

The Applications of Rhizobium spp Isolates From Various Rooting Zones of Legumes and Non-Legumes on Maize

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ABSTRACT

Rhizobium spp can associate indiscriminately with non-legume plants. *Rhizobium spp* can produce hormones and act as a phosphate solubilizer when associated with non-legume plants. The purpose of this study was to ascertain whether *Rhizobium spp* isolate could create IAA and dissolve phosphate as well as how different *Rhizobium spp* isolates from different root zones of legume and non-legume plants would affect maize plants. This study was initiated by selecting the ability of *Rhizobium spp* isolates to produce IAA hormones and dissolving phosphate which was carried out in the laboratory and then applied in the field using a Nonfactorial Complete Randomized Design (CRD) consisting of 6 levels of treatment with 4 replications. The results showed that all isolates of *Rhizobium spp* bacteria could produce IAA hormone which was indicated by the color change of the isolate to pink and could dissolve phosphate which was indicated by the presence of a halo zone around the isolates. The *Rhizobium spp* treatment showed a significant effect compared to the control treatment on plant height (150.09cm), stem diameter (2.18cm), root length (67.88cm), root fresh weight (95.04gram), and cob weight without husk (183.08 grams). Based on this study it is known that the application of *Rhizobium spp* bacteria can increase the availability of IAA and phosphate solvents in the soil which are positively correlated to the growth and production of corn plants.

Keyword: IAA hormone, Maize, Phosphate, *Rhizobium spp*