# Transcriptional Profiling Reveals Adaptive Responses to Boron Deficiency Stress in *Arabidopsis*

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Boron (B) is a micronutrient for vascular plants, and B deficiency has been recognized as a limiting factor for crop production in many areas worldwide. To gain a better insight into the adaptability mechanism of plant responses to B starvation, an *Arabidopsis* whole genome Affymetrix GeneChip was used to evaluate global gene expression alterations in response to short- and long-term B deficiency stress. A large number of B deficiency-responsive genes were identified and grouped by their functions. Genes linked to jasmonic acid (JA) showed the most prominent response under B deficiency. The transcripts for biosynthesis and regulation of JA were constantly induced during short- and long-term B deficiency stress. A set of well-known JA-dependent process and responsive genes showed the same expression profile. This suggested that JA could be a pivotal player in the integration of adaptive responses to B deficiency stress. Moreover, other functional groups of B deficiency-responsive genes (including various encoding the biosynthesis of antioxidants, the basic components of $Ca^{2+}$ signalling, protein kinases, cell wall-modifying enzymes and proteins, $H^+$-ATPase, $K^+$ transporters, and a set of enzymes involved in central metabolism and cellular growth) were also observed, and their physiological roles under B deficiency stress are discussed. These results provide some information for a better understanding of plant-adaptive responses to B deficiency stress and potential strategies to improve B efficiency in crops.

*Key words: Arabidopsis*, Boron Deficiency Stress, Transcriptional Profiling