Residual Control of Feathertop Rhodes Grass in Fallow

Trial ID: **LB2216** **Location:** **Tummaville** **Trial Year:** **2023**
Investigator: **Linda Bailey**

This trial was conducted as part of a series to evaluate the potential of a range of fallow registered residual herbicides and potential new options for management of common sowthistle. Management of common sowthistle in fallow is a major industry challenge with increasing levels of glyphosate resistance or tolerance. Although common sowthistle populations are typically scattered and at low densities, management alternatives including residual control are keenly sought.

Objective:	**To evaluate residual control of common sowthistle in fallow**
Previous Crop:	**Sorghum 2021/22**
Situation:	**Cultivated fallow with minimal stubble, volunteer sorghum and dead/dying weeds providing ~15% groundcover**
Application Date:	**15/03/2023**
Application Timing:	**Pre-emergent**
Nozzles:	**AIXR 11002**
Volume:	**100 L/ha**
Trial Design:	**Randomised complete block of 17 treatments x 4 replicates**
Plot Size:	**4 m x 12 m**
Keywords:	**Feathertop Rhodes grass, residual, fallow**

The trial was initiated in a fallow paddock with a history of common sowthistle issues near Tummaville on the southern downs in QLD. A commercial fallow spray was applied at trial initiation to control volunteer sorghum seedlings. Although the paddock had a history of common sowthistle issues, feathertop Rhodes grass (FTR) was the only weed to emerge at sufficient density to allow evaluation.

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First site inspection was in early April, after a total of ~90 mm of rainfall from application. No weeds were present in sufficient number to enable a count.

Despite the paddock having a history of common sowthistle issues, no sowthistle emerged during the 13-week trial duration.

NB: Only Dual Gold, Balance and Valor have registrations for the residual control of FTR in fallow. No other treatment in the trial has a registration for FTR activity.

Pest Scientific Name			***Chloris virgata***	
Pest Name			**Feathertop Rhodes grass**	
Pest Stage Majority			**First tiller visible**	**2 leaf**
Assessment Date			**26/04/2023**	**13/06/2023**
Assessment Type			**COUNT**	**COUNT**
Assessment Unit			**/m²**	**/m²**
Assessment Area			**1 m x 10 m**	**1 m x 10 m**
Treatment-Evaluation Interval			**42 DAA**	**90 DAA**
ARM Action Codes			**AA**	**AA**
Trt No.	**Treatment**	**Product Rate**		
1	Untreated	-	0.7a	0.2a
2	Dual Gold	1000ml/ha	0c	0c
3	Dual Gold	2000ml/ha	0.1bc	0c
4	Group 5 T	1200g/ha	0c	0c
5	Balance	100g/ha	0c	0c
6	Balance Valor	100g/ha 120g/ha	0c	0c
7	Valor	140g/ha	0c	0.0abc
8	Valor	180g/ha	0c	0.0bc
9	Valor	280g/ha	0c	0.0bc
10	Balance Group 14 V	100g/ha 100ml/ha	0.0bc	0.0bc
11	Group 14 V	120ml/ha	0.1bc	0.0bc
12	Group 14 V	240ml/ha	0c	0c
13	Group 14 R	750ml/ha	0.1b	0.1ab
14	Group 14 R	1500ml/ha	0c	0c
15	Group 4 T	200ml/ha	0.0bc	0.1abc
16	Group 13	1250ml/ha	0c	0c
17	Group 4 FB	1000ml/ha	0.0bc	0.1ab
		LSD P=.05	0.110 - 0.365	0.112 - 0.142
		Treatment Prob.(F)=	0.0001	0.0299

Means followed by same letter or symbol (-) do not significantly differ (P=.05, LSD).
Mean comparisons performed only when AOV Treatment P (F) is significant at mean comparison OSL.
NB: A weed count of 0 = no surviving weeds were found in any plot

ARM Action Codes
AA = Automatic arcsine square root % transformation

DAA = Days after Application A

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Conclusions:

This trial was designed to evaluate residual control of common sowthistle in fallow. Treatments were applied in mid-March 2023 in a paddock previously in sorghum 2021/22. The paddock had been cultivated during the fallow with no standing sorghum stubble and only ~15% ground cover. The site received ~4 mm of rainfall the day after application. A knockdown application of Glyphosate 450 at 2 L/ha was applied on the same day as the residual herbicides to control self-sown sorghum seedlings.

Initial inspection for weed emergence was conducted 22 DAA (22 days after application A) following a total of 90 mm of rainfall after application. No weed was at sufficient density to warrant assessment.

An additional 40 mm of rainfall was received shortly after the inspection with a very low density of FTR present at 42 DAA. All treatments had significantly reduced FTR counts compared to the untreated (~0.7/m^2). These weeds were removed by hand.

Following another 65 mm in late April and May a second trace level of FTR seedlings were present and assessed at 90 DAA. All treatments except Valor 140 g/ha, Group 14 R at 750 mL/ha, Group 4 T and Group 4 FB significantly reduced FTR counts compared to the untreated (~0.2/m^2).

Despite a total of ~200 mm of rainfall, no data was generated on common sowthistle efficacy. All treatments except Valor 140 g/ha, Group 14 R at 750 mL/ha, Group 4 T and Group 4 FB provided significant control of very low FTR populations up to ~9 weeks after application.

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Application Description	
Application Date:	15/03/2023
Application Start Time:	11:00 AM
Application Stop Time:	1:00 PM
Air Temperature Start, Stop:	27.7, 31.2 C
% Relative Humidity Start, Stop:	69.8, 61.4
Wind Velocity & Direction Start:	8.4 km/h, NNW
Wind Velocity & Direction Stop:	3.1 km/h, NNW
Soil Moisture:	NORMAL
% Cloud Cover:	95
First Moisture Occurred On:	16/03/2023

Application Equipment	
Application Equipment:	Polaris
Equipment Type:	BOOM
Operation Pressure:	300 kPa
Nozzle Model:	AIXR11002
Nozzle Spacing:	50 cm
Boom Length:	4 m
Boom Height:	60 cm
Ground Speed:	9.5 km/h
Application Amount:	100 L/ha

Rainfall:

Closest Weather Station:	SILO grid pt -27.90, 151.45
Distance:	2.4 km

Date	Amount (mm)	Additional Comments
15/03/2023	1.6	Application A (and commercial knockdown)
16/03/2023	4.4	
26/03/2023	35.5	
28/03/2023	5.1	
29/03/2023	29.4	
30/03/2023	17.1	
6/04/2023	-	Trial inspection; no useful weed density present
8/04/2023	40.3	
26/04/2023	-	Assessment 1 - weed counts then hand-weeded
30/04/2023	2.6	
15/05/2023	4.0	
16/05/2023	59.0	
13/06/2023	-	Assessment 2 - weed counts then trial terminated