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**BIOSYNTHESIS OF RHIZOBACTERIAL BASED FERTILIZER AND THEIR EFFECTS ON GROWTH AND YIELD OF TOMATO USING ORGANIC CARRIER MATERIALS**

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**ABSTRACT**

Agriculture plays a huge role in meeting the food needs of a growing human population. This study was designed to synthesize rhizobacterial-based fertilizer and to evaluate its effect on the growth and yield of tomato using organic carrier materials. Using standard microbiological procedures, bacteria were isolated from rhizosphere soil. A total of 15 bacterial species were identified and were screened for plant growth-promoting abilities (phosphate solubilization, indole acetic acid production) and biocontrol abilities (hydrogen cyanide production, inhibition against phytopathogenic *Fusarium oxysporum*, and *Alternaria solani*) *in-vitro.* In the pot experiment, *Bacillus thuringiensis* AN10 and *Bacillus cereus* AN14 which were the most effective growth-promoting rhizobacteria were evaluated for growth and yield effect on tomato germination with and without a carrier material. The result revealed that treatments with varying nutrient compositions significantly improved the growth parameters (number of leaves, leaf area, and shoot height, and stem girth) of tomato plants when compared to the control. These improvements were replicated in the dry and wet weight of plants after harvesting. However, the effect of treatments on fruit weight showed that treatment *Bacillus thuringiensis* AN10 with carrier material (130.98 g) was significantly higher (>) than other treatments, *Bacillus thuringiensis* AN10 without carrier material (85.4 g) > *Bacillus cereus* AN14 with carrier material (83.78 g) > combination of *Bacillus thuringiensis* AN10 and *Bacillus cereus* AN14 with carrier material (74.2 g) > Carrier material only (67.16) > combination of *Bacillus thuringiensis* AN10 and *Bacillus cereus* AN14 without carrier material (66.12 g) > *Bacillus cereus* AN14 without carrier material (64.3 g) and the control (53.5 g). This study revealed that a microbial formulation of *Bacillus thuringiensis* AN10 with organic carrier material is a good biofertilizer that can significantly enhance tomato yield. Farmers need to use this cheap, safe, and effective biofertilizer to boost tomato production in Nigeria.