

ABSTRACT

Oil palm (*Elaeis guineensis* Jacq.) is one of the most important plantation crops in Indonesia and plays a significant role in the national economy. Successful fruit production largely depends on effective pollination, which is primarily mediated by flower-visiting insects. These insects contribute to pollen transfer from male to female flowers, thereby enhancing fruit set and yield. The diversity and activity of flower-visiting insects may vary depending on environmental conditions and observation time. Therefore, this study aimed to determine the diversity of insects visiting female oil palm flowers at different observation periods. The study was conducted at the Indonesian Oil Palm Research Institute, Marihat Baris Unit, Simalungun Regency, North Sumatra, in February 2026. Observations were carried out on receptive female oil palm inflorescences using a time-lapse camera positioned directly in front of the flower bunches. Insect activity was recorded continuously for ten consecutive days during three observation periods: morning, afternoon, and late afternoon. The recorded insects were identified based on their morphological characteristics to the family level. Data were analyzed using the Shannon–Wiener diversity index, evenness index, and dominance index to describe the community structure of flower-visiting insects. The results showed that 8 morphospecies belonging to 4 orders and 5 families were recorded, namely Formicidae, Sphecidae, Curculionidae, Chelisochidae, and Muscidae. Curculionidae was identified as the principal pollinating insect family, while Formicidae, Sphecidae, and Chelisochidae functioned as predatory insects. The highest number of insect visits occurred in the morning and gradually decreased during the afternoon and late afternoon. The Shannon–Wiener diversity index indicated moderate diversity in the morning ($H' = 1.8355$) and afternoon ($H' = 1.7109$), but low diversity in the late afternoon ($H' = 0.5004$). Evenness values were high across all observation periods, indicating a relatively even distribution of individuals among families. Formicidae and Curculionidae were the most abundant insect families recorded throughout the study. These findings demonstrate that the diversity and activity of insect visitors to female oil palm flowers vary according to the time of day and provide baseline information for supporting pollination management and sustainable oil palm cultivation.

Keywords : female inflorescence, diversity, oil palm, time-lapse camera, visiting insects