



**Biochar-Assisted Amelioration of Saline Soil for Optimal Growth and Yield of Okra
(*Abelmoschus esculentus* (L.) Moench)**

**Biswajit Das^{1,2}, Md Jahid Hasan Jone², Kazi Md Younus Tanim¹, Humayun Kabir¹, Nadia Islam^{1,3},
Tarikul Islam¹, Akhinur Shila⁴ and Rayhan Ahmed^{1*}**

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Biswajit Das^{1,2}, Md Jahid Hasan Jone², Kazi Md Yunus Tanim¹, Humayun Kabir¹, Nadia Islam^{1,3}, Tarikul Islam¹, Akhinur Shila⁴ and Rayhan Ahmed^{1*}

¹Department of Agriculture, Noakhali Science and Technology University, Noakhali

²Department of Genetics and Plant Breeding, Bangladesh Agricultural University, Mymensingh

³Department of Agronomy, Bangladesh Agricultural University, Mymensingh

⁴Department of Agricultural Botany, Patuakhali Science and Technology University, Dumki, Patuakhali

Corresponding author:

Rayhan Ahmed

Assistant Professor,

Department of Agriculture, Noakhali Science and Technology University, Noakhali

Email: rayhan.rimon@gmail.com

ORCID: (0000-0003-2820-7890)

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ABSTRACT

Saline soil poses a significant challenge to agricultural productivity, particularly in coastal regions. In this study, a field experiment at the agriculture research field of Noakhali Science and Technology University, Noakhali was conducted where three doses of biochar were applied using RCBD with 3 replications in the soil to investigate the potential of biochar as a sustainable solution to enhance Okra growth and yield under saline conditions. To impose the salinity, 0.1M of NaCl solution were applied in each plot at the seedling stage. The findings demonstrated that the application of biochar significantly improves the growth and yield-contributing factors of okra. As the biochar dosage increased, notable increases in plant height, number of leaves per plant, lamina length, and petiole length were observed. Additionally, biochar-treated plants exhibited reduced time to first flowering (DAS), indicating enhanced early reproductive development. Chlorophyll content in okra leaves also showed a positive correlation with biochar application, suggesting improved photosynthetic efficiency and stress tolerance in saline conditions. Notably, biochar application positively influenced okra fruit characteristics. Higher biochar doses significantly increased the single fruit's length, diameter, and weight. Moreover, the number of fruits per plant and overall yield per plot were notably higher in biochar-treated plants. Among the various biochar doses tested, the 4 tons/ha treatment proved the most effective, resulting in remarkable improvements in all growth and yield parameters. The findings indicate that using biochar might help the farmers of the coastal region to mitigate the salinity problem.



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