



MCA Ag Research

Glufosinate adjuvants and water volume

Trial ID: BB2421

Protocol ID: MCA2406 Location: Billa Billa Trial Year: 2025

Study Director: Lawrie Price

Objectives:

To determine the effects of adjuvants with Biffo (Glufosinate) on control of key weeds

Materials and Methods:

A trial was sited in a fallow paddock infested with feathertop Rhodes grass ~ 45km north of Goondiwindi. Treatments were applied on April 8th 2025 to large flowering feathertop Rhodes grass plants. The plants were growing rapidly after 100 mm of rain in the prior two weeks.

Application was at either 75 or 150 L/ha using a 4 metre boom mounted on a Polaris Ace. The boom was equipped with eight AIXR110015 nozzles at 50 cm spacings, mounted 50 cm above the target. Operating pressure was 300Kpa, Application volume was varied by changing the speed of the Polaris.

Insufficient Liase was available to apply a Biffo + 10% Liase treatment at 150 L/ha. Plots were instead sprayed with a treatment of Biffo at 5L/ha. The Biffo + 10% Liase treatment was subsequently removed from factorial analysis.



Untreated plants on the day of application showing the size of the Feathertop Rhodes grass weeds



MCA Ag Research

Results:

Assessment Date		15/4/2025	28/4/2025
Assessment Type		Feathertop Rhodes grass	Feathertop Rhodes Grass
Sample Size		% Burndown	% Control
Number of Subsamples		1 plot	1 plot
Assessment Timing		1	1
ARM Action Codes		7 DAA	20 DA-A
Level	Description		
TABLE OF A (Herbicide treatment) MEANS			
1	Biffo 3.75L	78 b	64 bc
2	Biffo 3.75L + AMS 1%	78 b	71 b
3	Biffo 3.75L + Liase 2%	73 b	75 b
4	Biffo 3.75L + Outright 770 1%	77 b	71 b
5	Biffo 3.75L + On Course 0.25%	78 b	58 c
6	Biffo 3.75L + Cando 0.5%	73 b	70 bc
7	Biffo 3.75L + Hasten 0.5%	73 b	76 b
8	Biffo 3.75L + Hasten 1%	78 b	66 bc
9	Biffo 10L	87 a	93 a
TABLE OF B (Water volume) MEANS			
1	75 L/ha	76 -	61 b
2	150 L/ha	79 -	82 a
TABLE OF A (Herbicide treatment) B (Water volume) MEANS			
1	Biffo 3.75L	77 -	60 -
2	Biffo 3.75L + AMS 1%	77 -	63 -
3	Biffo 3.75L + Liase 2%	73 -	60 -
4	Biffo 3.75L + Outright 770 1%	73 -	57 -
5	Biffo 3.75L + On Course 0.25%	77 -	43 -
6	Biffo 3.75L + Cando 0.5%	73 -	53 -
7	Biffo 3.75L + Hasten 0.5%	70 -	65 -
8	Biffo 3.75L + Hasten 1%	80 -	57 -
9	Biffo 10L	87 -	93 -
	Biffo 3.75L + Liase 10%	77	68
1	Biffo 3.75L	80 -	68 -
2	Biffo 3.75L + AMS 1%	80 -	78 -
3	Biffo 3.75L + Liase 2%	73 -	90 -
4	Biffo 3.75L + Outright 770 1%	80 -	85 -
5	Biffo 3.75L + On Course 0.25%	80 -	72 -
6	Biffo 3.75L + Cando 0.5%	73 -	87 -
7	Biffo 3.75L + Hasten 0.5%	77 -	87 -
8	Biffo 3.75L + Hasten 1%	77 -	75 -
9	Biffo 10L	87 -	93 -
	Biffo 5L	83	83



MCA Ag Research

Means followed by same letter or symbol do not significantly differ ($P=0.05$, LSD).

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

FACTORIAL/POOLED ERROR Least square estimation AOV For 15-Apr-2025 % Burndown at 7DAA

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	53	2037.037037				
R	2	70.370370	35.185185	1.287	0.2892	
A	8	837.037037	104.629630	3.827	0.0027	6
B	1	66.666667	66.666667	2.438	0.1277	3
AB	8	133.333333	16.666667	0.610	0.7634	9
ERROR	34	929.629630	27.342048			

FACTORIAL/POOLED ERROR Least square estimation AOV For 28-Apr-2025 % Control at 20DAA

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	53	18081.481481				
R	2	2234.259259	1117.129630	9.458	0.0005	
A	8	4756.481481	594.560185	5.034	0.0004	13
B	1	5601.851852	5601.851852	47.429	0.0001	6
AB	8	1473.148148	184.143519	1.559	0.1741	18
ERROR	34	4015.740741	118.110022			

Conclusions:

An estimate of % burndown was made 7 days after treatment application. Treatment with Biffo alone resulted in an average Burndown score of 78%. Addition of adjuvants did not significantly impact burndown rating. Raising the rate of Biffo application to 10 L/ha increased the burndown score to 93%, a significant improvement.

