

PHYSIOLOGICAL AND BIOCHEMICAL MANIFESTATIONS OF SALICYLIC ACID IN RICE UNDER WATER STRESS CONDITION

Prabhasmita Shatpathy*, Manoranajan Kar, Surendra Pratap Singh¹ and Satendra Kumar²

Department of Plant Physiology, OUAT, Bhubaneswar, Odisha, India

¹ Central Rice Research Institute, Cuttack, Odisha, India

² Department of Soil Science, SVPUAT, Meerut, India

*Email: pshatpathy@yahoo.com

Abstract: Salicylic acid (SA) is a naturally occurring plant hormone of phenolic nature that has diverse effects on tolerance to abiotic stresses. It may act as endogenous signal molecule responsible for inducing abiotic stress tolerance in plants, especially water stress. An experiment was therefore, conducted with an aim to assess the role of exogenously applied SA in water stress tolerance of four different rice varieties. The pot culture was laid out in a completely randomized design (CRD) with three replications. Varieties were subjected to water stress at vegetative stage by withholding water application. The study revealed that moisture stress at vegetative stage is highly detrimental to most of the physiological and biochemical traits investigated in the current research. Drought caused a massive reduction in the basic physiological processes measured in terms of photosynthetic rate, stomatal conductance, transpiration rate, and chlorophyll stability index, but contrastingly, caused noticeable increase in proline accumulation. Foliar application of 100 ppm SA improved the plant growth by increasing the above stated parameters which were reduced due to moisture stress and helped the plants to overcome the adverse effects of water stress. The present finding envisaged that SA improved the drought tolerance of all the four rice cultivars particularly the sensitive ones. Therefore, it may be used as an ameliorant to alleviate the negative effect of drought injury in rice.

Key words: Rice, vegetative stage, water stress, physiological and biochemical traits

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