

## Book review

**An ecogeographic study. African *Vigna***, N. Maxted, P. Mabuza-Dlamini, H. Moss, S. Padulosi, A. Jarvis and L. Guarino, International Plant Genetic Resources Institute, Rome, 2004

Genus *Vigna* is a large group widely distributed in Asia and Africa with about seven subgenera and 19 sections, some of which are not very well differentiated from one another. This genus has been the subject of study by taxonomists for quite long time. The problems in this genus arise mainly with respect to the identity of the species described from time-to-time and these have persisted mainly due to lack of scientific interactions between the several groups working independently. There is very little exchange, even of herbarium specimens, between the groups active in this field. This has further resulted in several refutes and disagreements. The group involving Nigel Maxted and Helen Moss has published two good compilations on two major *Vigna* groups, namely Asian and African *Vigna*. These two books have attempted to sort out confusions in taxonomic description of various species under the genus *Vigna*.

The focus of the present publication is mainly on 'African *Vigna*' which comprise 61 species and 63 sub-specific taxa involving cowpea and bambara groundnut, and their wild relatives. Major emphasis has been on bringing together dispersed information from various sources on status of species distribution and potential use, determining the existing conservation status *in situ* and *ex situ*, major threats to plant diversity, and identifying conservation actions for species and populations having highest priority for interventions. The survey of ecogeographic databases from 30 herbaria and four genebanks from Africa, Europe and North America provided distribution maps of African *Vigna* species throughout the continent which should be of great help in devising conservation plans. The compilation is based on 7289 herbarium specimens and 1802 genebank accessions representing the 61 species sampled between 1762 and 1997.

The *Vigna* conspectus presented in the chapter on 'ecogeography conspectus' includes significant data analysis and interpretation for individual African *Vigna* taxa whereas the chapters on 'ecogeographic analysis' and 'biogeographic analysis' focus on the genus as a whole. The ecogeography conspectus provides patterns of actual distribution, based on herbarium specimens and

passport data, and predicted distribution, using climatic models. Taxonomic affinities and diagnostic characters of *Vigna* species are highlighted along with illustrations and distribution maps. The geographic distribution pattern of *Vigna* species combined two strategies, one that locates the actual hotspots of species richness and another that attempts to predict hotspots of species richness based on the potential distribution of each species including areas until now unexplored for *Vigna*. Combining these two results allowed conservation gaps to be identified, and permitted an analysis of the current status of *in situ* and *ex situ* conservation of the African *Vigna* gene pool.

Conservation gaps have been identified in the analyses made as most of the taxa are poorly represented in *ex situ* genebank collections. The analyses have clearly indicated three hot spots of *Vigna* diversity around the Great Lakes, the southern tip of Lake Tanganyika and the Cameroon Highlands. Other areas of potentially higher species richness, identified based on predictive models, are underexplored in the Democratic Republic of the Congo, south of Lake Victoria in Tanzania and Central Togo.

*In situ* conservation by establishing genetic reserves within the existing protected areas at the southern tip of Lake Tanganyika, in the coastal area of Sierra Leone and between Lake Victoria and other Great Lakes has been recommended which should be of importance to the organizations promoting conservation of plant diversity. The need to study the pattern of genetic diversity in landraces of cultivated species has been suggested before any *in situ* conservation activity is undertaken. The gaps in *ex situ* germplasm collections in *Vigna* have been identified and *V. dolomitica*, *V. baumaniana* var. *pedunculata*, *V. monantha*, *V. nuda*, *V. richardsiae*, *V. somaliensis*, *V. stenophylla*, *V. subterranea* var. *spontanea*, *V. unguiculata* subsp. *unguiculata* var. *spontanea*, *V. unguiculata* subsp. *aduensis*, *V. unguiculata* subsp. *baoulensis*, *V. unguiculata* subsp. *burundiensis*, *V. vexillata* var. *dolichonema* and *V. virescens* have been considered as the highest priority species for collection from these areas. The future requirements for sustainable conservation and use have been highlighted.

The publication is therefore a valuable guide for African conservationists, crop biologists and other stakeholders in the region, and will definitely provide a framework for more informed policy decisions that will ultimately

benefit African farmers. The extent to which research still remains to be undertaken has been clearly emphasized, the priority areas for research interventions include taxonomic classification, population surveys, reproductive biology and spatial diversity. A chapter on the relative importance of *Vigna* species in crop improvement could have been included which would definitely enhance conservation efforts.

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