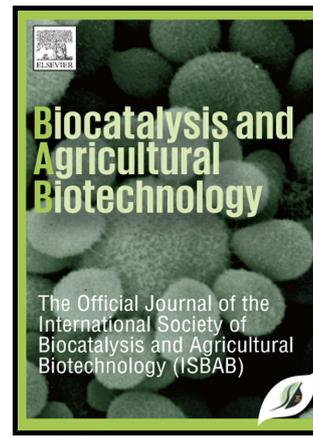


## Author's Accepted Manuscript

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[www.elsevier.com/locate/bab](http://www.elsevier.com/locate/bab)

PII: S1878-8181(18)30200-7  
DOI: <https://doi.org/10.1016/j.bcab.2018.07.026>  
Reference: BCAB824

To appear in: *Biocatalysis and Agricultural Biotechnology*

Received date: 4 March 2018  
Revised date: 17 July 2018  
Accepted date: 17 July 2018

Cite this article as: Surajit De Mandal, Sambanduram Samarjit Singh and Nachimuthu Senthil Kumar, Analyzing plant growth promoting *Bacillus* sp. and related genera in Mizoram, Indo-Burma biodiversity Hotspot, *Biocatalysis and Agricultural Biotechnology*, <https://doi.org/10.1016/j.bcab.2018.07.026>

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**Analyzing plant growth promoting *Bacillus* sp. and related genera in Mizoram, Indo-Burma biodiversity Hotspot**

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**ABSTRACT**

Mizoram, a state of Northeast India is known as biodiversity hotspot having a large forest cover area of the total land. There are studies on fauna and flora of Mizoram, but no reports are available on plant growth promoting (PGP) bacillus species. Present study analysed the genotypic diversity and phylogenetic relationships among PGP *Bacillus* spp. and related genera isolated from the pristine forests from Mizoram. A total of 31 morphologically identified *Bacillus* and related isolates were screened for PGP traits. Nineteen *Bacillus* sp. was identified as potential strains which were further processed for quantitative estimation of phosphate solubilization and Indole acetic acid (IAA) production. Quantitative test using the potential PGP strains showed that the concentration of the soluble P were between 47.73 - 156.83 µg/ml whereas the concentration of the IAA was highest in PG36 (10.23 µg/ml) and lowest in PG16 (2.88 µg/ml). The highest soluble P production was present in the strain PG36 (156.83 µg/ml). Molecular phylogenetic study based on 16s rRNA assigned them under the genus *Bacillus* with maximum similarity with *Bacillus thuringiensis*, *Paenibacillus* sp., *B. cereus*, *Lysinibacillus fusiformis*, *L. xylanilyticus* and *B. megaterium*. PCR screenings were performed for PGP related genes involved in the biosynthesis of acid phosphatase (*AcPho*) and 1-aminocyclopropane-1-carboxylate deaminase (*accd*) and seven isolates were gave an amplified fragment for *AcPho* & *accd* gene. The *Bacillus* species with different multifunctional PGP capabilities, and genetic

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