

Benjamas Rossopa 2010: Diversity of N<sub>2</sub> - Fixing Endophytic Bacteria from Rice Roots.  
Master of Science (Soil Science), Major Field: Soil Science, Department of Soil Science.  
Thesis Advisor: Assistant Professor Kannika Sajjaphan, Ph.D. 96 pages.

A total of 260 nitrogen fixing endophytic bacteria were isolated from rice roots of different varieties of rice in the greenhouse and Suphanburi Rice Experimental Station. UPGMA analysis using simple matching binary coefficient of antibiotic resistance patterns, carbon source utilization and morphology indicated that the isolated bacteria could be categorized into 18 groups, with a maximum similarity value of 78%. Complex fingerprint patterns were obtained for 50 isolates studied. 40 isolates carried *nifH* gene. Diversity of the representative bacteria was assessed by RFLP technique (restriction fragment length polymorphism). Restriction digestion with the enzymes *HahI*, *HpaII*, *HaeIII*, *MboI*, *RsaI* and *HinfI*. The results indicated that the isolated bacteria could be categorized into 14 groups, with a maximum similarity value of 100%. Sequence analysis of PCR product indicated the 16S rRNA gene in strain *Bradyrhizobium yuanmingense* strain TTB5, *Bradyrhizobium* sp., *Azorhizobium caulinodans*, *Burkholderia cepacia* strain BEB17, *Burkholderia vietnamiensis* and Uncultured bacterium with 78%, 93%, 99%, 94%, 94% and 99% sequence similarity respectively. Nitrogenase activity of these bacteria range from 0.204-1.138 nmol C<sub>2</sub>H<sub>4</sub>·H<sup>-1</sup>·tube<sup>-1</sup>.

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