

GRDC Stopping seed set of barley grass on the upper Eyre Peninsula

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Why do the trial?

Barley grass (*Hordeum glaucum*) continues to be the major grass weed in cereal cropping on the upper Eyre Peninsula (EP). Barley grass on the upper EP has been documented to have higher seed dormancy levels than elsewhere in the lower rainfall zone (UOA1904-004SAX). Additionally on the upper EP, there are emerging levels of Group 1 resistance in barley grass, thereby reducing in-crop weed control options. When higher seed dormancy and herbicide resistance co-occur, management of barley grass is extremely challenging. As a result, late season tactics, such as crop-topping, are vital to reduce seed set.

This research will provide further opportunity to investigate other management tactics that may delay flowering in barley grass making it feasible to spray-top effectively without damaging medic seed set or alternatively to manipulate barley grass emergence to make the flowering window of all cohorts more synchronised. The research will demonstrate and validate how different crop and pasture sequences change weed density in mixed-farming system on the upper EP and provide further extension activities for growers to increase confidence to implement recommended management strategies to drive down barley grass.

2024 Research

1. Use of pre-emergent herbicides especially newer chemistries in managing barley grass in cereals (Minnipa Agricultural Centre).

Trial 1. Pre-emergent herbicides in wheat. Sown on 3 June with Calibre wheat @75 kg/ha and MAP @ 75 kg/ha. Knockdown herbicide Weedmaster @ 2 L/ha.

1	Wheat - Nil Control
2	Glyphosate only (2 L/ha)
3	Sakura® (118gm) IBS
4	Sakura® (118gm) and Avadex 500 gm/L (1.6 L/ha) IBS
5	Sakura® (118gm) and Voraxor (0.2 L) IBS
6	Boxer® Gold (2.5 L/ha) IBS
7	Mateno Complete® (1 L/ha) IBS
8	Mateno Complete® (1 L/ha) EPE
9	Trifluralin (1.8 L/ha) IBS
10	Trifluralin (1.8 L/ha) and Sakura® (118gm) IBS
11	Trifluralin (1.8 L/ha) and Overwatch® (1.25 L/ha) IBS + Mateno Complete® (1 L/ha) EPE
12	Trifluralin (1.8 L/ha) IBS and Mateno Complete® (1 L/ha) EPE
13	Trifluralin (1.8 L/ha) and Overwatch® (1.25 L/ha) IBS
14	Trifluralin (1.8 L/ha) and Diuron (300 gm) IBS
15	Trifluralin (1.8 L/ha) IBS and Luximax (500 ml/ha) IBS (short lived)
16	Trifluralin (1.8 L/ha) IBS and Avadex 500 gm/L (1.6 L/ha) IBS
17	Luximax® (500 ml/ha) IBS
18	Overwatch® (1.25 L/ha) IBS
19	Diuron (300 gm) and Metribuzin (100 gm)
20	CL wheat Tomahawk with Intercept (500 ml/ha)

2. Can pre-emergent herbicides delay barley grass flowering to result in a more even flowering window to allow better and safer use of glyphosate for pasture topping?

Replicated pre-emergent herbicides trial in pastures will measure barley grass control and weed seed set, and medic seed viability.

Trial 2. Early barley grass management strategies in medic pasture – 3 June (early pre-emergent treatments) and 17 June (early post emergent treatments).

1	Propyzamide 2L/ha EPE (early post emergent)
2	Propyzamide 1L/ha EPE + Clethodim (500 ml/ha) + Butroxydim (90 gm/ha) early
3	Propyzamide 1L/ha EPE + Clethodim (500 ml/ha) early
4	Propyzamide 1L/ha EPE
5	Propyzamide 2L/ha pre-emergent
6	Propyzamide 1L/ha pre-emergent
7	Propyzamide 1L/ha + glyphosate EPE
8	Nil control

Trial 3. Early and in-season barley grass management strategies in medic pasture

1	Propyzamide 1L/ha EPE plus clethodim early timing then spray topped with glyphosate (500 g/L)
2	Propyzamide 1L/ha pre-emergent then spray topped with glyphosate
3	Propyzamide 1L/ha EPE (early post emergent) then spray topped with glyphosate
4	Propyzamide 1L/ha EPE then spray topped Paraquat
5	Nil control
6	Experimental
7	Propyzamide 1L/ha EPE + Clethodim (500 ml/ha) + Butroxydim (90 gm/ha) then spray topped with glyphosate
8	Propyzamide 1L/ha EPE + Clethodim (500 ml/ha) + Butroxydim (90 gm/ha)
9	Propyzamide 1L/ha EPE + glyphosate (kill early medic/grass weeds) then spray topped with glyphosate

Measurements undertaken in season on the trials will be plant establishment, early grass weeds, late grass weeds, head count, barley grass weed seed set, grain yield and grain quality.

4. Defining the contribution of herbicide resistance to ineffective barley grass management on EP

A physical weed survey will be undertaken in 2024 and 2025 of barley grass populations on EP. 20 barley grass populations per year will be collected from paddocks where growers are having difficulty in managing barley grass. The survey will focus on barley grass in cereal crops grown after pasture and lentils. **Please talk to Mandy Cook (0427 270 154) if you want barley grass samples tested.** Samples collected will be tested for herbicide resistance by a Technical Officer at Roseworthy.

Acknowledgements

This research was funded by GRDC (PROC-9176988). Thank you to Katrina Brands, Marina Mudge, Gabby Currie and Cayley Gray for their help with the field work.



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