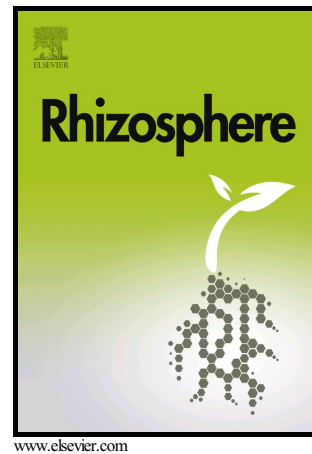


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Co-inoculation with endophytic and rhizosphere bacteria allows reduced application rates of N-fertilizer for rice plant (*Oryza sativa* L.)

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Abstract

This study was carried out to determine whether decreased rates of chemical N-fertilizer (25, 50, and 75 % of the full recommended fertilizer rate) coupled with rhizosphere (*Pseudomonas putida* REN₅) and endophytic (*Pseudomonas fluorescens* REN₁) bacteria as co-inoculation and single-inoculation would result in rice plant growth and nutrient uptake level (N), which be equivalent to those with full rates of the fertilizer under *in vitro* and greenhouse conditions. The results of this research indicated that supplementing 75% of the recommended N-fertilizer rate with bacterial isolates only as co-inoculation resulted in increase of rice growth indices (root and stem height, root fresh weight and shoot dry weight, and root branching), and N content, which were statistically equivalent to the full fertilizer rate without these isolates. In other word, co-inoculation with these isolates decreased application rate of N-fertilizer up to 25% under *in vitro* and greenhouse conditions. In

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