

Genetic mutation in a putative Aux/IAA gene in common sowthistle proposed as the basis for 2,4-D resistance

Mahima Krishnan¹, Tijana Petrovic¹, Alicia Merriam¹, Geetha Velappan¹, Christopher Preston¹
¹The University of Adelaide, Adelaide, Australia
(mahima.krishnan@adelaide.edu.au)

Summary Seven common sowthistle (*Sonchus oleraceus*) populations with resistance to Group I herbicides, including 2,4-D, were identified in South Australia. This has been due to an increased reliance on Group I herbicides as a result of the increasing failure of glyphosate and ALS herbicides to control common sowthistle. Study into the mode of inheritance suggests the resistance is caused by a single dominant gene. The Aux/IAA gene family, the likely target of 2,4-D and similar auxin-mimic

herbicides according to recent findings (LeClere et. al. 2018), was genotyped in these populations. A small deletion, on either side of a highly conserved degron region in a putative Aux/IAA gene, IAA20, was observed in resistant populations but, not in susceptible ones and is the probable cause of 2,4-D resistance.

Keywords 2,4-D resistance, mutation, Aux/IAA, IAA20, common sowthistle, *Sonchus oleraceus*