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“Bridging the gap between increasing knowledge and decreasing resources”

Transgressive Segregations in Interspecific Crosses Between *Cicer arietinum* L. and *C. echinospermum* P.H. Davis

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Abstract

Unlike the domestic chickpea (*Cicer arietinum* L.), wild *Cicer* species are resistant to biotic and abiotic stresses. It was reported that 11 different accessions of *C. echinospermum* P.H. Davis were maintained in national and international genebank in the world. Some of the accessions of *C. echinospermum* are not only resistant to seed beetle, leaf miner, fusarium wilt and ascochyta blight, but also important genetic sources of cold tolerance. From *C. echinospermum* to the domestic chickpea, the present study aimed to transfer desirable gene(s) for resistance to biotic and abiotic stresses and yield criteria as well. An accession of *C. echinospermum* (AWC 302) was crossed with the domestic chickpea genotype CA 2969. In F1 and F2–3, yield and yield criteria such as flowering and maturity time, plant height, canopy width, number of main stem per plant, number of pods and seeds per plant, biological and seed yield per plant, harvest index and 100-seed weight were recorded. Considerable heterosis and transgressive segregation were detected for some agronomical characteristics in F1 and F2, respectively. Results suggested that *C. echinospermum* is a member of second genepool as it can conventionally be crossed with the domestic chickpea and produced fertile plants in F2 and F3. Also, it was concluded that agronomical characteristics could be improved using *C. echinospermum* as pollen donor. Some lines in F3 were selected for resistance to cowpea seed beetle (*Callosobruchus maculatus* Fabricius) in choice and no-choice tests. Recombinant inbred lines (RILs) will be used for gene mapping for resistance to cold during vegetative stage.

Keywords: Chickpea, *Cicer* sp.