

Survey of glyphosate resistance in common sowthistle (*Sonchus oleraceus*) across the Australian Northern Grains Region

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Summary Common sowthistle (*Sonchus oleraceus* L.) is a major weed of conservation tillage systems in Australia. The major problem associated with the weed is that it reduces stored soil moisture in fallow, impacting growth of the subsequent crop. Glyphosate has been a reliable control option, but resistance to this herbicide has now been confirmed in populations growing in the northern cropping region of Australia.

To benchmark glyphosate resistance in common sowthistle across the study region, a survey was conducted (2014–2016). Common sowthistle seeds were collected from cropping properties as part of a non-targeted sampling approach. Plants were grown to a two-to-four leaf stage, and then treated with a commercial glyphosate formulation at a discriminating rate (field rate), to distinguish between resistant and susceptible populations.

At the time of writing, 20% of the populations tested have exhibited resistance to glyphosate (i.e. less than 80% of seedlings were killed by treatment with glyphosate at the discriminating dose). Most of the glyphosate resistant populations identified through this testing were clustered in the Liverpool Plains region of NSW, where long term use of conservation tillage practices has resulted in reliance on glyphosate for sowthistle control. By determining the geographic extent of glyphosate resistant common sowthistle in the northern region, the results of this survey can assist industry stakeholders to respond with suitable management solutions for the control of this problematic weed.

Keywords Herbicide resistance, survey, common sowthistle, *Sonchus oleraceus*.