Safety of Annual Ryegrass Herbicides in Winter Cereals with Tyne or Disc Planting

Trial ID: AM1602 **Location:** Mullaley **Trial Year:** 2016
Investigator: Anthony Mitchell

Planting Date:	**25/05/2016**	
Planting Equipment:	**Small Plot Planter, either Single Disc or Tyne**	
Row Spacing:	**32cm**	
Sowing Depth:	**5cm**	
Cereal Varieties:	**Lancer, Suntop, Caparoi, Commander & LaTrobe**	
Application Code:	**A**	**B**
Application Date:	**19/05/2016**	**25/05/2016**
Application Timing:	**Pre-Plant**	**Post Plant - Pre-Emergence**
	NB: Trial conducted in weed free paddock	

Trial designed and analysed as a Strip- Split Plot

	In Simple Terms
Table of A Means:	Mean of 'Variety' performance with **ALL** 'Herbicide' treatments and 'Cultivation' treatments
Table of B Means:	Mean of 'Herbicide' performance with **ALL** 'Variety' treatments and 'Cultivation' treatments
Table of C Means:	Mean of 'Cultivation' performance with **ALL** 'Variety' treatments and 'Herbicide' treatments
Table of A x B Means:	'Variety' performance with **EACH** 'Herbicide' treatment
Table of A x C Means:	'Variety' performance with **EACH** 'Cultivation' treatment
Table of B x C Means:	'Herbicide' performance with **EACH** 'Cultivation' treatment

How to interpret?

Is there a significant difference for A x B Means, A x C Means or B x C Means ?

- **If YES**: **Table A x B Means, A x C Means or B x C Means** analysis is the key information
- **If NO** (ie nsd): **Table A, Table B or Table C Means** analysis is the key information

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Crop Type				Winter Cereals		
Assessment Date				10/06/2016	19/07/2016	28/11/2016
Assessment Type				EMERGENCE	NDVI	YIELD
Assessment Unit				/m²	Ratio	t/ha
Crop Stage Majority				12	25-28	99
Treatment-Evaluation Interval				22 DAA	61 DAA	193 DAA
CV %						6.0
ARM Action Codes				T1		TY2
Trt No.	Treatment	Product Rate	Appln. Code			
TABLE OF A MEANS (Variety)						
1	Lancer			54.4a	0.369c	6.56a
2	Suntop			51.5ab	0.361c	6.67a
3	Caparoi			46.2b	0.364c	5.45bc
4	Commander			54.1a	0.629a	4.94c
5	LaTrobe			56.5a	0.402b	5.67b
TABLE OF B MEANS (Herbicide)						
1	Untreated	-		55.0-	0.459a	5.95-
2	Sakura	118g/ha	A	51.1-	0.406d	5.76-
3	Sakura	75g/ha	A	50.2-	0.398d	5.79-
	Gp K S	43g/ha	B			
4	Boxer Gold	1750ml/ha	A	53.6-	0.422c	5.92-
	Boxer Gold	750ml/ha	B			
5	TriflurX	1500ml/ha	A	52.9-	0.442b	5.86-
	Avadex Xtra	2400ml/ha	A			
TABLE OF C MEANS (Cultivation)						
1	Tyne			55.3a	0.435a	5.86-
2	Disc			49.8b	0.416b	5.86-
TABLE OF A x B MEANS (Variety x Herbicide)						
1	Lancer			54.7-	0.388e-h	6.80ab
1	Untreated	-				
1	Lancer			55.1-	0.371f-j	6.43abc
2	Sakura	118g/ha	A			
1	Lancer			53.6-	0.369g-j	6.42bcd
3	Sakura	75g/ha	A			
3	Gp K S	43g/ha	B			
1	Lancer			56.1-	0.358ijk	6.66ab
4	Boxer Gold	1750ml/ha	A			
4	Boxer Gold	750ml/ha	B			
1	Lancer			52.3-	0.362h-k	6.47abc
5	TriflurX	1500ml/ha	A			
5	Avadex Xtra	2400ml/ha	A			
2	Suntop			59.9-	0.399c-f	6.67ab
1	Untreated	-				
2	Suntop			46.6-	0.354ijk	6.42bcd
2	Sakura	118g/ha	A			
2	Suntop			48.0-	0.337kl	6.34b-e
3	Sakura	75g/ha	A			
3	Gp K S	43g/ha	B			
2	Suntop			51.0-	0.347jkl	7.06a
4	Boxer Gold	1750ml/ha	A			
4	Boxer Gold	750ml/ha	B			
2	Suntop			51.8-	0.370g-j	6.85a
5	TriflurX	1500ml/ha	A			
5	Avadex Xtra	2400ml/ha	A			

