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Efficiency of cinch on brome grass control.

J. E. Holmes.

R.L. Thomas

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TRIAL TITLE: Efficiency of Cinch on Brome Grass Control.

TRIAL NUMBER: 85GE34

OFFICERS: J.E. Holmes, R.L. Thomas

COOPERATOR:

LOCATION: Geraldton, Erradu
sand plain

CROP: Wheat cv. Gutha

DATE SOWN: 12.6.85

SOIL TYPE: Erradu sand

BLANKET TREATMENT: DSP 150 kg/ha
Agron 100 kg/ha

GROUND PREPARATION: Nil

EXPERIMENTAL DESIGN: Randomised Block

PLOT SIZE: 2.5 m x 20 m

HARVESTING:

SPRAYING DETAILS:

SPRAYING DATE: 13.6.85

TIME: 9.30 am

EQUIPMENT:

NOZZLE TYPE: 8001 LP

PRESSURE: 150 kpa

VOLUME: 60 l/ha

WIND SPEED: Light

DIRECTION: NE

TEMPERATURES: DRY: 15°C WET: 13°C

RH:

MOISTURE: SURFACE: Moist

DEPTH: Moist

CHEMICAL: Cinch

ADDITIVES:

CROP GROWTH STAGE: Pre-plant 12.6.85

WEED GROWTH STAGE:

TREATMENTS:

Treatment No.	Target brome grass density, rate of Cinch (product)
1	Brome grass 0 plants/m ² + 0 l/ha Cinch
2	Brome grass 0 plants/m ² + 0.25 l/ha Cinch
3	Brome grass 0 plants/m ² + 0.50 l/ha Cinch
4	Brome grass 0 plants/m ² + 0.75 l/ha Cinch
5	Brome grass 0 plants/m ² + 1.00 l/ha Cinch
6	Brome grass 0 plants/m ² + 1.50 l/ha Cinch
7	Brome grass 100 plants/m ² + 0 l/ha Cinch
8	Brome grass 100 plants/m ² + 0.25 l/ha Cinch
9	Brome grass 100 plants/m ² + 0.50 l/ha Cinch
10	Brome grass 100 plants/m ² + 0.75 l/ha Cinch
11	Brome grass 100 plants/m ² + 1.00 l/ha Cinch
12	Brome grass 100 plants/m ² + 1.50 l/ha Cinch
13	Brome grass 200 plants/m ² + 0 l/ha Cinch
14	Brome grass 200 plants/m ² + 0.25 l/ha Cinch
15	Brome grass 200 plants/m ² + 0.50 l/ha Cinch
16	Brome grass 200 plants/m ² + 0.75 l/ha Cinch
17	Brome grass 200 plants/m ² + 1.00 l/ha Cinch
18	Brome grass 200 plants/m ² + 1.50 l/ha Cinch
19	Brome grass 400 plants/m ² + 0 l/ha Cinch
20	Brome grass 400 plants/m ² + 0.25 l/ha Cinch
21	Brome grass 400 plants/m ² + 0.50 l/ha Cinch
22	Brome grass 400 plants/m ² + 0.75 l/ha Cinch
23	Brome grass 400 plants/m ² + 1.00 l/ha Cinch
24	Brome grass 400 plants/m ² + 1.50 l/ha Cinch
25	No wheat + brome grass 100 plants/m ²
26	No wheat + brome grass 200 plants/m ²
27	No wheat + brome grass 400 plants/m ²

RESULTS:

Treatment no.	Plant density/m ²		Control ^a rating	Wheat ears/m ²	Grain Yield kg/ha
	Wheat	Brome grass			
1	121	0 (0.71) ^b	10.0	185	1545
2	102	3 (1.43)	10.0	210	1820
3	107	0 (0.71)	10.0	201	1687
4	93	1 (1.21)	10.0	181	1320
5	108	3 (1.68)	9.7	187	1313
6	98	2 (1.37)	9.7	182	1085
7	103	66 (8.09)	4.7	149	1313
8	99	73 (8.44)	6.0	159	1358
9	104	79 (8.72)	6.8	171	1307
10	89	59 (7.66)	7.0	156	1213
11	107	58 (7.60)	8.0	161	1133
12	96	44 (6.62)	8.3	189	1220
13	110	85 (9.22)	4.3	156	1307
14	109	132 (11.46)	4.0	154	1100
15	118	131 (11.43)	6.0	168	1120
16	105	104 (10.23)	5.8	177	973
17	101	63 (7.96)	6.3	160	1073
18	106	54 (7.10)	7.2	154	1055
19	89	193 (13.87)	3.0	141	927
20	96	202 (14.23)	2.5	160	1152
21	106	126 (11.24)	4.0	174	1100
22	117	135 (11.54)	4.8	172	1093
23	100	119 (10.94)	3.5	158	967
24	99	90 (9.45)	5.3	157	927
25	-	160 (-)	-	-	-
26	-	201 (-)	-	-	-
27	-	401 (-)	-	-	-
l.s.d. (p < 0.05)					
	23	(1.85)	1.8	35	249
c.v. (%)					
	13.7	(14.7)	16.8	12.4	12.4

