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Finding Mango Mother Trees: Developing an Interactive Mapping Approach of Mango Motherblocks in Kenya

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Abstract

Mango growing is of great economic importance for farmers in Kenya where mangoes ranked second in production volume, and third with regard to production area and monetary value. However, the full potential of mango cultivation has not been reached and production is mainly based on seven cultivars. Contrarily, numerous mango varieties exist in motherblocks managed by governmental institutions in Kenya but are, for the most part, severely neglected. Genetic resources are neither documented nor used efficiently in the different agro-ecological zones.

The objective of this study was to record the names, characteristics, and geographic locations of the different mango varieties available in Kenya and to develop an interactive map, connected to a database.

In 21 mango mother blocks managed by the Kenyan Agricultural Research Institute (KARI) and by prison farms in five provinces of Kenya all mango tree individuals were mapped. Google Earth® was first used to develop a rough sketch of each of the motherblocks. This sketch was filled by data on the geographic location of each of the individual trees measured by a handheld GPS and by recording the variety name. The detailed information was then used to develop the interactive map based on Google Earth®. Information on the different varieties and their performance in the respective location was collected through interviews of the orchard managers and added to the created map.

In total, 62 different mango varieties were found and 7401 trees mapped. Varietal diversity was low in motherblocks in Western Province (2–5 varieties per motherblock), while Central Province had the most diverse motherblocks (11–35 varieties per motherblock). The difference in diversity was correlated to the level of importance attributed to mango as a food and cash crop in the various provinces.

The developed interactive map tool can help private investors, extension workers, agricultural development organisations, and other key stakeholders to further develop the mango value chain in Kenya by offering a wealth of information on the locally available genetic resources. The map can also contribute to conserving genetic resources and related knowledge contained in the field gene banks of the surveyed mango mother blocks.

Keywords: Conservation, database, gene bank, genetic resources, mango