

Genotypic and Phenotypic Variation in the Global Collection of Chickpea (*Cicer aritenum* L.)

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Globally, chickpea (*Cicer aritenum* L.) is the 4th largest grain legume crop, being grown on a total area of 10.38 m ha, a total production of 8.57 m ton, and an average productivity of 0.83 t ha⁻¹. There are two types of chickpeas: desi, widely grown in South Asia and Africa and kabuli, widely grown in Mediterranean region. Countries with the largest chickpea production are India, Turkey, Pakistan, and Iran in Asia, Ethiopia in Africa and Mexico in North and Central America. Large variation in chickpea germplasm has been noted for most of the morphological/agronomic traits and for resistance/tolerance to biotic and abiotic stresses, such as diseases due to *Ascochyta rabei*, *Botrytis cinerea*, *Fusarium oxysporum*, *Fusarium solani*, *Rhizoctonia bataticola*; the insect pests *Helicoverpa armigera* and *Liriomyza cicerina*; and drought, salinity, and temperature. A composite collection of 3000 accessions was formed that consists of a core collection representing germplasm held at ICRISAT's gene bank, accessions from ICARDA's gene bank, cultivars/breeding lines, trait-based unique germplasm and wild *Cicer* species compatible with *Cicer aritenum*. From the preliminary screening of 200 SSRs on 288 diverse chickpea germplasm, 50 polymorphic SSRs were selected for genotyping the global composite collection. The 3000 accessions were genotyped using at each SSR using a multiplexed, ABI 3700/ABI 3100-based approaches. Alleles were determined using a least-squares method, various distance measures calculated, and diversity analyzed using a variety of structure and cluster algorithms. A detailed analysis of the molecular and phenotypic diversity found will be presented.