

CHARACTERIZATION OF AVOCADO FROM THE SOUTHERN HIGHLANDS OF TANZANIAN USING QUALITATIVE AND QUANTITATIVE MORPHOLOGICAL TRAITS

I. Juma^{1,2}, A. Nyomora¹, H. Persson Hovmalm², M. Fatih², M. Geleta², A. Carlsson², R. Ortiz²

¹ University of Dar es Salaam, Box 35060, Dar es Salaam, Tanzania

² Swedish University of Agricultural Sciences, Sundsvägen 10 Box 101, 23053 Alnarp, Sweden

Germans introduced avocado to Tanzania in the late 19th century. The crop has been propagated sexually for over 120 years, thus showing high diversity. Scanty research is available on Tanzanian avocado for improving production and diversity of these seedling-derived populations is yet to be assessed. This study was conducted to characterize this germplasm using morphological traits. Two-hundred and twenty-six seedling-derived avocados were randomly selected from eight districts in three regions in the Southern Highlands. The tree, leaf, fruit and seed characters were studied based on the IPGRI descriptors for avocado. Descriptive statistics assessed distribution of traits between districts while principal coordinate analysis (PCoA) and cluster analysis (CA) facilitated grouping of seedling-derived trees and their eight populations, respectively. Extensive variation was noted among the studied samples based on the characters measured. Significant positive correlations ($P < 0.05$) was observed between some morphological traits. The biplot from PCoA revealed no clear grouping among the 226 genotypes, possibly due to movement of seeds between districts and across regions. The dendrogram ensuing from CA defined two major clades with populations generally grouped following the region of origin while the avocado population from Njombe town exclusively formed an outgroup. These findings revealed that all Mexican, Guatemalan and West Indian avocado races are grown in Tanzania. The widespread variation observed among the samples suggests high diversity that may be further ascertained by DNA markers to exploit it for future avocado breeding in Tanzania.