

## **Study of Morphological and Genetic Diversity in Iranian *Aegilops cylindrica* Populations using Molecular Microsatellite Marker**

### **Abstract**

*Aegilops cylindrica* ( $2n=4x=28$ , CCDD) is one of the herb plants of geraminaceae which has recognized more effective agronomy traits such as resistance to environmental stresses. To know from level of genetic diversity from germplasm complexes and determination of genetic relations among breeding materials is main and first step in breeding programs. In order to investigation genetic diversity of *Aegilops cylindrica* landraces of Iran, 47 landraces provision from the national plant gene bank and these landraces cultivated at augment design in research champ of plant and seed institution in Karaj. investigation based on morphological traits observed that, in all of these traits phenotypic diversity coefficient is higher than genotypic diversity coefficient which is indicated effects of environmental elements on investigated morphological traits at this study. In cluster analysis that implemented using of morphological traits based on Euclidian distance and UPGMA method by NTSYS pc2 software, surveyed landraces categorized at 6 groups. In order to more probing of interspecific genetic diversity of landraces, utilized from microsatellites (SSR) molecular markers at this study. Genomic DNA isolated from plant samples amplified with primers related to 7 location of microsatellite using of polyacrylamide gel electrophoresis. overall in molecular investigation, obtained 71 polymorphic alleles with average 10.14 for each microsatellite location. Locations *Xgwm192* and *Xgwm33* had higher and lower amount of effective allele content, heterozygosis, shanun index, PIC and MI respectively. Cluster analysis is done for grouping of landraces and dendrogram results indicated that 47 landraces divided into 5 groups. Whereas *Xgwm192* and *Xgwm337* primers indicated higher amount of polymorphic index, these primers could detect individual genetic distances better than the others. Comparing diagrams resulted from molecular cluster analysis and morphological traits with geographic transmittal, indicates that there is not any relation among groups based on molecular data grouping, morphological traits and geographic districts.

**Keywords:** *Aegilops cylindrica*, Landraces, Genetic diversity, Microsatellite markers



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