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Residual Control of Paradoxa Grass in Chickpea

Trial ID:	DH2204	Location:	Narrabri	Trial Year	2022
		Investigator:	Dean Hancock		

Paradoxa grass (*Phalaris paradoxa*) is an important weed of winter crops, particularly in seasons when wet conditions occur in late autumn and early winter. Improved understanding of the potential for residual paradoxa grass management is needed due to increasing levels of Group 1 (A) and 2 (B) post-emergent herbicide resistance.

This project evaluated a range of residual herbicides with existing registrations for use in chickpeas. Three of the herbicides have paradoxa grass/ canary grass control claims when applied at planting in chickpea: Sakura, TriflurX and Rustler, whilst Terbyne Xtreme has a suppression claim. The Group 13 herbicide is not registered in chickpea but was included as it has a paradoxa grass suppression claim in wheat.

Objective:	To evaluate herbicide options for residual control of <i>Phalaris paradoxa</i> in chickpea	
Situation:	Chickpea cv. PBA Seamer	
Planting Date:	22/07/2022	
Equipment:	Direct drilled with a tyne planter on 25 cm row spacings at a depth of 5cm at 57 kg/ha	
Application:	A	B
Application Timing:	Incorporated by Sowing (IBS) 1 day after application	Post Sowing-Pre-emergent (PSPE)
Application Date:	21/07/2022	22/07/2022
Weed Stage at Application:	Pre-emergent	
Volume:	100 L/ha	
Nozzles:	AIXR11002	
Trial Design:	Randomised complete block – 13 treatments x 4 replicates	
Plot Size:	4 m x 12 m	
Keywords:	Chickpea, paradoxa grass, wireweed, common sowthistle, residual	

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NB The Group 13 herbicide is not registered in chickpea. It has a control claim for wireweed and common sowthistle and a suppression claim for paradoxa grass in wheat.

Pest Scientific Name Pest Name Crop Name Crop Variety Assessment Date Assessment Type Assessment Unit Assessment Area Treatment-Evaluation Interval Plant-Evaluation Interval ARM Action Codes				Chickpea PBA Seamer 1/09/2022 EMERGENCE /m ² 4 m row 42 DAA/ 41 DAB 41 DAP AS	<i>Phalaris paradoxa</i> Paradoxa Grass 21/09/2022 COUNT /m ² 4 x 0.5 m ² 62 DAA/ 61 DAB 61 DAP AL ER4	<i>Polygonum aviculare</i> Wireweed 21/09/2022 COUNT /m ² 4 x 0.5 m ² 62 DAA/ 61 DAB 61 DAP AS	<i>Sonchus oleraceus</i> Common Sowthistle 21/09/2022 COUNT /m ² 4 x 0.5 m ² 62 DAA/ 61 DAB 61 DAP AA
Trt No.	Treatment	Product Rate	Appln. Code				
1	Untreated	-	-	11.9-	10.3a	22.3a	1.1ab
2	Sakura	118g/ha	A	5.0-	0.3d	6.3bcd	0.2bc
3	Boxer Gold	2500ml/ha	A	7.5-	1.1bcd	3.1c-f	0c
4	TriflurX	1500ml/ha	A	7.4-	2.0bcd	7.5bc	0c
5	Avadex Xtra TriflurX	1600ml/ha 1500ml/ha	A A	5.9-	0.8bcd	0f	0.1bc
6	Outlook	1000ml/ha	A	5.3-	0d	5.7b-e	0.2bc
7	Rustler	1000ml/ha	A	7.9-	4.2ab	3.5c-f	3.8a
8	Rifle 440	1900ml/ha	A	6.8-	0.4cd	1.3def	1.6ab
9	Ultro	1100g/ha	A	11.1-	3.3abc	12.0ab	0.9bc
10	Group 13	1250ml/ha	A	6.7-	2.0bcd	0f	0c
11	Terrain	180g/ha	A	8.2-	1.4bcd	0.6ef	0c
12	Balance Simazine	100g/ha 1100g/ha	B B	7.3-	0.4cd	0.8ef	0c
13	Balance Terbyne Xtreme	100g/ha 860g/ha	B B	8.8-	0d	0f	0c
LSD P=.05 Treatment Prob.(F)=				nsd 0.9598	0.5t 0.0561 (p=10%)	5.20 - 11.76t 0.0001	1.58 - 2.79t 0.0022

Means followed by same letter or symbol 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.

nsd = no significant difference

Replicate 4 was excluded from paradoxa grass analysis as no weeds were found in any plot in this replicate

ARM Action Codes

AS = Automatic square root transformation of X+0.5

AL = Automatic log transformation of X+1

ER4 = Excluded replicate 4

AA = Automatic arcsine square root % transformation

DAA = Days after Application A

DAB = Days after Application B

DAP = Days after Planting

Residual Control of Paradoxa Grass in Chickpea

Trial ID: DH2204 **Location:** Narrabri **Trial Year** 2022

Conclusions:

This trial was conducted in a low lying, heavy clay site near Narrabri with a history of paradoxa grass management issues. The site had a high volume of barley stubble (2021 harvest) which was heavily lodged and tangled. This stubble was burnt 3 days prior to sowing to avoid planting issues with the 25cm row planting equipment. The trial was planted in late July.

