

Germination ecology of two Australian populations of African turnip weed (*Sisymbrium thellungii* L.)

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Summary African turnip weed is an annual winter weed of the northern grain region of Australia. No information is available on the seed germination ecology of this weed species. Experiments were conducted to determine the effect of various environmental factors on seed germination and seedling emergence of two populations (cropped and fenceline) of African turnip weed. The response of both populations to various environmental factors was similar. In both populations, germination was greater in the light/dark regime than in darkness at the optimum temperature condition (20/10°C). An osmotic potential of -0.1 MPa inhibited germination of both populations by more than 50% and complete inhibition occurred at -0.8 MPa.

The seeds of both populations were germinated in sodium chloride concentrations ranging from 50–100 mM and beyond that concentration germination was completely inhibited. Seeds placed on the soil surface had maximum germination and emergence did not occur even with increase in seed burial depth of 1.0 cm. The addition of 6 t ha⁻¹ of wheat residue on the soil surface reduced the emergence of both populations by more than 60%. The results could help in developing strategies for integrated management of African turnip weed.

Keywords Weed biology, seed germination, burial depth, osmotic potential, integrated weed management.