

ABSTRACT

Indonesia is one of the largest producers of oil palm (*Elaeis guineensis* Jacq), a key commodity in the plantation sector. Weed interference is a major obstacle in oil palm cultivation as it competes for essential growth resources such as nutrients, water, light, and space. This study aimed to identify weed species, analyze weed dominance and diversity, and determine the differences in weed composition between flat and sloped land in Afdeling II of PTPN IV Ambalutu Estate, North Sumatra. The research was conducted from January 2025 to March 2025 using a descriptive method with purposive sampling and 1 m² quadrants, totaling 30 plots (15 plots on flat land and 15 plots on sloped land). Results showed the presence of 27 weed species from 17 families. Flat land had 20 species while sloped land had 17 species, with the Poaceae family being the most dominant in both. The dominant species on flat land were *Axonopus compressus*, *Ottochloa nodosa*, and *Oplismenus hirtellus*, while on sloped land, they were *Axonopus compressus*, *Ottochloa nodosa*, and *Origanum vulgare*. The Shannon-Wiener diversity index indicated moderate diversity, with values of 2.06 for flat land and 2.14 for sloped land. Evenness Index values were 0.74 and 0.76, respectively, suggesting a relatively even distribution of weed species across both topographic conditions.

Keywords: Dominance index, Flat land, Oil palm, Sloped land, Weed diversity