Incorporated by sowing treatments were applied one day before planting of PBA Seamer chickpea. Post sowing, pre-emergent treatments were applied immediately after sowing. Crop establishment was very slow and poor for all treatments including the untreated with waterlogging of site in early to mid-August. Chickpea emergence was assessed 41 days after planting (41 DAP) and ranged from ~5 to 12 plants/m² with no significant difference between treatments.

Residual weed control was assessed at 61 DAP with ~220mm of rainfall recorded between planting and assessment. Paradoxa grass was present in the untreated at ~10 plants/m². Variability in distribution (no paradoxa grass present in replicate 4) meant comparison of means could only be done at p=10% (p=.0561). There was a clear trend that all treatments except Rustler and Ultro reduced paradoxa grass counts compared to the untreated. Outlook and Balance + Terbyne Xtreme provided complete control with Sakura, Rifle and Balance + Simazine reducing paradoxa grass counts by >95%.

Wireweed was present at ~22 plants/m² in untreated plots. All treatments except Ultro significantly reduced wireweed counts. The Group 13 herbicide, Avadex Xtra + TriflurX and Balance + Terbyne Xtreme provided complete control with Terrain and Balance + Simazine reducing wireweed counts by >95%.

Common sowthistle was only present at ~1 plant/m² in untreated plots. Boxer Gold, TriflurX, the Group 13 herbicide, Terrain, Balance+ Simazine and Balance + Terbyne Xtreme all provided significant control with no common sowthistle found in these treatments.

More than 200mm of rainfall was recorded in the following 8 weeks. This made further site access and assessments impossible.

In this situation, all treatments except Rustler and Ultro provided useful levels of residual suppression of paradoxa grass. The performance of Outlook warrants more evaluation under higher weed densities. The most effective treatments for the range of weeds present were Balance + Terbyne Xtreme (no weeds found in any count) and Balance + Simazine.

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Location:

Narrabri

Trial Year

2022

Application Description		
	A	B
Application Date:	21/07/2022	22/07/2022
Application Start Time:	11:30 AM	1:30 PM
Application Stop Time:	1:30 PM	1:45 PM
Interval to Previous Application:		1 DAY
Application Method:	SPRAY	
Application Timing:	IBS	PSPE
Application Placement:	SOIL	
Air Temperature Start, Stop:	18.6, 23.4 C	23, 23 C
% Relative Humidity Start, Stop:	52.3, 38	38.4, 38.4
Wind Velocity & Direction Start:	5.5 km/h, SE	9.2 km/h, SE
Wind Velocity & Direction Stop:	8.9 km/h, SE	9.2 km/h, SE

Application Equipment		
	A	B
Application Equipment:	Polaris	
Equipment Type:	BOOM	
Operation Pressure:	400 kPa	
Nozzle Type:	AIXR11002	
Nozzle Spacing:	50 cm	
Boom Length:	4 m	
Boom Height:	50 cm	
Ground Speed:	11 km/h	
Application Amount:	100 L/ha	

Rainfall:

Closest Weather Station:	Kaputar Road
Distance:	~8 kms

Date	Total	Unit	Comments
31/01/2022	112	mm	Monthly total
28/02/2022	66	mm	Monthly total
31/03/2022	67	mm	Monthly total
30/04/2022	31	mm	Monthly total
31/05/2022	63	mm	Monthly total
30/06/2022	22	mm	Monthly total
6/07/2022	22	mm	
21/07/2022	-		Application A
22/07/2022	-		Application B
1/08/2022	10	mm	
6/08/2022	48	mm	
13/08/2022	32	mm	
16/08/2022	4	mm	
1/09/2022	-		Emergence assessment
2/09/2022	32	mm	
9/09/2022	24	mm	
15/09/2022	74	mm	
21/09/2022	-		Weed assessment
22-30/9/2022	26	mm	
31/10/2022	132	mm	Monthly total
1-14/11/2022	51	mm	Trial concluded