

Dyah Erinawati. 2018. Pengaruh Frekuensi Pemberian Pupuk Hayati dan Konsentrasi Kompos terhadap Pertumbuhan dan Produktivitas Tanaman Kedelai (*Glycine Max* (L) Merr). Skripsi ini dibimbing oleh Dr. Ni'matuzahroh dan Prof. Dr. Ir. Tini Surtiningsih, DEA. Departemen Biologi Fakultas Sains dan Teknologi, Universitas Airlangga, Surabaya.

ABSTRAK

Penelitian ini bertujuan untuk mengetahui pengaruh variasi frekuensi pemberian pupuk hayati, pengaruh variasi konsentrasi kompos dan pengaruh kombinasi variasi pemberian frekuensi pupuk hayati dan konsentrasi kompos terhadap pertumbuhan dan produktivitas tanaman kedelai (*Glycine max* (L) Merr). Penelitian ini merupakan penelitian eksperimental dengan rancangan acak lengkap (RAL), penelitian ini terdiri atas 17 perlakuan dengan frekuensi pemberian pupuk hayati yaitu 1 kali, 2 kali dan 3 kali dengan konsentrasi 5 mL, konsentrasi pupuk kompos yaitu 18 g, 27 g dan 36 g, kombinasi variasi pupuk hayati dan konsentrasi kompos, K- (tanpa pemberian pupuk hayati dan kompos) dan K+ (pemberian pupuk kimia). Pengulangan perlakuan sebanyak 3 kali dan setiap pengulangan terdiri atas 5 tanaman. Data dianalisis menggunakan uji Anova (*Analysis of Varians*) dengan derajat signifikansi 0,05 untuk data homogen dan normal dan uji *Brown Forsythe* dengan derajat signifikansi 0,05 untuk data homogen dan tidak normal. Hasil perlakuan menunjukkan bahwa pada variasi frekuensi pemberian pupuk hayati berpengaruh pada panjang akar, hasil optimal pada perlakuan FH1K0 dengan rerata tinggi tanaman 48.99 ± 10.39 cm/tanaman, berat bintil akar 1.56 ± 0.41 g/tanaman, panjang akar 28.33 ± 5.05 cm/tanaman, jumlah polong 87.73 ± 32.82 buah/tanaman, berat kering biji 22.95 ± 9.79 g/tanaman dan berat kering biji per 100 biji 11.46 ± 0.76 g/100 biji, sedangkan pada perlakuan FH2K0 pada perlakuan berat basah tanaman 72.53 ± 18.42 g/tanaman. Pada variasi konsentrasi kompos berpengaruh terhadap semua parameter pertumbuhan dan produktivitas tanaman kedelai kecuali panjang akar dan berat kering biji, hasil optimal pada perlakuan FH0K1 pada berat kering biji 24.21 ± 9.36 g/tanaman, perlakuan FH0K2 pada perlakuan berat bintil akar 2.68 ± 0.79 g/tanaman, panjang akar 24.87 ± 3.36 cm/tanaman dan berat kering biji per 100 biji 11.89 ± 1.01 g/100 biji, sedangkan pada perlakuan FH0K3 pada tinggi tanaman 57.47 ± 16.63 cm/tanaman, berat basah tanaman 83.98 ± 23.77 g/tanaman dan jumlah polong 95.73 ± 21.29 buah/tanaman. Kombinasi variasi frekuensi pemberian pupuk hayati dan konsentrasi kompos berpengaruh terhadap parameter tinggi tanaman, berat bintil akar, berat basah tanaman dan berat kering biji per 100 biji. Hasil optimal perlakuan FH1K1 pada panjang akar 25.53 ± 2.81 cm/tanaman dan jumlah polong 96.6 ± 31.56 buah/tanaman, perlakuan FH1K2 pada tinggi tanaman 55.62 ± 18.32 cm/tanaman, FH3K1 terbaik pada berat basah tanaman 77.37 ± 23.16 g/tanaman dan berat kering biji 27.54 ± 14.65 g/tanaman, FH3K2 terbaik pada berat bintil akar 3.16 ± 0.78 g/tanaman dan berat kering biji per 100 biji 12.3 ± 0.87 g/100 biji. Nilai RAE (*Relative Agronomic Effectiveness*) pada perlakuan FH3K1 sebesar 572.2%

Kata kunci : Pupuk hayati, pupuk kompos, pertumbuhan, produktivitas dan *Glycine max* (L) Merr.

