Abstract
There are some evidences that malaria cases in Indonesia have been resistant to chloroquine therapies. Artemisinin Combination Therapies (ACT) have been used as a frontline treatment of malaria in Indonesia. However in order to apply effective treatments such problems as poor quality, availability, and sufficient production of anti-malarial drugs are faced. Most artemisinin is extracted from an annual herb *Artemisia annua* L. but the cultivation in Indonesia is limited by the low yield of the artemisinin content that is not economically beneficial to industry. Improvement on cultivated varieties and cultivation techniques is therefore needed. This work aims to improve the cultivation techniques by evaluating the application effects of NPK, manure, and VMA on the artemisinin yield of *A. annua*. The experiment was set using a Split Split Plot Design involving three factors. First factor was the application of four dosages of NPK (0 kg ha-1 as a control; 40:40:40 kg ha-1; 80:80:80 kg ha-1; and 120:120:120 kg ha-1). Second factor was manure addition (using 0 ton ha-1 and 150 tons ha-1). Third factor was the application of mycorrhiza (0 g plant-1 and 15 g plant-1). The experiment was divided into three different groups based on the seed sources (Bandung, Cibodas, and Tawangmangu plants) using similar treatments. The results showed that the plant growth (Relative Growth Rates/RGR of plant heights and number of branches), leaf yield, and total plant biomass were much affected by NPK. The addition of manure has less significant effect on those parameters. Only VMA seems to influence the artemisinin content. The highest artemisinin yield (5 kg ha-1) was relatively low when compared to the production in USA, China, and Brazil. However the result shows that a low fertilizer input of 40:40:40 kg NPK ha-1 and an inoculation of VMA were recommended for cultivating *A. annua* resulting a significantly high yield of artemisinin.