

ABSTRACT

Faradiva Zahra Maharani. 24020120130072. **Growth and Production of Mungbean (*Vigna radiata* L. var. Vima 4) in Sand Soil with Compost and Humic Acid Addition at Different Level of Water Availability.** Department of Biology, Faculty of Science and Mathematics, Diponegoro University, under the guidance of Endang Saptiningsih and Sri Widodo Agung Suedy.

Volcanic sand has a low water-holding capacity. The prospect of applying organic amendments are to improve the sand soil structure and increase the soil plant-available water. Plant have a vary responses to soil water content, especially drought tolerant plant like mungbean. The aim of this study was to understand the mungbean (*Vigna radiata* L. var. Vima 4) growth and production in sand soil with compost and humic acid addition at different level of water availability. The experiment was conducted at greenhouse in a Completely Randomized Design with factorial treatment, using 6 combinations and 3 replicates. The first factor was soil mixtures, consisted of sand, sand-compost, and sand-humic acid. The second factor was soil water content level, consisted of 80% and 50% field capacity (FC). The parameters measured were soil water content, root length and amount, plant height, leaf area, and biomass allocation. The result showed that compost and humic acid addition had increased the soil water content in FC as 30,49% and 16,62%, compared to sand soil which is only 13,76%. The highest number of root were showed in sand-humic acid 80% FC. The maximum leaf area were recorded in sand 80% FC (128,19 cm²) followed by sand-humic acid 80% FC (111,42 cm²). The largest biomass allocation is in the pod, with the highest in sand 80% FC (1,24 g) subsequently in sand-humic acid 80% FC (1,15 g). Compost and humic acid addition in sand soil at different level of water availability had varying effects on the growth and production of drought tolerant plant like mungbean. Sand 80% FC showed the best growth and production of mungbean.

Keywords: Sand, compost, humic acid, growth and production, *Vigna radiata*