RINGKASAN

Budidaya kelapa sawit meningkat di Sumatera Utara karena peningkatan harga CPO (*Crude Palm Oil*) di pasaran yang cukup signifikan setiap tahunnya, sehingga banyak dilakukan penanaman kelapa sawit di lahan-lahan yang tidak optimal untuk pertanaman kelapa sawit. Umumnya untuk mendapatkan produksi CPO yang tinggi maka pekebun kelapa sawit umumnya memberikan pupuk kimia secara terus-menerus dan melakukan pengendalian gulma menggunakan herbisida kimia secara intensif menyebabkan terjadinya degradasi lahan di perkebunan kelapa sawit yang mengakibatkan tanah menjadi kering, keras, dan kekurangan unsur hara. Upaya untuk mengatasi hal tersebut dengan melakukan penanaman tanaman penutup tanah dengan memanfaatkan gulma untuk mendorong perbaikan sifat kimia tanah.

Tujuan penelitian adalah untuk mengetahui sifat kimia tanah di bawah campuran dua jenis gulma sebagai tanaman penutup tanah pada kondisi naungan dan tanpa naungan. Penelitian dilaksanakan di Kebun Percobaan Fakultas Pertanian Universitas Islam Sumatera Utara, Gedung Johor, Medan, Sumatera Utara dengan ketinggian Tempat ±25 m dpl, dengan topografi datar. Analisis tanah dilakukan di Laboratorium Ilmu Tanah PPKS, Medan. Penelitian ini dilaksanakan pada Januari sampai Maret 2024. Penelitian ini merupakan penelitian deskriptif menggunakan metode survei dengan mengambil sampel tanah pada masing-masing titik sampling dan dilakukan analisis kimia tanah di laboratorium. Pengambilan sampel tanah dilakukan secara komposit pada kedalaman 0-20 cm sebelum dan setelah campuran dua jenis gulma sebagai tanaman penutup tanah yang ditanam pada kondisi tanpa naungan dan dengan naungan, yaitu: (1) campuran gulma *Asystasia gangetica* (60%) dan *Ageratum conyzoides* (40%); (2) campuran gulma *Nephrolepis biserrata* (60%) dan *A. gangetica* (40%); dan (3) campuran *N. biserrata* (60%) dan *A. conyzoides* (40%).

Hasil penelitian menunjukkan bahwa kondisi tanah kebun percobaan Fakultas Pertanian UISU dengan umur yang cukup tua dan berada di bawah hamparan tanah terbuka, lahan selalu ditanami sepanjang tahun untuk penelitian mahasiswa. Sifat kimia tanah pada analisis awal (sebelum penanaman campuran dua jenis gulma) dengan kandungan C-organik sangat rendah (0,98%), N-total rendah (0,13%), C/N rendah (8), P-total sangat tinggi (1600 ppm), K-total sangat rendah (3,52 me/100 g), dan Mg-total sangat tinggi (29,82 me/100 g). Sifat kimia tanah pada analisis akhir (setelah penanaman campuran dua jenis gulma) menunjukkan terjadi peningkatan kandungan C-organik (18,37%), N-total (7,69%), C/N (12,50%), dan K-total (670,45%), sedangkan P-total terjadi penurunan sebesar 15,66%. Hal ini menunjukkan bahwa adanya tanaman penutup tanah di permukaan tanah dapat meningkatkan kandungan C-organik, N, dan K tanah baik di bawah kondisi tanpa naungan maupun dengan naungan. Kadar air dan kadar lengas tanah terjadi penurunan setelah penanaman campuran dua jenis gulma, yaitu masing-masing menurun sebesar 22,23% dan 30,26% akibat diserap oleh tanaman serta penyiraman yang dilakukan 3 hari sekali.

Kata Kunci: Sifat kimia tanah, tanaman penutup tanah, gulma, kelapa sawit

SUMMARY

Oil palm cultivation is increasing in North Sumatra due to the significant increase in the price of CPO (Crude Palm Oil) on the market every year, so that many oil palm plants are planted on land that is not optimal for oil palm cultivation. In general, to obtain high CPO production, oil palm planters generally apply chemical fertilizers continuously and control weeds using chemical herbicides intensively, causing land degradation in oil palm plantations which results in the soil becoming dry, hard and lacking in nutrients. Efforts to overcome this are by planting cover crops using weeds to encourage improvements in soil chemical properties.

The aim of the research was to determine the chemical properties of the soil under a mixture of two types of weeds as ground cover plants in shaded and unshaded conditions. The research was carried out at the Experimental Garden of the Faculty of Agriculture, Islamic University of North Sumatra, Johor Building, Medan, North Sumatra at an altitude of ± 25 m above sea level, with flat topography. Soil analysis was carried out at the PPKS Soil Science Laboratory, Medan. This research was carried out from January to March 2024. This research is a descriptive study using a survey method by taking soil samples at each sampling point and carrying out soil chemical analysis in the laboratory. Soil samples were taken compositely at a depth of 0-20 cm before and after a mixture of two types of weeds as ground cover plants planted in conditions without shade and with shade, namely: (1) a mixture of weeds Asystasia gangetica (60%) and Ageratum conyzoides (40%); (2) a mixture of Nephrolepis biserrata (60%) and A. gangetica (40%); and (3) a mixture of N. biserrata (60%) and A. conyzoides (40%).

The results of the research show that the soil condition of the UISU Faculty of Agriculture's experimental garden is quite old and is located under an open expanse of land, the land is always planted throughout the year for student research. Soil chemical properties in the initial analysis (before planting a mixture of two types of weeds) with very low C-organic content (0.98%), low total N (0.13%), low C/N (8), P-total very high (1600 ppm), K-total very low (3.52 me/100 g), and Mg-total very high (29.82 me/100 g). The chemical properties of the soil in the final analysis (after planting a mixture of two types of weeds) showed an increase in organic C content (18.37%), total N (7.69%), C/N (12.50%), and K -total (670.45%), while P-total decreased by 15.66%. This shows that the presence of cover crops on the soil surface can increase the organic C, N and K content of the soil both under conditions without shade and with shade. Water content and soil moisture content decreased after planting a mixture of two types of weeds, namely respectively decreasing by 22.23% and 30.26% due to absorption by plants and watering which was carried out every 3 days.

Keywords*: Soil chemical properties, cover crops, weeds, oil palm*