Hundred Years of Post-Mendelian Genetics and Plant Breeding- Retrospect and Prospects

November 6-9, 2001

Poster Abstracts

Editors
M.C. Kharkwal
R.B. Mehra

Indian Society of Genetics and Plant Breeding
New Delhi

Development in groundnut core collection from Asian region

H.D. Upadhyaya, R. Ortiz, P.J. Bramel and Sube Singh
Genetic Resources and Enhancement Program, ICRISAT, Patancheru, 502 324

Groundnut (Arachis hypogaea L.) is an important oilseed crop cultivated in 24 countries of Asia. The crop productivity of 1.50 t ha-1 is low in Asia. The available large variability in the Germplasm accessions has not been adequately utilized in the crop improvement programs and most groundnut cultivars stand on a very narrow genetic base. This is due to lack of information on agronomic and other economic traits, which require extensive evaluation. The development of a core collection could facilitate easier access to groundnut genetic resources and enhance their use in crop improvement.

The ICRISAT genebank contains 4738 accessions from 21 Asian countries, consisting 267 fastigiata, 2414 vulgaris, and 2057 hypogaea types. The Germplasm accessions were stratified by country of origin within each of three botanical varieties. Data on 15 morphological descriptor traits: growth habit, branching pattern, stem (color, hair), leaf (color, shape, hair) flower, streak and peg (color), pod (beak, constriction, reticulation), seed (per pod, color) were used for clustering by Ward's method. From each cluster = 10 percent accessions were randomly selected to constitute a core subset consisting of 504 accessions, consisting 35 fastigiata, 251 vulgaris, and 218 hypogaea types. Newman-Keuls test for mean, Levene's test for variance, chi-square test and Wilcoxon rank-sum non-parametric test for distribution indicated that the available genetic variation has been preserved in the core subset. The Shannon-Weiver diversity index for different traits was also similar in the entire collection and core subset. High coincidence rate (80.7%) and variable rate (116.9%) confirmed that the core subset is representative of entire collection. This core collection provides an effective mechanism for the proper exploitation of groundnut Germplasm resources Germplasm resources for the genetic improvement of this crop.