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Knockdown Control of Tall Fleabane in Fallow**Trial ID: LB2106****Location:**
Investigator:**St Ruth**
Linda Bailey**Trial Year: 2021**

Tall fleabane (*Conyza sumatrensis*) is an emerging weed threat, particularly on the Darling Downs. Although generally found in low densities, tall fleabane is posing management challenges as it appears poorly controlled by treatments that are effective on flaxleaf fleabane.

This trial was conducted to evaluate the impact of a wide range of single and double knock strategies for the knockdown control of tall fleabane in fallow. Treatments included herbicide rates for use in both broadacre and potential optical spot spray situations.

Objective:	To evaluate knockdown control of tall fleabane in fallow	
Situation:	Fallow	
Application:	A	B
Application Date:	29/04/2021	17/05/2021 (18 days after Application A)
Weed:	Mixed population of tall and flaxleaf fleabane	
Weed Stage at Application:	70% at 4-6 leaf stage (~1 cm tall, ~ 4 cm diameter)	
Weed Population at Application:	~260 plants/m²	
Nozzles:	AIXR110015	
Volume:	100 L/ha	
Trial Design:	Strip-block of 15 first knock treatments x 2 second knocks x 3 replicates	
Plot Size:	4m x 16m	
Keywords:	Tall fleabane, flaxleaf fleabane, knockdown, fallow	

NB Although the trial was designed as a strip block - to enable efficient double knock application, analysis was conducted as a randomised complete block to enable a clearer interpretation of results.

The trial site had a very high density of seedling fleabane with a history of tall fleabane presence. A sample of seedlings was collected, transplanted and grown out to flowering. The samples indicated tall fleabane comprised ~25% of the initial population with the remaining plants flaxleaf fleabane.

The trial was primarily conducted in fallow but was sown with wheat on the 27/05/2021 (28 days after application A and 10 days after application B). Wheat was sown with a disc planter on 28 cm row spacing. The final weed count was conducted when the wheat was at the 1-2 leaf stage. The planting operation may have controlled a small number of fleabane seedlings but is unlikely to have impacted on the relative performance between treatments.

Knockdown Control of Tall Fleabane in Fallow

Trial ID: **LB2106** Location: **St Ruth** Trial Year: **2021**

Weed count was conducted on a sample area of 6 m²/ plot.

Efficacy of treatments applied as a first knock alone

Scientific Pest Name Pest Name Assessment Date Assessment Type Assessment Unit Treatment-Evaluation Interval ARM Action Codes				<i>Conyza spp</i> Tall and Flaxleaf Fleabane				
				17/05/2021 BURNDOWN	17/05/2021 BIO REDN	24/05/2021 BURNDOWN	24/05/2021 BIO REDN	22/06/2021 COUNT
				% 18 DAA	% 18 DAA	% 25 DAA	% 25 DAA	/m ² 54 DAA
				AS	AS	AA	AA	AL
Trt No.	Treatment	Product Rate	Appln. Code					
1	Panzer 450	2000ml/ha	A	10g	10g	10h	10k	55.0a
2	Panzer 450	4000ml/ha	A	10g	16f	33g	53hij	26.0ab
3	Panzer 450	2000ml/ha	A	12fg	28e	33g	50ij	3.3def
	Amicide Advance	1500ml/ha	A					
	Hasten	1% v/v	A					
4	Panzer 450	2000ml/ha	A	28d	43cd	47f	60hi	1.0f-i
	Amine 625	3000ml/ha	A					
	Hasten	1% v/v	A					
	Liase	1% v/v	A					
5	Panzer 450	2000ml/ha	A	10g	28e	33g	47j	6.0cde
	Amine 625	1500ml/ha	A					
	Chemwet 1000	0.25% v/v	A					
6	Weedmaster DST	1920ml/ha	A	10g	28e	33g	47j	6.3cde
	Amicide Advance	1100ml/ha	A					
	Hasten	1% v/v	A					
7	Panzer 450	2000ml/ha	A	73c	87a	40fg	60hi	50.8a
	Sharpen	34g/ha	A					
	Hasten	1% v/v	A					
8	Panzer 450	2000ml/ha	A	17e	37d	43fg	57hij	0.7ghi
	Starane Advanced	2000ml/ha	A					
9	Panzer 450	4000ml/ha	A	13ef	47c	84d	87cd	0.3hi
	Starane Advanced	2000ml/ha	A					
10	Basta	5000ml/ha	A	90ab	90a	84d	87cd	3.2d-g
11	Basta	10000ml/ha	A	92a	93a	84d	87cd	1.0f-i
12	Experimental 1	2800g/ha	A	87ab	87a	98b	98b	0.0i
	Experimental 2	8500ml/ha	A					
	Hasten	1% v/v	A					
13	Experimental 3	4000ml/ha	A	83b	87a	84d	84de	0.5hi
	Uptake	0.5% v/v	A					
14	Panzer 450	4000ml/ha	A	10g	47c	60e	63gh	3.2d-g
	Grazon Extra	400ml/ha	A					
	Uptake	0.5% v/v	A					
15	Panzer 450	4000ml/ha	A	33d	57b	67e	73fg	2.0e-h
	Pixxaro	400ml/ha	A					
	Uptake	0.5% v/v	A					

