

Effect of Water Stress and Heat Stress on Crop Phenology, Yield and Yield Attributes of Rice (*Oryza Sativa* L.)

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ABSTRACT

The impact of water stress (Ws), high temperature (Ht) and combined water stress + high temperature stress (Ws+Ht) on phenological parameters, yield and yield attributes of four rice genotypes (Rasi, ADT43, N22 and Vandana) was studied. Plant height increased in response to Ht and reduced marginally in Ws and Ht+Ws. Compared to control, there was a decrease in the number of days to 50% flowering and days to maturity under Ht (10 and 14 days respectively) and Ht+Ws (11 and 16 days respectively). Ws, Ht and their interaction led to a reduction in grain yield and all the yield attributes. The reduction was higher in combined stress than individual stresses. Rasi recorded maximum panicle weight, number of grains panicle⁻¹ and filled grains panicle⁻¹ under all stress conditions. Filled grains panicle⁻¹ were low in MTU1001 under Ws, Ht and Ht+Ws. Spikelet fertility was maximum under Ws in Rasi and in Ht and Ht+Ws in N22 while, minimum was in Vandana under Ht and in MTU1001 under Ws and Ht+ Ws. The highest 1000 grain weight in Ws, Ht and Ht+Ws was in Rasi and the lowest in Ws was in MTU1001, in Ht and Ht+Ws in Vandana. In Ws, Ht and Ht+Ws maximum and minimum grain yield was noted in Rasi and Vandana respectively.

Key words: *High temperature, Rice, Spikelet fertility, water stress, yield.*