

1-AMINOCYCLOPROPANE-1-CARBOXYLIC ACID (ACC)-DEPENDENT PRODUCTION OF ETHYLENE IN TWO PAKISTANI SOILS

Zill-i-Huma Nazli, Baby Shahroona**, Zahir A. Zahir**,
Muhammad Khalid** and Muhammad Arshad***

ABSTRACT

1-Aminocyclopropane-1-carboxylic acid (ACC) has been identified as an intermediate in methionine-derived ethylene (C_2H_4) biosynthesis in higher plants. This study was designed to assess the effectiveness of ACC as an C_2H_4 -precursor in soil. Gas chromatographic analysis indicated that amendment with ACC (up to 10 mM) stimulated the biosynthesis of C_2H_4 in two Pakistani soils. Results also revealed that substrate (ACC)-dependent C_2H_4 production was inhibited when the soils were amended either with glucose (as a C source), NH_4NO_3 (N source) or antibiotics. The ACC-derived C_2H_4 biosynthesis in both soils was maximum when the soil suspension was amended with 10 mM substrate and incubated at pH 7.5 for a period of 120 h at 35 °C under shaking (120 rpm) conditions. Comparison of soils revealed that C_2H_4 production was relatively greater in a silty clay loam S_1 (containing 1.15% organic C) soil compared to a loamy S_2 (containing 0.54% organic C) soil.

Key words: Ethylene, 1-Aminocyclopropane-1-carboxylic acid, soil, factors.