

RINGKASAN

Tanaman legum mengalami produksi yang relatif rendah jika dibandingkan dengan konsumsi masyarakat per tahun. Salah satu penyebabnya adalah rendahnya kualitas tanah yang dapat disebabkan oleh penggunaan pupuk sintetis. Oleh karena itu diperlukan upaya dan inovasi untuk mengurangi penggunaan pupuk sintetis. Salah satu upaya yang dapat dilakukan adalah dengan menggunakan pupuk organik yang terbuat dari campuran beberapa bahan-bahan organik. Tujuan penelitian ini adalah untuk mengetahui pengaruh pemberian pupuk organik terhadap karakter fisiologi dan hasil pada tanaman kacang hijau, kacang merah, dan kedelai.

Penelitian dilaksanakan di *Screenhouse* Fakultas Pertanian Universitas Jenderal Soedirman, Laboratorium Agronomi dan Hortikultura, Laboratorium Tanah dan Sumber Daya Lahan, Laboratorium Agroekologi Fakultas Pertanian Universitas Jenderal Soedirman, dan Laboratorium Riset Universitas Jenderal Soedirman. Penelitian dilaksanakan pada bulan Desember-Maret 2024. Metode yang digunakan yaitu Rancangan Acak Kelompok (RAK) faktorial dengan 2 faktor. Faktor pertama adalah jenis tanaman legum yaitu K1 = kacang hijau, K2 = kacang merah, K3 = kacang kedelai. Faktor kedua adalah aplikasi dosis pupuk organik yang terdiri dari P0 = tanpa pupuk organik, P1 = aplikasi pupuk organik 10 t/ha, dan P2 = aplikasi pupuk organik 20 t/ha. Setiap perlakuan diulang sebanyak 3 kali sehingga diperoleh 27 unit percobaan. Tiap unit percobaan terdiri atas 3 ulangan sehingga secara keseluruhan menghasilkan 81 tanaman sampel. Data hasil penelitian dianalisis menggunakan software DSAATAT versi 1.514 dengan uji F pada taraf kepercayaan 95% kemudian apabila hasil analisis menunjukkan perbedaan yang nyata maka dilakukan uji lanjut Duncan (DMRT = *Duncan Multiple Range Test*) dengan taraf kepercayaan 95%. Variabel pengamatan yang diamati diantaranya adalah kandungan klorofil total, kehijauan daun, jumlah stomata, kerapatan stomata, luas daun, bobot kering tajuk tanaman vegetatif akhir, bobot kering akar tanaman vegetatif akhir, bobot 100 biji, bobot biji per tanaman, jumlah biji per tanaman, jumlah polong per tanaman, bobot kering tajuk panen, dan indeks panen.

Hasil penelitian menunjukkan bahwa aplikasi pupuk organik 20 t/ha mampu menghasilkan luas daun tertinggi pada kacang hijau, dan kandungan klorofil total, serta bobot kering tajuk vegetatif akhir tertinggi pada kedelai. Aplikasi pupuk organik 10 t/ha mampu menghasilkan bobot kering akar vegetatif akhir tertinggi pada kedelai, akan tetapi aplikasi pupuk organik belum mampu meningkatkan kehijauan daun 14 dan 28 HST, jumlah stomata dan kerapatan stomata pada semua jenis tanaman legum. Aplikasi pupuk organik 20 t/ha dapat menghasilkan bobot biji per tanaman, jumlah polong per tanaman, dan bobot kering tajuk panen tertinggi pada tanaman kedelai dan mampu menghasilkan jumlah biji per tanaman tertinggi pada kacang hijau. Akan tetapi aplikasi pupuk organik belum mampu meningkatkan bobot 100 biji dan indeks panen pada semua jenis tanaman legum.

SUMMARY

The legume plant undergoes a relatively low production compared with people's consumption annually. One factor is low ground quality that may be caused by the use of synthetic fertilizer. Therefore it takes effort and innovation to reduce the use of topical fertilizer. One effort can be made is to use organic fertilizer made from a mixture of some organic materials. The purpose of this study is to know the effects that organic fertilizers have on the physiological character and results of plants that are green beans, red beans, and soybeans

Research was carried out at the Screenhouse of the Faculty of Agriculture, Jenderal Soedirman University, the Agronomy and Horticulture Laboratory, the Soil and Land Resources Laboratory, the Agroecology Laboratory, the Faculty of Agriculture, Jenderal Soedirman University, and the Research Laboratory of Jenderal Soedirman University. The research was carried out in December-March 2024. The method used was a factorial Randomized Block Design (RAK) with 2 factors. The first factor is the type of legume plant, namely K1 = mung beans, K2 = red beans, K3 = soybeans. The second factor is the application of organic fertilizer doses consisting of P0 = no organic fertilizer, P1 = application of organic fertilizer 10 t/ha, and P2 = application of organic fertilizer 20 t/ha. Each treatment was repeated 3 times to obtain 27 experimental units. Each experimental unit consisted of 3 replications, resulting in a total of 81 sample plants. The research data were analyzed using DSAATAT version 1.514 software with the F test at a 95% confidence level, then if the analysis results showed significant differences, a further Duncan test (DMRT = Duncan Multiple Range Test) was carried out with a 95% confidence level. Observation variables observed included total chlorophyll content, leaf greenness, number of stomata, stomata density, leaf area, dry weight of final vegetative plant crown, dry weight of final vegetative plant roots, weight of 100 seeds, weight of seeds planting, number of plant seeds, number of pods. planting, dry weight of harvested shoots, and harvest index.

The research results showed that the application of 20 t/ha of organic fertilizer was able to produce the highest leaf area in mung beans, and total chlorophyll content, as well as the highest final vegetative shoot dry weight in soybeans. The application of organic fertilizer of 10 t/ha was able to produce the highest final vegetative root dry weight in soybeans, however the application of organic fertilizer was not able to increase leaf greenness at 14 and 28 HST, number of stomata and stomata density in all types of legume plants. The application of organic fertilizer of 20 t/ha can produce the highest seed weight planting, number of pods plant, and dry weight of harvest shoots in soybeans and is able to produce the highest number of seeds plant in mung beans. However, the application of organic fertilizer has not been able to increase the weight of 100 seeds and the harvest index for all types of legume plants.