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

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Assessment Type				EMERGENCE	NDVI	YIELD
Assessment Unit				/m²	Ratio	t/ha
Crop Stage Majority				12	25-28	99
Treatment-Evaluation Interval				22 DAA	61 DAA	193 DAA
CV %						6.0
ARM Action Codes				T1		TY2
Trt No.	Treatment	Product Rate	Appln. Code			
3 1	Caparoi Untreated	-		44.8-	0.411cde	5.53f-i
3 2	Caparoi Sakura	118g/ha	A	49.5-	0.333kl	5.38f-i
3 3 3	Caparoi Sakura Gp K S	75g/ha 43g/ha	A B	43.2-	0.321l	5.54f-i
3 4 4	Caparoi Boxer Gold Boxer Gold	1750ml/ha 750ml/ha	A B	46.7-	0.362h-k	5.43f-i
3 5 5	Caparoi TriflurX Avadex Xtra	1500ml/ha 2400ml/ha	A A	46.9-	0.392efg	5.37f-i
4 1	Commander Untreated	-		58.3-	0.670a	5.00f-i
4 2	Commander Sakura	118g/ha	A	52.0-	0.587b	4.93ghi
4 3 3	Commander Sakura Gp K S	75g/ha 43g/ha	A B	47.8-	0.583b	5.10f-i
4 4 4	Commander Boxer Gold Boxer Gold	1750ml/ha 750ml/ha	A B	59.6-	0.645a	4.79i
4 5 5	Commander TriflurX Avadex Xtra	1500ml/ha 2400ml/ha	A A	52.9-	0.662a	4.88hi
5 1	LaTrobe Untreated	-		57.2-	0.425c	5.72c-f
5 2	LaTrobe Sakura	118g/ha	A	52.6-	0.388e-h	5.65d-g
5 3 3	LaTrobe Sakura Gp K S	75g/ha 43g/ha	A B	58.2-	0.380f-i	5.57e-h
5 4 4	LaTrobe Boxer Gold Boxer Gold	1750ml/ha 750ml/ha	A B	54.3-	0.396d-g	5.65d-h
5 5 5	LaTrobe TriflurX Avadex Xtra	1500ml/ha 2400ml/ha	A A	60.4-	0.422cd	5.74c-f
TABLE OF A x C MEANS (Variety x Cultivation)						
1 1	Lancer Tyne			57.8-	0.385-	6.52-
1 2	Lancer Disc			50.9-	0.354-	6.59-
2 1	Suntop Tyne			55.8-	0.370-	6.75-
2 2	Suntop Disc			47.1-	0.352-	6.59-
3 1	Caparoi Tyne			48.4-	0.376-	5.43-
3 2	Caparoi Disc			44.1-	0.352-	5.46-

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Crop Name				Winter Cereals		
Assessment Date				10/06/2016	19/07/2016	28/11/2016
Assessment Type				EMERGENCE	NDVI	YIELD
Assessment Unit				/m²	Ratio	t/ha
Crop Stage Majority				12	25-28	99
Treatment-Evaluation Interval				22 DAA	61 DAA	193 DAA
CV %						6.0
ARM Action Codes				T1		TY2
Trt No.	**Treatment**	**Product Rate**	**Appln. Code**			
4 1	Commander Tyne			57.4-	0.637-	4.96-
4 2	Commander Disc			50.8-	0.622-	4.92-
5 1	LaTrobe Tyne			56.9-	0.407-	5.62-
5 2	LaTrobe Disc			56.1-	0.397-	5.72-
TABLE OF B x C MEANS (Herbicide x Cultivation)						
1 1	Untreated Tyne	-		57.2-	0.464-	5.95-
1 2	Untreated Disc	-		52.7-	0.453-	5.94-
2 1	Sakura Tyne	118g/ha	A	56.7-	0.421-	5.85-
2 2	Sakura Disc	118g/ha	A	45.6-	0.392-	5.68-
3 3 1	Sakura Gp K S Tyne	75g/ha 43g/ha	A B	53.4-	0.407-	5.68-
3 3 2	Sakura Gp K S Disc	75g/ha 43g/ha	A B	47.0-	0.388-	5.90-
4 4 1	Boxer Gold Boxer Gold Tyne	1750ml/ha 750ml/ha	A B	54.8-	0.433-	5.93-
4 4 2	Boxer Gold Boxer Gold Disc	1750ml/ha 750ml/ha	A B	52.3-	0.410-	5.91-
5 5 1	TriflurX Avadex Xtra Tyne	1500ml/ha 2400ml/ha	A A	54.2-	0.449-	5.87-
5 5 2	TriflurX Avadex Xtra Disc	1500ml/ha 2400ml/ha	A A	51.5-	0.434-	5.85-

NB: Variety x Herbicide x Cultivation interaction means analysed but not presented. No significant interaction for emergence or yield.

