Title: Pre-emergent herbicides for early barley grass control in wheat

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Key messages

- Treatments with Sakura® (with or without Treflan®) or Luximax® had lower barley grass density at the start of the season and higher wheat yield than Treflan® alone.
- Treatments with Sakura® had the lowest barley grass seed production.

Background

Barley grass is one of the major weeds in the southern region. Many southern growers think their barley grass is resistant to grass selective herbicides and may have developed late germination to avoid pre-seeding herbicides. In this area barley grass is a major problem in pastures, and often in break crops too.

Aim

The trial aims to investigate pre-emergent herbicides and autumn tickle in wheat in 2019, pre-emergent herbicides and crop density in barley in 2020 and grass selective herbicides and crop topping in pasture in 2021.

Paddock Details

- **Location:** Esperance (-33.1888, 121.4697), Geoff & Maryann Harris
- **Rainfall**
  2019 Total: 197 mm

  2019 GSR (April-Oct): 155 mm
- **Paddock history**
  2018: vetch pasture

  2017: barley
- **Soil type:** Loamy clay with kopi patches

Trial Details

- Variety: Mace wheat

- Treatments

1. Treflan® at 2 L/ha
2. Sakura® at 118 g/ha
3. Treflan® at 2 L/ha + Sakura® at 118 g/ha
4. Luximax® at 500 mL/ha

Note that the initial plans to include an autumn tickle were not possible, as the dry start to the season made the soil too hard to cultivate in autumn.

- Sowing rate: 65 kg/ha, 30 cm row spacing
- Sowing date: 14 June 2019
- Fertiliser
  14 Jun 2019. DAPSZC at 80 kg/ha, UAN at 50 L/ha, zinc sulphate at 1 L/ha, manganese sulphate at 1 L/ha
- Insecticides/fungicides
  14 Jun 2019. Flutriafol® 250 at 300 mL/ha
- Herbicide
  30 May 2019. Glyphosate 540 at 2 L/ha
  3 Jun 2019. Gramoxone® 360 2 L/ha + Sharpen® 17 g/ha
  14 Jun 2019. Pre-emergent herbicides prior to seeding, according to treatments
- Harvest: 18 November 2019
- Method and Measurements
  Plots of 36 m by 1400 m, 4 replications.
  18 Jul 2019. Assess crop and barley grass density.
  3 Oct 2019. Barley grass seed head counts. Harvest 20 heads per plot. Average seed number per head and head number/m^2 were used to determine barley grass seed/m^2.

Results

The Mace wheat had an average density of 114 plants/m^2, and was not significantly different between treatments (Table 1).

The barley grass had an average density of 9 plants/m^2. There were more plants following Treflan® (12.9 plants/m^2) compared to Sakura® (6.5 plants/m^2), Sakura® + Treflan® (8 plants/m^2) and Luximax® (9.1 plants/m^2, Table 1), although plant density following Luximax® was not significantly lower than Treflan®. The barley grass seed heads were not significantly different between treatments, but were slightly higher in the treatments without Sakura®. Barley grass seed production was lowest following Sakura® + Treflan® and Sakura® alone (136 and 189 seeds/m^2, Table 1).

Crop yield was low in all treatments, due to very low rainfall during the 2019 season (Table 1). However, yield was lowest in treatment 1 with Treflan® alone, probably due to the higher weed density.

Table 1 Wheat and barley grass density, barley grass seed head and seed production and wheat yield for each treatment. Note that barley grass seed head and seed production means are back-transformed from a square root transformation.

Treatment	Wheat density/m^2	Barley grass density/m^2	Barley grass seed heads/m^2	Barley grass seed/m^2	Wheat yield (kg/ha)
Treflan® at 2 L/ha	111	12.9	43.2	279	278
Sakura® at 118 g/ha	122	6.5	25.1	189	333
Treflan® at 2 L/ha + Sakura® at 118 g/ha	110	8.0	23.4	136	343
Luximax® at 500 mL/ha	114	9.1	44.6	346	314
P	0.058	0.033	0.098	0.036	0.029
LSD	8.86	4.41	NS	25.13	41.81

Conclusions

Treflan® alone had greater barley grass density compared to the other treatments. While weed density was low in all treatments, there was still reduced yield in plots with Treflan® alone. Weed competition has a bigger impact in dry years when the crop is stressed.

Treatments with Sakura® had lowest barley grass density and seed production, and highest crop yield.

The original trial plan included an autumn tickle, which was unfortunately not possible in the current year, as the ground was too dry and hard prior to seeding.

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