

## SUMMARY AND CONCLUSION

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Wheat is a vital source of energy throughout the earth due to its extensive agronomic pliability, simplicity of its storage along with large series of varied food products produced using its flour. Despite of the less increase in the cultivated area, the augmented productivity has made a rapid increase in the global wheat production during the last few decades. However, the evaluation of genetic variability amongst cultivars is crucial in favor of plant breeding function, as it offer an assessment of the variability presented in different germplasm collections. The results presented in this thesis indicated the occurrence of a high genetic variability among the 101 accessions investigated on the basis of both ploidy and origin. Among the polymorphic RAPD and ISSR primers used, two RAPD primers viz., cRAPD2 and RAPD B5 and four ISSR primers viz., ISSR F4, ISSR M2, ISSR M9 and ISSR M12 were found to be most informative for distinguishing the wheat varieties. According to molecular profiles obtained, it was concluded that ISSR primers were more informative than RAPD primers on the basis of total number of bands, number of polymorphic bands and polymorphism percentage. Dendrogram and Scatter Plot analyses have revealed the clear separation of Indian and Turkish wheat varieties on the basis of both Ploidy level and Geographical Origin.

As wheat is fulfilling the need of a major part of world population either in the form of chapati, bread, noodles or pasta, it serves as a major component of diet that has a good nutritional profile. Presence of different macro- and micro- elements in wheat contributing towards this nutritional value should be valued and estimated. As reported in the current study, efforts were made to establish the elemental content of different Indian and Turkish wheat varieties and significant variations and correlations among the elemental content of various genotypes has been found. It was concluded that Magnesium was highly correlated with Calcium, phosphorus and Zinc. Also, Potassium was found to be mutually linked with phosphorus and Zinc. In the study, some of the Indian tetraploid varieties like KBD 921 and KBD 9915 and hexaploid varieties like Veeri and HD2036 have been suggested for appropriate elemental content. Similarly, Higher macroelement and microelement contents were estimated in Turkish Wheat Varieties [Eser, Altay,

Gerek79, Akbugday, Bayraktar (6X)] and [Konya, Bezostaja (6x); Kaplica (2X)] respectively.

Our perceptives towards fundamental genetic management of multifaceted characters such as production yield, quality and abiotic stresses should be enhanced for the maintenance and increment of wheat yield. This can only be achieved when there is high genetic diversity in the crop, as the species will be likely to cope with the environmental changes. The assessment of genetic diversity analysis among different Indian and Turkish wheat varieties and the estimation of element content in the selected wheat genotypes have been performed in this study. This work would serve as a complementary approach for the conservation of various genotypes and a supportive step for the creation of sustainable agricultural systems that actively use as much biodiversity as possible.