



Journal of Himalayan Life Sciences
Volume 1, Issue 1 (2021)

Genomics in drought stress tolerance for crop improvement

Purnima Sharma^{*}, Pardeep Kumar, Leena Thakur, Maneesha Devi, Pushpa Guleria and Neha Guleri

Department of Plant Sciences, School of Life Sciences, Central University of Himachal Pradesh, Kangra (H.P), India - 176206

*Corresponding author: purusharma184@gmail.com

Abstract: Drought stress is the leading cause of crop loss worldwide, accounting for the majority of abiotic stresses. Consequently, the only environment friendly solution available to breeders to combat this problem is to raise stress tolerant cultivars. Crop plant's genetic improvements could be brought by combining conventional plant breeding methods with cutting-edge molecular biology techniques. These both have made significant contribution to global agricultural production. Genomics is exploring many new study areas and playing a distinct role in improving standard of global crop produce in terms of quality and quantity. Three technologies namely genomics, DNA markers, and genetic engineering will undoubtedly speed up the crop improvement efforts around the world. Plant stress response involves activation of a series of stress-related genes and their regulation including interaction of several molecular networks. Several dehydration tolerant cultivars have been raised through combination of r-DNA technology, genomics and traditional breeding approaches. The main objective is to genetically engineer transgenic plants depending upon the different stress-responsive mechanisms. Therefore, genomics is a new advancement in the field of science crucial for solving the future food scarcity situations.

Key words: Genomics, Signal transduction, Drought tolerant transgenics.