Dyah Erinawati. 2018. The influence of a variation of giving organic fertilizer and compost concentration towards the growth and productivity of soybean (*Glycine max* (L) Merr). The thesis direction by Dr. Ni'matuzahroh and Prof. Dr. Ir. Tini Surtiningsih, DEA. Biology Study Program, Departemen of Biology, Faculty of Science and Technology, Airlangga University, Surabaya

ABSTRACT

The aim of this research is to identify the influence of a variation of giving organic fertilizer, a variation of compost concentration and combination of a variation of giving organic fertilizer and compost concentration towards the growth and productivity of soybean (*Glycine max* (L) Merr). This is an experimental research which RAL. This research involved 17 treatment such as the frequency of giving organic fertilizer once, twice, and three times with 5 mL concentration. The concentration of compost was 18g, 27g, and 36 g. Combination of a variation of organic fertilizer and compost. K- (without giving organic fertilizer and compost) and K+ (giving chemical fertilizer). The repetition was three times in which each repetition consists of five plants. The data were analysed by using Anova (Analysis of Varians) test with 0,05 degree of significance to homogeny and normal data, Brown-Forsythe test with 0,05 degree of significance to homogeny and not normal data. The result showed that in terms of a variation of frequency, giving organic fertilizer influenced root length. The optimal result of FH1K0 treatment to the plant was approximately 48.99 ± 10.39 cm/plant, the root nodules weight was 1.56 ± 0.41 g/plant, the root length was 28.33 ± 5.05 cm/plant, the amount of the pod was 87.73 ± 32.82 pod/plant, the dry weight of the seed was 22.95 ± 9.79 g/plant and the dry weight of the seed per 100 seeds was 11.46 ± 0.76 g, while FH2K0 treatment to fresh weight treatment was 72.53 ± 18.42 g/plant. The variation of compost concentration influenced all growth parameter and soybean plants productivity except the root length and dry weight of the seed. The optimal result of FH0K1 treatment to dry weight of the seeds was 24.21 ± 9.36 g/plant. FH0K2 treatment to the treatment of root nodules weight was 2.68 ± 0.79 g/plant, root length was 24.87 ± 3.36 cm/plant, and the dry weight of the seed per 100 seeds was 11.89 ± 1.01 g, while FH0K3 treatment to the height of the plant was 57.47 ± 16.63 cm/plant, the fresh weight of the plant was 83.98 ± 23.77 g/plant, and the amount of the pod was 95.73 ± 21.29 pods/plant. In the combination treatment of frequency variation, giving organic fertilizer and compost concentration influenced the height parameter of the plants, root nodules, fresh weight of the plants and dry weight of the seed per 100 seeds. The optimal result of FH1K1 treatment to root length was 25.53 ± 2.81 cm/plant, and the amount of the pod was 96.6 ± 31.56 pods/plant. FH1K2 treatment to plant height was 55.62 ± 18.32 cm/plant. The best FH3K1 to the fresh weight of the plant was 77.37 ± 23.16 g/plant, and the dry weight of the seed was 27.54 ± 14.65 g/plant. The best FH3K2 on the weight of root nodules was 3.16 ± 0.78 g/plant, and the weight of the seed per 100 seeds was 12.3 ± 0.87 g. The amount of RAE on FH3K1 was 572.2%.

Keywords: organic fertilizer, compost, growth, productivity and *Glycine max* (L) Merr