Transcripts pattern in bread wheat under drought stress

Mona Soltani* shahed university
Amir Mohammad Naji shahed university
Alaeddin Kordenaieej shahed university
Hossien Torabi shahed university

*mona_soltani67@yahoo.com

Abstract:

Drought is an important environmental factor limiting the productivity of wheat and other crops world-wide. Plants have developed different strategies to cope with this stress, involving changes in the pattern of gene expression due to activation of stress-specific genes and to a general re-programming of genetic activity in the cell. A simple method for profiling differential gene expression is cDNA-amplified fragment length polymorphism (cDNA-AFLP). The technique of cDNA-AFLP is a powerful tool for analyzing gene expression related to environmental stresses. CDNA-amplified fragment length polymorphism (AFLP) was used to analyze differentially expressed genes in wheat varieties Tabassi, a drought-stress tolerant genotype and Taifun, a drought-stress sensitive genotype, under drought stress and normal condition. Using 32 AFLP primer combinations, a total of 3300 transcript derived fragments (TDFs) were detected. Over 61% of gene expression was not affected by drought stress in the two wheat genotypes. 1268 TDFs differentially expressed under stress and control conditions. Some genes showed genotype-specific patterns of up- or down-regulation in response to drought. More than 15% was regulated by drought stress in both genotypes, and less than 12% was specifically regulated in Tabassi or Taifun. 70 transcript-derived fragments was specifically expressed in Tabassi under drought stress, which can be considered as candidate genes for drought tolerance.

Keywords: Drought stress, cDNA-AFLP, wheat, transcript pattern