Amplification of 1-amino-cyclopropane-1-carboxylic (ACC) deaminase from plant growth promoting rhizobacteria in Striga-infested soil

Abstract:

Experiments were conducted in pots to determine the growth effect of different rhizobacteria on maize under Striga hermonthica infestation. Three bacteria were selected based on their plant growth promoting effects. Whole bacterial cells of the rhizobacteria were used to amplify 1-amino-cyclopropane-1-carboxylic acid (ACC) deaminase gene by polymerase chain reaction (PCR). Each bacterial inoculation increased agronomic characteristics of maize although not always to a statistically significant extent. The extent of growth enhancement differs between the isolates. Enterobacter sakazakii 8MR5 had the ability to stimulate plant growth, however in the PCR study, ACC deaminase was not amplified from this isolate, indicating that not all plant growth-promoting rhizobacteria contain the enzyme ACC deaminase. In contrast, an ACC deaminase specific product was amplified from Pseudomonas sp. 4MKS8 and Klebsiella oxytoca 10MKR7. This is the first report of ACC deaminase in K. oxytoca.