

## ABSTRACT

Environmental abiotic stresses such as high temperature have negative impacts on wheat production. Late planted wheat crop is often subjected to high temperature stress during grain filling period which leads to the decline in overall performance of the crop. Current field study was conducted to investigate the effect of various growth promoting substances as seed priming agents on wheat genotypes (Sarsabz and Khirman) under normal and late sowing conditions. The experiment was executed in a completely randomized design (CRD) with three replicates and four priming treatments. Distilled water, 2% CaCl<sub>2</sub> and 50ppm SA were used as seed priming solutions for 12 hrs. All the seed priming treatments gave better results as compared to control. Salicylic acid proved best in better establishment of seedling stand by reducing time required for E<sub>50</sub> and MET while enhancing EI and FEP. Growth parameters such as seedling biomass, plant height, leaf area and no. of tillers were increased by SA and CaCl<sub>2</sub> seed priming. Yield related traits (no. of spikes and spikeletes, spike length, grain weight per plant, 100-grain weight, harvesting and biological index) were also maximally enhanced by seed pre-conditioning with SA and CaCl<sub>2</sub> in both genotypes followed by hydropriming.

High temperature stress had reduced the physiological and biochemical attributes in late planted wheat as compare to the normal sowing. SA and CaCl<sub>2</sub> priming executed highest proline, total soluble sugars, RWC, chlorophyll contents and total phenolic contents in both Sarsabz and Khirman. Hydropriming gave maximum accumulation of glycine betaine contents and membrane thermo-stability. The results revealed that hydropriming, osmopriming with CaCl<sub>2</sub> and SA hormonal priming had significantly alleviated the damages of high temperature by inducing heat tolerance in both wheat genotypes. Overall, Sarsabz variety showed better crop performance under late sowing.