

Weed control options in field peas

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Key Points

- Triflur® and Roundup CT® applied pre-sowing produced the best yield and gross margin result, some other treatments were statistically similar.
- All 4 rates of Diuron® produced the same yield and gross margin.
- The best timing for weed control to maximize yield and gross margin is prior to sowing.

Why do the trial?

The Euabalong regional site community in 2004 conducted a trial to look at the different weed control options for field peas. The group established a trial that aimed to compare the ability of both Diuron® at 4 different rates, which is not registered for use in field peas in NSW, and registered herbicides in controlling broad-leaf weeds, particularly spiny emex. The trial also aimed to investigate the difference of applying herbicides pre-sowing, post-sowing pre-emergent and post-emergent.

How was it done?

The trial was designed as a randomized replicated block. There were three replicates with each herbicide treatment present in each replicate, with the plots 30 m long and 1.5 m wide. All herbicide treatments were applied using a propane

hand-held spray boom, with a spraying width of 2 m. The herbicide treatments used represent district practices for early and in-crop weed control. The trial was on a local farmer's property approximately 50 km west of Condobolin on a red loam soil.

The trial was sown, using a cone seeder, and managed by the Euabalong Regional Site group and CWFS staff. The trial was sown with Kasper field peas, at 98 kg/ha, and Trifos fertiliser, at 60 kg/ha, on the 15th June 2004. The different herbicide treatments, their cost (\$/ha) and time of application are in Table 1.

During the growing season weed counts were taken on the 16th July, after Treatments 2 to 10 were applied, and on the 25th August, after Treatments 11 and 12 were applied. The rainfall for the trial site can be seen in Figure 1.

Table 1. Herbicide treatments, associated costs and time of application.

	Herbicide treatments		Spray Date	Cost (\$/ha)
1	Nil Herbicide	-	-	
2	Triflur X @ 0.8 L/ha and Roundup CT 1.0 L/ha	PS	15/6/04	\$11.75
3	Diuron 500 @ 0.5 L/ha	PS/PE	22/6/04	\$3.75
4	Diuron 500 @ 1.0 L/ha	PS/PE	22/6/04	\$7.50
5	Diuron 500 @ 1.5 L/ha	PS/PE	22/6/04	\$11.50
6	Diuron 500 @ 2 L/ha	PS/PE	22/6/04	\$15.00
7	Sencor 480 (Metribuzin) @ 435 mL/ha	PS/PE	22/6/04	\$23.92
8	Spinnaker @ 200 mL/ha	PS/PE	22/6/04	\$27.65
9	Sencor 480 (Metribuzin) @ 435 mL/ha + Spinnaker @ 100 mL/ha	PS/PE	22/6/04	\$37.75
10	Sencor 480 (Metribuzin) @ 435 mL/ha + Spinnaker @ 200 mL/ha	PS/PE	22/6/04	\$51.57
11	Diuron 500 @ 1 L/ha (PE) + Verdict 520 @ 0.075 L/ha	PE	16/7/04	\$26.25
12	Sencor 480 @ 435 mL/ha + Verdict 520 @ 0.075 L/ha	PE	16/7/04	\$46.67

Note: PS = pre-sowing, PS/PE = post-sowing, pre-emergent, PE = post-emergent

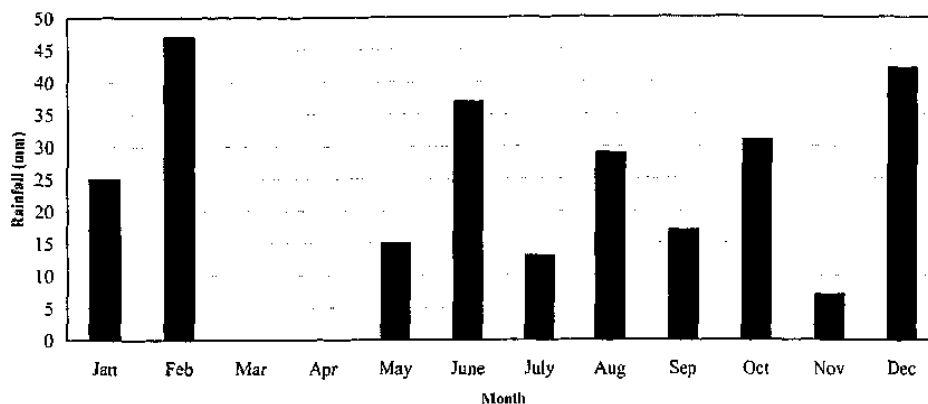


Figure 1. Rainfall at the Euabalong regional site herbicide trial 2004

What happened?

