

ABSTRAK

PENGARUH SISTEM OLAH TANAH KONSERVASI DAN PEMUPUKAN NITROGEN JANGKA PANJANG TERHADAP N-TOTAL DAN NITRAT TANAH PADA LAHAN PERTANAMAN JAGUNG (*Zea mays* L.) DI KEBUN PERCOBAAN POLITEKNIK NEGERI LAMPUNG

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Di Indonesia saat ini telah dikembangkan penerapan sistem olah tanah konservasi. Cara persiapan lahan yang memenuhi kriteria olah tanah konservasi adalah pengolahan tanah minimum dan tanpa pengolahan tanah. Selain dengan sistem olah tanah konservasi, usaha untuk meningkatkan produksi tanaman pangan juga dapat dilakukan dengan pemupukan. Pemupukan merupakan suatu tindakan pemberian unsur ke tanah atau tanaman sesuai yang dibutuhkan untuk pertumbuhan normal tanaman.

Penelitian ini bertujuan untuk mengetahui pengaruh sistem olah tanah dan pengaruh pemupukan nitrogen jangka panjang terhadap N-total dan nitrat (NO_3^-) dalam tanah pada lahan pertanaman jagung di Kebun Percobaan Politeknik Negeri Lampung. Penelitian ini dilakukan dengan menggunakan rancangan acak kelompok lengkap (RAKL) disusun secara faktorial dengan 4 ulangan. Faktor pertama dalam penelitian ini adalah perlakuan sistem olah tanah (T) yaitu T_1 = olah tanah intensif, T_2 = olah tanah minimum, T_3 = tanpa olah tanah, dan faktor kedua dalam penelitian ini adalah pemupukan nitrogen jangka panjang (N) yaitu $N_0 = 0 \text{ kg N ha}^{-1}$, dan $N_1 = 200 \text{ kg N ha}^{-1}$. Adapun kombinasi perlakuan yang diterapkan adalah : $N_0T_1, N_1T_1, N_0T_2, N_1T_2, N_0T_3, N_1T_3$.

Pada masing-masing petak percobaan, sampel tanah diambil pada tiga titik kemudian dikompositkan. Pengambilan sampel tanah untuk sampel nitrat dilakukan pada fase vegetatif, fase generatif dan setelah panen tanaman jagung pada kedalaman 0-20 cm sedangkan untuk sampel N-total dilakukan sebelum pengolahan tanah pada musim tanam sebelumnya pada tanaman kedelai pada kedalaman 0-5 cm, 5-10 cm, dan 10-20 cm. Data yang diperoleh dianalisis dengan analisis ragam dan dilanjutkan dengan uji Beda Nyata Jujur (BNJ) pada taraf 5 %. Data yang diperoleh diuji homogenitasnya dengan uji Bartlett dan aditifitasnya dengan Uji Tukey.

Dari hasil penelitian didapatkan bahwa sistem olah tanah tidak berpengaruh terhadap N-total tanah, sedangkan sistem olah tanah intensif menghasilkan nitrat (NO_3^-) lebih tinggi dibandingkan sistem olah tanah lainnya. Pemupukan nitrogen dengan dosis pemupukan 200 kg N ha^{-1} menghasilkan N-total tanah nyata lebih tinggi dibandingkan tanpa dipupuk N, dan pemupukan N 200 kg N ha^{-1} menghasilkan nitrat tanah (NO_3^-) nyata lebih tinggi dibandingkan tanpa pupuk N. Interaksi antara pengolahan tanah minimum dengan pemupukan nitrogen dengan dosis 200 kg N ha^{-1} menghasilkan N-total nyata lebih tinggi dibandingkan tanpa pupuk N, sedangkan pada nitrat (NO_3^-) interaksi antara pengolahan tanah dan pemupukan N tidak berpengaruh nyata.

Kata kunci : Nitrat, N-total, Pemupukan, Sistem olah tanah konservasi.

ABSTRACT

EFFECT OF CONSERVATION TILAGE SYSTEM AND LONG TERM OF NITROGEN FERTILIZING ON N-TOTAL AND SOIL NITRATE ON CORN (*Zea mays* L.) PLANTING LAND ON EXPERIMENT LAND OF POLITEKNIK NEGERI LAMPUNG

By

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Nowday, Indonesia has developed the application of conservation tillage systems. How tillage conservation tillage criteria are minimum tillage and no tillage (Utomo, 1990). Abdurachman et al. (1998) explain that conservation tillage (OTK) is a way of preparing land to reduce soil and water loss due to erosion and evaporation compared by means of conventional land preparation.

In addition to conservation tillage systems, efforts to boost crop production can also be done with fertilization. Fertilization is an act of giving elements to the soil or plants as needed for the normal growth of plants (Pulung, 2005).

Fertilizer N is one of the activities carried out in the cultivation of land, out of necessity N available for plant growth is not granted and organic-N in the soil will not be enough to meet the needs of the plant (Sanchez, 1992). Fertilization is intended to supplement the nutrients that plants need to be able to increase the production and quality of the production and quality of crops. N fertilization were performed continuously on the previous season with a conservation tillage system contains a higher soil N compared to intensive tillage (Niswati et al., 1994). Based on this fact it is important to know the N content of the soil in the planting season for corn-41.

This study aimed to determine the effect of tillage systems and nitrogen fertilization effect of long-term N-total and nitrate (NO_3^-) in the soil at planting corn land in Lampung State Polytechnic Experimental Farm. The study was conducted using a complete randomized block design (RAKL) arranged in factorial with four replications. The first factor in this study is the treatment of

tillage system (T) is T1 = intensive tillage, T2 = minimum tillage, T3 = no-tillage, and the second factor in this study is a long-term fertilizer nitrogen (N), ie N0 = 0 kg N ha⁻¹, and N1 = 200 kg N ha⁻¹. The combination treatment applied is: N0T1, N1T1, N0T2, N1T2, N0T3, N1T3.

In each experimental plot, soil samples were taken at three points and then composited. Soil sampling for nitrate samples done in the vegetative phase, the generative phase and after harvest of maize at a depth of 0-20 cm, while for the sample of N-total tillage done before the growing season prior to the soybean crop at a depth of 0-5 cm, 5 - 10 cm, and 10-20 cm.

Data were analyzed with analysis of range and continued with test Honestly Significant Difference (HSD) at the level of 5%. The data obtained by the assay Bartlett tested homogeneity and aditifitasnya with Tukey Test.

The result showed that the tillage system had no effect on N-total land, while the intensive tillage systems produce nitrate (NO₃⁻) differ significantly higher than other tillage systems. Nitrogen fertilizer dose of fertilizer 200 kg N ha⁻¹ produced different soil N- total significantly higher than without fertilizer N, fertilizer N and 200 kg N ha⁻¹ produced soil nitrate (NO₃⁻) differs significantly higher than that without fertilizer N. Interactions between minimum tillage with fertilizer nitrogen dose of 200 kg N ha⁻¹ produced significantly different N-total is higher than without fertilizer N, whereas the nitrate (NO₃⁻) interaction between tillage and N fertilization had no significant effect.

Keywords: conservation tillage systems, fertilizer N, N-total, Nitrate.