameter, Unit:	30 cm	
Height, Unit:	60 cm	
Density, Unit:	1.7 m^2	
Pest 3:	Yellow vine	
Stage Majority:	9 leaf	
Diameter, Unit:	10-35 cm	
Density, Unit:	11.2 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	
Nozzles/Row:	8	
Boom Length, Unit:	4 m	
Boom Height, Unit:	110 cm	
Ground Speed, Unit:	7.2 km/h	
Spray Volume, Unit:	100 L/ha	