

Seedbanks and the conservation of threatened species

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Loss of biodiversity is one of the major environmental threats facing the world today. Natural resource management strategies that aim to integrate *in situ* (on-site) and *ex situ* (off-site) approaches to conservation merit considerable attention. Seedbanking for conservation purposes offers an opportunity to reduce the impact of species extinction and loss of biodiversity. It ensures that even if species are lost in the wild, plants will be available for future conservation actions and utilisation. It is one of many complementary conservation management strategies that are available to counter the impact of biodiversity loss.

Seedbanking is considered the safest, most inexpensive and most convenient method of *ex situ* conservation for flowering plants. Seedbanking has been used for many decades to conserve seed of agricultural species, with the primary objective to conserve plant genetic resources for use in plant improvement programs. Wild species diversity has largely been ignored, with the establishment of native seedbanks for biodiversity conservation a relatively recent occurrence, particularly in Australia. The extension of the operation of *ex situ* facilities to involvement in recovery projects, such as the reintroduction of threatened species and the restoration of degraded plant communities, is an even more recent phenomenon, and one that has received international sanction through the Convention on Biological Diversity (CBD).

In some cases, *ex situ* conservation represents the only option available if the remaining natural populations are to be conserved in the face of destruction of their habitat. Actions to conserve individual species contribute in a fundamental way to broader conservation objectives, even if the species themselves are not highly threatened. Seedbanking cannot directly protect biological diversity of ecosystems, but it can ensure the protection of genetic diversity. Off-site flora conservation can:

- provide material for species and ecosystem recovery;
- provide a readily accessible and cost-effective source of material for research;
- maximise the value of the material for sustainable use in research and recovery, through investigations into seed germination and storage behaviour;
- contribute to education and public awareness; and
- provide critical biophysical information for writing and implementing management and recovery actions.

In the first instance, seedbanks should establish priorities for collection and storage, with the most urgent candidates for *ex situ* conservation being plant species under severe threat in the wild. Priorities for collection should include: