

## Effect of Phytohormones in Mitigating Terminal Heat Stress and Enhancing Seed Yield in Maize Hybrid COH (M) 8

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Maize is one of the leading crops in the world and is widely cultivated as a cereal grain. Heat stress is a main threat to current and future global maize production. Maize plants are sensitive to terminal heat stress and there is a strong decline in grain yield as plants face heat stress above the threshold level for a prolonged duration. Adaptation of maize to future warmer conditions requires improving our understanding of crop responses to elevated temperatures. Terminal heat stress negatively affects maize yield during the maize growing season. The present study was conducted in the high temperature zone at ARS, Bhavanisagar, Tamil Nadu, India with an aim of exposing the plants to high temperature during the flowering period to evaluate the influence of phytohormones on mitigating heat stress and improving pollen viability, seed set and seed yield of maize. These studies were carried out in the maize seeds COH(M) 8 for identifying the suitable phytohormone for alleviating terminal heat stress. The crop was foliar sprayed with various phytohormones such as salicylic acid @ 50 and 75 ppm, brassinolides @ 0.2 and 0.5 ppm and sodium nitroprusside @ 50 and 75  $\mu$ M at 40 and 47 days after sowing compared with control (No spray). The experimental trial was carried out with Randomized block design in three replications. The observations on seed yield attributes were recorded in ten randomly selected plants of each treatment. The significance of data was determined using the "F" test. critical differences (CD) were computed at a 5% probability level. The results of the study revealed that the maize crop foliar sprayed with sodium nitroprusside 50  $\mu$ M at 40 and 47 days after sowing improved the pollen viability and yield attributes viz., number of seeds/cob, 1000 seed weight and seed yield/ ha (kg) of maize under high temperature conditions when compared to control and other treatments. The foliar application of phytohormones induces high temperature stress tolerance in maize plants and could help the plants cope with terminal heat stress by scavenging reactive oxygen species, upregulation of antioxidant enzymes and protection of cellular membranes thus resulting in higher seed yield.

**Keywords:** Maize, Terminal heat stress, Phytohormones, Pollen viability, Seed yield.