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Any product referred to in this document must be used strictly as directed, and in accordance with all label or permit instructions. Always consult the label prior to use.

Wild Oat Management in Chickpeas

Trial ID: LB1802

Location: Condamine
Investigator: Linda Bailey

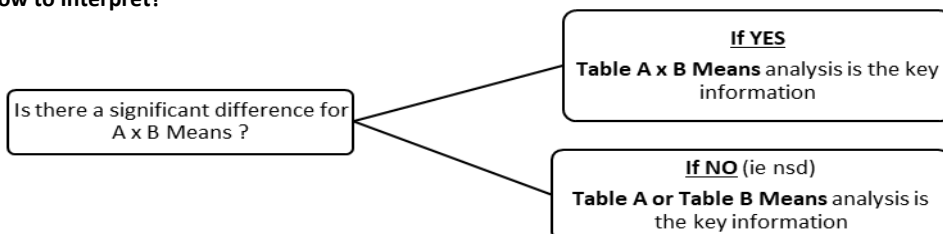
Trial Year: 2018

Objectives:	To screen residual herbicides for suppression of wild oats in Chickpea To evaluate the impact of soil levelling during planting on herbicide efficacy To evaluate the impact of pre-emergent herbicides on efficacy of post-emergent applications
Application Date:	1/06/2018
Variety:	PBA Seamer
Application Timing:	Pre-Plant with Incorporation by Sowing
Application Volume:	100L/ha
Levelling:	Furrow levelling was carried out using a Prickle harrow after planting
Planting Equipment:	Commercial Tyne Planter with Press wheels
Row Spacing:	60cm
Planting Date:	1/06/2018
Planting Depth:	10cm depth with 5cm soil coverage in 'non-levelled' treatments
Keywords:	Liverseed Grass, Common Sowthistle, Australian Bindweed, Chickpeas

NB: Trial was designed and analysed as a Factorial

	In Simple Terms:
Table of A Means:	Mean of 'herbicide' performance with ALL 'levelling +/-' treatments
Table of B Means:	Mean of 'levelling +/-' performance with ALL 'herbicide' treatments
Table of A x B Means:	'herbicide' performance with EACH 'levelling +/-' treatment

How to Interpret?



NB: Post emergent wild oat treatments are not included in this report due to the absence of wild oat emergence in the trial.

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Key information highlighted in grey

