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Assessment of *in-situ* Variability in Kair (*Capparis decidua*) Germplasm for Utilization in Genetic Improvement through *ex-situ* Conservation

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Abstract: Kair (*Capparis decidua*) is one of the multipurpose shrubs of hot arid ecosystem and found in diverse habitats unattended and unprotected. In recent past, due to changes in land use pattern, mechanization, expansion of irrigation facilities, urbanization etc. natural habitats of kair are under serious threat. For achieving sustainable development, based on use of available genetic wealth, promotion and conservation of adapted arid species like kair is of immense importance. Extensive survey of western Rajasthan was carried out to collect germplasm from different habitats during April-May 2011 and 45 accessions were collected from different sites. Marked diversity with respect to plant types, canopy, flowering and fruiting were observed in natural population. The seeds of collected germplasms were further sown in nursery for seedling study and field planting for ex-situ conservation. Among the accessions, germination ranged from 41.6-93.4% and survival ranged from 44.2 to 76.8% in nursery. After one year of field planting accessions, CZJK-8 followed by CZJK-9, CZJK-4, CZJK-15 and CZJK-21 showed better survival (>80%), however, accessions CZJK-14, CZJK-33, CZJK-34 and CZJK-35 showed poor survival (<25%). The available germplasm is being further evaluated for characterization and utilization in breeding programme for selection of elite plant types.

Key words: *Capparis decidua*, ex-situ conservation, diversity, germplasm, survival.

Kair [*Capparis decidua* (Forsk.) Edgew.] is one of the important indigenous multipurpose shrubs of hot arid ecosystem with the ability to survive in various unattended and unprotected habitats (Singh *et al.*, 2005). It grows abundantly in dry, arid and exposed habitats like wastelands, ditches, drying ponds, cultivated lands, road sides and surrounding plains of hills as it is tolerant to prolonged drought due to its excellent adaptation to arid conditions (Pandey and Rokad, 1992). It provides food (pickle and vegetable), fodder, fuel wood and timber, thus plays an important role in the rural economy of arid regions (Kumar *et al.*, 2005). The flower buds and immature green fruits of kair are pickled, cooked and consumed as vegetables (Harsh and Tewari, 1998). Young branches are relished by camel and goats particularly during post winter season, when little else is available for browsing (Khan, 2005). The species has important ecological roles i.e.; provides vegetation cover, improves soil, prevents soil erosion and promotes biodiversity in arid regions (Shankarnaryan *et al.*, 1987).

Besides socio-economic and ecological benefits, it has a number of medicinal properties as the plant has significant pharmacological activities like hypercholesterolemic, anti-inflammatory and analgesic, antidiabetic, antimicrobial, antiplaque, antihypertensive, antihelmintic and purgative activities (Satyanarayana *et al.*, 2008). In spite of multifarious uses and highly adapted to desertic conditions of arid western Rajasthan, there have been few attempts to domesticate or study kair, particularly its genetic potential and scope for orchard plantation in arid zone. Looking to the diversified uses and ecological adaptation to harsh climatic conditions in Thar Desert an attempt was made to collect kair germplasm from different habitats of arid zone to create live repository for *ex-situ* conservation and its further utilization in genetic improvement for higher fruit yield.

Materials and Metdhds

An extensive survey of Western Rajasthan (Bikaner, Nagaur, Jodhpur, Barmer and Jaisalmer districts) was carried out to congregate information on *in-situ* variability and to collect diverse germplasm from different habitats *viz.* rocky, gravely, sand dunes, natural rangelands and cultivated fields during April-May 2011. Forty five accessions of *C. decidua*

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