PENGARUH PEMBERIAN PUPUK CAIR VEGETATIF (PCV) PADA ULTISOL YANG DI KAPUR TERHADAP CIRI KIMIA TANAH DAN PERTUMBUHAN TANAMAN CAISIM (*Brassica juncea l.*)

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ABSTRAK

Ultisol memiliki kendala utama untuk pengembangan pertanian, seperti reaksi tanah masam, kandungan hara rendah, dan kadar bahan organik yang rendah. Penelitian ini bertujuan untuk menguji mutu PCV serta pengaruh pemberiannya pada Ultisol yang dikapur terhadap ciri kimia tanah dan pertumbuhan tanaman caisim. Penelitian dilaksanakan dari Maret hingga Juli 2025. Penelitian disusun menggunakan Rancangan Acak Lengkap (RAL) dengan 5 perlakuan konsentrasi PCV (0%; 1%; 2%; 3%; dan 4%) dan 3 ulangan. Pupuk diberikan dengan cara dikocorkan pada 7, 14, dan 21 Hari Setelah Tanam (HST). Parameter analisis pupuk meliputi N-total, P_2O_5, K_2O, CaO, MgO, dan S. Parameter analisis tanah meliputi pH, P-tersedia, C-organik, N-total, KTK, K-dd, dan kadar C/N. Hasil penelitian menunjukkan bahwa kandungan hara PCV (N-total 14,82%; P_2O_5 9,35%; K_2O 8,14%; CaO 6,16%; MgO 4,32%) telah memenuhi standar mutu pupuk anorganik cair, sedangkan S (2,43%) belum memenuhi standar minimal 3%. Pemberian PCV konsentrasi 3% merupakan konsentrasi optimal dalam memperbaiki ciri kimia tanah setelah panen, dengan nilai pH 5,82, P-tersedia 9,47 ppm, C-organik 3,25%, N-total 0,37%, KTK 20,13 $cmol^{(+)}kg$, K-dd 0,53 $cmol^{(+)}/kg$, dan C/N 8,70. Pertumbuhan tanaman caisim optimal juga dicapai pada konsentrasi 3% dengan tinggi tanaman 30,6 cm, berat basah 61,52 g, dan berat kering 10,15 g. Berdasarkan hasil penelitian, disarankan untuk menambahkan bahan dasar yang dapat meningkatkan kandungan sulfur pada PCV agar memenuhi standar mutu pupuk anorganik cair, serta penggunaan konsentrasi 3% untuk perbaikan ciri kimia Ultisol dan pertumbuhan caisim yang optimal.

Kata Kunci : *Caisim, Ciri Kimia Tanah , Pupuk Anorganik Cair, Ultisol*

THE EFFECT OF VEGETATIVE LIQUID FERTILIZER (PCV) APPLICATION AT LIMED ULTISOL ON SOIL CHEMICAL CHARACTERISTICS AND THE GROWTH OF CAISIM (*Brassica juncea* L.)

ABSTRACT

Ultisol has major constraints for agricultural development, such as acidic soil reaction, low nutrient and organic matter content. This research was aimed to evaluate the quality of PCV and its effect on limed Ultisol on soil chemical characteristics and the growth of caisim plants. The research was conducted from March to July 2025. The study consisted of 5 treatments from different concentrations of PCV (0%; 1%; 2%; 3%; and 4%) and 3 replications. The experimental units were arranged in a Completely Randomized Design (CRD) in glasshouse. The fertilizer was applied by pouring the fertilizer solution into the soil at 7, 14, and 21 days after planting (DAP). Fertilizer analysis parameters included total N, P_2O_5, K_2O, CaO, MgO, and S. Soil analysis parameters included pH, available P, organic C, total N, cation exchange capacity (CEC), exchangeable K, and C/N ratio. The results showed that the nutrient content of PCV (total N 14.82%; P_2O_5 9.35%; K_2O 8.14%; CaO 6.16%; MgO 4.32%) met the quality standards for inorganic liquid fertilizer, while S (2.43%) did not reach the minimum standard of 3%. The application of 3% PCV concentration was the optimal concentration for improving post-harvest soil chemical properties, indicated by the pH was 5.82, available P was 9.47 ppm, organic C was 3.25%, total N was 0.37%, CEC was 20.13 $cmol^+/kg$, exchangeable K was 0.53 $cmol^+/kg$, and C/N ratio was 8.70. The optimal growth of caisim was also achieved at a 3% concentration PCV application, with a plant height was 30.6 cm, fresh weight was 61.52 g, and dry weight was 10.15 g. Based on the results, it was recommended to add base materials that can increase the sulfur content in PCV to meet quality standards for inorganic liquid fertilizer and to use a 3% concentration for improving Ultisol chemical characteristics and optimal caisim growth.

Keywords: Caisim, Inorganic Liquid Fertilizer, Soil Chemical Characteristics, Ultisol