



Isolation and Identification of Nitrogen Fixing and Indole Acetic Acid Producing Bacteria from Oil Plantation in Jambi, Indonesia

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Abstract: Plant associated nitrogen fixing bacteria have been considered as one of the possible alternative for inorganic nitrogen fertilizer for promoting plant growth and yield. The research was conducted to isolate and identify of nitrogen-fixing bacteria which produced 3-indole acetic acid (IAA) from transformation forest such as oil palm in Jambi, Indonesia. IAA production is a major property of rhizosphere bacteria that stimulated and facilitate plant growth. Seven isolates bacteria were obtained from 10 soil samples. All isolates could produce IAA and did not cause a necrotic on tobacco leaves. Phylogenetic analysis showed that isolates ITJ.2, ITJ.7 and ITJ.9 closely related to *Beijerinckia fluminensis* strain UQM 1685, isolate ITJ.3 closely related with *Ensifer adhaerens* strain NBRC 100388, isolate ITJ.4 closely related with *Microbacterium* sp. ST2, isolate ITJ.5 closely related with *Caulobacter segnis* strain ATCC 21756 and isolate ITJ.6 closely related with *Rhizobium grahamii* strain CCGE 502. In conclusion of the study all isolates had a promising potency as biofertilizer.

Keywords: *Indole acetic acid, nitrogen fixation, oil palm plantation.*

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