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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No data shown for assessments on 17/05/2021 as double knock had not been applied.

Efficacy of treatments applied as a double knock

Scientific Pest Name Pest Name Assessment Date Assessment Type Assessment Unit Treatment-Evaluation Interval ARM Action Codes				<i>Conyza spp</i> Tall and Flaxleaf Fleabane				
				17/05/2021 BURNDOWN	17/05/2021 BIO REDN	24/05/2021 BURNDOWN	24/05/2021 BIO REDN	22/06/2021 COUNT
				%	%	%	%	/m ²
				18 DAA	18 DAA	25 DAA/ 7 DAB	25 DAA/ 7 DAB	54 DAA/ 36 DAB
				AS	AS	AA	AA	AL
Trt No.	Treatment	Product Rate	Appln. Code					
16	Panzer 450	2000ml/ha	A			33g	47j	31.4ab
	Gramoxone	1600ml/ha	B					
	Sharpen	9g/ha	B					
	Hasten	1% v/v	B					
17	Panzer 450	4000ml/ha	A			84d	90cd	9.4cd
	Gramoxone	1600ml/ha	B					
	Sharpen	9g/ha	B					
	Hasten	1% v/v	B					
18	Panzer 450	2000ml/ha	A			94bc	94bc	0.8f-i
	Amicide Advance	1500ml/ha	A					
	Hasten	1% v/v	A					
	Gramoxone	1600ml/ha	B					
	Sharpen	9g/ha	B					
	Hasten	1% v/v	B					
19	Panzer 450	2000ml/ha	A			92c	92c	0.7f-i
	Amine 625	3000ml/ha	A					
	Hasten	1% v/v	A					
	Liasse	1% v/v	A					
	Gramoxone	1600ml/ha	B					
	Sharpen	9g/ha	B					
	Hasten	1% v/v	B					
20	Panzer 450	2000ml/ha	A			98b	98b	0.5hi
	Amine 625	1500ml/ha	A					
	Chemwet 1000	0.25% v/v	A					
	Gramoxone	1600ml/ha	B					
	Sharpen	9g/ha	B					
	Hasten	1% v/v	B					
21	Weedmaster DST	1920ml/ha	A			94bc	94bc	1.1f-i
	Amicide Advance	1100ml/ha	A					
	Hasten	1% v/v	A					
	Gramoxone	1600ml/ha	B					
	Sharpen	9g/ha	B					
	Hasten	1% v/v	B					
22	Panzer 450	2000ml/ha	A			60e	77ef	14.0bc
	Sharpen	34g/ha	A					
	Hasten	1% v/v	A					
	Gramoxone	1600ml/ha	B					
	Sharpen	9g/ha	B					
	Hasten	1% v/v	B					
23	Panzer 450	2000ml/ha	A			98b	98b	0.1i
	Starane Advanced	2000ml/ha	A					
	Gramoxone	1600ml/ha	B					
	Sharpen	9g/ha	B					
	Hasten	1% v/v	B					
24	Panzer 450	4000ml/ha	A			98b	98b	0.0i
	Starane Advanced	2000ml/ha	A					
	Gramoxone	1600ml/ha	B					
	Sharpen	9g/ha	B					
	Hasten	1% v/v	B					

