# Proposed plant host test list for assessing the risk of candidate biological control agents for leaf cactus, *Pereskia aculeata*

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**Background**

The following is a proposed test plant list for determining the risk of biological control (biocontrol) agents for *Pereskia aculeata* Miller (Cactaceae; leaf cactus) (Fig. 1)

**Figure 1.** *Pereskia aculeata* in Brisbane, Queensland.

*Pereskia aculeata* originates from South America and is an emerging weed in some parts of Australia, particularly in Queensland and northern New South Wales. It is a serious threat to native biodiversity in Australia because it is in the early stage of the invasion curve and is likely to become much more problematic in future. It has also spread through northern and south-eastern Queensland, north-eastern NSW (including Lord Howe Island where it is currently an eradication target) and is also found in the Sydney area (Fig. 2).

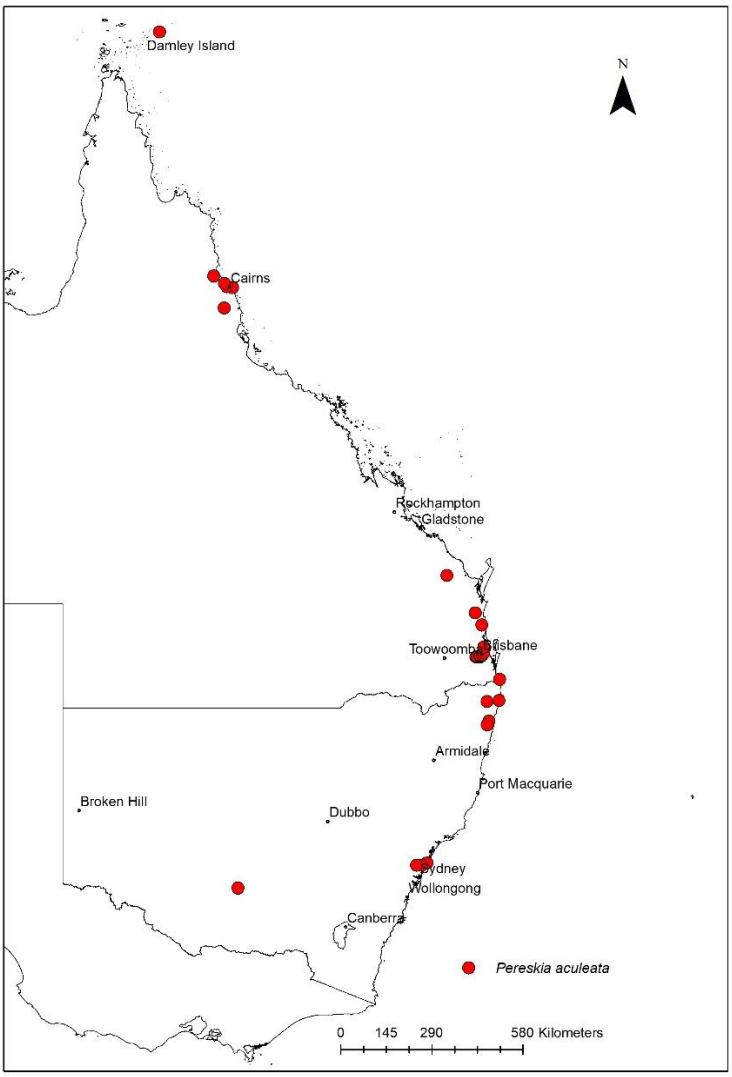


**Figure 2**. The known distribution of *Pereskia aculeata* in Australia.

Evidence from post-release observations in South Africa indicates a positive outlook for the biocontrol of *P. aculeata* in Australia. Two insect agents, the stem-wilting bug, *Catorhintha schaffneri* Brailovsky & Garcia (Coreidae), and the leaf-feeding flea beetle, *Phenrica guerini* (Bechyné) (Chrysomelidae), have been released and successfully established in South Africa (Dixon et al. 2023). The proposed host plant test list for Australia (Table 1) has been shaped by research conducted in South Africa (Paterson et al., 2014; Dixon et al. 2023), feedback by the Australian Department of Agriculture, Forestry and Fisheries (DAFF), the centrifugal phylogenetic approach (Wapshere, 1974; Briese, 2003) and use of a decision-making tool (Phylocontrol) developed by CSIRO (Chen et al. 2024). The test plant list includes native,

ornamental and agriculturally relevant species to Australia, especially those within the families Cactaceae, Anacampserotaceae, Portulaceae, Talinaceae and Montiaceae.

