GENETIC DIVERSITY IN AN ISOLATED POPULATION OF *Capparis decidua*

A.L. Abdel-Mawgood*, A. Assaeed, T. Al-Abdallatif

Plant Production Department, College of Food and Agricultural Sciences, King Saud University, P.O. Box 2460, Riyadh 11451, Kingdom of Saudi Arabia
mawgood9@yahoo.com

Summary
Capparis decidua is a rangland plant species growing in isolated regions in Saudi Arabia. RAPD markers were used to study genetic diversity in a population present in Raudhat Khuraim and a control population. Cluster analysis showed that coefficient of similarity within Raudhat Khuraim population (84-93%) is a lot larger than between Raudhat Khuraim and the control population (77%).This indicates that the former population is isolated and of particular conservation concern.

Keywords
RAPD markers, *Capparis deciduas*, ker, tandab, genetic diversity**.**

Contribution
Capparis deciduas (known as Ker or tandab) is a rangeland plant species growing in isolated populations in several regions of Saudi Arabia. In Riyadh, it is found as an isolated population in the northern part of Raudhat Khuraim, nearly 100 km northeast of Riyadh city. The plant is under heavy browsing from goats and camels. It is feared that excessive grazing may lead to a decrease in population size and therefore, suffers from the genetic consequences of being an isolated small population. This plant has medicinal value, young parts of the plants are applied to cure boils and swelling, the bark is said to be useful in Asthma.
Genetic diversity within population is considered to be of great importance for possible adaptation to environmental changes and consequently for long term survival of a species [1]. The loss of genetic variation in a population leads to increasing number of homozygous individuals within a population which is associated with lack of individual fitness [2]. Thus the quantification of genetic variation is currently regarded as a primary goal in conservation efforts and accounts for the current utilization of genetic information in conservation.
We used RAPD technique to study the genetic diversity within a population of *Capparis decidua* located in Raudhat Khuraim. In addition, another population from Medina (960 Kilometers apart) was used as a control. Twelve individuals were used in the former population and two in the latter population. For each genotype, the presence of a band (1) or its absence was scored. A cluster analysis for individuals from these two populations was calculated using NT-SYS pc v2.1 and UPGMA's method based on Jaccard's similarity matrix [3].
Twelve different RAPD primers were used. Amplification of the 14 individuals (12 individuals from Raudhat Khuraim and two from the control population) with these primers produced 85 scorable bands, of which 39 were polymorphic. A dendrogram showing genetic interrelationship among individuals of Raudhat Khuraim and between Raudhat Khuraim and the control population is presented in Figure 2. Genetic similarity within individuals of Raudhat Khuraim was a lot higher than between Raudhat Khuraim and the control indicating

that Raudhat Khuraim is an isolated population. In addition, genetic similarity within Raudhat Khuraim population was very high and the coefficient of similarity was from 84 to 93%. However, coefficient of similarity between Raudhat Khuraim and the control population was 77% indicating that this population has very low genetic variation between its individuals.

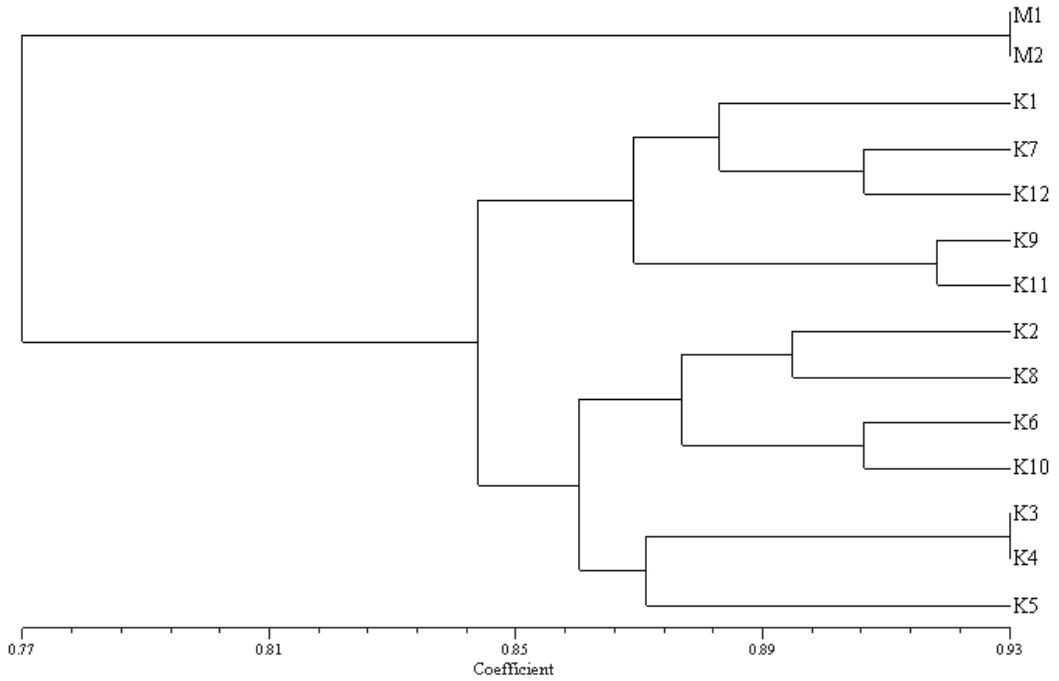

Fig.1. Cluster analysis showing the interrelationships between control population (M1 and M2) and Raudhat Khuraim population (K1 to K12).

Since the population in Raudhat Khuraim is isolated, therefore has noway of increasing its genetic diversity throught immigration. In addition field surveying showed that the population size was around 200 individuals only. Others [2] indicated that, in isolated populations, genetic drift may reduce genetic variation, increasing levels of inbreeding and consequently, reducing the potential to adapt to environmental changes. This indicates that the population in Raudhat Khuraim may be of particular conservation concern as it is unlikely to recover from any stochastic extinction events that may occure.

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