EFFECT OF FOLIAR APPLICATION OF SALICYLIC ACID ON MITIGATION OF DROUGHT STRESS IN BORO RICE (*Oryza sativa* L.)

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Executive Summary

In rice, drought stress during the vegetative stage greatly reduces the plant growth and development. But, research work on mitigation of drought stress in rice crops by salicylic acid is scanty in Bangladesh. Based on the above mentioned circumstances, the present research work has been undertaken in order to fulfilling the following objectives, i) To evaluate the physiological and yield behavior of boro rice (*Oryza sativa* L.) under drought stress. ii) To develop a possible strategy in mitigating drought stress in rice using foliar application of salicylic acid. The experiment was conducted at the Research field of Sher-e-Bangla Agricultural University, Dhaka during the period from November, 2017 to May, 2018. The experiment consisted of two factorsviz A: Different level of SA: control, foliar application of SA (250 µM, 500µM, 750 µM and 1000 µM) and B: different level of drought stress: control (normal irrigation), moderate drought stress (water withheld from flowering stage to season end), severe drought stress (water withheld from panicle initiation stage to season end). The experiment was laid out in Randomized Complete Block Design (RCBD) with three replications. The highest plant height, number of leaves hill^{-1}, number of tillers hill^{-1}, dry weight hill^{-1}, leaf area index, relative water content (%), leaf membrane stability index, flag leaf chlorophyll content, thousand seed weight, number of filled grains panicle^{-1}, 1000 grain weight (g), straw yield, biological yield, harvest index were recorded from foliar application of SA @ 750 µM, significant influence was remarked in terms of all parameter with different level of drought stress of boro rice. Among the level of stress, the maximum grain yield was obtained from control. Interaction effect of salicylic acid and different level of drought stress was significantly influenced in all parameter. The maximum grain yield (12.01 kg hill^{-1}) was with foliar application of SA @ 750 µM with normal irrigation (control).So, it can be concluded that control showed the best performance but salicylic acid has positive effect to reduce the drought stress and increased the yield of rice with stress condition.

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