

Genotypic Response to Heat Stress on Micronutrient Content in wheat and its Molecular Characterization

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Abstract—Study on genotypic response to heat stress on micronutrient (Zn, Cu, Fe, Mn & B) content in flag leaf, spike and seeds obtained from three phenological stages (Booting, Grain filling and Maturity) respectively of 18 wheat genotypes was carried out during rabi season. Under heat stress condition significant increased accumulation was observed for Zn in genotypes Kauz/AA/Kauz, HD2888 and Sonalika; Fe in genotypes AKAW4008, Halna, Pusa gold, AKAW4189-3, PBW343, HD 2733, Kauz/AA/Kauz, Ipeca rabe, F5-995, HD2888, MonsAld's and Raj3765; Mn in genotypes AKAW4008, Halna, PBW343, HD2285, Ipeca rabe, HD2888, MonsAld's and Sonalika and for boron in only one genotype Kauz/AA/Kauz. The genotypes PBW343, HD2888, Kauz/AA/Kauz showed overall better micronutrients under stress condition. The molecular study was achieved with the help of 23 SSR markers. A total number of 341 allelic variants were detected with an average of 9.2 alleles per locus and total 226 unique alleles were observed at 37 SSR loci, with an average of 6.10 unique alleles per locus. The highest number of alleles per locus was observed in the B genomes as compared to A and D genomes. Polymorphism information content (PIC) value ranged from 0.347 for the primer Xgwm369 to 0.858 for Xgwm251, 0.691 as an average for Xgwm282. So, the extensive study of wheat genotypes has been done on the both morphological and molecular aspect to know its specificity and variability above.