

**PENGARUH *Indigofera zollingeriana* DAN KEDALAMAN TANAH
TERHADAP KANDUNGAN C-ORGANIK DAN N-TOTAL PADA TANAH
VERTISOL DI DESA PITU, KECAMATAN PITU, NGAWI**

Ashim¹, Handoyo Hadi Nurjanto², Arom Figyantika²

INTISARI

Indigofera zollingeriana yang berfamili legum berpotensi sebagai pembenah lahan, meningkatkan C-Organik, dan mempertahankan nitrogen melalui pertambahan dari biomasnya dan fiksasi nitrogen. Kandungan C-organik dan N-total tanah berperan penting dalam mendukung kesuburan tanah dan menyediakan nutrisi bagi tanaman. Masyarakat di Desa Pitu, Kec. Pitu, Kab. Ngawi sebagian besar bermata pencaharian sebagai petani. Tanah yang telah dimanfaatkan untuk budidaya pertanian cenderung memiliki nilai kesuburan yang lebih rendah. Penelitian ini bertujuan untuk mengetahui pengaruh *I. zollingeriana* dan kedalaman tanah terhadap kandungan C-Organik dan N Total pada tanah vertisol di kawasan Desa Pitu, Kecamatan Pitu, Kabupaten Ngawi, Jawa Timur.

Penelitian ini dilakukan dengan pengambilan sampel tanah pada 2 plot ukur, dengan teknik purposive sampling diagonal. Serta dilakukan pengambilan sampel tanah pada 3 kedalaman 0-10 cm, 10-20 cm, dan 20-30 cm untuk mengetahui kandungan C-Organik dan N-total tanah. Sampel tanah kemudian dianalisis di Laboratorium Fisiologi dan Tanah Hutan Kehutanan UGM dan dilanjut dengan uji analisis statistik T-test menggunakan *software R*.

Hasil penelitian menunjukkan penanaman *I. zollingeriana* secara positif meningkatkan 8,3% kandungan C-Organik dan 15,7% kandungan N total tanah, kandungan C-Organik tanah dengan *I. zollingeriana* sebesar 2,48% (sedang) yang lebih tinggi dibandingkan tanpa *I. zollingeriana* sebesar 2,29% (sedang) dan kandungan N total tanah dengan *I. zollingeriana* sebesar 0,22% (sedang), yang lebih tinggi dibandingkan tanpa *I. zollingeriana* sebesar 0,19% (rendah). Pada berbagai kedalaman tanah pengaruh *I. zollingeriana* terhadap peningkatan kandungan C-Organik dan N total tanah terlihat perbedaan yang lebih baik, terutama pada lapisan tanah permukaan. Dan cenderung menurun seiring bertambahnya kedalaman tanah.

Kata Kunci: *Indigofera zollingeriana*, C-Organik, N-total tanah, Vertisol.

¹ Mahasiswa Fakultas Kehutanan UGM

² Staff Pengajar Fakultas Kehutanan UGM

THE EFFECT OF *Indigofera zollingeriana* ON THE CONTENT OF C-ORGANIC AND N-TOTAL SOIL IN THE AREA OF PITU VILLAGE, PITU DISTRICT, NGAWI REGENCY, EAST JAVA

Ashim¹, Handojo Hadi Nurjanto², Arom Figyantika²

ABSTRAK

Indigofera zollingeriana, a member of the legume family, has the potential to improve soil quality, increase organic carbon, and retain nitrogen through biomass growth and nitrogen fixation. Organic carbon and total nitrogen content in soil play an important role in supporting soil fertility and providing nutrients for plants. The community in Pitu Village, Pitu Subdistrict, Ngawi District primarily relies on agriculture as their main livelihood. Soil used for agricultural cultivation tends to have lower fertility values. This study aims to investigate the influence of *I. zollingeriana* and soil depth on organic carbon and total nitrogen content in Vertisol soil in the Pitu Village area, Pitu Subdistrict, Ngawi District, East Java.

This study was conducted by taking soil samples from two plots using diagonal purposive sampling. Soil samples were also taken at three depths (0–10 cm, 10–20 cm, and 20–30 cm) to determine the organic carbon and total nitrogen content of the soil. The soil samples were then analyzed at the Forest Physiology and Soil Laboratory of the Forestry Department at UGM and followed by statistical analysis using the T-test with R software.

The results of the study indicate that the cultivation of *I. zollingeriana* positively increases the organic carbon content by 8.3% and the total nitrogen content of the soil by 15.7%. The organic carbon content of the soil with *I. zollingeriana* is 2.48% (moderate), which is higher than without *I. zollingeriana* at 2.29% (moderate) and total N content of soil with *I. zollingeriana* at 0.22% (moderate), which is higher than without *I. zollingeriana* at 0.19% (low). At various soil depths, the effect of *I. zollingeriana* on increasing organic carbon and total nitrogen content in the soil showed better differences, especially in the surface soil layer. And it tends to decrease with increasing soil depth.

Keywords: *Indigofera zollingeriana*, C-Organic, N-total soil, Vertisol

¹ Student of Faculty of Forestry UGM

² Lecturer of Faculty of Forestry UGM