

Agronomic efficiency of simple and co-inoculation of plant growth-promoting bacteria in maize production⁽¹⁾

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Resumo — Maize (*Zea mays* L.) cultivation requires high doses of nitrogen and phosphate fertilizers, which can be supplemented with plant growth-promoting bacteria (PGPB). We aimed to evaluate the efficiency of simple inoculation and co-inoculation of *Azospirillum* sp. and *Bacillus* sp. in maize crops. We implemented the following treatments: (T1) Non-inoculated control (B0); (T2) Phosphate Solubilizing Inoculant PSI: formulated with *Bacillus subtilis* and *B. megaterium*; (T3) *Azospirillum* sp. (CMS1626); (T4) *Azospirillum* sp. (CMS2142); (T5) PSI+CMS1626; (T6) PSI+CMS2142, and (T7) PSI+CMS1626+CMS2142. These were tested in two agricultural harvests in the Sete Lagoas region. We used a randomized block experimental design with randomized blocks and three replicates. We evaluated productivity; nitrogen (N); phosphorus (P), and potassium (K) content in the grains. T7 showed significantly higher productivity in the first harvest than T3 and T4. In the second year, only T2 did not show higher productivity than the control. All treatments showed higher P accumulation than treatment T1 in the first year of the harvest. In the second year, significant N accumulation in grains was observed only in treatments T5 and T6. Furthermore, T7 in the first and second harvest years and T6 in the second harvest year exhibited higher P accumulation in the grains. Regarding treatments T2 and T3, co-inoculations with T5 and T7 led to a more significant P accumulation in grains in the first year and T6 and T7 in the second year. In the first harvest, all inoculations showed a response, with a more significant accumulation of K in the grains. However, in the second harvest, more significant K accumulation was observed only in treatments T5 and T6. These results underscore the benefits of co-inoculations over simple inoculations, such as increased nutrient accumulation, providing a solid foundation for future research and application in plant science.

Termos para indexação: *Zea mays* L., enzymatic activity, inoculants, *Azospirillum* sp., *Bacillus* sp.