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				17/05/2021 BURNDOWN %	17/05/2021 BIO REDN %	24/05/2021 BURNDOWN %	24/05/2021 BIO REDN %	22/06/2021 COUNT /m ²
				18 DAA AS	18 DAA AS	25 DAA/ 7 DAB AA	25 DAA/ 7 DAB AA	54 DAA/ 36 DAB AL
Trt No.	Treatment	Product Rate	Appln. Code					
25	Basta	5000ml/ha	A			92c	92c	0.9f-i
	Gramoxone	1600ml/ha	B					
	Sharpen	9g/ha	B					
	Hasten	1% v/v	B					
26	Basta	10000ml/ha	A			92c	92c	0.8f-i
	Gramoxone	1600ml/ha	B					
	Sharpen	9g/ha	B					
	Hasten	1% v/v	B					
27	Experimental 1	2800g/ha	A			100a	100a	0.0i
	Experimental 2	8500ml/ha	A					
	Hasten	1% v/v	A					
	Gramoxone	1600ml/ha	B					
	Sharpen	9g/ha	B					
	Hasten	1% v/v	B					
28	Experimental 3	4000ml/ha	A			100a	100a	0.0i
	Uptake	0.5% v/v	A					
	Gramoxone	1600ml/ha	B					
	Sharpen	9g/ha	B					
	Hasten	1% v/v	B					
29	Panzer 450	4000ml/ha	A			94bc	94bc	0.6hi
	Grazon Extra	400ml/ha	A					
	Uptake	0.5% v/v	A					
	Gramoxone	1600ml/ha	B					
	Sharpen	9g/ha	B					
	Hasten	1% v/v	B					
30	Panzer 450	4000ml/ha	A			98b	98b	0.7f-i
	Pixxaro	400ml/ha	A					
	Uptake	0.5% v/v	A					
	Gramoxone	1600ml/ha	B					
	Sharpen	9g/ha	B					
	Hasten	1% v/v	B					
LSD P=.05 Treatment Prob.(F)=				0.4t 0.0001	0.6t 0.0001	6.6t 0.0001	6.7t 0.0001	0.42t 0.0001

Assessment Type

BIO REDN = Biomass reduction

ARM Action Codes

AS = Automatic square root transformation of X+0.5

AA = Automatic arcsine square root % transformation

AL = Automatic log transformation of X+1

DAA = Days after Application A

DAB = Days after Application B

Knockdown Control of Tall Fleabane in Fallow

Trial ID: **LB2106**

Location:

St RuthTrial Year: **2021**

Treatments in this trial were selected to cover both broadacre and optical spot sprayer (OSS) application rates.

Conclusions:

The trial was established to evaluate post-emergent control options for tall fleabane management in fallow. Stubble levels were very low as the paddock was fallowed from sorghum in 2019/20.

The 1st knock treatments were applied to a mixed fleabane population of ~260 weeds/m² (~25% tall fleabane) at ~4 cm diameter. The majority of weeds were at the 4-6 leaf stage with advanced plants at the 8-9 leaf rosette stage. The 2nd knock application was delayed by rain with Gramoxone 1.6 L/ha + Sharpen 9 g/ha + Hasten 1% applied 18 days after the 1st knock treatments (18 DAA).

