

*Exploration and Identification of Rhizobium spp. From Different Root Zones of Legumes and Non-Legumes*

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**ABSTRACT**

*This research purposed to isolate and characterize Rhizobium spp. from various legume and non-legume root zones in the highlands and lowlands. This research was conducted for 3 months from May 2022 to July 2022. This research was carried out in 2 stages where the first stage was taking root zone soil samples carried out in lowland (106 mdpl) and highland (440 mdpl) lands, and the second stage isolation and characterization were carried out at the Jember State Polytechnic Bioscience Laboratory. In this study there were 15 soils in the root zone where 10 soils in the lowland root zone consisted of legumes (soybeans, string beans, ornamental beans, peanuts, cowpeas, edamame), non-legumes (sugarcane, sorghum, rice, and corn). While in the highlands, there were 5 plant samples consisting of legumes (peanuts, long beans, ornamental beans), non-legumes (rice and corn). The root zone soil sample was then taken to the lab for isolation. The data were analyzed quantitatively and qualitatively, quantitative data was carried out by counting the number of colonies using the TPC (Total Plate Count) method. Qualitative data obtained were gram staining, bacterial growth speed, bacterial morphology and observations. bacterial purity. The results of this study indicate that in the root zone of legumes and non-legumes, each sample can be collected and identified as the type of bacteria Rhizobium spp. which is shown in milky white color, and pink after culturing in YEMA + Congo Red selection medium, yellow when cultured in YEMA + BTB selection medium, has a gram negative gram satining result. And the results of the number of stray colonies in the lowlands were on non-legume sorghum plants  $2.58 \times 10^4$  CFU/g soil, while the highlands in the rice root zone soil were  $1.55 \times 10^4$  CFU/g soil.*

*Keywords: Rhizobium spp., Root zone, Legumes, Non-Legumes.*