



## **Effect of Plant Bioregulators and Their Combinations on Growth and Yield of Wheat Under Sodicty Stress Induced by Alkali Water Irrigation**

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### **Abstract**

Exogenous applications of plant bio-regulators (PBRs) were evaluated during *rabi* of 2017-18 and 2018-19 for their efficiency to modulate growth and production processes in wheat grown in soils undergoing sodification. The PBRs included three sprays with either of gibberellic acid (GA, 25ppm), potassium nitrate (PN, 15g L<sup>-1</sup>), salicylic acid (SA, 10uM), thio-urea (TU, 500ppm), or in sequence of TU-PN-TU, GA-TU-PN and a mixture of TU+PN. These were sprayed at three stages i.e. tillering (30-40 days after sowing, DAS), jointing (60-70 DAS) and heading and spike emergence (90-100 DAS). The increase in grain yield equaled 20, 17, 11 and 9% with the application of TU-PN-TU, SA, PN, TU+PN mixture, respectively at site II while the crop responded (7-11%) to only TU and TU-PN-TU at Site-I. Similarly during 2018, the improvements in yield equaled 18, 12, 9, and 6% with SA, GA, GA-TU-PN and PN at Site I and 8-10% with SA, TU+PN mixture and TU at site II while the effects of other treatments were non-significant. On the basis of consistency, it emerges that the use of potassium nitrate, salicylic acid and thio-urea alone or in combination is a viable option for alleviating sodicity stress in wheat under alkali water irrigated conditions.

**Key words:** Bio-regulators, Alkali water, Sodic soil, Sodification, Wheat, Abiotic stress