

A Study on the Influence of Salicylic Acid on Sub-Mergence Stress Recovery of Selected Rice Cultivars Grown in Kebbi State Northwest Nigeria

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Abstract : Submergence stress in plants refers to the physiological and biochemical challenges that occur when plants are partially or fully submerged in water. This type of stress primarily affects plants in flood-prone areas or regions with heavy rainfall, where oxygen availability and other essential resources are limited. Salicylic acid (SA) is an important plant hormone involved in various physiological processes and responses to environmental stress, particularly in plant defense mechanisms against pathogens. Its role as a signaling molecule in plants is crucial for activating defense pathways, regulating growth, and managing responses to biotic (living) and abiotic (non-living) stresses. The study involved using salicylic acid (SA) at concentrations of 1g/L, 2g/L, and 3g/L, dissolved in water, to treat rice plants during submergence stress. The experiment had four treatments: 0g/L (control), 1g/L, 2g/L, and 3g/L of SA, each with four replications. Rice seedlings were submerged in water for 11 days and then desubmerged for 7 days. During the experiment, all plants except the control received a foliar spray of SA solutions, while control plants were sprayed with distilled water. The results indicate a significant difference ($P < 0.05$) between the control and salicylic acid (SA)-treated rice plants. Salicylic acid, particularly at concentrations of 1g/L, 2g/L, and 3g/L, generally improved the recovery of all four rice cultivars from submergence stress, as reflected by increased numbers of nodes, longer internodes, taller plants, and longer root lengths compared to untreated controls. Salicylic acid, particularly at concentrations of 1g/L, 2g/L, and 3g/L, generally improved the recovery of all four rice cultivars from submergence stress, as reflected by increased numbers of nodes, longer internodes, taller plants, and longer root lengths compared to untreated controls.

Keywords : submergence, stress, rice, salicylic

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