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Pengaruh Pembenah Tanah dan Pupuk KCl terhadap Sifat Tanah dan Serapan K Bawang Merah di Entisol
Bugel, Kulon Progo
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

INTISARI

Entisol merupakan salah satu jenis tanah yang masih sering dimanfaatkan sebagai lahan pertanian, salah satunya yang berada di daerah Pantai Bugel Kulon Progo. Karakteristiknya yang didominasi fraksi pasir menjadikan tanah Entisol memiliki sifat kimia yang sangat rendah. Penelitian ini bertujuan untuk melihat pengaruh zeolit dan kalium humat dalam memperbaiki sifat tanah entisol serta perbedaan dosis pupuk kalium terhadap pertumbuhan bawang merah. Penelitian dilaksanakan di rumah kaca Fakultas Pertanian UGM dari Mei 2026 hingga Juli 2026. Penelitian menggunakan Rancangan Acak Lengkap (RAL) non faktorial dengan 11 perlakuan dan 4 ulangan (44 sampel), kode perlakuan meliputi K0-, K0+, K100, Z100K50, Z100K100, H100K50, H100K100, Z50H50K50, Z50H50K100, Z100H100K50, serta Z100H100K100. Keterangan dari kode perlakuan antara lain Z100 = zeolit 10 kg/ha (100%), H100 = Kalium Humat 10 kg/ha (100%), K100 = KCl 185 kg/ha (100%). Terkait dengan pupuk anorganik dan pupuk kandang menggunakan pupuk dasar berupa Urea 185 kg/ha, ZA 225 kg/ha, TSP 204 kg/ha, KCl 185 kg/ha, pupuk kandang 2 ton/ha, arang sekam 1 ton/ha, dan nano-Si 3 kg/ha. Hasil menunjukkan bahwa perlakuan zeolit 100% + kalium humat 100% + KCl 100% (Z100H100K100) mampu meningkatkan KPK tanah akhir sebesar 60,67% dari nilai 0,89 cmol(+)/kg menjadi 1,43 cmol(+). Hasil dari kalium humat, terlihat pada perlakuan kalium humat 100% + KCl 50% (H100K50) terjadinya peningkatan sebesar 183,67% dibanding dengan nilai tanah awal yakni dari 0,49% menjadi 1,39%. Sementara itu, kombinasi zeolit 100% + kalium humat 100% + KCl 50% (Z100H100K50) menunjukkan nilai kimia jaringan tertinggi pada parameter klorofil, ANR, dan Si Jaringan dengan nilai masing-masingnya sebesar 36,94 mg/L, 38,47 μmol NO^{-}_{2}/g/jam, dan 0,168%.

Kata kunci: zeolit, kalium humat, ketersediaan kalium, penyerapan kalium, bawang merah, Entisol pasir pantai

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ABSTRACT

Entisols are a type of soil frequently utilized for agricultural purposes, such as those found in the coastal area of Bugel, Kulon Progo. Due to their composition—which is dominated by sand fractions—Entisols exhibit very low chemical fertility. This study aims to examine the effects of zeolite and potassium humate on improving the properties of Entisol, as well as the impact of varying potassium fertilizer dosages on the growth of shallots. The research was conducted in a greenhouse at the Faculty of Agriculture, UGM, from May 2026 to July 2026. A Completely Randomized Design (CRD) was employed, consisting of 11 treatments with 4 replications (totaling 44 samples). The treatment codes are as follows: K0-, K0+, K100, Z100K50, Z100K100, H100K50, H100K100, Z50H50K50, Z50H50K100, Z100H100K50, and Z100H100K100. The codes correspond to the following applications: Z100 = 10 kg/ha of zeolite (100%), H100 = 10 kg/ha of potassium humate (100%), and K100 = 185 kg/ha of KCl (100%). In addition, the study utilized a basal fertilizer application consisting of 185 kg/ha of Urea, 225 kg/ha of ZA, 204 kg/ha of TSP, 185 kg/ha of KCl, 2 tons/ha of manure, 1 ton/ha of rice husk charcoal, and 3 kg/ha of nano-Si. The results indicate that the treatment consisting of 100% zeolite + 100% potassium humate + 100% KCl (Z100H100K100) increased the final soil cation exchange capacity (CEC) by 60.67%, from an initial value of 0.89 cmol(+)/kg to 1.43 cmol(+)/kg. Regarding the effect of potassium humate, the treatment with 100% potassium humate + 50% KCl (H100K50) resulted in a 183.67% increase compared to the initial soil value, rising from 0.49% to 1.39%. Meanwhile, the combination of 100% zeolite + 100% potassium humate + 50% KCl (Z100H100K50) yielded the highest tissue chemical values for chlorophyll, ANR (assimilatory nitrate reductase activity), and tissue Si content, with values of 36.94 mg/L, 38.47 µmol NO_2^-/g/h, and 0.168%, respectively.

Keywords : zeolite, potassium humate, potassium availability, potassium absorption, shallots, coastal sandy Entisols