

INTISARI

Pertanian organik sudah lama dijalankan pada petani sayuran di Indonesia. Penggunaan bahan organik secara terus menerus dilakukan tanpa memberikan pupuk sintetis dan pestisida. Pemberian bahan organik tersebut belum diketahui pengaruhnya terhadap cadangan karbon tanah, sehingga penelitian ini bertujuan untuk mengevaluasi *carbon stock* tanah pada pertanian sayuran organik serta dibandingkan dengan pertanian konvensional dan hutan. Beberapa parameter fisika kimia tanah juga dibandingkan yang meliputi bahan organik, berat volume, KPK, N-total, K-tersedia, retensi P, pH, dan tekstur tanah di lahan sayuran organik Desa Batur, Kecamatan Getasan, Jawa Tengah. Data diambil dengan metode komposit sampling dengan kedalaman 0-20cm dan 20-40cm pada setiap jenis pengolahan lahan. Analisis data menggunakan analisis sidik ragam dengan 2 faktorial yaitu kedalaman dan pengolahan lahan untuk melihat faktor mana yang menunjukkan beda nyata serta analisis regresi dan korelasi untuk melihat hubungan antar parameter. Hasil penelitian menunjukkan nilai cadangan karbon pada sistem pertanian organik paling tinggi. Nilai pH secara umum berkategori agak masam, bahan organik sangat tinggi, N-total rendah, K-tersedia sangat rendah hingga sangat tinggi, KPK rendah. Pertanian dengan sistem organik mampu menyimpan cadangan karbon lebih banyak di dalam tanah serta beberapa parameter kimia lain lebih tinggi nilainya pada sistem pertanian organik.

Kata Kunci: *Soil carbon stock*, pertanian organik, kimia tanah, karbon organik.

ABSTRACT

Organic farming has long been practiced in vegetable farming in Indonesia. Continuous use of organic materials is carried out without providing synthetic fertilizers and pesticides. The effect of the application of organic matter on soil carbon stocks is unknown, so this study aims to evaluate soil carbon stocks in organic vegetable farming and compare it with conventional farming and forests. Several soil Physico-chemical parameters were also compared which included soil organic matter, bulk density, CEC, total Nitrogen, available K, P retention, soil pH, and soil texture in organic vegetable farm in Batur Village, Getasan District, Central Java. Data were taken using the composites sampling method with a depth of 0-20cm and 20-40cm for each type of land management. Data analysis used analysis of variance with two factorials. The factorials are depth and land cultivation to see which factors showed significant differences, also regression and correlation analysis to see the relationship between parameters. The results showed that the carbon stock value in the organic farming system was the highest. The results of chemical parameters are slightly acidic pH, very high soil organic matter, low total N, very low to very high available K, low CEC. Agriculture with organic systems can store more carbon stocks in the soil and several other chemical parameters have a higher value in organic farming systems.

Keywords: Carbon Stock, Organic Agriculture, Soil Chemistry, Organic Carbon.