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(54) Title: ENHANCED DIAZOTROPHIC MICROORGANISMS FOR USE IN AGRICULTURE

(57) Abstract: The disclosure relates to genetically modified microorganisms of the genus *Paenibacillus*, for the improvement of phenotypes of plants, for example nitrogen availability for non-leguminous plants. Included are novel strains of the microorganisms, microbial consortia, and agricultural compositions comprising the same. Furthermore, the disclosure teaches methods of utilizing the described microorganisms, microbial consortia, and agricultural compositions comprising the same, in methods for imparting beneficial properties to target plant species. In particular aspects, the disclosure provides methods of increasing desirable plant traits in agronomically important species, for example nitrogen fixation, utilization, regulation, uptake, acquisition, tolerance, and/or processing in plants.