^a Control rating of 10 = 100% weed control, 0 = 0% weed control.

^b Values in parentheses are $\sqrt{x + 0.5}$, where x = brome grass plants/m².

CONCLUSIONS:

1. Actual densities of brome grass achieved in this trial were about half the target densities. Brome grass was very competitive at this site and its density of 193 plants/m² caused a 40% decrease in the grain yield of wheat.
2. Cinch was toxic to the crop and caused a significant reduction in ears/m² and grain yield of wheat.
3. Data on weed counts and control rating shows that the weed control achieved at the higher brome grass densities was unsatisfactory.

TRIAL TITLE: Brome Grass Control in Cereals.

TRIAL NUMBER: 85A11

OFFICERS: J.E. Holmes, R.L. Thomas

COOPERATOR:

LOCATION: Avondale

CROP: Wheat cv. Aroona

DATE SOWN: 25.6.85

SOIL TYPE: Loam

BLANKET TREATMENT: 1. Agras No. 1
61.5 kg/ha. 2. Sprayseed 13 days
before planting

GROUND PREPARATION: Scratch-up prior to hand top-dressing brome grass.

EXPERIMENTAL DESIGN: Randomised Block

PLOT SIZE: 3 m x 20 m

HARVESTING: 10.12.85

SPRAYING DETAILS:

SPRAYING DATE: 26.6.85

TIME: 11.30 am

EQUIPMENT:

NOZZLE TYPE: 8001 LP

PRESSURE: 150 kpa

VOLUME: 60 l/ha

WIND SPEED: 0-10 kph

DIRECTION: NW

TEMPERATURES: DRY: 19°C WET: 15°C

RH:

MOISTURE: SURFACE: Moist

DEPTH: Moist

CHEMICAL: Cinch

ADDITIVES:

CROP GROWTH STAGE: Post-plant, pre-emergence

WEED GROWTH STAGE:

TREATMENTS:

Treatment No.	Target brome grass density, rate of Cinch (product)
1	Brome grass 0 plants/m ² + 0 l/ha Cinch
2	Brome grass 0 plants/m ² + 0.25 l/ha Cinch
3	Brome grass 0 plants/m ² + 0.50 l/ha Cinch
4	Brome grass 0 plants/m ² + 0.75 l/ha Cinch
5	Brome grass 0 plants/m ² + 1.00 l/ha Cinch
6	Brome grass 0 plants/m ² + 1.50 l/ha Cinch
7	Brome grass 100 plants/m ² + 0 l/ha Cinch
8	Brome grass 100 plants/m ² + 0.25 l/ha Cinch
9	Brome grass 100 plants/m ² + 0.50 l/ha Cinch
10	Brome grass 100 plants/m ² + 0.75 l/ha Cinch
11	Brome grass 100 plants/m ² + 1.00 l/ha Cinch
12	Brome grass 100 plants/m ² + 1.50 l/ha Cinch
13	Brome grass 200 plants/m ² + 0 l/ha Cinch
14	Brome grass 200 plants/m ² + 0.25 l/ha Cinch
15	Brome grass 200 plants/m ² + 0.50 l/ha Cinch
16	Brome grass 200 plants/m ² + 0.75 l/ha Cinch
17	Brome grass 200 plants/m ² + 1.00 l/ha Cinch
18	Brome grass 200 plants/m ² + 1.50 l/ha Cinch
19	Brome grass 400 plants/m ² + 0 l/ha Cinch
20	Brome grass 400 plants/m ² + 0.25 l/ha Cinch
21	Brome grass 400 plants/m ² + 0.50 l/ha Cinch
22	Brome grass 400 plants/m ² + 0.75 l/ha Cinch
23	Brome grass 400 plants/m ² + 1.00 l/ha Cinch
24	Brome grass 400 plants/m ² + 1.50 l/ha Cinch
25	No wheat + brome grass 100 plants/m ²
26	No wheat + brome grass 200 plants/m ²
27	No wheat + brome grass 400 plants/m ²

