

# **APPLICATION OF *Rhizobium spp* BACTERIA AND GOAT MANURE FERTILIZER ON SORGHUM PLANTS (*Sorghum bicolor L.*)**

*Supervised by Tirta Wahyu Widodo S.P.,M.P*

**Indra Jaya Perkasa**

*Study Prog of Food Crop Production Technology*

*Majoring of Agriculture Production*

## **ABSTRACT**

Rhizobium spp bacteria can be associated with non-legume plants, one of which is sorghum. Increasing the potential for Rhizobium spp in association with sorghum can be done by adding organic materials such as goat manure. This research aims to examine the influence of Rhizobium spp. from various root zones by adding various doses of goat manure fertilizer to sorghum plants. This research was designed using a factorial completely randomized design (CRD) consisting of two factors and three replications. The first factor consisted of control treatment (without Rhizobium spp), Rhizobium spp in the rice root zone, Rhizobium spp in the corn root zone, Rhizobium spp in the edamame root zone, Rhizobium spp in the soybean root zone, and Rhizobium spp in the peanut root zone. The second factor is the dose of goat manure fertilizer which consists of 140 g/polybag, 210 g/polybag, and 280 g/polybag. Based on the research results, Rhizobium spp had a significant effect compared to the control (without Rhizobium spp) on plant height, number of leaves and stem diameter. Rhizobium spp can associate with non-legume plants through the production of the hormone IAA and increasing root absorption capacity. Rhizobium spp from the non-legume root zone had a significant effect compared to Rhizobium spp from the legume root zone on plant height (210 cm), number of leaves (17), and stem diameter (34.17 mm). This is thought to be because Rhizobium spp. from the non-legume root zone it is easier to adapt to the sorghum root zone. Rhizobium spp from the non-legume root zone (graminae) with 280 g goat manure/polybag had a significant effect on stem diameter (34.17 mm). The addition of organic materials can improve bacterial performance because they can be used as a source of carbon and energy. Rhizobium spp can be used as an alternative method to increase the production of non-legume crops.

Keywords: Organic Fertilizer, Rhizobacteria, Rhizosphere.