

FIKRI DHIYA ULHAQ. 160311100056. Pengaruh Pemberian Biochar dan Pupuk Kandang Terhadap Sifat Tanah, Pertumbuhan dan Hasil Tanaman Kacang Bambara (*Vigna subterranea* (L.) Verdcourt). Dibawah bimbingan: **Drs. H. Kaswan Badami, M.Si dan Dr. Ir. Eko Murniyanto, MP**

ABSTRAK

Sifat fisik tanah yang mengembang dan mengkerut pada vertisol dapat mengganggu perkembangan polong tanaman bambara. Kondisi tanah ini kemungkinan dapat diperbaiki dengan pemberian bahan pembenah tanah biochar dan pupuk kandang sehingga kondisi tanah menjadi remah. Tujuan penelitian ini untuk mengetahui pengaruh campuran biochar sekam padi dan pupuk kandang terhadap sifat tanah, pertumbuhan, dan hasil tanaman kacang bambara (*Vigna subterranea* (L.) Verdcourt). Penelitian ini dilakukan di Dusun Candi, Desa Telang, Kecamatan Kamal, Kabupaten Bangkalan, Jawa Timur. Dari Bulan Desember 2019 sampai April 2020. Perlakuan pemberian biochar sekam padi dan kotoran ternak sapi disusun dalam Rancangan Acak Kelompok (RAK) dengan 12 perlakuan dan diulang 3 kali ulangan. Kacang Bambara yang digunakan yaitu Varietas Galur Gresik. Perlakuan tersebut meliputi: B0P0, B0P3 (Biochar 0 ton.ha⁻¹ + Kotoran Ternak Sapi 5 ton.ha⁻¹), B1P1 (Biochar 10 ton.ha⁻¹ + Kotoran Ternak Sapi 1 ton.ha⁻¹), B1P2 (Biochar 10 ton.ha⁻¹ + Kotoran Ternak Sapi 3 ton.ha⁻¹), B1P3 (Biochar 10 ton.ha⁻¹ + Kotoran Ternak Sapi 5 ton.ha⁻¹), B2P1 (Biochar 20 ton.ha⁻¹ + Kotoran Ternak Sapi 1 ton.ha⁻¹), B2P2 (Biochar 20 ton.ha⁻¹ + Kotoran Ternak Sapi 3 ton.ha⁻¹), B2P3 (Biochar 20 ton.ha⁻¹ + Kotoran Ternak Sapi 5 ton.ha⁻¹), B3P0 (Biochar 30 ton.ha⁻¹ + Kotoran Ternak Sapi 0 ton.ha⁻¹), B3P1 (Biochar 30 ton.ha⁻¹ + Kotoran Ternak Sapi 1 ton.ha⁻¹), B3P2 (Biochar 30 ton.ha⁻¹ + Kotoran Ternak Sapi 3 ton.ha⁻¹) dan B3P3 (Biochar 30 ton.ha⁻¹ + Kotoran Ternak Sapi 5 ton.ha⁻¹). Hasil penelitian menunjukkan bahwa pemberian biochar sekam padi dan kotoran ternak sapi berpengaruh tidak nyata terhadap jumlah polong per tanaman, bobot 100 biji, bobot kering biji, pH dan EC, kadar air, P tersedia, C-organik. Perlakuan pemberian biochar dan pupuk kandang berpengaruh nyata terhadap bobot biomas tanaman, produksi, bobot kering akar.

Kata kunci: Biochar Sekam Padi, Galur, Kotoran Ternak Sapi, Kacang Bambara, Pertumbuhan, Produksi, Vertisol.

FIKRI DHIYA ULHAQ. 160311100056. Effect of Biochar and Manure on Soil Properties, Growth and Yield of Bambara Bean (*Vigna subterranea* (L.) Verdcourt). Supervisor: **Drs. H. Kaswan Badami, M.Si and Dr. Ir. Eko Murniyanto, MP**

ABSTRACT

The physical properties of a vertisol that shrinks when dry and swells when wet can interfere the development of pods on bambara plants. This condition could be improved by application of soil amendments, biochar and cow manure. The purpose of this study was to determine the effect of a mixture of rice husk biochar and manure on soil properties, growth, and yield of bambara beans (*Vigna subterranea* (L.) Verdcourt). This research was conducted in Candi Hamlet, Telang Village, Kamal District, Bangkalan Regency, East Java, from December 2019 to April 2020. The experiment was arranged in a Randomized Block Design (RBD) consisting of 12 treatments and each treatment was repeated for three times. Bambara seed Nuts used was Gresik Line Varieties. These treatments include: B0P0 (without soil amendment), B0P3 (0 ton.ha⁻¹ biochar + 5 ton.ha⁻¹ Cattle Manure), B1P1 (10 ton.ha⁻¹ Biochar + 1 ton.ha⁻¹ Cattle Manure), B1P2 (10 ton.ha⁻¹ Biochar + 3 ton.ha⁻¹ Cow Manure), B1P3 (10 ton.ha⁻¹ Biochar + 5 ton.ha⁻¹ Cattle Manure), B2P1 (20 ton.ha⁻¹ Biochar + 1 ton.ha⁻¹ Cattle Manure), B2P2 (20 ton.ha⁻¹ Biochar + Cattle Manure 3 ton.ha⁻¹), B2P3 (20 ton.ha⁻¹ + Cattle Manure 5 ton.ha⁻¹), B3P0 (30 tons.ha⁻¹ Biochar + Cattle Manure 0 tons.ha⁻¹), B3P1 (30 tons.ha⁻¹ Biochar + 1 ton.ha⁻¹ Cattle Manure), B3P2 (30 tons.ha⁻¹ Biochar 30 tons.ha⁻¹ + 3 tons.ha⁻¹ Cow Manure) and B3P3 (30 tons.ha⁻¹ Biochar 30 tons.ha⁻¹ + 5 tons.ha⁻¹ Cattle Manure). The results showed that the application of biochar rice husks and cow dung had no significant effect on the number of pods per plant, weight of 100 seeds, dry weight of seeds, pH and EC, moisture content, available P, and C-organic. The treatment of giving biochar and manure had a significant effect on plant biomass weight, production, root dry weight.

Keywords: Rice Husk Biochar, Strains, Cattle Manure, Bambara Beans, Growth, Production, Vertisol.