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Physiological responses of nitric oxide applications on diverse crops grown under abiotic stress conditions

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Being a colorless low molecular weight gas molecule, NO plays an important role as a second messenger in biochemical and physiological processes in plants. Researchers determined that exogenous applications of NO molecules are involved in plant defense mechanism in addition to plant growth and development, germination, de-etiolation, chlorosis, and senescence mechanism. NO plays a crucial role in signal transduction and interacts with active oxygen species to inhibit lipid peroxidation in plants under stress conditions. Induction of oxidative properties by reacting with superoxide radicals, especially under drought stress conditions, indicates the potential antioxidant role of NO in plant metabolism. Therefore, it is important to determine the effect of nitric oxide application under stress conditions. Our research group has examined the physiological and biochemical effects of NO donor SNP on different plant species like wheat, rye, barley, maize, beans, soybean and watermelon under different abiotic stress conditions such as drought and salinity. The results of the study showed that NO applications in abiotic stress conditions were effective in suppressing reactive oxygen species and MDA levels, and also had positive effects on protective antioxidant activities that produced stress responses. These effects were more effective in case of wheat, barley, bean and soybean plants.

Biography

Mehmet Hamurcu has completed his PhD from Selcuk University, Konya, Department of Soil Science and Plant Nutrition in 2007. He is running a Physiology Laboratory in Konya (TR) within Selcuk University, Faculty of Agriculture. His study focused on abiotic stresses (drought, salinity, boron etc.), antioxidant activities, and reactive oxygen species of plants.

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