Pest Scientific Name			Chickpea PBA Seamer 26/07/2018 EMERGENCE /m ² 55 DAA T1	Convolvulus erubescens	Sonchus oleraceus	Urochloa panicoides
Pest Name				Australian Bindweed	Common Sowthistle	Liverseed Grass
Crop Name						
Crop Variety						
Assessment Date				4/09/2018	14/09/2018	14/09/2018
Assessment Type				COUNT	COUNT	COUNT
Assessment Unit				/m ²	/m ²	/m ²
Treatment-Evaluation Interval				95 DAA	105 DAA	105 DAA
ARM Action Codes				AA T4	AA T5	AA T6
Trt No.	Treatment	Product Rate				
TABLE OF A MEANS (Herbicide)						
1	Untreated	-	11.4-	1.39t-	0.13ab	0.10t-
2	Sakura	118g/ha	9.6-	1.35t-	0.00f	0.04t-
3	Boxer Gold	2500ml/ha	10.4-	1.92t-	0.08b-e	0.03t-
4	Experimental Gp K	1800ml/ha	11.7-	1.70t-	0.01ef	0.01t-
5	Avadex Xtra	1600ml/ha	12.2-	1.53t-	0.25a	0.16t-
6	TriflurX	1700ml/ha	11.8-	0.52t-	0.09bcd	0.03t-
7	Avadex Xtra TriflurX	1600ml/ha 1700ml/ha	11.5-	0.32t-	0.17ab	0.01t-
8	Outlook	1000ml/ha	11.7-	0.94t-	0.09bcd	0.02t-
9	Rustler	1000ml/ha	12.5-	1.13t-	0.17ab	0.05t-
10	Bladex	2200g/ha	11.0-	1.62t-	0.01def	0.10t-
11	Rifle 440	2500ml/ha	10.8-	0.93t-	0.12abc	0.18t-
12	Terbyne Xtreme	1200g/ha	10.8-	1.08t-	0.03c-f	0.14t-
TABLE OF B MEANS (Levelling)						
1	Unlevelled		11.0-	1.21t-	0.08t-	0.06t-
2	Levelled		11.6-	1.09t-	0.07t-	0.06t-
TABLE OF A x B MEANS (Herbicide x Levelling)						
1	Untreated, Unlevelled	-	10.8-	1.84t-	0.18t-	0.21t-
1a	Untreated, Levelled	-	11.9-	1.00t-	0.10t-	0.03t-
2	Sakura, Unlevelled	118g/ha	8.2-	1.19t-	0.00t-	0.00t-
2a	Sakura, Levelled	118g/ha	11.0-	1.53t-	0.01t-	0.17t-
3	Boxer Gold, Unlevelled	2500ml/ha	11.9-	2.56t-	0.15t-	0.01t-
3a	Boxer Gold, Levelled	2500ml/ha	8.9-	1.36t-	0.04t-	0.06t-
4	Experimental Gp K, Unlevelled	1800ml/ha	13.6-	3.25t-	0.04t-	0.01t-
4a	Experimental Gp K, Levelled	1800ml/ha	9.9-	0.65t-	0.00t-	0.03t-
5	Avadex Xtra, Unlevelled	1600ml/ha	11.5-	1.17t-	0.14t-	0.11t-
5a	Avadex Xtra, Levelled	1600ml/ha	12.9-	1.93t-	0.39t-	0.23t-
6	TriflurX, Unlevelled	1700ml/ha	10.8-	0.40t-	0.11t-	0.12t-
6a	TriflurX, Levelled	1700ml/ha	12.8-	0.66t-	0.07t-	0.00t-
7	Avadex Xtra, Unlevelled TriflurX, Unlevelled	1600ml/ha 1700ml/ha	11.9-	0.84t-	0.16t-	0.03t-
7a	Avadex Xtra, Levelled TriflurX, Levelled	1600ml/ha 1700ml/ha	11.1-	0.05t-	0.18t-	0.00t-
8	Outlook, Unlevelled	1000ml/ha	9.6-	0.24t-	0.09t-	0.02t-
8a	Outlook, Levelled	1000ml/ha	13.9-	2.07t-	0.10t-	0.03t-
9	Rustler, Unlevelled	1000ml/ha	11.4-	1.72t-	0.14t-	0.04t-
9a	Rustler, Levelled	1000ml/ha	13.6-	0.66t-	0.20t-	0.06t-
10	Bladex, Unlevelled	2200g/ha	12.1-	0.96t-	0.01t-	0.17t-
10a	Bladex, Levelled	2200g/ha	10.0-	2.44t-	0.01t-	0.05t-
11	Rifle 440, Unlevelled	2500ml/ha	9.7-	0.78t-	0.11t-	0.13t-
11a	Rifle 440, Levelled	2500ml/ha	11.9-	1.10t-	0.14t-	0.24t-
12	Terbyne Xtreme, Unlevelled	1200g/ha	10.7-	1.05t-	0.06t-	0.17t-
12a	Terbyne Xtreme, Levelled	1200g/ha	10.8-	1.11t-	0.01t-	0.11t-

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.

