



Conservation of chickpea genetic resources



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Importance of chickpea conservation

Archeological chickpea remains found from Syria to Greece dating from the very early days of farming show its important role in the dispersal of farming habits. Like many other crops, it has been subjected to different selection pressures in various ecological and cultural environments and consequently diversified into a range of varieties. It is likely that chickpea has a higher potential to yield more than the yields currently achieved on farmers' fields. This potential can only be fully utilized if a broad range of genetic materials are available to select from or to breed for specific traits. Therefore, breeding for higher and more stable yields and also for enhanced resistance to pests and diseases is one of the immediate objectives of many chickpea programmes.

A more efficient and effective conservation of the chickpea genepool worldwide, including both cultivated and wild species, is essential and potentially very important for research and crop improvement.

Some of the wild relatives are potentially important to incorporate resistance to abiotic and biotic stresses.

Tolerance to drought is a particularly important trait for chickpea that often grows in extremely harsh and dry environments.

Priority should be given to conservation of chickpea in primary and secondary centres of diversity.

Urgent priorities identified for chickpea conserved in many genebanks are the need for regeneration, characterization, safety duplication and long-term conservation.

Cicer genetic resources could be much better utilized if a representative core collection (10% of the entire collection) and a mini core collection (10% of the core or 1% of entire collection) are developed and evaluated extensively for useful traits.

More data is available at the accession level for economic traits to identify trait-specific germplasm.

Many small collections contain unique materials that can be extremely important for the genetic improvement of the crop.



Chickpea seed diversity (photo: ICRISAT)



Chickpea diversity of pods (photo: ICRISAT)



Chickpea germplasm diversity in the field (photo: ICRISAT)

Major chickpea collections

Chickpea collections include landraces, breeding material and wild species. It is estimated that more than 80 000 accessions are conserved in more than 30 genebanks worldwide. The genebank at ICRISAT Patancheru, India, is one of the largest genebanks holding >20 000 accessions of chickpea from 60 countries. Other major collections (more than 5000 accessions) are held at NBPGR, New Delhi, India; [ICARDA](#) Aleppo, Syria; Australian temperate field crops collection, Victoria, Australia; USDA, USA and the Seed and Plant Improvement Institute, Iran.

It was only after 1970 that wild *Cicer* species were actively collected. Currently there is a reasonable number of wild annual species but still limited availability of perennial species. Less than 1% of the *Cicer* accessions (conserved in about 10 genebanks worldwide) represent wild species. The ICRISAT genebank holds 308 accessions belonging to 18 species of wild *Cicer* from 14 countries.



A chickpea genebank (photo: ICRISAT)

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