

INTISARI

Total kebutuhan gula nasional beberapa tahun terakhir selalu lebih rendah daripada produksi gula nasional. Ketidakseimbangan tersebut dapat disebabkan karena belum optimalnya usaha budidaya dan ketidakefisienan pemupukan pada tanaman tebu. Upaya yang dapat dilakukan yakni memenuhi kebutuhan unsur hara tebu seperti dengan melakukan pemupukan N sesuai dosis sehingga efektif dan efisien, serta menggunakan bibit dengan kualitas baik dan menanamnya dengan sistem yang sesuai. Penelitian ini bertujuan untuk mengetahui pengaruh pupuk N dan sistem tanam dengan berbagai penempatan bibit terhadap sifat kimia tanah, pertumbuhan, dan serapan N oleh tebu di tanah ultisol Tulang Bawang. Penelitian dilaksanakan pada bulan November 2015 - Mei 2016 di Lahan Perkebunan PT Sweet Indolampung, Kabupaten Tulang Bawang, Lampung. Penelitian dilakukan menggunakan Rancangan Acak Kelompok Lengkap (RAKL) dengan dua faktor perlakuan dan tiga ulangan. Faktor pertama adalah dosis urea yang terdiri dari empat taraf, yaitu: tanpa urea (U0), 165 kg/ha (U1), 329 kg/ha atau standar pemupukan SGC (U2), dan 494 kg/ha (U3). Faktor kedua adalah sistem tanam dengan penempatan bibit yang terdiri dari enam taraf, yaitu: *double row overlap* 25% (S1), *double row overlap* 50% atau standar penggunaan SGC (S2), *double row overlap* 100% (S3), *single row overlap* 25% (S4), *single row overlap* 50% (S5), *single row overlap* 100% (S6). Pengamatan dilakukan terhadap beberapa sifat kimia tanah, serapan hara, dan variabel pertumbuhan tanaman. Data hasil penelitian selanjutnya dianalisis varian (ANOVA) pada taraf 5%, dan dilanjutkan dengan uji *Duncan Multiple Range Test* (DMRT) pada tingkat kepercayaan 5% apabila hasil analisis varian menunjukkan perbedaan yang nyata antar perlakuan. Hasil penelitian menunjukkan bahwa tidak ada interaksi antara pemberian pupuk N dan perlakuan sistem tanam dengan berbagai penempatan bibit terhadap parameter sifat kimia tanah, serapan N, pertumbuhan, dan produksi tebu. Pemberian pupuk N di tanah ultisol Tulang Bawang tidak berpengaruh nyata terhadap pH tanah, N-total, C-organik, dan nisbah C/N dalam tanah, tetapi berpengaruh nyata terhadap serapan N, efisiensi serapan N, tinggi tanaman, luas daun, berat kering, dan produksi tebu umur 6 bst. Sedangkan perlakuan sistem tanam dengan berbagai penempatan bibit berpengaruh nyata terhadap pH tanah, N-total, nisbah C/N, serapan N, efisiensi serapan N, perkecambahan, populasi, tinggi tanaman, luas daun, berat kering, dan produksi tebu umur 6 bst. Dosis pupuk N sebesar 329 ton/ha dan sistem tanam *double row overlap* 25% di tanah ultisol Tulang Bawang merupakan kombinasi yang paling efektif dan ekonomis dalam meningkatkan kesuburan tanah serta memacu pertumbuhan dan produksi tebu umur 6 bst. Efisiensi Serapan N yang rendah dipengaruhi oleh terjadinya denitrifikasi, tingginya suhu (volatilisasi), dan tingginya curah hujan (pencucian hara).

Kata kunci: ultisol, urea, *double row*, *single row*

ABSTRACT

In recent years, the national sugar demand has always been lower than the national sugar production. The imbalance is caused by sub-optimal cultivation and inefficiency of sugarcane fertilization. Efforts that can be done to improve the conditions are meeting the nutrients needs of sugar cane by N-fertilization according to the effective and efficient dosage, use high quality seeds, and planting the seeds with the appropriate systems. This study aimed to determine the effect of N fertilizer and cropping systems with some of seed placement to soil chemical properties, growth, and N uptake by sugarcane at ultisols in Tulang Bawang. The experiment was conducted in November 2015 - May 2016 at PT Sweet Indolampung, Tulang Bawang, Lampung. It was arranged in randomized complete block design (RCBD) two factors with three blocks as replication. The first factor was urea dosage consisting of 4 levels, i.e. without urea (U0), 165 kg/ha (U1), 329 kg/ha or standard fertilization of SGC (U2), and 494 kg/ha (U3). The second factor was cropping system with some of seed placement consisting of 6 levels, i.e. double row overlap of 25% (S1), double row overlap of 50% or standard use of SGC (S2), double row overlap 100% (S3), single row overlap 25% (S4), single row overlap of 50% (S5), single row overlap 100% (S6). The observations were done on several properties of soil chemical, nutrient uptake, and the plant growth variables. Data were analyzed using analysis of variance (ANOVA) at 5 % level, and continued with Duncan's Multiple Range Test (DMRT) at 5% level of significance. The results showed that there was no interaction between N fertilizing and cropping systems with variation of seed placement to all parameters (soil chemical properties, N uptake, growth, and production of sugarcane). Application of N fertilizer at ultisols in Tulang Bawang could not significantly affect soil pH, N-total, C-organic, and C/N ratio, but could significantly affect N uptake, efficiency of N uptake, plant height, leaf area, dry weight, and production of sugarcane aged 6 MAP. Meanwhile, cropping system with variation of seed placement could significantly affect soil pH, N-total, C/N ratio, N uptake, efficiency of N uptake, germination aged 40 DAP, population, plant height, leaf area, dry weight, and production of sugarcane aged 6 MAP. Application of 329 tons/ha of urea with cropping system of double row overlap 25% at ultisols in Tulang Bawang was the most effective and economic combination in improving soil fertility and stimulating growth and production of sugarcane aged 6 MAP. The low N uptake efficiency was influenced by denitrification, high temperature (volatilization), and high rainfall (leaching).

Keywords: ultisols, urea, double row, single row