

The role of crop competition in managing early emerging summer weeds in wheat

Asad Shabbir¹, Michael Widderick², Greg Harvey², Linda Heuke¹, Michael Walsh

¹School of Life and Environmental Sciences, University of Sydney, Sydney, Australia,

²Agri-Science Queensland Department of Agriculture and Fisheries, Australia

(asad.shabbir@sydney.edu.au)

Summary In the northern grain region of Australia, it is increasingly common for ‘summer’ weed species to emerge in early spring within winter grown crops. This emergence typically coincides with the loss of residual herbicide activity, at a stage when advanced crop growth and canopy closure make seedlings difficult to target. However, these weeds can potentially be suppressed by enhancing winter crop competition effects on late-season emerging weed seedlings. The aim of this study then was to determine if reduced row spacing and increased wheat plant density prevented the establishment of summer weeds late in the winter growing season. Field trials at Narrabri, NSW and Hermitage, Qld measured the impact of wheat row

spacing (25 cm and 50 cm) and plant density (75, 100 and 125 plants m⁻²) on the growth and seed production of common sowthistle, fleabane, awnless barnyard grass and feathertop Rhodes grass plants emerging at wheat pre-booting stage. Weeds biomass was significantly reduced to 83% when row spacing was reduced from 50 to 25cm. Increasing wheat plant density from 75 to 125 plants m⁻² reduced the biomass of weeds by 49%. These results indicate that early emerging summer weeds can be controlled in wheat by maximizing crop competition through manipulating agronomic practices.

Keywords Row spacing, crop density, summer weeds, wheat, northern grains region