The yield results from the herbicide trial are shown in Figure 2. These results show a significant difference ($P \leq 0.01$) between the yields of each herbicide treatment. The graph shows that one of the lowest

yielding treatments was when no herbicides were applied (Treatment 1), whilst one of the highest yielding treatments was when Triflur® and Roundup CT® (Treatment 2) were applied pre-sowing.

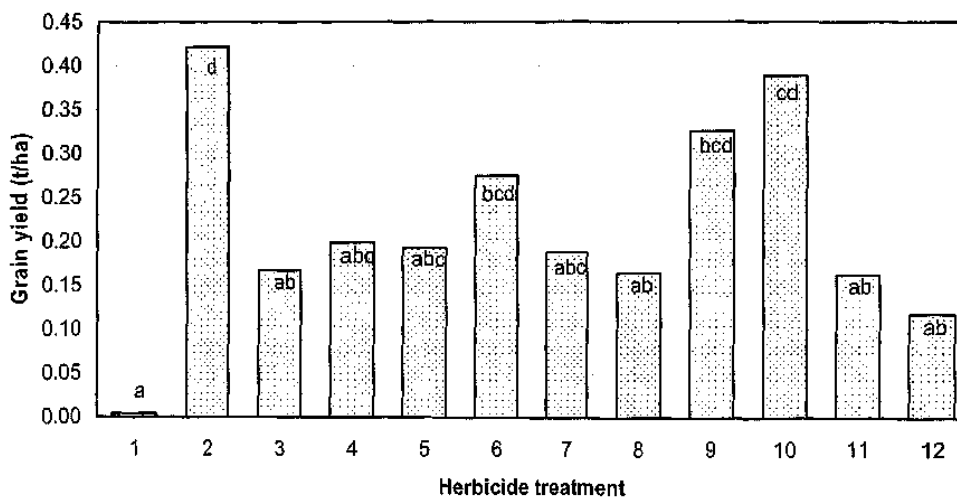


Figure 2. Grain yield (t/ha) for the Euabalong regional site herbicide trial

Note: columns with the same letter are not significantly different

The gross margin results from the herbicide trial are shown in Figure 3. These results show there are significant differences ($P \leq 0.05$) between herbicide treatments and their gross margins. The

highest gross margin (least negative) was when Triflur® and Roundup CT® were applied, this treatment, however, was not significantly different from Diuron® applied at 2 L/ha (Treatment 6). On the

other hand the lowest gross margin was when Sencor® and Verdict® (Treatment 12) were applied after the field pea crop

had emerged; this treatment was not significantly different from treatments 1, 7, 8 and 11.

