

Proposed plant host test list for assessing risk of candidate biological control agents for *Lycium ferocissimum*

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Background

The following proposed plant list for testing potential biological control agents for *Lycium ferocissimum* (African boxthorn; “target weed” hereafter) was developed based on currently accepted phylogenetic information on the Solanaceae family available in the literature (e.g. Särkinen et al. 2013) and on the Angiosperm Phylogeny Website V14 (Stevens 2018).

Test plant species have been selected based on their phylogenetic relationship to the target weed, according to the centrifugal phylogenetic method (Briese 2003; Gilbert et al. 2012; Wapshere 1974). This method is underpinned by evidence that specialist candidate biological control agents are evolutionarily more likely to infect or feed on non-target species closely related to the target weed relative those that are more distantly related. Within this phylogenetic/evolutionary framework, selection of representative test species places an emphasis on endemic species, species of economic importance and those that are likely to overlap biogeographically with the target weed, where possible. Representatives from all subfamilies of the Solanaceae present in Australia have been included in this proposed host-test list. The list has been developed in consultation with Solanaceae specialist Dr Laurence Haegi, Botanic Gardens and State Herbarium, South Australia, who advised in particular on relationships within the native Australian species of Solanaceae.

Any suggestions for plant species substitutions or additions to this proposed test list are welcomed, but we ask that they be justified within the phylogenetic/evolutionary framework approach taken to develop test lists. Further, information on where accessions of these proposed species for addition/substitution can be sourced will be most helpful. Feedback and comments on this proposed plant host test list can be addressed to Dr Kylie Ireland (kylie.ireland@csiro.au; 02 6218 3445) or Dr Michelle Rafter (michelle.rafter@csiro.au; 07 3833 5549).

Proposed plant host test list

Table 1: List of proposed plant species for testing the specificity of candidate biological control agents for the target weed.

SUBFAMILY	RELATIONSHIP TO THE TARGET WEED	GENUS	STATUS IN AUSTRALIA ^A	PERCENTAGE COVERAGE OF THE GENUS PRESENT IN AUSTRALIA
SOLANOIDEAE	Target weed	<i>Lycium ferocissimum</i>	Weed	
	Same genus	LYCIUM		71 %
		<i>Lycium australe</i>	Native	
		<i>Lycium barbarum</i>	Ornamental - NE	
		<i>Lycium chinense</i>	Ornamental - E	
		<i>Lycium ruthenicum</i>	Ornamental	
	Same tribe	HYOSCYAMUS		75 %
		<i>Hyoscyamus albus</i>	Ornamental - N	
		<i>Hyoscyamus aureus</i>	Ornamental	
		<i>Hyoscyamus niger</i>	Ornamental - N	
	Same subfamily	LYCIANTHES		67 %
		<i>Lycianthes rantonetti</i>	Ornamental	
		<i>Lycianthes shanesii</i>	Native	
	Same subfamily	CAPSICUM		50 %
		<i>Capsicum annum</i>	Horticultural - N	
	Same subfamily	BRUGMANSIA		25 %
		<i>Brugmansia sanguinea</i>	Ornamental	
	Same subfamily	DATURA		43 %
		<i>Datura inoxia</i>	Ornamental - NAEX	
		<i>Datura leichhardtii</i>	Native	
		<i>Datura stramonium</i>	Ornamental - NAEX	
	Same subfamily	PHYSALIS		8 %
		<i>Physalis peruviana</i>	Horticultural - NAE	
	Same subfamily	SOLANDRA		50 %
		<i>Solandra maxima</i>	Ornamental	
	Same subfamily	SOLANUM		3 %
		<i>Solanum aviculare</i>	Native	
		<i>Solanum lycopersicum</i>	Horticultural	
	<i>Solanum melongena</i>	Horticultural		
	<i>Solanum tuberosum</i>	Horticultural		
Same subfamily	NICANDRA		100 %	
	<i>Nicandra physalodes</i>	Ornamental - NAEX		

	Same subfamily	SALPICHROA	100 %
		<i>Salpichroa origanifolia</i>	Ornamental --NAEX
NICOTIANOIDEAE	Same family	NICOTIANA	3 %
		<i>Nicotiana velutina</i>	Native
	Same family	CYPHANTHERA	9 %
		<i>Cyphanthera albicans ssp. notabilis</i>	Native
	Same family	DUBOISIA	25 %
		<i>Duboisia myoporoides</i>	Native
CESTROIDEAE	Same family	CESTRUM	17 %
		<i>Cestrum fasciculatum</i>	Ornamental
PETUNIOIDEAE	Same family	PETUNIA	33 %
		<i>Petunia X hybrida</i>	Ornamental
GOETZEOIDEAE	No representatives of these Solanaceae subfamilies present in Australia		
SCHIZANTHOIDEAE			
SCHWENCKIOIDEAE			

^A Recorded as A = agricultural weed, E = environmental weed, N = naturalised, X = noxious in Australia, as reported by Randall (2007) or as cited in more recent literature.

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