



Title: Pre-emergent herbicides and high density crop for barley grass control

Author and organisation:

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Key messages

- Increased crop density reduced annual ryegrass density.
- Performance of pre-emergent herbicides was similar in this season.
- Even though barley grass seed was evident at the site, low seed viability prevented barley grass growth in 2019.

Background

Barley grass at high density reduces crop yield. However, GRDC project UA00156 (Seed bank ecology of emerging weeds) has highlighted that barley grass ecotypes in Western Australia are often short, and are likely to be highly sensitive to crop competition. Initial control with pre-emergent herbicides combined with high seeding rates in cereal crops may be sufficient to control this species.

Aim

The trial aims to investigate pre-emergent herbicides and high density crop seeding in a wheat-wheat-barley rotation.

Paddock Details

- **Location:** Dalwallinu (-30.2108, 116.3700), Dustyn Fry
- **Rainfall**
2019 Total: 182 mm
2019 GSR (April-Oct): 172 mm
- **Paddock history**
2018: barley
2017: wheat
- **Soil type** Sandy loam

Trial Details

- Variety: Mace wheat
- Treatments
Main plot treatments
 1. No herbicide
 2. Sakura® 118 g/ha pre-seeding
 3. Boxer Gold® 2.5 L/ha pre-seeding
 4. Boxer Gold® 1.25 L/ha pre-seeding and 1.25 L/ha post-emergent
 5. Boxer Gold® 2.5 L/ha + Sakura® 118 g/ha pre-seedingSubplot treatments
 1. Wheat at 90 kg/ha
 2. Wheat at 45 kg/ha
- Sowing rate: 45 or 90 kg/ha, according to treatments, 25 cm row spacing
- Sowing date: 14 June 2019

- Herbicide
14 June 2019. Pre-emergent herbicides applied according to treatments
- Harvest: 29 November 2019
- Method and Measurements
Plots of 36 m by 1200 m, 3 replications.
20 July 2019. Assess crop and barley grass density.

No herbicide

Sakura® 118 g/ha pre-seeding

Boxer Gold® 2.5 L/ha pre-seeding

Boxer Gold® 1.25 L/ha pre-seeding and 1.25 L/ha post-emergent

Boxer Gold® 2.5 L/ha + Sakura® 118 g/ha pre-seeding

Results

The wheat had an average density of 88 plants/m² at a seeding rate of 45 kg/ha, and 130 plants/m² at a seeding rate of 90 kg/ha (P<0.001, LSD: 5.7). Crop density was not significantly different between herbicide treatments.

Annual ryegrass was significantly reduced by herbicide application, with density ranging from 300 plants/m² in the control plots to 47 plants/m² after Boxer Gold® pre-seeding and post-emergent, 43 plants/m² after Boxer Gold® pre-emergent, 31 plants/m² after Sakura® and 33 plants/m² after Boxer Gold® + Sakura® (P<0.001, LSD: 67.2).

Annual ryegrass was also reduced at a higher seeding rate, with 108 and 74 plants/m² at a seeding rate of 45 and 90 kg/ha (P: 0.018, LSD: 24.8). There was no interaction of herbicide and seeding rate.

Yield was uniformly low due to the very dry season.

Unfortunately, there was a very low barley grass density in the trial, and so it was not practical to collect data on barley grass density. Collections of chaff/weed seed over the summer for resistance testing indicated that barley grass seed was present at the site. Unfortunately, both this trial and the resistance test showed very poor viability of barley grass seed. Barley grass in WA can be very short and poorly competitive (see annual report from UA00156). If the 2018 crop was highly competitive, this may have affected barley grass weed seed viability. Alternatively, the grower may have sprayed a chemical in 2018 that affected barley grass seed viability.

Conclusions

Increased crop density reduced annual ryegrass density. Where practical, increased crop density is a highly effective part of an integrated weed management plan.

Performance of pre-emergent herbicides was similar, with no significant differences between Boxer Gold® and Sakura®.

Acknowledgements

We would like to thank Dustyn Fry for providing the trial site and running the trial, and staff at WANTFA for assistance with trial management.