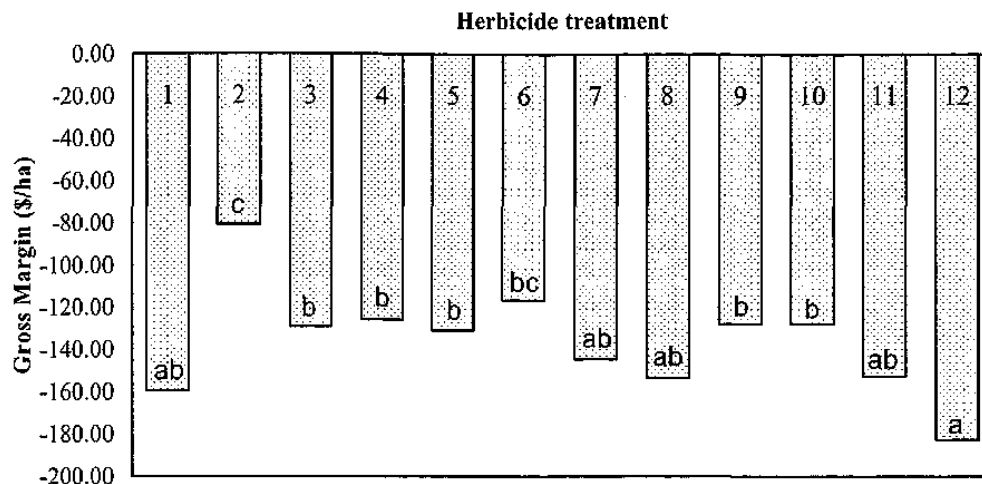


Figure 3. Gross margins (\$/ha) for the Euabalong regional site herbicide trial

Note: columns with the same letter are not significantly different

The yield and gross margin results averaged over the time of herbicide application are shown in Table 2. These results show there are significant differences ($P \leq 0.05$) between the timing

of the herbicide application in respect to both yield and gross margin. Herbicides applied pre-sowing produced significantly higher yields and gross margins compared to later applications.

Table 2. Yield and gross margin results by timing of herbicide application.

Timing	Yield (t/ha)	Gross Margin (\$/ha)
Pre-sowing (PS)	0.422 b	-80.8 c
Post-sowing, pre-emergent (PS/PE)	0.140 a	-167.6 a
Post-emergent (PE)	0.233 a	-132.4 b
Significant	Yes	Yes
<i>l.s.d.</i>	0.1555	31.49

Note: Values with the same letter are not significantly different.

The number of spiny emex plants/m² on the 16th July and the 25th August for each treatment can be seen in Table 3. This table shows that the interaction between herbicide treatment and the change in spiny emex numbers over time is not significant. However, if you average the counts between dates there is a significant difference between treatments. The

treatment with the lowest number of spiny emex is Diuron® @ 2 L/ha, followed by Triflur® & Roundup CT® and Diuron® @ 1.5 L/ha. The highest number of spiny emex were recorded under the nil treatment, where no herbicides were applied.

Table 3. Spiny emex plants/m² on the 16th July, 25th August 2004 and as an average.

Treatment	16th July	25th August	Average
1	54	60	57.0 h
2	16	7	11.7 ab
3	25	24	24.7 c
4	17	22	19.5 bcde
5	7	19	13.0 abc
6	3	6	4.7 a
7	16	25	20.7 bcde
8	21	39	30.0 ef
9	22	25	23.7 cde
10	16	15	15.7 bed
11	52	29	40.3 fg
12	34	42	38.0 fg
Significant (interaction)	NO		YES
L.s.d	n/a		11.1

Note: values with the same letter are not significantly different

Conclusions

The main standout points in this trial were:

- The highest yield and gross margin occurred when Triflur® and Roundup CT® were applied prior to sowing. With regard to yield, this treatment was not significantly different from Diuron @ 2 L/ha and the 2 Sencore/Spinnaker®¹ mixes, whilst with regard to gross margin it was not significantly different from Diuron® @ 2 L/ha.
- The best time to apply herbicides to maximise yield and gross margin is prior to sowing. Applying the herbicides after sowing, either pre-emergent or post-emergent, caused a significant reduction in both yield and gross margin.
- The change in the number of spiny emex plants over time between the herbicide treatments was not significant. However the treatment effect showed that Triflur® and Roundup CT® and Diuron® @ 1.5 & 2

L/ha had the lowest spiny emex populations.

These results are interesting to farmer because they enhance very important points when it comes to growing Field peas. The first is that pulses are poor competitors against weeds with yield being affected to a great extent than cereals, therefore good weed control is essential to minimise the impact on yield. Secondly successful pulse production occurs when effective herbicides are used pre-emergent to prevent high weed pressures. Therefore it is highly recommended that potential pulse growers use pre-sowing or pre-emergent herbicide management strategies. For advice please talk to your local agronomist.

Other factors

The only factor to be considered, that was not a part of the trial set-up, was the fact that this area in 2004 was in their 4th year of drought. Therefore the conditions were extremely tough for the trial.

Acknowledgements

I would like to thank the farmers in the Euabalong district for their support and interest in this trial throughout the year. On behalf of the group I would also like to thank Allan L'Estrange and Dary Reardon for their technical support. I would also like to thank the Kemp family for donating land on their property to run the trial.