

Summer weed time of removal trials

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Key messages

- Four summer weed time of removal trials were implemented across the Western Australian wheatbelt in March 2017 following a widespread summer rainfall event.
- Time of weed removal at the high rainfall site did not affect canola yield although the canola had a higher biomass when weeds were removed earlier.
- The medium rainfall site had consecutively higher wheat yields with earlier times of weed removal; however, these were not significantly different.
- At the low rainfall site plots sprayed for summer weeds had significantly higher oat yields than unsprayed plots. Timely control of summer weeds increased soil moisture and nitrate conservation.

Background

Growing season rainfall is variable across the WA cropping region and impacts on the yield potential of winter sown crops. In February 2017 a summer rainfall event produced falls greater than 40mm across the WA wheatbelt. After this event four opportunistic summer weed time of removal trials were implemented. Two were situated in low rainfall areas in the eastern wheatbelt, Moorine Rock and Beacon, one in a medium rainfall site in the Albany port zone at Jerramungup and a high rainfall site in Neridup located in the Esperance port zone.

The sites were left for one month after the rainfall event to allow weed growth. Each trial was sprayed between one to four times from March until sowing (Table 1).

Table 1. Weed time of removal trial spray times.

Site	1 st Spray	2 nd Spray	3 rd Spray	4 th Spray
Moorine Rock	March 14	April 27 (At Sowing)	-	-
Beacon	March 8	March 31	May 5	-
Jerramungup	March 16	April 4	April 20 (Sprayed out)	-
Neridup	March 9	March 21	March 31	April 4 (At Sowing)

The paddocks were sown as part of the growers' standard practice on the following dates:

- Moorine Rock was sown to Carrolup oats on 27 April,
- Jerramungup was sown to Trojan wheat on May 7,
- Neridup was sown to canola on April 5, and
- Beacon was not sown due to the dry season.

Results

The growing season rainfall was below decile one for both Beacon and Moorine Rock with 61 and 77mm of rain respectively from April to October. Jerramungup had a decile four growing season, receiving 241mm from April to October. The site experienced small dry spells during sowing and in spring, but had consistent rainfall events outside of those windows. The Neridup site had a decile one growing season (data sourced from Esperance Downs Research Station) receiving 304mm from April to October. While the growing season rainfall was below average the decile 10 summer provided sufficient moisture at sowing. The site is also prone to waterlogging, so below average rainfall was not a bad outcome.

Table 2. Grain yields (t/ha) from weed time of removal trials located at Moorine Rock, Jerramungup and Neridup 2017. Different letters next to grain yields denote a significant difference.

Site	First time of spray grain yield (t/ha)	Second time of spray grain yield (t/ha)	Third time of spray grain yield (t/ha)	Fourth time of spray grain yield (t/ha)
Moorine Rock - Carrolup oats	1.34 a	1.04 b	-	-
Beacon - Not sown				
Jerramungup - Trojan wheat	3.85	3.58	3.40	-
Neridup - canola	3.03 a	3.03 a	2.70 b	2.88 ab

The Moorine Rock site showed significantly higher oat yields in the sprayed plots compared to the unsprayed plots (Figure 1). Wheat yields at the Jerramungup site declined with delayed spraying, but were not significantly different. And at the Neridup site the first and second time of spray canola yields were significantly higher to the third time of spray, but not the fourth.

Summary

With a shift to more summer rainfall this series of trials demonstrates it is crucial to remove weeds early in low rainfall areas and seasons. Although grain yield response was not significant in this Jerramungup experiment, there are benefits to controlling weeds in medium rainfall areas. Grain yield responses are less likely from early

summer weed control in high rainfall areas; however there are other consequences of a summer green bridge to consider such as pests, diseases and weed pressure in consecutive seasons. Results from summer weed control can be dependent on growing season water supply in response to rainfall patterns.

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