

RINGKASAN

Padi merupakan tanaman penghasil bahan makanan pokok sebagian besar masyarakat di Indonesia, yaitu beras. Produksi padi tahun 2018 sebanyak 59,20 juta ton gabah kering giling (GKG), produksi pada tahun 2019 sebanyak 54,60 juta ton GKG, dan produksi pada tahun 2020 sebanyak 55,16 juta ton GKG. Peningkatan produksi padi dalam memenuhi kebutuhan pangan adalah dengan upaya ekstensifikasi dengan pemanfaatan lahan marginal seperti tanah entisol yang selama ini belum dimanfaatkan dengan baik untuk kegiatan budidaya padi. Tanah Entisol di Indonesia berjumlah \pm 3 juta Ha. Permasalahan tanah Entisol adalah sifat fisik dan kimia yang rendah. Kadar unsur hara P dan K banyak terdapat pada tanah ini, tetapi tidak tersedia bagi tanaman. Unsur hara N yang bersifat *mobile* sangat tidak tersedia pada tanah ini, karena tanah ini sangat berpori. Kapasitas Tukar Kation (KTK) dan Kation Basa (KB) tanah ini rendah akibat kandungan bahan organik rendah. Penambahan pupuk Nzeo-SR dapat menjadi solusi dalam permasalahan dalam tanah entisol. Pupuk NZeo-SR Plus adalah pupuk yang dikembangkan dari bahan zeolit dan bahan alam lain dengan diperkaya oleh silika (Si). Pupuk ini mempunyai kemampuan dalam rangka peningkatan efisiensi pupuk N dan mempunyai kemampuan meningkatkan ketahanan tanaman terhadap kondisi stres.

Penelitian telah dilaksanakan di Laboratorium Tanah dan Sumber Daya Lahan, Laboratorium Ilmu Tanah dan kebun percobaan *screen house* Fakultas Pertanian Universitas Jenderal Soedirman, Purwokerto. Penelitian ini berlangsung selama 6 bulan. Penelitian ini dilakukan dengan rancangan acak kelompok (RAK) yang terdiri atas 2 faktor dengan 3 ulangan, faktor pertama adalah dosis pupuk N yang terdiri atas 3 macam taraf yaitu N0 : kontrol, N1 : dosis N 100 kg/ha, dan N2 : dosis N 200 kg/ha. Faktor kedua adalah macam pupuk Nzeo-SR plus dari 3 macam taraf yaitu P1 : pupuk urea, P2 : pupuk NZeo-SR Plus *Coating* 1%, dan P3 : pupuk NZeo-SR Plus *Coating* 3%. Perlakuan diulang tiga kali sehingga semuanya terdapat 27 unit percobaan. Pada setiap unit percobaan terdapat 27 kombinasi perlakuan, diulang 3 kali. Variabel pengamatan penelitian ini antara lain: pH, DHL, redoks, P tersedia, K tersedia, prolin, fenol, saponin, tanin, dan tinggi tanaman.

Hasil penelitian ini menunjukkan bahwa pemberian dosis N meningkatkan pH, DHL, saponin, dan tanin. Pemberian dosis N belum mampu meningkatkan redoks, P tersedia, K tersedia, prolin, fenol, dan tinggi tanaman secara nyata, namun ada kecenderungan peningkatan pada variabel-variabel tersebut. Macam pupuk Nzeo-SR Plus mampu meningkatkan redoks, fenol, saponin, dan tanin. Macam pupuk Nzeo-SR Plus belum mampu meningkatkan pH, DHL, P tersedia, K tersedia, prolin, tinggi tanaman secara nyata, namun ada kecenderungan peningkatan pada variabel-variabel tersebut pada pemberian macam pupuk Nzeo-SR Plus.

SUMMARY

Rice is a staple food crop for most people in Indonesia, namely rice. Rice production in 2018 was 59.20 million tons of milled dry grain (MDG), production in 2019 was 54.60 million tons MDG, and production in 2020 was 55.16 million tons MDG. Increasing rice production to fulfil of food demand is carried out through extensification efforts by utilizing marginal land such as entisol soil which has not been used properly for rice cultivation activities. Entisol soil in Indonesia amounted to \pm 3 million ha. Entisol soils are undeveloped soils and are often found in soils with very diverse parent materials, both in terms of type, nature and origin. The problem with Entisol soil is its poor physical and chemical properties. Nutrient levels of P and K are abundant in this soil, but are not available to plants. Nutrient N which is mobile is not available in this soil, because this soil is very porous. The Cation Exchange Capacity (CEC) and Base Cation (BC) of this soil is low due to low organic matter content. The addition of Nzeo-SR fertilizer can be a solution to problems in entisol soils. NZeo-SR Plus fertilizer is a fertilizer developed from zeolite and other natural materials enriched by silica (Si). This fertilizer has the ability to increase the efficiency of N fertilizer and has the ability to increase plant resistance to stress conditions.

The research has been carried out at the Laboratory of Soil and Land Resources and the experimental garden at the screen house of the Faculty of Agriculture, Jenderal Soedirman University, Purwokerto. This research lasted for 6 months. This research was conducted with a randomized block design (RBD) consisting of 2 factors with 3 replications, the fertilizer of N doses consisted of 3 levels, that is N0 : control, N1 : N dose 100 kg/ha, and N2 : N dose 200 kg/ha. The second factor is the fertilizers of Nzeo-SR plus from 3 different levels, that is P1 : urea fertilizer, P2 : 1% NZeo-SR Plus Coating fertilizer, and P3 : 3% NZeo-SR Plus Coating fertilizer. The treatment was repeated three times so that there were 27 experimental units in total. In each experimental unit there were 27 treatment combinations, repeated 3 times. Variables observed in this study were: pH, DHL, redox, availability of p, availability of k, proline, phenol, saponin, tannin, and plant height.

The results of this research showed that a dose of N increased pH, DHL, saponins, and tannins. Dosage of N has not been able to increase redox, availability of P, availability of K, proline, phenol, and plant height significantly, but there was an increasing trend in these variables due to giving the dose of N. The various of fertilizers Nzeo-SR Plus can increase redox, phenol, saponins, and tannins. The fertilizer of Nzeo-SR Plus has not been able to increase pH, DHL, availability of P, availability of K, proline, plant height significantly, but there is a tendency to increase in these variables in the application of Nzeo-SR Plus fertilizer.