

بكتيريا الإندوفيت المذيبة للفوسفات و دورها فى تنشيط نمو نباتات الذرة  
عادل البلتاجى ، وفاء حنفى محمود و على عبدالمطلب

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## PHOSPHATE SOLUBILIZING ENDOPHYTIC BACTERIA AND THEIR ROLE IN MAIZE PLANT GROWTH PROMOTION

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**ABSTRACT:** *Phosphate solubilizing bacteria were isolated from maize roots and their beneficial effects on plant growth were studied. Among 9 isolates, 6 showed high phosphate solubilization efficiency. These isolates were investigated for maximum phosphate solubilization in regard to different pH and incubation periods. Results showed high solubilization efficiency at pH 7 and incubation periods between 6- 12 days. Based on solubilization levels, three isolates 4PC, 5PC and 6PC were selected and studied for their possible growth promoting potential for maize (Zea mays L.) in pot experiment. Plants sown in soil containing rock phosphate and inoculated with phosphate solubilizing isolates, recorded a significant increase in root length and plant height, fresh and dry weight of root and shoot as well as number of leaves / plant, photosynthetic pigments and N, P and K concentrations as compared to uninoculated plants. The isolate 6PC and 4PC exhibited better performance and therefore they identified based on 16S rDNA as Planococcus sp. and Bacillus cereus, respectively. This study showed that these isolates can be applied as phosphate solubilizers in the soil containing insoluble form of phosphate.*

**Key words:** *Phosphate solubilization, endophytes, maize, biofertilizer, Plant growth promoting bacteria.*

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***CHANGES DURING COMPOSTING OF ORGANIC WASTES AND  
ASSESSMENT OF COMPOST APPLICATIONS ON PEA (PISUM SATIVUM L.)  
GROWTH AND SOIL PROPERTIES***

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***ABSTRACT:***

This study was carried out to study the biological and chemical changes during composting process of compost consisted from different ratios of rice straw, animal manure and mature compost Also, the produced composts effects individual or in combination with mineral fertilizers at different application rates on pea growth and soil properties were studied. The results showed an increase in mesophilic bacterial counts at the beginning (0-15 days) and end (45-60 days) of composting process, and increase in spore forming and thermophilic bacteria at 15-30 days of composting. A decrease in C/N ratio, the content of organic carbon and increase in the content of total N, P, K were recorded throughout composting period. The composts that produced at 60 days, were rich in organic matter and mineral nutrients. Application of compost at a rate of 75% with 25% mineral fertilizer significantly increased growth and productivity of pea plants and improved the selected soil chemical and biological properties. The benefit of this compost demonstrated the validity and possibility of sustainable agronomic performance of pea plants using locally available recycled organic materials.

***Key words:*** Compost; Rice straw; Pea; Growth; Productivity.