

INTISARI

Kelapa sawit (*Elaeis guineensis* Jacq.) merupakan komoditas strategis perkebunan di Indonesia, namun produktivitas pada perkebunan rakyat masih rendah akibat tingginya penggunaan lahan marginal seperti lereng yang pengelolaannya kurang optimal akibat biaya. Penelitian ini bertujuan menyediakan dan membandingkan profil kimia tanah, profil tajuk dan akar, serta hasil tanaman kelapa sawit di tiga posisi pada lereng dengan kemiringan 12,5% (atas, tengah, dan dasar lereng). Penelitian dilaksanakan di Desa Sekonau, Kecamatan Sekadau Hulu, Kabupaten Sekadau, Kalimantan Barat pada September 2024 - Maret 2025. Analisis tanah dilakukan di Laboratorium Kimia dan Kesuburan Tanah Universitas Tanjungpura, sedangkan analisis jaringan (serapan hara, klorofil, dan aktivitas nitrat reduktase) dilakukan di Laboratorium Tanah Umum dan Laboratorium Manajemen dan Produksi Tanaman, Fakultas Pertanian Universitas Gadjah Mada. Penelitian menggunakan rancangan komparatif observasional dengan *purposive sampling* dan uji T berpasangan (*pairwise*) untuk tiga posisi tanaman pada lereng, masing-masing enam ulangan dengan tiap ulangan terdiri dari tiga sampel tanaman. Variabel yang diamati meliputi sifat kimia tanah (C-organik, N, P, K, KTK), profil tajuk (bobot kering organ dan luas daun), profil akar (bobot kering, luas, dan volume), serapan hara, klorofil, aktivitas nitrat reduktase, analisis pertumbuhan serta hasil tanaman. Hasil penelitian menunjukkan bahwa profil kimia tanah dan profil tajuk lebih baik pada posisi dasar dan tengah lereng dibandingkan posisi atas lereng. Profil akar di lereng yang cenderung lebih tinggi pada lapisan atas tanah pada sisi arah lereng dari tegakan. Hasil tanaman pada dasar lereng lebih tinggi dibandingkan atas lereng. Perbedaan posisi tanaman pada lereng berpengaruh nyata terhadap profil tajuk-akar dan hasil, sehingga pengelolaan konservasi tanah dan pemupukan berimbang penting diterapkan terutama pada posisi atas lereng untuk menjaga hasil tanaman yang berkelanjutan pada perkebunan kelapa sawit rakyat.

Kata Kunci: Lereng, kelapa sawit, produktivitas, perkebunan rakyat

ABSTRACT

Oil palm (*Elaeis guineensis* Jacq.) is a strategic plantation commodity in Indonesia. However, productivity in smallholder plantations remains low due to the extensive use of marginal lands such as sloping areas, which are often managed suboptimally due to high operational costs. This study aimed to characterize and compare the soil chemical profile, canopy and root traits, as well as yield performance of oil palm plants located at three positions (upper, middle, and lower) within the same sloping land with a 12.5% gradient. The research was conducted in Sekonau Village, Sekadau Hulu District, Sekadau Regency, West Kalimantan, from September 2024 to March 2025. Soil analyses were carried out at the Laboratory of Soil Chemistry and Fertility, Universitas Tanjungpura, while tissue analyses (nutrient uptake, chlorophyll content, and nitrate reductase activity) were performed at the General Soil Laboratory and the Laboratory of Crop Management and Production, Faculty of Agriculture, Universitas Gadjah Mada. The study employed a comparative observational design with purposive sampling and pairwise *t*-tests for the three plant positions within the slope, each with six replications consisting of three sampled plants per replication. Observed variables included soil chemical properties (C-Organic, N, P, K, and CEC), canopy profile (dry weight of organs and leaf area), root profile (dry weight, surface area, and volume), nutrient uptake, chlorophyll content, nitrate reductase activity, growth analysis, and yield. The results showed that soil chemical properties and canopy profiles were generally better at the middle and lower slope positions compared to the upper position. Root profiles on sloping land tended to be more concentrated in the upper soil layers on the downslope side of the palm stands. Yield at the lower slope position was higher than that at the upper position. Differences in plant position within the slope significantly affected canopy–root profiles and yield, indicating that soil conservation practices and balanced fertilization are essential, particularly at the upper slope position, to maintain sustainable productivity in smallholder oil palm plantations.

Keywords: Sloping land, oil palm, productivity, smallholder plantation