

**THESIS TITLE: CHARACTERIZATION OF TRANSCRIPTION FACTORS DREB4-2
AND SNAC1 IN RICE UNDER SOIL MOISTURE STRESS CONDITION**

Abstract

One of the severe constraints is to realize the high level of rice crop productivity in Indian agriculture has been due to soil moisture stress (SMS) situation that growing plants often face. To evade such a condition in rice farming, we looked for the potential of the ability to sustain amongst rice cultivars viz. *Oryza sativa L. ssp. IR20* and *Oryza sativa L. ssp. Vandana*. Likewise, we have been explored this potential in some grass family members viz. *O. nivara* and *O. rufipogon*. Keeping this in view, we had searched for the presence of variations in the allelomorphic forms of two transcription factor (TF) genes, viz; *DREB4-2* and *SNAC1*. These two TFs are known to play essential roles towards drought tolerance. Thus, we set out to characterize the different forms of these transcription factor genes present amongst cultivars and wild rice species in SMS condition. Some of the allelic forms of these two transcription factor genes along with their regulatory elements may contain variation amongst themselves. Their differences may directly be responsible for functional attributes towards conferring tolerance to SMS. Such characterization may keep in building resources for their ultimate use in molecular breeding to generate SMS tolerance in elite cultivars of rice like *OsIR20*.

Keywords: soil moisture stress, transcription factor, allele, cultivar