

ABSTRAK

Fitria Lestari. 2026. Respon Pertumbuhan Dan Hasil Tanaman Mentimun (*Cucumis sativus* L.) Terhadap Pemberian Biochar Sekam Padi dengan Tepung Tulang Sapi. Dibawah bimbingan Ahmad Taofik dan Yati Setiati Rachmawati.

Produktivitas mentimun (*Cucumis sativus* L.) pada tanah bertekstur liat masih relatif rendah akibat kondisi fisik tanah yang kurang mendukung, seperti porositas rendah, aerasi terbatas, dan bobot isi tanah yang tinggi sehingga menghambat perkembangan akar serta penyerapan air dan unsur hara. Salah satu upaya untuk mengatasi permasalahan tersebut adalah melalui aplikasi biochar sekam padi sebagai amelioran tanah dan tepung tulang sapi sebagai sumber fosfor dan kalsium yang dilepaskan secara bertahap. Penelitian ini bertujuan untuk mengetahui pengaruh kombinasi biochar sekam padi dan tepung tulang sapi terhadap pertumbuhan, hasil, serta sifat fisik tanah pada budidaya mentimun, sekaligus menentukan kombinasi perlakuan terbaik. Penelitian dilaksanakan di Lahan Agroteknologi Kampus II UIN Sunan Gunung Djati Bandung menggunakan Rancangan Acak Kelompok (RAK) yang terdiri atas enam perlakuan dan empat ulangan. Data dianalisis menggunakan analisis ragam (ANOVA) pada taraf nyata 5% dan dilanjutkan dengan Uji Duncan Multiple Range Test (DMRT) taraf 5% apabila menunjukkan pengaruh nyata. Parameter yang diamati meliputi waktu berbunga, jumlah buah per tanaman, bobot buah per tanaman, bobot buah per buah, grading buah, indeks panen, serta sifat fisik tanah berupa bulk density dan porositas. Hasil penelitian menunjukkan bahwa pemberian biochar sekam padi dan tepung tulang sapi berpengaruh nyata terhadap waktu berbunga, jumlah buah, bobot buah per tanaman, bobot buah per buah, indeks panen, serta perbaikan sifat fisik tanah melalui penurunan bulk density dan peningkatan porositas, namun tidak berpengaruh nyata terhadap grading buah. Perlakuan terbaik diperoleh pada kombinasi biochar sekam padi 10 t ha^{-1} dan tepung tulang sapi 10 t ha^{-1} yang menghasilkan rata-rata 30,00 buah tanaman⁻¹, bobot buah per tanaman 4.843,25 g, bobot buah per buah 177,28 g, serta mampu memperbaiki kondisi tanah sehingga mendukung produktivitas mentimun pada tanah bertekstur liat.

Kata Kunci: Biochar Sekam Padi, Mentimun, Tanah Liat, Tepung Tulang Sapi

ABSTRACT

Fitria Lestari. 2026. Growth and Yield Response of Cucumber (*Cucumis sativus* L.) to the Application of Rice Husk Biochar and Cattle Bone Meal. Supervised by Ahmad Taofik and Yati Setiati Rachmawati.

Cucumber (*Cucumis sativus* L.) productivity on clay-textured soils is often limited by unfavorable physical properties, including low porosity, poor aeration, and high bulk density, which restrict root development and reduce water and nutrient uptake. The application of rice husk biochar as a soil amendment and cattle bone meal as a slow-release source of phosphorus and calcium is considered a promising approach to improving soil quality and crop productivity. This study aimed to evaluate the effects of rice husk biochar and cattle bone meal on cucumber growth, yield, and soil physical properties, as well as to determine the optimum combination of both materials. The experiment was conducted at the Agrotechnology Experimental Field of UIN Sunan Gunung Djati Bandung using a Randomized Complete Block Design consisting of six treatments with four replications. Data were analyzed using analysis of variance (ANOVA) at the 5% significance level, followed by Duncan's Multiple Range Test (DMRT) when significant differences were detected. Observed variables included flowering time, number of fruits per plant, fruit weight per plant, individual fruit weight, fruit grading, harvest index, bulk density, and soil porosity. The results showed that the application of rice husk biochar and cattle bone meal significantly affected flowering time, fruit number, fruit weight per plant, individual fruit weight, harvest index, and improved soil physical properties by reducing bulk density and increasing soil porosity. However, no significant effect was observed on fruit grading. The best treatment was the combination of 10 t ha⁻¹ rice husk biochar and 10 t ha⁻¹ cattle bone meal, producing an average of 30.00 fruits per plant, 4,843.25 g fruit weight per plant, and 177.28 g individual fruit weight. This combination effectively improved soil conditions and enhanced cucumber productivity on clay-textured soil.

Keywords: Cattle Bone Meal, Clay Soil, Cucumber, Rice Husk Biochar