

# Effect of combinations of sowing time, seed rate and herbicides on ryegrass management in faba beans

Ben Fleet<sup>1</sup>, Gurjeet Gill<sup>1</sup>

<sup>1</sup>School of Agriculture, Food and Wine, The University of Adelaide, Roseworthy Campus, Roseworthy, Australia

([benjamin.fleet@adelaide.edu.au](mailto:benjamin.fleet@adelaide.edu.au))

**Summary** Legume crops tend to be weak competitors with weeds and weed seedbanks can build up after the legume phase. Delaying crop sowing can reduce weed seedbank before seeding, but later sown crops can be less competitive against weeds. Seed rate has already been found to influence competitive ability of many crops with weeds. A field trial was conducted at Roseworthy (SA) in 2019 to investigate factorial combinations of sowing time, seed rate and herbicides on the management of annual ryegrass (ARG) in faba beans. A three week delay in seeding faba beans (7 May to 31 May) did not reduce ARG plant density. However herbicide treatments that included post-emergent (POST) applications of clethodim and butoxydim had much greater efficacy when they were applied later in the 2nd time of sowing treatments. The same trend was evident in ARG seed set when crop seeding was delayed. ARG seed production was strongly influenced by faba bean

seed rate ( $P < 0.001$ ). The high faba bean seed rate had 43% less ARG seed set compared to the low faba bean seed rate. Faba bean grain yield was significantly influenced by crop seed rate ( $P < 0.001$ ), with the high seed rate yielding 14% and 30% higher than the medium and low seed rates, respectively. Herbicide treatment had a significant effect on faba bean grain yield. When POST clethodim was applied after the simazine + trifluralin IBS (1.55 t/ha), faba bean grain yield improved by 43% to 2.21 t/ha. This field study has shown that at high plant density, faba beans can provide a significant suppression of ARG. However, faba beans were very intolerant to weeds as shown by the large yield losses. Higher seed rates, are important to both increase suppression of ARG by faba beans and to maintain grain yield.

**Keywords** Annual ryegrass, faba beans, weed management, seed rate, sowing time, herbicide