

Managing clethodim-resistant annual ryegrass (*Lolium rigidum*) in canola with herbicides and competition

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Summary Clethodim has been the main herbicide used for the control of annual ryegrass in canola. However, increasing clethodim resistance in recent years has been impacting on growers' ability to control annual ryegrass. In the absence of alternative post-emergent herbicides for annual ryegrass control in canola, more emphasis is being placed on pre-emergent herbicides. Two field trials were conducted at Roseworthy in South Australia in 2015 and 2016 to investigate the effectiveness of increased crop competition with hybrid canola in combination with pre-emergent herbicides to reduce seed set of clethodim-resistant annual ryegrass. In both years, annual ryegrass establishment was the same in both hybrid canola (Hyola 559TT) and open pollinated canola (ATR Stingray). The herbicide strategies reduced annual ryegrass establishment in both

years, but there was no significant difference between cultivars. However, greater early vigour in hybrid canola was reflected in a significantly lower annual ryegrass head density in Hyola 559TT compared to ATR Stingray in both 2015 and 2016. Hyola 559TT without any herbicide treatment reduced ryegrass seed set by 14% in 2015 and by 37% in 2016 compared to ATR Stingray. However, combination of Hyola 559TT with the most effective herbicide treatment, reduced annual ryegrass seed set by 48% in 2015 and 57% in 2016 compared to the same herbicide treatments in ATR Stingray. In 2016, Hyola 559TT produced higher seed yields than ATR Stingray, but there was no difference in yield in 2015.

Keywords Crop competition, hybrid canola, clethodim resistance, annual ryegrass.