Seedling Emergence and Growth Response of Wild Arabica Coffee Accessions in Southwest Ethiopia

T. KUFA[1] AND J. BURKHARDT[2]

[1]Ethiopian Institute of Agricultural Research, Jimma Research Center, P. O. Box 192, Jimma, Ethiopia
[2]Institute of Plant Nutrition, University of Bonn, Karlrobert-Kreiten-Str.13, D-53115 Bonn, Germany. E-mail: kufataye@yahoo.com

SUMMARY

The study was conducted with the primary objective to compare the variability in seed germination and seedling growth of wild Arabica coffee accessions under controlled optimal nursery conditions at Jimma Agricultural Research Center, southwest Ethiopia. The experiment was laid dawn in a randomised complete block design with six replicates. Seedling emergence and subsequent growth stages were recorded to calculate mean days of emergence, percentage and rate of emergence and seedling vigor indices. The analysis of variance for percentage of emerged seedlings depicted highly significant differences among coffee progenies between 55 and 97-days after sowing. Consequently, the overall mean germination percents were highest and lowest for PIS3 (83.5%) and PIIIS2 (48.3%) accessions, respectively. There were also highly significant variations in seed germination rate with superior and lowest results obtained from Harenna and Berhane-Kontir accessions. In addition, the accessions exhibited highly significant differences in speed of growth stages (emergence, soldier, butterfly and first true leaf) and seedling vigor. In addition, seedlings of wild Arabica coffee populations showed highly significant variations for all the morphological growth characters considered. Consequently, most of the progenies from Harenna and Yayu had maximum mean values as compared to others, particularly Berhane-Kontir accessions. In general, the rapidity of growth responses followed the descending order: Yayu > Harenna > Bonga > Berhane-Kontir accessions and their latter stage productivity could also vary accordingly. The findings would, therefore, provide baseline information on the extent of variability in early growth stages of wild coffee accessions and thus, the need to target specific management options on the use and conservation of Arabica gene pools in the montane rainforests of Ethiopia.