2.7 *Ex situ* conservation facilities

Botanical facilities

Ex situ conservation of plants and their genetic material is relatively new to Namibia. After Independence in 1990, the country joined the Southern African Development Community (SADC), and a National Plant Genetic Resources Programme was initiated as part of the regional SADC Plant Genetic Resources Centre (SPGRC) Project. The value and development of indigenous plant genetic material had received little attention in Namibia before then. National capacity is developing slowly, since most infrastructure and expertise must be newly developed.

The National Plant Genetic Resources Centre

The SPGRC project aims to conserve all plant genetic resources in the region and promote their use. The project was started because the threat of genetic erosion in the region was believed to be growing.[104]

Under this project a National Plant Genetic Resources Centre (NPGRC) was established in the Ministry of Agriculture, Water and Rural Development (MAWRD) as a section of the National Botanical Research Institute (NBRI) in Windhoek. The Namibian Government built a new complex, completed in 1992, to house the NPGRC. Its facilities comprise an office, documentation room, seed threshing room, laboratory, deep-freezer room, and walk-in cold room, with other facilities shared with the rest of the NBRI. Essential equipment is linked to a stand-by power supply.

Important equipment was provided to the NPGRC through an agreement between SPGRC and the Swedish International Development Authority (SIDA), but running costs are met by the MAWRD. Specific projects may be funded through the SPGRC project, which in turn is funded by the five Nordic countries. Since 1994, SPGRC is also supported by contributions from SADC member states, which must assume full financial responsibility for the project in 2005.

A curator was trained under the SPGRC project to MSc level and began work in 1993. Overall, five staff positions (two researchers, two technicians and one assistant) have been allocated by MAWRD to the NPGRC. By 1997, only one researcher, a technician and an assistant had been employed.

At present, the NPGRC's storage capacity is almost filled. Storage space for the project will double, however, and the remaining 50% of capacity should take an estimated three years to fill. Currently all germplasm is accepted for storage. Once a basic collection of important germplasm has been stored, the NPGRC will be more selective. In future, only local germplasm accompanied by sufficient passport information will be stored.

The collection so far contains only Namibian material, both wild species and crops. There are over 1900 accessions, of which over half (53%) are of pearl millet, the main crop in Namibia, mostly collected by ICRISAT in 1991. Most accessions of wild species are of indigenous Cucurbitaceae. The majority of accessions are duplicated at the SPGRC regional centre in Lusaka, Zambia. As the collection is still very young, it does not yet represent the country's diversity. The millet collection is relatively representative, but by no means complete. Many accessions also need to be multiplied or regenerated, and most other species are poorly or not at all represented. Managing the collection is a problem due to staff shortages, but this situation should improve with the help of staff in other sections of the MAWRD.

Namibian material is collected according to a priority list identified by the NPGR Committee (Appendix 3). This lists wild and cultivated species considered to be of great value or in danger of genetic erosion. Collection is done by the NPGRC or the National Herbarium of the NBRI. Collecting missions of foreign institutes in Namibia are obliged to deposit a subsample of each collection at the NPGRC; in the past five years six such collections have been received. Collecting missions for specific crops are carried out according to the needs of agronomists, who meet once a month to advise the NPGRC.

Random sampling is used wherever possible for both crops and wild species. General collecting of wild species is mainly opportunistic according to rainfall, and planning has recently been aided by the use of Vegetation Index Maps generated with NOAA satellite data.[105]

Almost all material from wild species in the collection is collected at the request of foreign taxonomists. The NPGRC receives very few requests for wild material to be used in breeding projects or evaluation of agricultural potential. Locally, germplasm is used by MAWRD scientists for the Sorghum and Pearl Millet Improvement Programme and research on the potential of indigenous cucurbits.

Fig. 2.33 *Citrillus lanatus* seed diversity in Namibia. Courtesy C Mannheimer

The NPGRC collection database is entered into DBase IV, which is used by all NPGRCs in SADC to facilitate data exchange, and backups are sent annually to the regional SPGRC facility. The PRECIS Specimen Database, developed by the South African National Botanical Institute in Pretoria, was implemented at the National Herbarium in 1996, and will facilitate both *in situ* and *ex situ* conservation activities considerably.

The NPGRC tries to use crop experts to carry out seed characterization and evaluations, due to staff shortages. When supplying seed, the NPGRC has a contractual requirement that information obtained using the seed must be fed back to the NPGRC. As there is so far no legislation backing up this request, one-time users of the NPGRC can get away with not responding. Users requesting seed again receive it only if feedback on previous requests was obtained. Legislation to back up these agreements is in preparation.

The NPGRC intends to regenerate material once the viability of the seed falls below 85% for crop species or 65% for wild species. Once crop accessions have been tested for viability, multiplication and regeneration will be done in collaboration with SPGRC or the MAWRD Subdivision of Agronomy.

Other botanical facilities

At present no arboreta, field genebanks or botanic gardens are involved in *ex situ* conservation in Namibia. Land for a small (11 ha) botanical garden in Windhoek is being developed by the NBRI and Ministry of Environment & Tourism as personnel and financial circumstances allow. This will complement conservation activities, mainly by raising public awareness. The MAWRD's Namibia Root Crops Research Project plans to establish field genebanks for cassava *Manihot esculenta* and sweet potato *Ipomoea batatas* at Bagani. Both locally available germplasm and material from the SADC region will be held there.

Genetic resources of indigenous trees are being developed by the Tree Seed Centre Network, a joint project of the MET's Directorate of Forestry, the Southern African Development Community (SADC) and the Canadian International Development Agency. This project collects, tests, stores and regenerates seed from economically valuable indigenous tree species in Namibia, as part of a regional programme.[106]

Finally, international herbaria with holdings of Namibian plant specimens have been summarised in Appendix 4.

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Fig. 2.34 Pearl millet or *omahangu*, *Pennisetum glaucum*, is a focus of the NPGRC. Courtesy HH Kolberg