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**Residual Control of Feathertop Rhodes Grass in Wheat**

Trial ID: LB2003      Location: Meandarra      Trial Year: 2020  
Investigator: Linda Bailey

Feathertop Rhodes grass (*Chloris virgata*) has become a management issue in broadacre farming in many areas of Qld and northern NSW during the last decade. Common fallow herbicide treatments such as glyphosate and paraquat applied alone or even as a sequential (double knock) program, rarely provide useful levels of suppression. Although generally considered a summer grass, feathertop Rhodes grass (FTR) can emerge, establish and set seed within winter crops, particularly when crop establishment or vigour is poor. These winter and spring FTR cohorts can then also prove a major challenge for management in fallow.

This trial was designed to evaluate the efficacy and potential of a wide range of residual herbicides to manage FTR in wheat. The objective was to screen a wide range of herbicides, at existing wheat use patterns, to evaluate for FTR efficacy and potential label registration.

Objective:	To evaluate herbicides for the residual control of spring germinating Feathertop Rhodes grass		
Crop:	Wheat cv. Elmore CL Plus		
Planting Date:	3/06/2020		
Application Code:	A	B	C
Application Type:	IBS (commercial tyne planter on 38cm rows)	PSPE	In-crop (28 days after planting)
Application Date:	2/06/2020	4/06/2020	1/07/2020
Nozzles:	AIXR110015		
Volume:	100 L/ha		
Weeds:	Feathertop Rhodes Grass		
Keywords:	Wheat, residual, feathertop Rhodes grass		

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NB Treatments 12 and 13 have a registered use pattern in wheat for application prior to planting with incorporation by sowing (IBS). Due to a pump breakdown, these treatments could not be applied prior to planting and were applied post sowing pre-emergent (PSPE) with no physical incorporation.

A change from IBS to PSPE may increase the risk of crop safety issues (no removal of herbicide from seeding furrow) and reduce the level of weed efficacy (due to lack of incorporation). There was no obvious impact from the change in application method on crop safety or weed efficacy in this trial.

Table 1: Crop emergence and weed counts at 48, 83 and 118 DAA

Pest Scientific Name Pest Name Crop Name Crop Variety Description Assessment Date Assessment Type Sample Size Assessment Unit Weed Stage Treatment-Evaluation Interval ARM Action Codes				Wheat Elmore CL Plus  17/06/2020 EMERGENCE  /m <sup>2</sup>  14 DAP	<i>Chloris virgata</i> Feathertop Rhodes Grass		
Trt No.	Treatment	Product Rate	Appln. Code		Total 20/07/2020 COUNT 10 m x 1 m /m <sup>2</sup> GS13 48 DAA ER4	New emergence only 24/08/2020 COUNT 10 m x 1 m /m <sup>2</sup> GS11-13 83 DAA	Total 21/09/2020 COUNT 10 m x 2 m /m <sup>2</sup> GS13-24 (to ~10cm diameter) 111 DAA
1	Untreated	-	-	70-	1.5-	1.9a	1.6a
2	Sakura	118g/ha	A	63-	0.0-	0.0c	0.0b
3	Boxer Gold	2500ml/ha	A	66-	0.0-	0.0c	0.0b
4	Boxer Gold	1750ml/ha	A	69-	0.0-	0.1c	0.0b
	Boxer Gold	750ml/ha	B				
5	TriflurX	2000ml/ha	A	66-	0.0-	0.0c	0.0b
6	TriflurX	3000ml/ha	A	53-	0.0-	0.0c	0.0b
7	Avadex Xtra	2400ml/ha	A	63-	0.0-	0.0c	0.0b
	TriflurX	2000ml/ha	A				
8	Rifle 440	1350ml/ha	A	70-	0.0-	0.0c	0.0b
9	Luximax	500ml/ha	A	73-	0.0-	0.0c	0.0b
10	Overwatch	1250ml/ha	A	78-	0.0-	0.1bc	0.1b
11	Bolta Duo	3000ml/ha	A	63-	0.0-	0.0c	0.0b
12	Diablo Duo	3000ml/ha	B*	71-	0.0-	0.0c	0.0b
13	Arcade	3000ml/ha	B*	70-	0.0-	0.0c	0.0b
16	Arcade	3000ml/ha	C	68-	0.5-	0.8b	0.4b
17	Experimental		C	74-	0.1-	0.0c	0.1b
LSD P=				nsd	nsd	0.67	0.469
Treatment Prob.(F)=				0.4327	0.0820	0.0001	0.0002

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

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

Missing data estimates are included in columns: Average = 2, 4, 6, 8

nsd = No significant difference

DAP = Days after Planting

DAA = Days after Application A

B\* - Applied as PSPE due to breakdown

### Pest Stage Majority

11 = 1 true leaf

12 = 2 true leaves

13 = 3 true leaves

24 = 4 tillers

ER4 = Excluded rep 4 in column 4

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**NB All products in this trial are registered for use in wheat at the rates and use patterns evaluated. However, none of these products have feathertop Rhodes grass on their label.**

### Conclusions:

This trial was established to evaluate the residual control of Feathertop Rhodes (FTR) grass in wheat. The incorporation by sowing treatments (IBS) were applied 1 day prior to planting and the post sowing pre-emergent treatments (PSPE) were applied 1 day after planting (1 DAP). The in-crop application was applied at 28 DAP when ~50% of the crop was at GS15. An FTR population of ~1/m<sup>2</sup> was at the 2 leaf stage when the in-crop treatments were applied. Rainfall of ~63 mm was received during the 4 months of the trial. This was ~ 50% of the long- term average with less than 5mm received between mid June and the end of July.

Wheat establishment counts were taken at 14 DAP, with no apparent impact on emergence. Overwatch treated plots showed concerning levels of wheat leaf bleaching at inspection on 28 DAP.

An initial FTR emergence occurred following a total of ~16mm rain on the 14<sup>th</sup> and 15<sup>th</sup> of June (12-13 DAA). Assessment at 48 DAA only found FTR in the untreated and where in-crop treatments had been applied after weed emergence. A second emergence of FTR was counted at 83 DAA. This followed ~24mm of rain, over 3 days, between the 8<sup>th</sup> and 16<sup>th</sup> of August (67-75 DAA). All treatments except the in-crop application of Arcade provided 90-100% control. Only new FTR emergence was counted. Both these assessments were conducted on an area of 10 m x 1m in each plot.

A final assessment of FTR was conducted at 111 DAA with all surviving FTR counted in a sample area of 10 m x 2 m. All treatments except Arcade in-crop (applied post-emergence to first emergence of FTR) had provided 90-100% control.

In this trial, all herbicides except Arcade in-crop provided promising residual control of low populations of FTR up to at least ~70 days after application (~10 weeks after application).

Crop Description	
Crop:	Wheat
Variety:	Elmore CL Plus
Planting Date:	3/06/2020
Planting Method:	Direct Drilled
Planting Equipment:	Tyne
Row Spacing, Unit:	38 cm

Application Description			
	A	B	C
Application Date:	2/06/2020	4/06/2020	1/07/2020
Application Start Time:	1:00 PM	11:45 AM	1:30 PM
Application Stop Time:	3:00 PM	12:25 AM	1:40 PM
Application Method:	SPRAY		
Application Timing:	IBS	PSPE	POEMCR
Application Placement:	SOIL	SOIL	FOLIAR
Air Temperature, Unit:	18 C	18.9 C	25.2 C
% Relative Humidity:	37.5	35.9	40.3
Wind Velocity, Unit:	7.6 km/h	9.1 km/h	1.4 km/h
Wind Direction:	SW	SE	SE
Dew Presence (Y/N):	No		
Soil Moisture:	DRY	DRY	DRY
% Cloud Cover:	0	0	10
Next Moisture Occurred On:	14/06/2020	14/06/2020	4/07/2020

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Crop Stage At Each Application					
	A		B		C
Crop:	Wheat cv. Elmore CL Plus				
Stage Majority, %:	Planting			15	50%
Stage Minimum, %:				12	10%
Stage Maximum,%:				15	50%

Weed Stage At Each Application				
	A	B	C	
Pest:	Feathertop Rhodes grass <i>Chloris virgata</i>			
Stage Majority, %:	Pre-em		12	70%
Stage Minimum, %:			12	70%
Stage Maximum,%:			13	30%
Diameter, Unit:			1	cm
Height, Unit:			0.5	cm
Density, Unit:			~1	m <sup>2</sup>

Application Equipment			
	A	B	C
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:	50 cm		
Ground Speed, Unit:	7.2 km/h		
Spray Volume, Unit:	100 L/ha		

Rainfall	
Closest Weather Station:	SILO grid point -27.15, 149.8
Distance, Unit:	~3 km

Date	Amount	Unit
8/06/2020	0.7	mm
14/06/2020	12.2	mm
15/06/2020	3.4	mm
22/06/2020	0.1	mm
3/07/2020	0.5	mm
4/07/2020	1.3	mm
12/07/2020	2.4	mm
23/07/2020	0.3	mm
26/07/2020	0.1	mm
8/08/2020	13.5	mm
15/08/2020	8.1	mm
16/08/2020	2.2	mm
8/09/2020	0.5	mm
11/09/2020	13.6	mm
20/09/2020	0.1	mm
22/09/2020	2	mm
30/09/2020	0.1	mm