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Genetic Differentiation of *Abies equi-trojani* (Asch. & Sint. ex Boiss) Mattf. Populations from Kazdağı, Turkey and the Genetic Relationship between Turkish Firs belonging to the *Abies nordmanniana* Spach Complex

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**Abstract:** The present study aimed to test the utility of RAPD (randomly amplified polymorphic DNA) and cpSSR (simple sequence repeats) markers for in situ gene conservation programs for fir species, as well as for determining the genetic similarities between the *Abies nordmanniana* Spach species complex (*A. nordmanniana*, *A. bornmuelleriana* Mattf., *A. equi-trojani* (Asch. & Sint. ex Boiss) Mattf.) and between populations of *A. equi-trojani*, which is a narrow-endemic to Turkey. For this purpose, DNA was extracted and pooled from 15 seed megagametophytes (megs) of the Ortaköy population of *A. nordmanniana* and the Muratdere population of *A. bornmuelleriana* species, and from two 7-meg subsamples each from of the Kazdağı and Çan populations of *A. equi-trojani*. Template DNA was screened with the DNA markers to reveal the amount of genetic variation in each species. It appeared that template DNA pooling for screening the fir populations with RAPD or cp-SSR markers could be effectively used to speed up gene conservation and taxonomic studies. It is suggested that DNA pooling for template DNA in the PCR (polymerase chain reaction) mixture should be limited to 7 megs, but at least 5 replications that sample different sets of families each time. Based on genetic similarity and distance values, it seems that the Turkish fir species studied, as well as *A. equi-trojani* populations, have genetically been well differentiated. Fragmented distribution of 3 fir species in northern Turkey, belonging to the *nordmanniana* fir complex, also supports the possible existence of an ancestral species. However, to test this further studies that include fir species from the region, such as *A. cephalonica* Loud., *A. borisii-regis* Mattf., and *A. cilicica* Ant. & Kotschy, are needed.

**Key Words:** *Abies equi-trojani*, *A. nordmanniana*, *A. bornmuelleriana*, Genetic similarity, Genetic distance, RAPD Markers, cp-SSR

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