Calibration of nursery substrate for commonly grown indigenous tree species in Western Oromia, Ethiopia.

**ABSTRACT**

Every tree species has its own individual environment that requires special equipment, compatible site, balanced soil mixture and specific nursery management practices to produce healthy and vigorous seedlings. If tree nurseries fail to produce high-quality seedlings, agro-deforestation and loss of indigenous tree genetic resources will continue and will devastate our landscapes. In western part of Ethiopia, most of the locally appreciated and on farm available indigenous tree species are declining due to lack of species based calibration of nursery substrates and specific management practices to sustain their regeneration. This study was conducted at five (5) agro ecologically different sites (Arjo, Fincha, Gedo, Nekemt and Shambu) of western Oromia to calibrate the requirements of each nursery substrates for 14 different indigenous tree species. Accordingly, locally acceptable and threatening tree species such as: *Acacia abyssnica, Cordia africana, Croton macrostachyus, Dodonaea angustifolia, Ekebergia capensis, Erythrina brucei, Faidherbia albida, Hagenia abyssinica, Juniperus procera, Olea africana, Podocarpus falcatus, Prunus africana, Syzygium guineense and Vernonia amygdalina* were subjected to the trial. For each tree species throughout the study sites, there were 3 replications with 7 treatments of different soil mixture ratios from which a control treatment was locally being practiced soil ratio for each site. Root collar diameter (RCD), height and survival rate were measured parameters. Since demanding for vigorous, highly survived and healthy seedlings is the main issue in nursery practices, the correlation of RCD and survival rate was considered more in the results of this study. In general, the study was underlined that seedling production for most of the selected indigenous tree species at the nursery sites is significantly affected by agro ecological variability where more intensified management, specific soil media, and especial consideration for pre-sowing seed treatments are influencing practical components across the locations and each tree species. Finally, this study calls for further research in calibrating nursery substrates to produce and multiply seedlings for the restoration of each indigenous tree species, which are locally sound-full and have incredible value in environmental protection, ecosystem rehabilitation and climate change mitigation.

Key Words: Nursery calibration, indigenous tree species, nursery sites, nursery substrates, soil mixture ratio