RESULTS:

Treatment no.	Plant density/m ²		Control ^a rating	Wheat ears/m ²	Grain Yield kg/ha
	Wheat	Brome grass			
1	101	1 (1.02) ^b	10	348	2500
2	94	4 (1.71)	10	334	2590
3	91	1 (1.21)	10	372	2327
4	90	1 (1.02)	10	340	2711
5	91	0 (0.71)	10	332	2769
6	82	2 (1.53)	10	347	2391
7	94	146 (11.99)	4.3	292	1109
8	94	103 (10.09)	6.0	314	1276
9	93	87 (9.37)	6.7	306	1353
10	90	86 (9.20)	7.0	301	1461
11	83	61 (7.76)	8.0	326	1718
12	87	38 (6.11)	8.0	300	1628
13	98	297 (17.22)	1.3	214	679
14	89	213 (14.51)	2.7	271	949
15	93	175 (13.23)	5.0	264	1038
16	82	103 (9.96)	6.3	287	1852
17	88	149 (11.98)	7.0	290	1538
18	80	58 (7.59)	7.7	314	1852
19	90	459 (21.36)	0.3	215	359
20	80	273 (16.49)	1.7	237	622
21	81	228 (15.12)	2.7	212	994
22	96	172 (13.11)	3.3	282	1320
23	90	181 (13.48)	4.3	241	1282
24	79	174 (13.00)	5.7	254	1167
25	-	175 (-)	-	-	-
26	-	307 (-)	-	-	-
27	-	501 (-)	-	-	-
l.s.d. (P < 0.05)	15	(2.55)	1.6	55	708
c.v. (%)	10.1	(16.3)	15.5	11.4	27.5

^a Control rating of 10 = 100% weed control, 0 = 0% weed control.

^b Values in parentheses are $\sqrt{x + 0.5}$, where x = brome grass plants/m².

CONCLUSIONS:

1. Brome grass was highly competitive against wheat and if left uncontrolled, a weed density of 297 plants/m² caused a 73% reduction in the grain yield of wheat.
2. Cinch was not toxic to the crop in the range of 0-1.5 l/ha (product).

3. Relative to the untreated controls, Cinch gave a significant increase in grain yield at the target brome grass densities of 200 and 400 plants/m² but not at the lower weed density of 100 plants/m².
4. The data on weed counts and control ratings showed that Cinch was less effective at higher densities of brome grass.

TRIAL TITLE: Efficiency of Isoproturon on Barley Grass.

TRIAL NUMBER: 85A12

OFFICERS: J.E. Holmes, R.L. Thomas

COOPERATOR:

LOCATION: Avondale

CROP: Wheat cv. Aroona

DATE SOWN: 25.6.85

SOIL TYPE: Loam

BLANKET TREATMENT: 1. Agras No. 1
61.5 kg/ha. 2. Sprayseed @ 2 l/ha
13 days before sowing

GROUND PREPARATION: Scratch-up prior to planting.

EXPERIMENTAL DESIGN: Randomised Block

PLOT SIZE: 3 m x 20 m

HARVESTING: 9.12.85

SPRAYING DETAILS:

SPRAYING DATE: 26.6.85

TIME: 11.00 am

EQUIPMENT:

NOZZLE TYPE: 8001 LP

PRESSURE: 150 kpa

VOLUME: 60 l/ha

WIND SPEED: 0-10 kph

DIRECTION: NW

TEMPERATURES: DRY: 12.5°C WET: 12°C RH:

MOISTURE: SURFACE: Moist

DEPTH: Moist

CHEMICAL: Isoproturon

ADDITIVES:

CROP GROWTH STAGE: Pre-plant

WEED GROWTH STAGE:

TREATMENTS:

