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The Potential of Wild Yams to Improve Food Security on the Mahafaly Plateau in Southwestern Madagascar

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Abstract

While yams constitute a staple food in many other African countries, they are traditionally used as substitutes during periods of drought and food insecurity in rural areas of Madagascar. The diversity of yams in Madagascar is particularly rich with altogether 41 species of which 27 are endemic. In our study region on the Mahafaly plateau in the semi-arid region of southwestern Madagascar, wild yams collection is practised by 87% of the households. Based on semi-structured questionnaires, data on wild yams collection, usage and consumption was collected for 218 households in four villages. Altogether, six species of wild yam (*Dioscorea ovinala* Baker, *Dioscorea alatipes* Burk. & H.Perr., *Dioscorea nako* H.Perr., *Dioscorea fandra* H.Perr., *Dioscorea bemandry* Jum. & H.Perr., *Dioscorea soso* Jum. & H.Perr.) were identified as important source of food during lean periods, to substitute cassava and maize.

Hot spot areas for wild yams collection comprised a total area of 350 km². To determine the distribution and abundance of the different yam species, a systematic sampling approach in a hot spot region was used (N = 58 plots), covering different soil and vegetation types. For each plot (size = 400 m²), abundance of harvestable yams and number of yams seedlings, the number and age of harvesting holes, which are left open after tuber extraction and soil samples were taken. The use of interpolation methods and collection of additional geospatial data (soil and vegetation maps) within a GIS allowed mapping of the distribution of the yams species.

Age and number of harvesting holes are correlated with the species regeneration rate. Tubers of *D. alatipes* and *D. bemandry* are collected most frequently. Since trade and sale of tubers is increasing on local markets, traditional methods of tuber harvest contribute to the extinction of this resource leading to low densities of harvestable tubers and soil degradation (harvesting holes). The distribution mapping of wild yams will allow to define pressure zones and serve as a basis for the establishment of conservation and management strategies of forest resources such as yam.

Keywords: Food security, Mahafaly plateau, wild yams, yams distribution