

GENETIC DIVERSITY STUDY OF ETHIOPIAN HOT PEPPER CULTIVARS (CAPSICUM SPECIES) USING INTER SIMPLE SEQUENCE REPEAT (ISSR) MARKER

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Background: Hot pepper (*Capsicum species*) is an economically important spice widely cultivated and consumed in Ethiopia. In spite of its wide importance, there is no information available on molecular genetic diversity of this crop. The importance of cultivars characterization is an important link between the conservation and utilization of plant genetic resources in various breeding programmes

Result: Using five ISSR primers, a total of 37 scorable bands were generated of which 35 (94.6%) were polymorphic. Within population diversity based on polymorphic bands ranged from 51.35% to 91.89 % with a mean of 66.6 %, Nei's genetic diversity of 0.19-0.30 with a mean of 0.28, and Shannon information index of 0.29-0.45 with a mean of 0.43. With all diversity parameters, the highest diversity was obtained from Amhara2 populations, whilst the lowest was from Oromia2. From Jaccard's pairwise similarity coefficient, Oromia1 and Oromia2 were most related populations exhibiting 0.956 similarity and Semn omo and Amhara 2 were the most distantly related populations with similarity of 0.827. Clustering was showed that there is strong correlation between geographic distance and genetic diversity of Ethiopian hot peppers cultivars because geographically closely related species have been clustered together.

Conclusion: Amhara 2 populations (from West Gojjam and North Gonder) exhibited the highest genetic diversity so that the populations should be considered as the primary sites in designing conservation areas for this crop. Further, it is suggested that molecular markers are valid tags for the assessment of genetic diversity in *Capsicum species* cultivars.

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