Treatment No.	Target barley grass density, rate of Isoproturon (product)
1	Barley grass 0/m ² + 0 l/ha Isoproturon
2	Barley grass 0/m ² + 1.5 l/ha Isoproturon
3	Barley grass 0/m ² + 2.0 l/ha Isoproturon
4	Barley grass 0/m ² + 2.5 l/ha Isoproturon
5	Barley grass 0/m ² + 3.0 l/ha Isoproturon
6	Barley grass 100/m ² + 0 l/ha Isoproturon
7	Barley grass 100/m ² + 1.5 l/ha Isoproturon
8	Barley grass 100/m ² + 2.0 l/ha Isoproturon
9	Barley grass 100/m ² + 2.5 l/ha Isoproturon
10	Barley grass 100/m ² + 3.0 l/ha Isoproturon
11	Barley grass 200/m ² + 0 l/ha Isoproturon
12	Barley grass 200/m ² + 1.5 l/ha Isoproturon
13	Barley grass 200/m ² + 2.0 l/ha Isoproturon
14	Barley grass 200/m ² + 2.5 l/ha Isoproturon
15	Barley grass 200/m ² + 3.0 l/ha Isoproturon
16	Barley grass 400/m ² + 0 l/ha Isoproturon
17	Barley grass 400/m ² + 1.5 l/ha Isoproturon
18	Barley grass 400/m ² + 2.0 l/ha Isoproturon
19	Barley grass 400/m ² + 2.5 l/ha Isoproturon
20	Barley grass 400/m ² + 3.0 l/ha Isoproturon
21	No wheat + barley grass 100/m ²
22	No wheat + barley grass 200/m ²
22	No wheat + barley grass 400/m ²

RESULTS:

Treatment no.	Plant density/m ²		Control ^a rating	Wheat ears/m ²	Grain Yield kg/ha
	Wheat	Barley grass			
1	97	1 (1.13) ^b	10.0	295	2737
2	100	3 (1.63)	10.0	287	2654
3	103	0 (0.90)	10.0	303	2942
4	107	1 (1.21)	10.0	298	2776
5	94	6 (1.94)	9.7	311	2615
6	111	125 (11.15)	4.3	244	1090
7	100	23 (4.86)	8.7	278	2404
8	101	25 (5.00)	8.7	287	2320
9	101	7 (2.45)	9.3	296	2622
10	97	11 (3.09)	9.0	269	2513
11	93	195 (13.97)	0.7	173	622
12	98	48 (6.96)	6.3	295	1942
13	103	27 (5.11)	8.0	282	2173
14	108	26 (5.15)	8.3	261	2385
15	102	33 (5.64)	8.0	260	2340
16	95	267 (16.36)	0.0	150	378
17	101	103 (9.95)	4.7	226	1519
18	107	79 (8.69)	5.7	247	1776
19	93	85 (9.10)	6.0	249	1840
20	98	60 (7.56)	7.0	241	2045
21	-	158 (-)	-	-	-
22	-	227 (-)	-	-	-
23	-	370 (-)	-	-	-
l.s.d. (P < 0.05)	N.S.	(2.35)	1.6	46	311
Interaction: Weed density x Isoproturon	N.S.	Sig. (P < 0.001)	Sig. (P < 0.001)	Sig. (P < 0.05)	Sig. (P < 0.001)
c.v. (%)	10.1	23.4	13.7	10.6	9.0

^a Control rating, 10 = 100% weed control, 0 = 0% weed control.

^b Values in parentheses are $\sqrt{x + 0.5}$, where x = barley grass plants/m².

Note: Treatments 21-23 were not included in the analysis of variance.

CONCLUSIONS:

1. Barley grass was very competitive against wheat and if left uncontrolled a density of 267 plants/m² decreased the grain yield of wheat by 86 per cent.
2. On the heavy, fertile soil at this experimental site, Isoproturon did not have any phytotoxic effect on the crop.

3. Under the high yielding conditions of this experiment, Isoproturon appears to be an economically desirable option for the control of barley grass. For example, at the highest weed density, application of Isoproturon @ 1.5 l/ha, increased the grain yield of wheat by 1.1 t/ha. Assuming the cost of Isoproturon application to be \$30/ha, the treatment is likely to give net economic returns equivalent to \$124/ha.
4. There was a significant interaction between the density of barley grass and the rates of application of Isoproturon. Therefore, higher rates of the herbicide were required to achieve a satisfactory weed control at higher densities of barley grass.