

Engineering cyanobacterial nitrogen bio-fertilizer for rice cultivation in stressful environment

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As a naturally abundant, photosynthetic, nitrogen-fixing microbe, the cyanobacterium *Anabaena* contributes significantly to the nitrogen and carbon economy of tropical soils, especially in cultivation of rice paddy. However, its nitrogen bio-fertilizer potential is adversely affected by common abiotic stresses. Engineering enhanced nitrogen fixation and stress tolerance capabilities in this microbe through genetic manipulation is seriously limited due to the unavailability of appropriate tools and techniques and knowledge of suitable candidate genes. In recent years, our laboratory has devised an electroporation protocol for genetic

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