

**INVESTIGATING THE SYNERGISTIC EFFECTS OF COMBINATIONS  
OF EFFECTIVE MICROORGANISMS (EM-1) AND CONVENTIONAL  
INORGANIC FERTILIZERS ON THE GROWTH AND YIELD OF  
*Capsicum chinese* .L**



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## ABSTRACT

This study investigates the synergistic effects of combining Effective Microorganisms (EM) and conventional inorganic fertilizers on the growth and yield of *Capsicum chinense* L., commonly known as chili pepper. The primary objective was to determine whether the integration of EM, a sustainable agricultural practice, with inorganic fertilizers could enhance plant growth, improve soil fertility, and increase crop yield compared to using each treatment independently.

The experiment was conducted using a randomized complete block design (RCBD) with eight treatments: a control T1: 75% Chemical Fertilizer + EM-1, T2: 75% Chemical Fertilizer + EM-1 + Foliar Application, T3: 50% Chemical Fertilizer + EM-1, T4: 50% Chemical Fertilizer + EM-1 + Foliar Application, T5: 25% Chemical Fertilizer + EM-1, T6: 25% Chemical Fertilizer + EM-1 + Foliar Application, T6: 25% Chemical Fertilizer + EM-1 + Foliar Application, control: 100% chemical fertilizer. *Capsicum chinense* plants were monitored for key growth parameters, including plant height, leaf number, and stem diameter.

Results indicated that the combined application of EM and inorganic fertilizers significantly improved both growth and yield parameters compared to the control and individual treatments. The combination treatment led to an increase in plant height, leaf area, and overall biomass. Furthermore, there was a notable improvement in fruit yield, with the combined treatment producing a higher number of fruits with greater average weight. Soil analysis revealed enhanced nutrient availability and microbial activity in the plots treated with EM, suggesting that EM contributes to improved soil health and nutrient cycling.

In conclusion, the study demonstrates that the synergistic use of EM and inorganic fertilizers can be an effective strategy for improving the growth and yield of *Capsicum chinense* L. This approach holds promise for sustainable agriculture, offering a viable solution to increase productivity while maintaining soil health. Future research should explore the long-term effects of this combination on different crops and under various environmental conditions.

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