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A Minicore Collection of Sorghum [*Sorghum bicolor* (L.) Moench] for Enhancing Utilization of Germplasm in Crop Improvement.

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Crop improvement requires genetic diversity for sustainable development of agriculture and food security. Much of progress in plant breeding depends on the discovery of new sources of genetic variation, identification of lines for beneficial traits, and their use in breeding to develop progenies with superior traits such as grain and fodder yield, tolerance/resistance against pests and diseases, and improved product quality. Minicore collection (10% of core, 1% of entire collection) is considered a gateway for utilization of diversity present in large germplasm collections for crop improvement. The minicore provides breeders with much of the available genetic diversity in a substantially reduced subset of germplasm. Sorghum minicore collection consisting of 242 accessions from 57 countries was established by evaluating 2246 core collection accessions. Data on 20 morpho-agronomic characters of 2246 accessions was subjected to hierarchical cluster analysis using phenotypic distance. A sample of 10% or a minimum one accession from each cluster was selected to form the minicore. Data in minicore and core collections were compared for homogeneity of distribution for morphological characters, geographical regions, and taxonomic races using $\chi 2$ test. Mean values of mini core and core were compared using Newman-Keul test, variances using Levene's procedure, and phenotypic diversity using Shannon-Weaver diversity index. Mean difference percentage, variance difference percentage, coincidence rate, and variable rate were calculated to determine representativeness of minicore. These tests indicated that the minicore captured about 90% diversity and majority of coadapted gene complexes present in the core, which was a representative of entire collection. Due to its greatly reduced size and representing almost entire diversity, the sorghum minicore can be economically evaluated extensively for beneficial traits and provides a gateway for enhanced utilization of germplasm for sustainable crop improvement for food,feed, fodder, fuel, and other industrial products like tannins, waxes, protein, starch,and dyes.

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