RINGKASAN

Jagung (*Zea mays,* L.) adalah salah satu jenis tanaman semusim yang mempunyai banyak manfaat salah satunya adalah sebagai bahan pangan. Salah satu faktor yang menyebabkan ketidakstabilan produktivitas tanaman jagung yaitu faktor tanah. Faktor tanah yang dapat mempengaruhi ketidakstabilan produktivitas tanaman jagung salah satunya yaitu tingkat kesuburan tanah di daerah tersebut rendah karena termasuk kedalam jenis tanah Ultisol. Tanah Ultisol memiiliki kandungan hara makro yang rendah terutama K, Ca dan Mg. Hal tersebut juga sejalan dengan kondisi tanah awal Ultisol yang diamati yaitu memiliki kandungan sifat kimia dan kandungan hara yang rendah. Salah satu upaya yang dapat dilakukan untuk dapat meningkatkan kesuburan tanah yaitu dengan kombinasi pupuk Hayati dan pupuk NPK. Penelitian ini bertujuan untuk 1) Mengetahui pengaruh berbagai perlakuan kombinasi pupuk hayati dan pupuk NPK terhadap pertumbuhan tanaman jagung. 2) Mengetahui pengaruh berbagai perlakuan kombinasi pupuk hayati dan pupuk NPK terhadap sifat kimia tanah pada tanah Ultisol.

Penelitian ini dilaksanakan di Desa Kaliori, Kalibagor Kabupaten Banyumas dengan ketinggian tempat pengujian 58 mdpl serta dilaksanakan analisis kimia di laboratorium tanah dan sumber daya lahan Faklutas Pertanian Uniersitas Jenderal Soedirman. Penelitian ini dilaksanakan mulai bulan Maret sampai dengan bulan November 2024. Bahan penelitian meliputi pupuk hayati yang telah dirakit pada tahap penelitian sebelumnya, pupuk kandang, tanah Ultisol, pupuk urea, pupuk KCl, pupuk TSP, benih jagung hibrida P27 dan bahan-bahan kimia untuk analisis tanah. Peralatan yang digunakan antara lain meliputi alat kantong plastik untuk pengambilan sampel tanah, sprayer, bor tanah, dan alat alat laboratorium yang digunakan untuk analisis tanah, antara lain timbangan, spektrofotometer, labu kjedahl, labu destilasi, labu erlenmeyer, buret, labu ukur, gelas ukur, pipet ukur, pipet volume, saringan, mortar dan pestle, spatula, pengaduk magnetik, tabung reaksi, dispenser, tabung *digestion*, dan alat sentrifugasi. Peneltian ini menggunakan Rancangan Acak Kelompok (RAK) non faktorial dengan 9 perlakuan dan 3 kali ulangan. Penelitian dilakukan pada petak lahan dengan ukuran 5 x 5 meter sebanyak 27 petak. Variabel yang diamati meliputi pH H_2O, pH KCl, KTK, C-organik, C/N rasio, N-tersedia, N-total, P-tersedia, P-total, tinggi tanaman, jumlah daun, bobot brangkasan tanaman segar, bobot tongkol dan bobot pipilan kering

Hasil penelitian ini menunjukan bahwa pemberian pupuk Hayati dan pupuk NPK mampu meningkatkan beberapa sifat kimia tanah dan pertumbuhan serta hasil tanaman jagung. Pemberian pupuk Hayati dan pupuk NPK berpengaruh nyata terhadap pH H_2O, C-organik, C/N rasio, N-total dan P-tersedia. Pemberian pupuk Hayati dan pupuk NPK berpengaruh nyata terhadap tinggi tanaman 8 mst, jumlah daun 8 mst, bobot brangkasan tanaman seegar, bobot tongkol dan bobot pipilan kering.

SUMMARY

Corn (Zea mays, L.) is a type of annual plant that has many benefits, one of which is as a food ingredient. One of the factors that causes instability in corn productivity is soil factors. One of the soil factors that can affect the instability of corn productivity is the low level of soil fertility in the area because it is included in the Ultisol soil type. Ultisol soil has a low macro nutrient content, especially K, Ca and Mg. This is also in line with the initial soil conditions of Ultisol observed, namely having low chemical properties and nutrient content. One effort that can be made to increase soil fertility is by combining biological fertilizers and NPK fertilizers. This study aims to 1) Determine the effect of various treatments of combinations of biological fertilizers and NPK fertilizers on the growth of corn plants. 2) Determine the effect of various treatments of combinations of biological fertilizers and NPK fertilizers on the chemical properties of soil in Ultisol soil.

This research was conducted in Kaliori Village, Kalibagor, Banyumas Regency with a testing altitude of 58 meters above sea level and chemical analysis was carried out in the soil and land resources laboratory, Faculty of Agriculture, General Soedirman University. This research was conducted from March to November 2024. The research materials included biofertilizers that had been assembled in the previous research stage, manure, Ultisol soil, urea fertilizer, KCl fertilizer, TSP fertilizer, P27 hybrid corn seeds and chemicals for soil analysis. The equipment used included plastic bags for soil sampling, sprayers, soil drills, and laboratory equipment used for soil analysis, including scales, spectrophotometers, kjedahl flasks, distillation flasks, Erlenmeyer flasks, burettes, measuring flasks, measuring cups, measuring pipettes, volume pipettes, sieves, mortars and pestles, spatulas, magnetic stirrers, test tubes, dispensers, digestion tubes, and centrifuges. This research used a non-factorial Randomized Block Design (RAK) with 9 treatments and 3 replications. The research was conducted on a plot of land measuring 5 x 5 meters with 27 plots. The observed variables include pH H_2O, pH KCl, CEC, C-organic, C/N ratio, N-available, N-total, P-available, P-total, plant height, number of leaves, fresh plant stalk weight, cob weight and dry corn kernel weight

The results of this study indicate that the provision of biological fertilizer and NPK fertilizer can improve several chemical properties of the soil and the growth and yield of corn plants. The provision of biological fertilizer and NPK fertilizer significantly affects pH H_2O, C-organic, C/N ratio, N-total and available P. The provision of biological fertilizer and NPK fertilizer significantly affects plant height 8 weeks after planting, number of leaves 8 weeks after planting, fresh plant stalk weight, cob weight and dry corn kernel weight.