

RINGKASAN

Proses pertumbuhan tanaman padi memerlukan asupan nutrisi yang cukup seperti unsur hara makro nitrogen (N), fosfor (P) dan Kalium (K). Pemberian pupuk dan bahan organik merupakan usaha untuk menambahkan unsur hara pada tanaman baik pada tanah maupun tajuk tanaman. Alternatif penggunaan pupuk dapat menggunakan pupuk NPK-SR dan bahan organik dari jerami dan pupuk kandang karena dapat menyediakan nutrisi bagi tanaman padi. Penelitian ini bertujuan untuk (1) mengetahui pengaruh pemberian pupuk NPK-SR grade (7,26-10-7) pada berbagai takaran dan kombinasi jerami kompos terhadap K-tersedia tanah dan serapan hara K dalam daun dan biji tanaman padi, (2) Mengetahui pengaruh pemberian pupuk NPK-SR grade (7,26-10-7) pada berbagai takaran dan kombinasi jerami kompos terhadap biomassa padi sawah, (3) Menentukan kombinasi optimal pupuk NPK-SR dan jerami kompos untuk tanaman padi.

Penelitian ini dilaksanakan di rumah kaca Fakultas Pertanian Universitas Jendral Soedirman dan laboratorium tanah dan sumberdaya lahan mulai dari bulan September 2023 - Februari 2024. Penelitian ini dilaksanakan dengan menggunakan Rancangan Acak Kelompok (RAK) yang terdiri atas 2 faktor dan tiga ulangan. Faktor pertama yaitu takaran pupuk majemuk NPK-SR grade 7,26-10-7 dan faktor kedua yaitu kombinasi jerami dan pupuk kandang. Data yang diperoleh dianalisis keragaman (Uji F) pada taraf kesalahan 5%. Apabila terdapat perbedaan nyata dan sangat nyata, dilanjutkan dengan uji DMRT (*Duncan's Multiple Range Test*) pada taraf kesalahan 5%. Variabel yang diamati adalah K-tersedia tanah akhir vegetatif dan setelah panen, K-total tanah akhir vegetatif dan setelah panen, serapan K daun dan biji tanaman, serta biomassa tanaman padi.

Hasil penelitian menunjukkan bahwa perlakuan pemberian pupuk NPK-SR terbaik pada perlakuan T1 K-tersedia tanah setelah panen ($7,88 \text{ cmol}(+) \text{kg}^{-1} \text{ K}_2\text{O}$), K-total tanah setelah panen (0,004%), perlakuan T3 kadar K daun (1,22%), dan kadar K biji (2,15%), perlakuan T5 serapan K daun/rumpun ($22.362 \mu\text{g K}_2\text{O}$ daun/rumpun), serapan biji/rumpun ($89.260 \mu\text{g K}_2\text{O}$ biji/rumpun), bobot basah batang (175,3 g/rumpun), bobot basah daun (76,9 g/rumpun) bobot basah total (347,58 g/rumpun), bobot kering batang (34,24 g/rumpun), bobot kering daun (20,53 g/rumpun) dan berat kering total (77,82 g/rumpun). Perlakuan jerami kompos terbaik pada perlakuan J2 K-total tanah akhir vegetatif (0,008%), K-total tanah setelah panen (0,004%), K-tersedia tanah setelah panen ($6,12 \text{ cmol}(+) \text{kg}^{-1} \text{ K}_2\text{O}$), kadar K daun (1,13%) serapan K daun/rumpun ($17.277 \mu\text{g K}_2\text{O}$ daun/rumpun), serapan K biji/rumpun ($75.103 \mu\text{g K}_2\text{O}$ biji/rumpun), bobot basah akar (88,13 g/rumpun), bobot basah daun (55,51 g/rumpun), bobot basah total (281,85 g/rumpun) dan bobot kering daun (15,02 g/rumpun). Kombinasi antara pupuk NPK-SR dan jerami kompos berpengaruh nyata pada kadar K daun dengan perlakuan terbaik T3J2 (1,48%).

Kata kunci: Pupuk NPK-SR, Jerami kompos, K-tersedia tanah, Serapan K, K-total tanah dan Biomassa Padi.

SUMMARY

In the process of growth, rice plants require adequate intake of nutrients such as macronutrients nitrogen (N), phosphorus (P) and potassium (K). Apply the application of fertilizers and organic materials is an effort to add nutrients to plants both in the soil and the crown of the plant. The alternative use of fertilizers can use NPK-SR fertilizers and organic materials from compost straw because they can provide nutrients for rice plants. This study aims to (1) determine the effect of applying NPK-SR grade (7,26-10-7) fertilizer at various rates and combinations of compost straw on K-available and K nutrient uptake in leaves and seeds of rice plants, (2) determine the effect of applying NPK-SR grade (7,26-10-7) fertilizer at various rates and combinations of compost straw on rice paddy biomass, (3) determine the optimal combination of NPK-SR fertilizer and compost straw for rice plants.

This research was carried out in the greenhouse of the faculty of Agriculture Universitas Jendral Soedirman and the soil and land resources laboratory from September 2023 - February 2024. This research was carried out using a Randomized Block Design (RBD) consisting of 2 factors and three replications. The first factor is the dosage of compound fertilizer NPK-SR grade 7,26-10-7 and the second factor is the combination of compost straw. The data obtained was analyzed for diversity (F test) at an error level of 5%. If there is a real and very significant difference, continue with the DMRT test (Duncan's Multiple Range Test) at an error level of 5%. The variables observed were K-available soil at the end of vegetative and after harvest, K-total soil at the end of vegetative and after harvest, K uptake of plant leaves and seeds, and biomass of rice plants.

The results of the research showed that the best NPK-SR fertilizer treatment was in the T1 K-available soil treatment after harvest (7,88 cmol(+)kg⁻¹ K₂O), soil K-total after harvest (0,004%), T3 treatment leaf K content (1,22%), and seed K content (2,15%), treatment T5 leaf/clump K uptake (22,362 µg K₂O/clump leaf), seed/clump uptake (89,260 µg K₂O/clump seed), stem fresh weight (175,3 g/clump), leaf wet weight (76,9 g/clump) total wet weight (347,58 g/clump), stem dry weight (34,24 g/clump), leaf dry weight (20,53 g/clump) and total dry weight (77,82 g/clump). The best compost straw treatment in treatment J2 K-total final vegetative soil (0,008%), K-total soil after harvest (0,004%), K-available soil after harvest (6,12 cmol(+)kg⁻¹ K₂O), leaf K content (1,13%), leaf K uptake/clump (17,277 µg K₂O/clump leaf), seed/clump K uptake (75,103 µg K₂O/clump seed), root wet weight (88,13 g/clump), leaf wet weight (55,51 g/clump), total wet weight (281,85 g/clump) and leaf dry weight (15,02 g/clump). The combination of NPK-SR fertilizer and compost straw had a significant effect on leaf K levels with the best treatment T3J2 (1,48%).

Key words: NPK-SR fertilizer, compost straw, soil-available K, K uptake, K-total soil and Rice Biomass.