

Genetic Divergence of Hararge Coffee (*Coffea arabica* L) Germplasm Accessions at Pre-Bearing Stage

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SUMMARY

A field experiment was conducted at Awada Agricultural Research Sub-Center using 100 Hararge coffee germplasm accessions for morphological characterization at pre-bearing stage. These coffee germplasm accessions representing 16 woredas of Hararge coffee growing areas and 4 standard checks from southwest Ethiopia were evaluated for 14 quantitative characters. The germplasm accessions differed significantly for all the characters in the univariate analyses of variances indicating the prevalence of variability among the Hararge coffee germplasm accessions. Further, the first four principal components explained 78.5 per cent of the total variation prevalent within the germplasm accessions out of which 38.5 per cent was explained by the first principal component. Length of the longest primary branch and stem diameter were the two important characters that contributed most to the total variation of the first principal component. Average linkage cluster analysis using Mahalanobis (D^2) distance for the 14 quantitative characters grouped the 100 Hararge coffee germplasm accessions with four standard checks into six clusters. The number of accessions per cluster ranged from 5 in cluster VI to 44 in cluster III. The clustering pattern of the accessions revealed the prevalence of genetic diversity in the Hararge coffee germplasm for the quantitative characters considered. The maximum inter-cluster distance was obtained between clusters II and VI while the minimum was observed between clusters I and III. The study highlighted the possibility of using accessions of the distant clusters as potential candidates for the genetic improvement of Hararge coffee. Nevertheless, the aspects of intensive germplasm exploration in the western Hararge and consideration of additional characters across the bearing stage was suggested in order to confirm the results of characterization of pre-bearing stage.