The site was accidentally over-sprayed by the grower at 9DAA by a herbicide mixture of Glyphosate 450 @ 2L/ha + Amicide 700 @ 500mL/ha. It was considered that this treatment would have had little effect on the trial as there was very little green leaf material present in most plots and neither of the products sprayed are very effective against FTR.

The trial needed to be terminated earlier than ideal on April 28th as the grower began planting the paddock to wheat. Consequently, a visual estimate of % control of feathertop Rhodes grass was made for each plot. Regrowth was evident in every plot.

Water volume had a significant impact on efficacy. On average % control where Biffo was sprayed at a volume of 75 L/ha was 61%. This increased to 82% where the application volume was increased to 150 L/ha.

Increasing the rate of Biffo application to 10 L/ha increased % control from 64% (at 3.75/ha) to 93%. Where Biffo was applied at 5L/ha (not included in the factorial) % control was rated at 83%

None of the adjuvants affected % control compared to Biffo alone. On Course appeared to give a poorer result than treatments containing AMS, Liase or Outright.

In this trial the effect of water volume and rate were much more important than choice of adjuvant.



MCA Ag Research

Appendices:

Crop Description

Crop 1:C YBRAC Fallow

Pest Description

Pest 1 Type:W Code:CHRVI Chloris virgata
Common Name:Feathertop Rhodes Grass Stage Scale:BBCH

Site and Design

Treated Plot Width:4 m Site Type:FALLOW fallow
Treated Plot Length:12 m Experimental Unit:1 PLOT plot
Treated Plot Area:48.0 m² Tillage Type:NOTILL no-till
Replications:3 Treatments:20 Plots:60 Study Design: Factorial
Distance between Blocks:1 m
Distance between 'Plot' Experimental Units:0 m

Trial Initiation Comments:

Large weeds starting to flower in excellent growing conditions.

Comment: Commercial broadacre application sprayed over the trial site. Glyphosate 450 @ 2L/ha + Amicide 700 @ 500mL/ha. 9 days after application. Would have had minimal effect on FTR

Comment: Not enough Liase to apply at 10%. Decided to replace this treatment with a treatment of 5L/ha of Biffo alone (at 150 L/ha). Will need to exclude treatment from factorial analysis

Previous crop: Wheat 2024
Brown Brigalow soil

Weather Conditions

Weather Station Name:Long paddock Silo online Distance:0.5 km

No.	Date	Moisture Total	Unit
1.	24-Mar-2025	3.8	mm
2.	25-Mar-2025	5.7	mm
3.	26-Mar-2025	1.9	mm
4.	27-Mar-2025	31	mm
5.	28-Mar-2025	24.1	mm
6.	2-Apr-2025	17.1	mm
7.	3-Apr-2025	22.8	mm
8.	11-Apr-2025	0.7	mm
9.	22-Apr-2025	8.6	mm
10.	25-Apr-2025	1.7	mm
11.	26-Apr-2025	0.5	mm
12.	27-Apr-2025	2.4	mm

Application Description

	A	B
Date	8-Apr-2025	8-Apr-2025
Start Time	7:15 AM	7:15 AM
Stop Time	9:00 AM	9:00 AM
Standard	POST	POST
Method	SPRAY	SPRAY
Timing	POSPOS	POSPOS
Placement	BROADC	BROADC
Mixed/Prepared By	Lawrie Price	Lawrie Price
Applied By	Brendan Burton	Brendan Burton
Entry Date	9-Apr-2025	9-Apr-2025
Air Temperature Start, Stop	14.8, 21.1 C	14.8, 21.1 C
% Relative Humidity Start, Stop	75.9, 61.9	75.9, 61.9
Wind Velocity+Dir. Start	0 KPH, -	0 KPH, -
Wind Velocity+Dir. Stop	0 KPH, -	0 KPH, -
% Cloud Cover	0	10
Problems with Application?	N, no	N, no



MCA Ag Research

Pest Stage At Application

	A	B
Pest 1 Code, Type, Scale	CHRVI, W, BBCH	CHRVI, W, BBCH
Stage Majority, Percent	63, 30	63, 30
Stage Minimum, Percent	61, 50	61, 50
Stage Maximum, Percent	65, 20	65, 20
Diameter Average	25 cm	25 cm
Diameter Minimum, Maximum	15, 35	15, 35
Height Average	40 cm	40 cm
Height Minimum, Maximum	25, 55	25, 55
Density Average	5 m2	5 m2

Application Equipment

	A	B
Equipment Name	Polaris	Polaris
Equipment Type	BOOM	BOOM
Operation Pressure	300 kPa	300 kPa
Nozzle Model	110015	110015
Nozzle Type	AIXR	AIXR
Nozzle Spacing	50 cm	50 cm
Spray Swath	4.0 m	4.0 m
Boom Height	0.5 m	0.5 m
Boom Flow Rate	50 cm	50 cm
Ground Speed	9.4 km/h	4.7 km/h
Application Amount	75 L/ha	150 L/ha
Mix Size	5.0 L	5.0 L