

Eradication or mitigation? How to manage patches of glyphosate resistant *Echinochloa colona* L.

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Summary Glyphosate-resistant *Echinochloa colona* L. (Link) is a common weed in non-irrigated cotton systems in Australia. *E. colona* is a small-seeded species that is not wind-blown and has a relatively short seed bank life. These characteristics make it a potential candidate to attempt to eradicate resistant populations when they are detected. A four year systems experiment established in 2012 was developed to determine the practicality of eradicating glyphosate resistant populations using different tactics under field conditions. Treatments ranged from glyphosate only to two additional tactics in crop and fallow with other treatments containing further eradication tactics. The glyphosate only treatment had consistently higher emergence and plants remaining at the end of each season throughout the experiment. In this experiment, the ‘Best Management Practice’ (BMP) treatment which contained two non-glyphosate tactics in crop and fallow were found

effective at managing glyphosate resistant *E. colona* populations. Treatments that included additional eradication tactics were significantly better at times; however, this was not always the case. The final seed bank counts at the end of the experiment were 5648 seeds m⁻² for the glyphosate only treatment, compared to 124 seeds m⁻² for the BMP treatments, and ranged from 25–272 seeds m⁻² for the BMP + Eradication treatments. It is recommended that the BMP approach of incorporating two additional non-glyphosate tactics in crop and fallow should be used as a baseline combined with monitoring, so that additional eradication tactics can be included as required.

Keywords Glyphosate resistance, *Echinochloa colona*, eradication.

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