

INTISARI

Perubahan iklim terjadi akibat tingginya konsentrasi gas CO₂ di atmosfer akibat dari alih fungsi lahan dan deforestasi serta pembakaran bahan bakar fosil. Tentu hal tersebut akan mengakibatkan indeks kualitas udara yang buruk, pergeseran musim yang menyebabkan terjadinya banjir, dan pemanasan global. Oleh karena itu, perlu suatu upaya mitigasi perubahan iklim berupa peningkatan serapan karbon agar konsentrasi karbon di atmosfer dapat menurun. Penelitian ini bertujuan untuk mengetahui nilai cadangan karbon yang tersimpan, mengetahui pola tanam yang paling efektif, dan mengetahui sifat tanah yang berpengaruh dalam menyimpan kandungan cadangan karbon baik di atas maupun di bawah permukaan tanah di lereng barat laut Gunung Merbabu. Metode pengambilan sampel tumbuhan bawah dan seresah dengan metode *destructive sampling*, sedangkan metode pengambilan sampel tanah dengan metode *purposive sampling* menggunakan bor (*disturbed soil sample*) dan *ring sample* (*undisturbed soil sample*). Sampel biomassa & tanah yang diambil berasal dari jenis lahan monokultur, polikultur, semak belukar dan pekarangan. Untuk sampel tanah sendiri diambil pada tiga jeluk tanah (0-10 cm, 10-20 cm, dan 20-30 cm). Beberapa parameter fisik dan kimia tanah yang diujikan pada penelitian ini antara lain tekstur tanah, berat volume tanah, pH, C-organik, N-total, KPK dan C-stock. Data yang diperoleh berupa data mentah lalu data diolah dan disajikan dalam bentuk tabel, grafik hingga histogram serta dilakukan analisis regresi. Hasil yang diperoleh dari penelitian ini yaitu nilai cadangan karbon yang tersimpan pada pola tanam polikultur sebesar 47,48 ton/ha lebih besar dibandingkan pada pola tanam monokultur sebesar 42,09 ton/ha sehingga pola tanam yang paling efektif dalam menyimpan cadangan karbon yaitu polikultur. Parameter yang berhubungan (berpengaruh) terhadap simpanan cadangan karbon dari yang paling erat secara berturut-turut yaitu tekstur tanah, C-organik, berat volume tanah.

Kata kunci: *C-stock*, iklim, karbon, monokultur, polikultur

ABSTRACT

Climate change occurs due to high concentrations of CO₂ gas in the atmosphere as a result of land conversion and deforestation as well as the burning of fossil fuels. Obviously, climate change will be resulting a poor air quality index and season-shifting that cause floods and global warming. Therefore, a climate change mitigation effort is needed in the form of increased carbon absorption, so that carbon concentrations in the atmosphere can be decreased. This study aims to determine the value of stored carbon stocks, determine the most effective cropping pattern, and determine the soil properties that affect the storage of carbon stocks both above and below the soil surface on the north-western slopes of Mount Merbabu. The method for taking samples of undergrowth and litter is using the destructive sampling method, while the method for taking soil samples is using the purposive sampling method using a drill (disturbed soil sample) and ring sample (undisturbed soil sample). Biomass & soil samples taken came from monoculture, polyculture, grassland, and yardland. The soil samples were taken at three depths of soil (0-10 cm, 10-20 cm, and 20-30 cm). Several soil physical and chemical parameters were tested in this study including soil texture, soil bulk density, pH, C-organic, N-total, KPK, and C-stock. The data obtained is in the form of raw data and then the data is processed and presented in the form of tables, graphs, and histograms also regression analysis is carried out. The results obtained from this study were that the value of carbon stock stored in the polyculture cropping pattern was 47,48 tonnes/ha greater than in the monoculture cropping pattern of 42,09 tonnes/ha so the most effective cropping pattern in storing carbon stocks was polyculture. Parameters related (influential) to carbon stocks from the most closely related respectively are soil texture, C-organic, and soil bulk density.

Keyword: Carbon, climate, c-stock, monoculture, polyculture