

***Effect of Rhizobium spp. and Various Doses of Azolla Compost on Sorghum  
(Sorghum bicolor L.) Plant Growth***  
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***ABSTRACT***

The demand for wheat flour in Indonesia continues to increase with wheat imports reached 3,707 tons. Efforts to reduce wheat imports can utilize sorghum as a substitute, however sorghum production has only increased by 1,581 tons in the past five years, necessitating to increase sorghum production can be done through use of *Rhizobium spp.* and azolla compost. This study aimed to examine effect of *Rhizobium spp.* from various rhizosphere with addition of various doses of azolla compost on sorghum. This study used a factorial complete randomized design (CRD) consisting of two factors and three replications. The first factor was treatment without *Rhizobium spp.* (control), *Rhizobium spp.* from rice rhizosphere, corn rhizosphere, edamame rhizosphere, soybean rhizosphere and peanut rhizosphere. The second factor was doses of azolla compost 35 g, 50 g and 65 g. Based on the results, *Rhizobium spp.* from corn rhizosphere with 35 g azolla compost had a significant effect on plant height (162.83 cm). Addition of organic matter can improve performance of bacteria because it can be source of carbon and energy. Application of *Rhizobium spp.* had a significant effect compared to the control on plant height (156.06 cm), stem diameter (2.61 cm) and leaf chlorophyll content (52.35). *Rhizobium spp.* can associate with non-legume plants through production hormone (IAA) and increase root absorption. *Rhizobium spp.* from non-legume rhizosphere had a significant effect compared to *Rhizobium spp.* from legume rhizosphere on plant height (160.92 cm). This was thought because *Rhizobium spp.* from non-legume rhizosphere was more adaptable to sorghum rhizosphere. *Rhizobium spp.* can be an alternative method in increasing production of non-legume crops.

***Key words*** : IAA hormone, Rhizobacteria, Organic Compost, Rhizosphere