

INTISARI

Jagung (*Zea mays* L.) merupakan salah satu tanaman pangan dengan permintaan yang terus meningkat, tetapi kebutuhan nitrogen jagung yang tinggi perlu diiringi dengan peningkatan efisiensi pemupukan melalui penggunaan pupuk *slow release* seperti *Synthetic Nitrification Inhibitors* yang berfungsi menghambat kehilangan nitrogen. Tujuan penelitian ini yaitu menganalisis pengaruh variasi dosis DMPP dan variasi dosis pupuk urea terhadap kandungan nitrogen di dalam tanah, morfofisiologis tanaman, serta pertumbuhan dan hasil tanaman jagung. Penelitian dilakukan di Kebun Tridharma Banguntapan, Fakultas Pertanian, Universitas Gadjah Mada, di Banguntapan, Kabupaten Bantul, Daerah Istimewa Yogyakarta. Penelitian dilaksanakan pada bulan Januari-April 2025. Metode yang digunakan adalah Rancangan Acak Kelompok Lengkap (RAKL) faktorial dengan tiga blok sebagai ulangan. Faktor pertama yang digunakan adalah pemberian SNI yaitu 3,4-*Dimethylpyrazole Phosphate* (DMPP) dengan tiga aras, yaitu tanpa perlakuan SNI, 4,5 kg/ha, dan 9 kg/ha. Faktor kedua adalah pemberian pupuk urea dengan empat aras, yaitu perlakuan dengan dosis 0 kg/ha, 100 kg/ha, 200 kg/ha, dan 300 kg/ha. Hasil penelitian memberikan informasi bahwa pemberian dosis urea 200 kg/ha meningkatkan hampir seluruh parameter pertumbuhan seperti tinggi tanaman, jumlah daun, luas daun, serta parameter hasil seperti panjang tongkol, diameter tongkol, jumlah biji per tongkol, bobot kering tongkol, dan bobot kering biji. Sementara itu, pemberian DMPP 4,5 kg/ha meningkatkan efisiensi hasil, seperti peningkatan indeks panen dan bobot 100 biji. Meskipun demikian, model regresi menunjukkan bahwa dosis optimum untuk memperoleh produktivitas maksimum secara efisien dicapai pada kombinasi urea 300 kg/ha dan DMPP 6,0 kg/ha

Kata Kunci: Jagung, nitrogen, urea, inhibitor, DMPP

ABSTRACT

Maize (*Zea mays* L.) is one of the major food crops with increasing demand; however, its high nitrogen requirement necessitates improved fertilization efficiency. This can be achieved through the application of slow-release fertilizers, such as synthetic nitrification inhibitors (SNIs), which function to reduce nitrogen loss. This study aimed to analyze the effects of various rates of DMPP (3,4-Dimethylpyrazole Phosphate) in combination with different urea fertilizer dosages on soil nitrogen content, plant morphophysiological characteristics, growth, and yield of maize. The experiment was conducted at the Tridharma Experimental Farm, Faculty of Agriculture, Universitas Gadjah Mada, located in Banguntapan, Bantul Regency, Special Region of Yogyakarta. The research was carried out from January until April 2025. The experimental design used was a factorial randomized complete block design (RCBD) with three replications (blocks). The first factor was the application of SNI (DMPP) at three levels: no DMPP (control), 4.5 kg/ha, and 9 kg/ha. The second factor was urea fertilizer at four levels: 0 kg/ha, 100 kg/ha, 200 kg/ha, and 300 kg/ha. The results indicated that the application of urea at 200 kg/ha significantly enhanced most growth parameters such as plant height, leaf number, and leaf area, as well as yield parameters including ear length, ear diameter, number of kernels per ear, dry ear weight, and dry grain weight. In contrast, DMPP application did not directly promote vegetative growth, but application of DMPP at 4.5 kg/ha contributed to improved yield efficiency, as reflected in a higher harvest index and 100-kernel weight. The application of 4.5 kg/ha DMPP enhanced yield efficiency, as reflected by the increases in harvest index and 100-grain weight. Nevertheless, the regression model indicated that the optimum rate for achieving maximum productivity efficiently was obtained with the combination of 300 kg/ha urea and 6.0 kg/ha DMPP.

Keywords: Maize, nitrogen, urea, inhibitor, DMPP