Wild Oat Management in Chickpeas

Trial ID: LB1802

Location: Condamine

Trial Year: 2018

Pest Scientific Name Pest Name Assessment Date Assessment Type Assessment Unit Treatment-Evaluation Interval ARM Action Codes			<i>Urochloa panicoides</i> Liverseed Grass 19/11/2018 COUNT /m ² 171 DAA AA T7
Trt No.	Treatment	Product Rate	
TABLE OF A MEANS (Herbicide)			
1	Untreated	-	4.7ta
2	Sakura	118g/ha	2.3tbcd
3	Boxer Gold	2500ml/ha	1.5td
4	Gp K B	1800ml/ha	1.9tcd
5	Avadex Xtra	1600ml/ha	3.2tabc
6	TriflurX	1700ml/ha	1.5td
7	Avadex Xtra	1600ml/ha	1.3td
	TriflurX	1700ml/ha	
8	Outlook	1000ml/ha	2.6tbc
9	Rustler	1000ml/ha	4.3ta
10	Bladex	2200g/ha	3.3tab
11	Rifle 440	2500ml/ha	2.3tbcd
12	Terbyne Xtreme	1200g/ha	3.3tab
TABLE OF B MEANS (Levelling)			
1	Unlevelled		2.9t-
2	Levelled		2.3t-
TABLE OF A x B MEANS (Herbicide x Levelling)			
1	Untreated, Unlevelled	-	5.7t-
1a	Untreated, Levelled	-	3.8t-
2	Sakura, Unlevelled	118g/ha	2.2t-
2a	Sakura, Levelled	118g/ha	2.4t-
3	Boxer Gold, Unlevelled	2500ml/ha	2.1t-
3a	Boxer Gold, Levelled	2500ml/ha	1.0t-
4	Experimental Gp K, Unlevelled	1800ml/ha	2.3t-
4a	Experimental Gp K, Levelled	1800ml/ha	1.6t-
5	Avadex Xtra, Unlevelled	1600ml/ha	3.0t-
5a	Avadex Xtra, Levelled	1600ml/ha	3.3t-
6	TriflurX, Unlevelled	1700ml/ha	2.6t-
6a	TriflurX, Levelled	1700ml/ha	0.7t-
7	Avadex Xtra, Unlevelled	1600ml/ha	2.0t-
	TriflurX, Unlevelled	1700ml/ha	
7a	Avadex Xtra, Levelled	1600ml/ha	0.8t-
	TriflurX, Levelled	1700ml/ha	
8	Outlook, Unlevelled	1000ml/ha	2.5t-
8a	Outlook, Levelled	1000ml/ha	2.8t-
9	Rustler, Unlevelled	1000ml/ha	3.7t-
9a	Rustler, Levelled	1000ml/ha	4.9t-
10	Bladex, Unlevelled	2200g/ha	3.0t-
10a	Bladex, Levelled	2200g/ha	3.6t-
11	Rifle 440, Unlevelled	2500ml/ha	3.1t-
11a	Rifle 440, Levelled	2500ml/ha	1.6t-
12	Terbyne Xtreme, Unlevelled	1200g/ha	3.7t-
12a	Terbyne Xtreme, Levelled	1200g/ha	3.0t-

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

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COMPLETE STRIP-BLOCK AOV Chickpea - PBA Seamer 26/07/2018 EMERGENCE /m ² 55 DAA T1						
Source	DF	Sum of Squares	Mean Square	F	Prob.(F)	LSD (.05)
Total	71	625.540123				
R	2	62.128665	31.064333	5.400	0.0124	
A	11	43.711420	3.973765	0.345	0.9643	4.1
RA	22	253.206983	11.509408			
B	1	5.102238	5.102238	0.313	0.6323	4.1
RB	2	32.643711	16.321856			
AB	11	102.189429	9.289948	1.615	0.1630	4.1
RAB	22	126.557677	5.752622			

COMPLETE STRIP-BLOCK AOV <i>Convolvulus erubescens</i> - Australian Bindweed 4/09/2018 COUNT /m ² 95 DAA AA T4						
Source	DF	Sum of Squares	Mean Square	F	Prob.(F)	LSD (.05)
Total	71	1180.101153				
R	2	141.433096	70.716548	5.768	0.0097	
A	11	126.981617	11.543783	0.684	0.7389	4.92
RA	22	371.094874	16.867949			
B	1	1.594586	1.594586	0.032	0.8738	7.12
RB	2	98.503076	49.251538			
AB	11	170.768067	15.524370	1.266	0.3055	5.93
RAB	22	269.725837	12.260265			

COMPLETE STRIP-BLOCK AOV <i>Sonchus oleraceus</i> – Common Sowthistle 14/09/2018 COUNT /m ² 105 DAA AA T5						
Source	DF	Sum of Squares	Mean Square	F	Prob.(F)	LSD (.05)
Total	71	95.335517				
R	2	5.220215	2.610108	3.880	0.0360	
A	11	44.910191	4.082745	4.751	0.0009	1.11
RA	22	18.907059	0.859412			
B	1	0.249320	0.249320	0.277	0.6513	0.96
RB	2	1.800940	0.900470			
AB	11	9.449968	0.859088	1.277	0.2996	1.39
RAB	22	14.797824	0.672628			

