

## INTISARI

Kompetisi penggunaan lahan pertanian untuk komoditas primer dan non-primer mengakibatkan keterbatasan luasan lahan untuk budidaya abaka sebagai tanaman penghasil serat potensial dengan nilai ekonomi tinggi, sehingga sistem agroforestri berpotensi untuk menjadi sistem budidaya alternatif untuk abaka. Penelitian ini bertujuan untuk mengkaji respon adaptasi abaka di dalam sistem agroforestri fase pertengahan (FT) dan fase lanjut (FL) berdasarkan keragaan metabolik dan biokimia serta mutu serat yang dihasilkan.

Penelitian dirancang menggunakan petak bersarang dan dilaksanakan pada musim hujan. Parameter pengamatan meliputi karakteristik edafik dan iklim mikro, kandungan MDA,  $H_2O_2$ ,  $O_2^{\bullet-}$ , SOD, POD, fenol, asam askorbat, unsur hara makro dan mikro, serta mutu serat. Sistem agroforestri FT menunjukkan kelembaban relatif yang lebih tinggi (4,35%) dan suhu yang lebih rendah (2,73%) dibandingkan FL karena memiliki sistem tajuk berlapis. Sistem agroforestri FL menunjukkan peningkatan kadar lengas (19,64%), karbon organik (72,89%), porositas (4,29%), KPK (13,77%), dan pH (35,13%) dibandingkan FT, namun belum dapat mengkompensasi dampak intensitas naungan tinggi (83,99%) yang memicu cekaman tanaman diindikasikan oleh peningkatan MDA (0,07%),  $O_2^{\bullet-}$  (1,86%),  $H_2O_2$  (32,66%), SOD (0,08%), POD (14,63%), dan fenol (35,08%) daun abaka. Kandungan asam askorbat abaka pada FL lebih rendah 18,90% dibandingkan fase pertengahan. Pertumbuhan abaka pada FL terhambat akibat cekaman naungan sehingga mutu serat yang dihasilkan lebih rendah dibandingkan abaka pada FT. Diameter dan kuat tarik serat abaka pada FT, secara berurutan, lebih tinggi 23,53% dan 18,77% dibandingkan abaka pada FL.

## ABSTRACT

Land use competition between initial cash crops and non-primary crops leads to decreasing productive area for abaca cultivation, as one of potential fiber crops with high quality fiber and promising economic value. Therefore, it is mainly established under agroforestry system for it is considered as third-phase crop. The study aims to observe metabolic and biochemical performance as well as fiber quality of abaca under agroforestry system.

The experimental design used in this study was nested design with two types of agroforestry system, intermediate phase (FT) and advanced phase (FL), and was conducted in rainy season. Parameters observed in this study were divided into edaphic and climatic parameters, oxidative response parameters, foliage macro- and micronutrient, as well as fiber quality. Higher RH (4,35%) and lower temperature (2,73%) were observed in FT due to its multilayer system. Improved soil characteristics in FL viz. soil water content (19,64%), organic carbon (72,89%), porosity (4,29%), CEC (13,77%), and pH (35,13%) were unable to compensate plant stress induced by high shading intensity at 83,99%. Consequently, it contributed to higher level of MDA (0,07%),  $O_2^{\bullet-}$  (1,86%),  $H_2O_2$  (32,66%), SOD (0,08%), POD (14,63%), and phenol (35,08%) due to shading stress. Nevertheless, ascorbic acid content in FL was lower (18,90%) compared to FT. Higher fiber diameter (23,53%) and tensile strength (18,77%) of abaca in FT was observed compared to FL.