

Growth responses of two Australian biotypes of common sowthistle (*Sonchus oleraceus* L.) to varied soil moisture regimes

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Summary Common sowthistle is one of the most troublesome weeds in the northern grain region of Australia. It is well known fact that water stress played a great role in influencing crop growth and yield. However, effects of water stress on weed growth and seed production are poorly understood. In this experiment, growth behaviour of two population of sowthistle weed (Dalby and Gatton biotype) were studied at 100, 75, 50 and 25% of soil water holding capacity (WHC). At 100% WHC, Dalby biotype had higher plant height than Gatton biotype; while at other soil moisture levels, no such differences were observed. The highest plant height in Gatton biotype was observed at 100% WHC; while Gatton attained highest plant height at 50% WHC. The seed production in Dalby biotype did

not vary with varied soil moisture levels. The Gatton biotype had similar seed production at 75 and 50% WHC; but significantly higher than 25% WHC. It was interesting that Gatton biotype had higher seed production than Dalby biotype at 50%WHC; while at 100%WHC, seed production in Dalby biotype was higher than Gatton biotype. Averaged over soil moisture levels, Dalby biotype had greater biomass than Gatton biotype. The root weight, proline and phenolics contents were also higher in Dalby biotype than Gatton biotype. This study shows that sowthistle has capacity to survive and reproduce even under a higher degree of water stress; but response varied with the biotypes.

Keywords Water stress, weed ecology, rainfall, proline, phenolics, seed production.