

Resumo #27

Aprovado

THE EFFECTS OF PHYTOHORMONE PRODUCING DIAZOTROPH INOCULATION ON THE ROOT OF MAIZE SEEDLINGS

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Biological nitrogen fixation (BNF) has emerged as an important tool for the development of grasses sustainable agriculture. Currently, it is known that the advantages of using microbial inoculants with diazotrophic bacteria are not explained only by BNF. The production of auxins by these organisms has been associated to stimulatory effects on plant growth and root development. Therefore, the aim of this study was to select indole acetic acid (IAA) producing diazotrophs and evaluate their effects in maize seedlings roots. For this work, 93 diazotrophic strains were tested for IAA production. The IAA production ranged from 12 to 144 mg ml⁻¹ in culture medium supplemented with tryptophan (500 mg ml⁻¹) and 9 to 55 mg ml⁻¹ in culture medium without tryptophan. To evaluate the effects of bacterial inoculation in roots of maize seedlings, germinated seeds were inoculated with contrasting strains (3 of high IAA production and 3 of low IAA production) and grown under hydroponic controlled conditions. After 15 days of growth, samples were collected and analyzed. The parameters used for analysis were dry weight of roots and shoots and other root parameters (projected area, volume, length, diameter, apex length) measured by the WinRhizo program. The assessment of these parameters indicated that the strains capable of producing high concentrations of IAA induced a negative effect on root development and, consequently, seedling growth. Similar results were found by other authors, where strains that produce IAA at concentrations above 40 mg ml⁻¹ showed suppressive effects on seedling growth of rice and wheat, under hydroponic conditions. From these results, we can conclude that IAA production increased with the availability of tryptophan and that the benefits of the inoculation with IAA producing diazotrophs are associated with phytohormone concentration produced by bacterial strains, under hydroponic conditions.

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