

Wild *Cicer* Species in Chickpea Improvement

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ABSTRACT

Chickpea (*Cicer arietinum* L.) is one of the most important cool-season food legumes grown in Central and West Asia and North Africa (CWANA). Although substantial research has been done for the improvement of the crop, major break-through in increasing its productivity is yet to be achieved. This partly due to the susceptibility of cultivated *Cicer* (cultigen) to a variety of biotic and abiotic stresses, and the lack of adequate variability for traits. The international Center for Agricultural Research in the Dry Areas (ICARDA) has assembled a large number of accessions of eight wild annual *Cicer* species. Evaluation of this germplasm for several biotic and abiotic stresses has identified some of the accessions that are resistance to bruchids (seed beetle) and cyst nematodes. Genes for resistance to these biotics stresses are found in *C. reticulatum* and *C. bijugum*. Such useful genes are absent or rarely found in the cultivated species. Further, we observed that cultigen possess relatively low level of tolerance to cold temperature, compared to *C. reticulatum* and *C. echinospermum*. Our wild-cultigen hybridization involving selected *C. reticulatum* and *C. echinospermum* accessions proved successful in transferring genes for cyst nematode, cold resistance, earliness and high biomass from the wild species to cultigen. Genetic stocks derived from inter-specific crosses and other elite lines have been made available to NARS through the Legume International Testing Network located at ICARDA. In this paper, we report the results of work on wide hybridization and discuss its implication for widening the genetic base of chickpea for further improvement.