

UJI SILANG BAKTERI PEMBENTUK BINTIL AKAR LEGUM DARI
LAHAN PEKARANGAN TERDAMPAK
ERUPSI MERAPI

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INTISARI

Legum Nodulating Bacteria (LNB) telah diketahui selektif membentuk bintil akar dengan tanaman legum. Penelitian ini bertujuan menguji kemampuan 27 isolat LNB membentuk bintil akar pada 6 tanaman legum yaitu *Medicago sativa*, *Pisum sativum*, *Phaseolus vulgaris*, *Glycine max*, *Arachis hypogea* dan *Macroptilium atropurpureum*). Penelitian dilakukan dengan rancangan acak lengkap, menggunakan metode *plastic pouch* untuk uji inokulasi silang, dengan 3 ulangan. Berdasarkan hasil uji inokulasi silang terdapat 4 isolat yang mampu membentuk bintil akar pada *Glycine max* yaitu LNB 8, LNB 9, LNB 25, LNB 27 dan hanya LNB 25 yang mampu membentuk bintil akar pada *Macroptilium atropurpureum*. Tidak satupun isolat mampu membentuk bintil akar pada *Medicago sativa*, *Pisum sativum*, *Phaseolus vulgaris* dan *Arachis hypogea*. Aktivitas nitrogenase tertinggi ditunjukkan oleh isolat LNB 25 pada *Macroptilium atropurpureum* ($0.0087 \text{ mmol N}_2 \text{ g bintil}^{-1} \cdot \text{jam}^{-1}$) dan yang terendah ditunjukkan oleh isolat yang sama pada *Glycine max* ($0.0004 \text{ N}_2 \text{ g bintil}^{-1} \cdot \text{jam}^{-1}$). Diameter bintil akar berkorelasi positif dengan berat basah dan berat kering pada nilai koefisien korelasi secara berurutan 0,9 dan 0,8. Aktivitas nitrogenase pada bintil akar berkorelasi negatif dengan diameter bintil, jumlah bintil, berat kering dan berat kering bintil akar.

Kata kunci : LNB (*Legum Nodulating Bacteria*), bintil akar, kelompok inokulasi silang

CROSS INOCULATION TEST OF LEGUM NODULATING BACTERIA IN SOIL AFFECTED BY MERAPI MOUNT ERUPTION

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ABSTRACT

Legume Nodulating Bacteria (LNB) are known selectively to form root nodules on leguminous plants. The purpose of this study was to test the ability of 27 LNB isolates in producing root nodule on six legumes : *Medicago sativa*, *Pisum sativum*, *Phaseolus vulgaris*, *Glycine max*, *Arachis hypogea* and *Macroptilium atropurpureum*. This research was conducted with a completely randomized design, using plastic pouch for inoculation test cross, with three replications. Based on the results of the cross inoculation test, none among the twenty seven isolates were capable to nodulate *Medicago sativa*, *Pisum sativum*, *Phaseolus vulgaris* and *Arachis hypogea*. On the other hand, LNB 8, LNB 9, LNB 25 and LNB 27 isolates were capable to nodulate *Glycine max*, and only LNB 25 was able to nodulate *Macroptilium atropurpureum*. Acetylene reduction assay showed that *Macroptilium atropurpureum* nodulated by LNB 25 gave the highest result of nitrogenase activity ($0.0087 \text{ mmol g nodule N}_2^{-1} \cdot \text{hour}^{-1}$) and the lowest shown by *Glycine max* which was nodulated by LNB 25 ($0.0004 \text{ g nodule N}_2^{-1} \cdot \text{hour}^{-1}$). Diameter of root nodule has positive correlation with fresh weight and dry weight of root nodule with correlation coefficient respectively 0.9 and 0.8. There were negative correlation between nitrogenase activity with nodule diameter, nodule number, fresh weight and dry weight of root nodules.

Key words : LNB (Legum Nodulating Bacteria), root nodules, cross-inoculation group