DIAZOTROPHIC MICROORGANISMS OF SUGARCANE INFLUENCE THE HOST PLANT SELECTION OF *Diatrea Saccharalis*: METABOLOMICS AND VOLATILE ORGANIC COMPOUNDS (VOCS)

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In the agriculture it is essential to adopt management strategies with low environmental impacts. In this context, the roots environment is of outmost importance, since they are in constant contact with microorganisms such as growth promoting rhizobacteria (RPCPs), known to affect metabolism and the resistance of plants. This may help them to deal with biotic and abiotic stresses via growth promotion, inducing resistance, production of phytohormones, volatile organic compounds (VOCs) and nitrogen fixation. This study was based on the hypothesis that the RPCPs can promote plant resistance to insect herbivores. The aim was to evaluate the influence of both strains of RPCPs (*Gluconacetobacter sp.* and *Azospirillum sp.*) in the metabolome of sugarcane and the influence in plant defence mechanism against *Diatraea saccharalis*. The host preference behaviour was investigated using a two-choices arena. In order to assess the caterpillar relative growth rate a non-choice feeding bioassay was performed. The volatile organic compounds (VOCs) were collected from both plant treatments and identified using gas chromatography coupled mass spectrometry (GC-MS). The metabolomic analysis was performed using NMR techniques. The sugarcane borer showed a preference for the control plants avoiding the inoculated plants. There was no difference in caterpillars feeding between treated and control plants. There was a general suppression VOCs identified in plants associated with bacteria.In the metabolomic analysis, inoculated plants presented carbohydrates, aromatic compounds, amino acids and organic including the defense metabolite gallic acid. The results suggest that *Gluconacetobacter sp.* and *Azospirillum sp.* can promote resistance and make the sugarcane less attractive to Diatraea saccharalis. The changes in the VOCs profiles and the metabolome may be one of the mechanisms involved.