COMPLETE STRIP-BLOCK AOV <i>Urochloa panicoides</i> - Liverseed Grass 14/09/2018 COUNT /m ² 105 DAA AA T6						
Source	DF	Sum of Squares	Mean Square	F	Prob.(F)	LSD (.05)
Total	71	182.602825				
R	2	6.107587	3.053793	0.793	0.4650	
A	11	29.096299	2.645118	1.689	0.1422	1.50
RA	22	34.449558	1.565889			
B	1	0.012739	0.012739	0.008	0.9371	1.28
RB	2	3.208571	1.604286			
AB	11	25.011204	2.273746	0.590	0.8164	3.32
RAB	22	84.716867	3.850767			

Wild Oat Management in Chickpeas

Trial ID: LB1802

Location:

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COMPLETE STRIP-BLOCK AOV						
<i>Urochloa panicoides</i> - Liverseed Grass						
19/11/2018						
COUNT /m ² 171 DAA AA T7						
Source	DF	Sum of Squares	Mean Square	F	Prob.(F)	LSD (.05)
Total	71	631.565815				
R	2	53.986687	26.993344	3.670	0.0421	
A	11	243.892597	22.172054	5.995	0.0002	2.3
RA	22	81.366254	3.698466			
B	1	24.226314	24.226314	17.116	0.0538	1.2
RB	2	2.830897	1.415449			
AB	11	63.459063	5.769006	0.784	0.6527	4.6
RAB	22	161.804002	7.354727			

ARM Action Codes

AA = Automatic arcsine square root % transformation

T1 = [1]/2.4

T4 = Arcsine square root percent ([7])

T5 = Arcsine square root percent ([9])

T6 = Arcsine square root percent ([11])

T7 = Arcsine square root percent ([13])

DAA = Days after Application

Conclusions:

Crop establishment was assessed ~8 weeks after planting. In this trial, with seed planted at ~10cm depth, there was no impact from any herbicide on chickpea establishment.

Wild oats did not emerge during the trial. No data was able to be generated on any of the wild oat objectives.

Assessment at ~14 weeks after application showed no significant activity from any herbicide against Australian bindweed with untreated populations of ~1 plant/m². There was no apparent impact from soil levelling.

Assessment at ~15 weeks after application, showed Sakura, Bladex, Terbyne Extreme and the Experimental Gp K all provided significant levels of common sowthistle control with untreated populations of ~0.1 to 0.2/m². There was no significant impact on a similar density of liverseed grass at the same date. There was no apparent impact from soil levelling on either weed.

A large emergence of liverseed grass occurred prior to assessment at ~24 weeks after application with untreated populations of ~5 plants/m². All treatments except Avadex Xtra alone, Rustler, Bladex and Terbyne Extreme provided significant levels of suppression (~50-70% reductions). In addition, there was a trend for soil levelling to reduce liverseed grass emergence (p=10%).

In this trial, a range of herbicides registered for use at planting in chickpeas provided extended residual activity against common sowthistle and liverseed grass. There was also an indication that soil levelling improved liverseed grass suppression.

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Application Description	
Application Date:	1/06/2018
Application Start Time:	2:30 PM
Application Stop Time:	4:15 PM
Application Method:	SPRAY
Application Timing:	Incorporated by Sowing
Application Placement:	SOIL
Air Temperature, Unit:	19 C
% Relative Humidity:	32
Wind Velocity, Unit:	7 km/h
Wind Direction:	SW
Dew Presence (Y/N):	No
Soil Moisture:	DRY
% Cloud Cover:	0
Next Moisture Occurred On:	27/06/2018

Application Equipment	
Operation Pressure, Unit:	350 kPa
Nozzle Type:	AIXR
Nozzle Size:	110015
Nozzle Spacing, Unit:	50 cm
Nozzles/Row:	6
Boom Length, Unit:	3 m
Boom Height, Unit:	60 cm
Ground Speed, Unit:	7.1 km/h
Carrier:	water
Spray Volume, Unit:	100 L/ha