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PROMOTION OF PLANT GROWTH BY SOIL BACTERIA THAT REGULATE PLANT ETHYLENE LEVELS

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A mechanism used by many soil bacteria to promote plant growth is the production of the enzyme 1-aminocyclopropane-1-carboxylate (ACC) deaminase which cleaves plant-produced ACC, lowering the level of ethylene in the plant allowing it to be more resistant to environmental stresses including phytopathogens, extremes of temperature, high salt, flooding, drought, exposure to metals and organic contaminants, and insect predation. ACC deaminase-containing *Rhizobia* spp. are also more efficient at nodulating their legume hosts than are strains that lack this enzyme. A wide range of studies using different plants and soil bacteria will be discussed in the context of a previously proposed model for the functioning of ACC deaminase-containing bacteria. In addition, plant genes that are expressed as a consequence of the interaction with ACC deaminase-containing soil bacteria, and some of the bacterial regulatory factors involved will also be discussed.