

Inter-specific variations in seed germination biology and seedling emergence of bladder ketmia (*Hibiscus* spp.)

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Summary Bladder ketmia (*Hibiscus* spp.) is a widespread and troublesome weed found throughout the Australian cotton industry. The species is closely related to cotton plants in terms of phenological and physiological traits. There are two different species of bladder ketmia, wide leaf (*Hibiscus trionum* var. *vesicarius*) and narrow leaf (*Hibiscus trionum* var. *trionum*). Understanding the difference in seed dormancy and biology between the bladder ketmia varieties can influence the choice of control options in some situations. This study was undertaken to quantify the inter-specific differences in germination biology of *Hibiscus* spp. We also postulated that glyphosate's action may differ between two ketmia species. Experimental results suggest 20 and 25 minutes sulphuric acid scarification is required to release 60% seeds of wide and narrow leaf ketmia respectively. The model

also suggests wide leaf ketmia was twice as salt tolerant as the narrow leaf and at 100 mM NaCl, growth medium, about 70% seeds of wide leaf ketmia are still able to germinate. Narrow leaf ketmia is more sensitive to water stress and its germination was completely inhibited at -2 Mpa water potential. Glyphosate spray (1.5 L ha^{-1}) at pod development stage demonstrates, narrow leaf ketmia is 3-fold more tolerant to glyphosate than wide leaf ketmia and 1.6 L ha^{-1} glyphosate was required to kill 50% plants from the population of narrow leaf ketmia. We conclude that seed dormancy and biology variation exists between ketmia species. This result may fit well with growers' experiences of controlling both varieties of bladder ketmia in Roundup Ready crops.

Keywords Germination, tolerant, glyphosate, cotton.