

TITLE: RESPONSE OF CORN (*Zea mays*) TO COINOCULATION WITH THREE DIFFERENT SPECIES OF PLANT GROWTH-PROMOTING BACTERIA.

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ABSTRACT:

In the past decades, search for alternatives that can reduce costs, as well as environmental impacts of both agricultural and livestock sector has increased significantly. Hence the practice of coinoculating plants with plant growth-promoting microorganisms is an innovation in agriculture that has promoted sustainability in environmental, economic and social scales. Benefits of coinoculation to soybean are well known; but the efficiency of this technique has yet to be demonstrated on corn. The aim of this study was to evaluate the effects of coinoculation with three different species of plant growth-promoting bacteria on plant height, ear insertion height, shoot dry biomass and yield of corn. The experiment was carried on in Ponte Alta – SC, and sowing was on October 2016. The experimental design was randomized blocks with nine treatments and five repetitions. Treatments were: T1) control, with no nitrogen fertilization; T2) 75% of the recommended N fertilization (300 kg/ha); T3: 100% of the recommended N fertilization (400 kg/ha); T4) 75%N + *Azospirillum brasilense* at 100ml/60,000 seeds; T5: 75%N + *Pseudomonas fluorescens*; T6: 75% N + *Bacillus subtilis*; T7: 75% + *Azospirillum brasilense* and *Bacillus subtilis*; T8: 75% N + *Azospirillum brasilense* and *Pseudomonas fluorescens*; T9: 75% N + *Azospirillum brasilense*, *Bacillus subtilis* and *Pseudomonas fluorescens*. All inoculants were produced by the company Total Biotecnologia. Regarding vegetative growth, no statistical difference was observed among treatments according to the ANOVA. The highest mean of yield was promoted by Treatment 9 (15,103kg/ha). This value is 19% higher than the mean observed in T1 by 19% and also in T3 by 15%. Based on the conditions of this experiment, it is possible to state that coinoculation with *Azospirillum brasilense*, *Bacillus subtilis* and *Pseudomonas fluorescens* is a promising strategy to increase corn yield. By using this technique, producers may reduce nitrogen fertilization by 25% and still harvest 2,138 kg more grains per hectare.

Keywords: *Azospirillum*; *Bacillus*; *Pseudomonas*.

Development Agency: Total biotecnologia