

EFFICACY OF BIOREGULATORS ON PERFORMANCE OF TOMATO PLANT UNDER SUMMER SEASON OF BANGLADESH

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Executive Summary

Bioregulators are vital in controlling plant growth and development. High temperature is a severe environmental stressor that reduces crop yield. Tomato is one of the vegetable crops whose growth, physiology, and yields are highly affected by high temperature. Despite the importance of bioregulators in crop production, little information has been reported concerning the effects of 4-Chlorophenoxyacetic acid (4-CPA), Naphthalene Acetic Acid (NAA) and Gibberellic Acid (GA₃) during the summer season in Bangladesh. As a result, possible morpho-physiological and yield responses of summer tomato (BARI Hybrid Tomato-10) to bioregulators were investigated at the Central Research Farm of Sher-e-Bangla Agricultural University, Dhaka. In this study, the external application of 4-CPA, NAA and GA₃ was used to find the response of summer tomato under field condition in the summer season. The pot experiment was arranged under a Completely Randomized Design (CRD) containing three replications. The bioregulator concentrations consisted of control, 20 ppm 4-CPA, 40 ppm 4-CPA, 60 ppm 4-CPA, 10 ppm NAA, 20 ppm NAA, 30 ppm NAA, 20 ppm GA₃, 30 ppm GA₃ and 40 ppm GA₃. The different concentrations of bioregulators showed potential influence to enhance plant height (36.02%), number of branches plant-1 (50%), number of leaves plant-1 (50%), chlorophyll a content (46.95%), chlorophyll b content (27.97%), total chlorophyll content (38.49%), number of flower cluster plant-1 (67.02%), number of flower plant-1 (50%), number of fruits plant-1 (48.72%) and fruit weight plant-1 (64.18%) compared to control treatment. Among the bioregulators, 20 ppm NAA showed better result to reduce flower and fruit dropping of summer tomato. The findings of the study imply that bioregulators can be utilized as a protective agent to reduce the negative effects of high temperature on tomato growth and physiology, resulting in optimum yield.

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