International Journal of Agricultural Sciences
Volume 22 | Issue 1 | January, 2026 | 72-75 ■ ISSN : 0973-130X
DOI:10.15740/HAS/IJAS/22.1/72-75
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RESEARCH PAPER

Growth response of selected mangroves to biofertilizer inoculation in saline coastal soils of Thane creek and Ulhas river estuary

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Abstract : The present investigation was carried out along the Thane Creek (19°002 –19°152 N, 72°552 –73°002 E) and the adjoining Ulhas River estuary, Maharashtra, India, with the objective of assessing the growth performance of selected mangrove species under biofertilizer supplementation and evaluating their potential utility for farmers in coastal agroforestry systems. Three dominant mangrove species, *Avicennia marina*, *Rhizophora mucronata*, and *Sonneratia alba*, were raised under controlled nursery conditions and subsequently transplanted to the intertidal mudflats of the study area. Biofertilizers including *Azospirillum brasilense*, phosphate solubilizing bacteria (PSB, *Bacillus megaterium*), and arbuscular mycorrhizal fungi (AMF, *Glomus* spp.) were applied individually and in combinations. The experimental design comprised control and four treatment groups monitored for survival, height, biomass, and physiological parameters over 24 months. Results revealed that biofertilizer application significantly enhanced seedling growth, nutrient uptake, and survival under saline conditions. The combined treatment (Azospirillum + PSB + AMF) recorded the highest performance with up to 25% improvement in seedling height and 20% higher survival over control. The study concludes that biofertilizer-based interventions can be integrated with mangrove plantation programmes to promote sustainable coastal farming practices, soil health improvement, and climate resilience.

Key Words : Mangroves, Biofertilizers, Avicennia, Rhizophora, Sonneratia, Coastal agroforestry

View Point Article : Tak, Aasawari A.(2026). Growth response of selected mangroves to biofertilizer inoculation in saline coastal soils of Thane creek and Ulhas river estuary. *Internat. J. agric. Sci.*, **22** (1) : 72-75, **DOI:10.15740/HAS/IJAS/22.1/72-75.**

Article History : Received : 03.12.2025**; Accepted :** 07.01.2026