

Reduction in sowthistle biomass and seed production through manipulation of pulse population and row spacing

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Summary *Sonchus oleraceus* L. (sowthistle) is an annual broadleaf weed of northern winter crops including pulses. Several sowthistle populations have been confirmed resistant to Group B and Group M (e.g. glyphosate) herbicides. An integrated approach to sowthistle control including non-chemical methods such as growing a competitive crop will slow the further development of herbicide resistance. In this study we tested the competitive ability of faba bean and chickpea against sowthistle, to reduce sowthistle growth and seed production. Field trials consisted of five replicates of 13 treatments (row spacing [25 cm and 50 cm] × crop population [low, medium, high] × ±weeds + one crop free plot). Sowthistle seed was spread over the soil in +weed plots and the crop free plot after crop planting. All plots were irrigated to encourage weed and crop germination. At crop maturity, sowthistle

biomass and seed production data were collected and the crop harvested. Overall, sowthistle reduced faba bean yield by 10% and chickpea yield by 7%. In the absence of crop competition, crop free plots had significantly higher sowthistle biomass and seed production than cropped plots. In both crops, increased crop population combined with narrow row spacing resulted in the greatest reduction in sowthistle biomass and seed production compared to low population and wide rows. In-crop sowthistle biomass and seed production can be significantly reduced through manipulation of faba bean and chickpea planting configuration. Growing a competitive pulse crop is an important component of an integrated weed management strategy in the face of herbicide resistance.

Keywords *Sonchus oleraceus*, common sowthistle, chickpea, faba bean, crop competition.