The decision support tool, Phylocontrol, was particularly valuable in refining the finalised host plant test list. Phylocontrol combines current genetic information (degrees of phylogenetic separation), geographic overlap and status of the species (native/introduced) (Chen et al. 2024; Fig. 3).

We welcome any suggestions for substitutions or additions to the proposed test list of plant species, provided they are justified within the phylogenetic/evolutionary framework approach used to develop the test lists. Additionally, information on where accessions of these proposed species for addition/substitution can be sourced would be greatly appreciated. Feedback and comments on this proposed plant host test list can be directed to Dr Asad Shabbir (Email: asad.shabbir@dpi.nsw.gov.au; Mob: 0488 269 873) or Dr Andrew McConnachie (Email: andrew.mcconnachie@dpi.nsw.gov.au; Mob: 0428 411 085).


**Figure 3**. Phylogentic relatedness and geographic overlap of plant species related to *Pereskia aculeata*.

**Table 1.** The list of proposed test plants for the risk assessment of potential biocontrol for *Pereskia aculeata*.

| **Plant species** | **Status** | **Tested in South Africa (Patterson et al. 2014; Dixon et al., 2023)** | **To be tested in Australia** |
|---|---|---|---|
| **Order: Caryophyllales** | | | |
| **CACTACEAE** | | | |
| *Pereskia aculeata* | Target weed | Yes | Yes |
| *Pereskia grandifolia* | Naturalised | Yes | No |
| *Pereskia quesquenyana* | Introduced | Yes | No |
| *Rhipsalis baccifera* | Introduced | Yes | No |
| *Rhipsalis cereuscula* | Introduced | Yes | No |
| *Hylocereus* (*Selenicereus*) *undatus* | Introduced | Yes | Yes |
| *Hylocereus polyrhizus* | Introduced | No | Yes |
| *Hylocereus setaceus* | Introduced | No | Yes |
| *Opuntia aurantiaca* | Invasive | Yes | No |
| *Opuntia ficus-indica* | Introduced | Yes | Yes |
| *Selenicereus monocanthus* | Introduced | No | Yes |
| *Selenicereus megalanthus* | Introduced | No | Yes |
| *Cereus peruvianus* | Introduced | No | Yes |
| *Cereus jamacaru* | Introduced | Yes | No |
| **MONTIACEAE** | | | |
| *Calandrinia ptychosperma* | Native | No | Yes |
| *Calandrinia balonansis* | Native | No | Yes |
| **PORTULACACEAE** | | | |
| *Portulacaria afra* | Introduced | Yes | Yes |
| *Portulaca oleracea* | Native | Yes | Yes |
| *Portulaca grandiflora* | Introduced | Yes | No |
| *Portulaca bicolor* | Native | No | Yes |
| **TALINACEAE** | | | |

| | | | |
|---|---|---|---|
| *Talinum paniculatum* | Introduced | Yes | No |
| *Talinum caffrum* | Introduced | Yes | No |
| **ANACAMPSEROTACEAE** | | | |
| *Anacampseros telephiastrum* | Introduced | Yes | No |
| *Anacampseros australiana* | Native | No | Yes |
| **BASELLACEAE** | | | |
| *Anredera cordifolia* | Invasive | Yes | No |
| *Basella rubra* | Introduced | Yes | No |
| *Basella alba* | Naturalised | Yes | No |
| **DIDIEREACEAE** | | | |
| *Alluaudia procera* | Introduced | Yes | No |
| **MESEMBRYANTHEMACEAE** | | | |
| *Carpobrotus modestus* | Native | No | Yes |
| *Carpobrotus rossii* | Native | No | Yes |
| *Carpobrotus edulis* | Invasive | Yes | No |
| *Delosperma cooperi* | Unknown | Yes | No |
| *Faucaria tigrina* | Introduced | Yes | No |
| *Glottiphyllum regium* | Unknown | Yes | No |
| **CARYOPHYLLACEAE** | | | |
| *Silene primuliflora* | Unknown | Yes | No |
| **Order: Saxifragales** | | | |
| **CRASSULACEAE** | | | |
| *Crassula ovata* | Introduced | Yes | No |
| **Order: Asparagales** | | | |
| **ASPHOLDOLACEAE** | | | |
| *Aloe arborescence* | Introduced | Yes | No |
| **EUPORBIACEAE** | | | |
| *Euphorbia tirucalli* | Introduced | Yes | No |

**References**

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