

Improving food security and conserving yam diversity

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Harvesting cultivated winged yams in the Ikongo region of Madagascar. Credit: T. Randriamboavonjy

Through its yam research programme, RBG Kew is providing scientific data contributing to improving food security and conserving yam diversity in some of the lowest GDP per capita countries.

In the southern and western parts of Ethiopia, cultivated (*Dioscorea rotundata*, *D. cayenensis*) and forest (*D. abyssinica*, *D. praeheasilis*) guinea yams are a staple source of dietary starch with the banana relative

Ensete ventricosum. The diversity of these guinea yams was much less well understood than the same species in West Africa.

Kew scientists and researchers from Ethiopia and Norway have used [molecular markers](#) to show that there is continuous variation and hence [gene flow](#) between wild and cultivated populations of guinea yams linked to the process of taking forest yams into cultivation, called 'ennoblement'. They are thus likely to form a single biological species with [morphological variation](#) increased through their mode of cultivation. The greatest diversity was found in wild yams in the south west Sheko region, indicating their importance for conservation as sources of potentially useful genes for cultivated yam amelioration.

Wild and cultivated yams are also key carbohydrate sources in Madagascar. Working in the south-central Ikongo region, Kew researchers and NGO partners Feedback Madagascar used survey methods to investigate the preferences of [community members](#) for cultivated winged (*D. alata*) and wild species of yams.

Respondents preferred cultivated yams to the species of wild yam presented, in contrast to previous work in eastern Madagascar. The wealth of the respondent did not affect the strong preference for winged yam. Even so, villagers are still collecting seven times the number of tubers from the forest than they are cultivating.

The higher value put on cultivated yams suggests that there is substantial scope for increased local yam cultivation and increased exchange of cultivated tubers between the villages of the region to simultaneously increase [food security](#) and conserve wild yam species. To this end, Kew and Feedback Madagascar have supplied both 'seed' yams (tubers for growing) to villages in the Ikongo region and expertise both to grow yams and produce further seed yams for subsequent seasons.

More information: Abebe, W. et al. (2013). Genetic diversity and population structure of Guinea yams and their wild relatives in South and South West Ethiopia as revealed by microsatellite markers, *Genetic Resources & Crop Evolution* 60: 529-541.

Abebe, W. et al. (2013). Genetic diversity and species delimitation in the cultivated and wild Guinea yams (*Dioscorea* spp.) from Southwest Ethiopia as determined by AFLP (amplified fragment length polymorphism) markers, *Genetic Resources & Crop Evolution* 60: 1365-1375.

Provided by Royal Botanic Gardens, Kew

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