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COMPLETE FACTORIAL AOV
Winter Cereals
10/06/2016
EMERGENCE /m² 22 DAA T1

Source	DF	Sum of Squares	Mean Square	F	Prob.(F)	LSD (.05)
Total	149	14006.9				
R	2	1589.5	794.73			
A	4	1884.7	471.19	5.79	0.0172	5.4
RA	8	650.5	81.32			
B	4	437.6	109.41	1.39	0.3194	
RB	8	629	78.63			
AB	16	1185.1	74.07	1.11	0.3873	
RAB	32	2136.9	66.78			
C	1	1113	1112.99	19.53	0.0001	2.5
AC	4	276.6	69.16	1.21	0.3167	
BC	4	367	91.76	1.61	0.1862	
ABC	16	887.9	55.49	0.97	0.4977	
RABC	50	2848.9	56.98			

COMPLETE FACTORIAL AOV
Winter Cereals
19/07/2016
NDVI Ratio 61 DAA

Source	DF	Sum of Squares	Mean Square	F	Prob.(F)	LSD (.05)
Total	149	1.78679				
R	2	0.0014	0.0007			
A	4	1.59412	0.39853	533.11	0.0000	0.016
RA	8	0.00598	0.00075			
B	4	0.07466	0.01867	35.2	0.0000	0.014
RB	8	0.00424	0.00053			
AB	16	0.02892	0.00181	3.22	0.0024	0.029
RAB	32	0.01798	0.00056			
C	1	0.0141	0.0141	27.34	0.0000	0.007
AC	4	0.00192	0.00048	0.93	0.4526	
BC	4	0.0013	0.00033	0.63	0.6427	
ABC	16	0.01639	0.00102	1.99	0.0333	0.040
RABC	50	0.02578	0.00052			

COMPLETE FACTORIAL AOV
Winter Cereals
28/11/2016
YIELD t/ha 193 DAA TY2

Source	DF	Sum of Squares	Mean Square	F	Prob.(F)	LSD (.05)
Total	146					
R	2	1.5845	0.7922			
A	4	64.3048	16.0762	11.08	0.0024	0.72
RA	8	11.6042	1.4505			
B	4	0.836	0.209	1.22	0.3728	
RB	8	1.3655	0.1707			
AB	16	2.5614	0.1601	2.13	0.0335	0.40/0.85
RAB	32	2.4038	0.0751			
C	1	0.0344	0.0344	0.28	0.6004	
AC	4	0.3764	0.0941	0.76	0.5556	
BC	4	0.4208	0.1052	0.85	0.5	
ABC	16	2.2616	0.1414	1.14	0.3459	
RABC	47	5.808	0.1236			

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Assessment Type
NDVI = Normalized difference vegetation index
Crop Stage Majority
12 = 2 leaves unfolded
99 = Harvested product
ARM Action Codes
T1 = [C1]/(4*0.32)
TY2 = 0.5*[C4]

DAA = Days after Application

Application Description		
	A	B
Application Date:	19/05/2016	25/05/2016
Application Start Time:	11:00 AM	4:30 PM
Application Stop Time:	12:00 PM	5:00 PM
Application Method:	SPRAY	
Application Timing:	IBS	PSPE
Application Placement:	SOIL	
Air Temperature, Unit:	23 C	17.3 C
% Relative Humidity:	36	53
Wind Velocity, Unit:	14 km/h	2 km/h
Wind Direction:	SW	NE
Soil Moisture:	Good	
% Cloud Cover:	0	70
Next Moisture Occurred On:		26/05/2016

Application Equipment		
	A	B
Application Equipment:	Quad Bike	
Equipment Type:	BOOM	
Operation Pressure, Unit:	300 kPa	
Nozzle Type:	AIXR	
Nozzle Size:	110015	
Nozzle Spacing, Unit:	50 cm	
Boom Length, Unit:	4 m	
Boom Height, Unit:	0.5 m	
Ground Speed, Unit:	10.2 km/h	
Spray Volume, Unit:	100 L/ha	