

RINGKASAN

Nitrogen merupakan unsur hara esensial bagi tanaman, namun keberadaannya mudah hilang karena pencucian dan penguapan. Oleh karena itu diperlukan usaha untuk mengurangi kehilangan nitrogen melalui pembuatan formulasi pupuk lepas lambat untuk meningkatkan efisiensi N. Penelitian ini bertujuan untuk mengetahui: (i) pengaruh empat formula pada pupuk N lepas lambat (*slow release urea*) terhadap beberapa sifat kimia Inseptisols sawah; (ii) pengaruh empat formula pupuk N lepas lambat (*slow release urea*) terhadap pertumbuhan tanaman bawang merah varietas Bauji.

Penelitian ini dilaksanakan pada lahan sawah yang bertempat di Desa Purwosari, Kecamatan Baturraden, Banyumas, Jawa Tengah serta di Laboratorium Riset UNSOED dan Laboratorium Tanah Fakultas Pertanian. Penelitian ini dilaksanakan pada bulan Desember 2019 hingga Agustus 2020. Penelitian berupa percobaan di lahan sawah dengan menggunakan RAKL non-faktorial dengan 5 taraf perlakuan yang diulang sebanyak 5 kali. Formula pada masing-masing perlakuan meliputi: F_0 = N-P-K (Urea, TSP-46, dan KCl), F_1 = 70% Urea + 6% kitosan + 24% bahan humat, F_2 = 70% Urea + 10% *Azolla microphylla* + 10% gondorukem + 10% bahan humat, F_3 = 60% Urea + 10% *Azolla microphylla* + 10% gondorukem + 10% bahan humat + 10% montmorilonit, dan F_4 = 56% Urea + 24% zeolit + 3% bahan humat + 11% tepung tapioka + 6% gondorukem. Variabel yang diamati antara lain tinggi tanaman, jumlah daun, jumlah anakan, bobot tanaman segar, dan bobot umbi segar, pH H_2O , daya hantar listrik (DHL), dan N-Total tanah.

Hasil penelitian menunjukkan bahwa formula F_3 merupakan formula pupuk terbaik pada pengujian. Hal ini ditunjukkan pada variabel pengamatan bobot tanaman segar dan bobot umbi segar. Formula pupuk *urea slow release* berpengaruh nyata terhadap jumlah daun, jumlah anakan, bobot tanaman segar, dan bobot umbi segar bawang merah varietas Bauji. Pada formula F_4 memiliki pelepasan pupuk yang kurang stabil sehingga penyediaan unsur hara N untuk tanaman kurang optimal.

Kata Kunci: pupuk lepas lambat, urea, polimer, bawang merah, Inseptisols.

SUMARRY

Nitrogen is an essential nutrient for plants, but its existence is easily moved out due to washing and evaporation factors. Therefore, an effort is needed to reduce nitrogen-loss through the formulation of slow available urea making, which it purposes to improve the N efficiency. This study aims to determine: (i) the effect of four formulae on N slow release urea toward several chemical properties of rice fields Inceptisols; (ii) the effect of four formulae on N slow release area toward the growth of 'Bauji' variety onion plants.

The research was conducted in rice field which located in Purwosari Village, Baturraden Subdistrict, Banyumas Regency, Central Java, UNSOED Research Laboratory and Soil Laboratory of the Agriculture Faculty. It was done from December 2019 up to August 2020. This study was an experiment which executed in rice field by using non-factorial RAKL with 5 treatment levels and repeated 5 times. The formulae on each treatment were: F_0 = N-P-K (Urea, TSP-46, dan KCl) , F_1 = 70% Urea + 6% chitosan + 24% humate, F_2 = 70% Urea + 10% Azolla microphylla + 10% gondorukem + 10% humate, F_3 = 60% Urea + 10% Azolla microphylla + 10% gondorukem + 10% humate + 10% montmorillonite and F_4 = 56% Urea + 24% zeolit + 3% humate + 11% tapioca flour + 6% gondorukem. The variables observed were height of the plants, number of leaves, number of tillers, the weight of fresh plants, and the weight of fresh tubers, pH H_2O , electrical conductivity (DHL), and N-Total of soil.

The results showed that the F_3 formula was the best fertilizer formula in this research. It was shown in the yield parameters such as plant fresh weight and fresh bulbs weight. The formula of urea slow release had a significant effect on the number of leaves, the number of tillers, the weight of fresh plants, and the weight of Bauji variety fresh bulbs (shallot). In the F_4 formula, the release of urea is not really stable, so, the supply of N nutrients for plants is not optimal.

Keywords: slow release fertilizers, urea, polymers, shallot, Inseptisols.