At 18 DAA a visual assessment of 1st knock impact was conducted. Basta, both experimental products and Panzer (450 g/L glyphosate ipa) + Sharpen + Hasten all provided >70% burndown and >85% biomass reduction. By 25 DAA/ 7 DAB (7 days after 2nd knock application), Basta, both experimental products and an OSS treatment of Panzer 4 L/ha + Starane Advanced 2 L/ha provided >80% burndown and biomass reduction. All double knock combinations provided >90% burndown and biomass reduction except where the 1st knock was Panzer alone or Panzer + Sharpen + Hasten.

Tall and flaxleaf fleabane could not be reliably distinguished when surviving weed counts were taken at 54 DAA/ 36 DAB. Fleabane populations of >50 /m² were still present where Panzer 2 L/ha or Panzer + Sharpen + Hasten had been applied as a 1st knock treatment alone. The mixture of experimentals 1 and 2 provided complete fleabane control when used as a single knock. Panzer + Starane Advanced 2 L/ha (OSS rates) and experimental 3 were the only other single knock treatments with surviving counts of <1/m².

Complete fleabane control was achieved where experimentals 1 +2, experimental 3 or Panzer 4 L/ha + Starane Advanced 2 L/ha were followed by a 2nd knock. All other treatments with a double knock had equivalent levels of control, except where Panzer alone or Panzer + Sharpen + Hasten were applied as the 1st knock treatments and between 9 and 31 plants/m² remained.

The levels of control achieved in this trial were greater than expected on a mixed population of tall and flaxleaf fleabane. All products except Panzer alone or Panzer tank mixed with Sharpen provided >80% control when used alone or >95% when followed with a 2nd knock of Gramoxone + Sharpen + Hasten. Unfortunately, the two fleabane species could not be reliably distinguished at the final count. This may make collection of sound efficacy data on seedling and rosette staged tall fleabane a challenge. The performance of both experimental products was encouraging.

Crop Description	
Crop 1:	Fallow
Crop 2:	Wheat cv. LRPB Hellfire
Planting Date:	27/05/2021
Row Spacing:	28 cm

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Application Description		
	A	B
Application Date:	29/04/2021	17/05/2021
Application Start Time:	10:30 AM	9:30 AM
Application Stop Time:	1:15 PM	9:35 AM
Application Method:	SPRAY	
Application Timing:	EARLY POST-EM	
Application Placement:	FOLIAR	
Air Temperature, Unit:	21.8 C	13.7 C
% Relative Humidity:	54.1	50.8
Wind Velocity, Unit:	11.8 km/h	2.4 km/h
Wind Direction:	NNE	NE
Soil Moisture:	DRY	SLIWET
% Cloud Cover:	90	0
Next Moisture Occurred On:	2/05/2021	3/06/2021

Pest Stage at Application		
	A	
Weed:	<i>Conyza spp</i> Mixed population of tall (~25%) and flaxleaf fleabane (~75%)	
Stage Majority, %:	6 leaf	40%
Stage Minimum, %:	4 leaf	30%
Stage Maximum, %:	9 leaf	20%
Diameter, Unit:	4 cm	
Height, Unit:	1 cm	
Density, Unit:	261 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	
Spray Volume, Unit:	100 L/ha	

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Rainfall:

Closest Weather Station:	SIL0 grid point -27.35, 151.35
Distance, Unit:	1.2km

Date	Amount	Unit	
29/04/2021	-	mm	Application A (1 st knock)
2/05/2021	1.1	mm	
4/05/2021	0.1	mm	
5/05/2021	16.9	mm	
6/05/2021	4.7	mm	
10/05/2021	4.9	mm	
11/05/2021	6.7	mm	
12/05/2021	8.9	mm	
13/05/2021	10.3	mm	
17/05/2021	-	mm	Assessment 1 Application B (2 nd knock)
24/05/2021	-	mm	Assessment 2
3/06/2021	3	mm	
4/06/2021	10	mm	
9/06/2021	11.2	mm	
15/06/2021	12.6	mm	
16/06/2021	3.5	mm	
17/06/2021	2.2	mm	
22/06/2021	0.9	mm	Assessment 3