

ABSTRACT

Zhafira Afifah Febriana. 24020121140152. *Plant Diversity and Their Tolerance to Air Pollution in The Industrial Area of Semarang City*. Under the supervision of Jumari and Lilih Khotimperwati.

Air pollution in industrial areas has the potential to decrease plant diversity and trigger tolerance responses among species. This study aimed to examine plant diversity and the level of tolerance to air pollution around the industrial area of Semarang City. Plant diversity data were collected inside and outside the industrial area through a survey with quantitative descriptive analysis. The Air Pollution Tolerance Index (APTI) was calculated based on four physiological parameters (ascorbic acid content, total chlorophyll, leaf pH, and Relative Water Content) in 28 species of trees and shrubs. Data was analyzed using ANOVA and Duncan's test to compare responses among species, and the Mann-Whitney U test to compare tolerance levels of the same species in both locations. The results on plant species composition show there were 44 species from 24 families, dominated by shade tree plants. In the APTI analysis, there were 28 species found, with the highest value observed in *Samanea saman*, *Muntingia calabura*, *Cananga odorata*, and *Ficus benjamina*. Four of these species had lower values inside the industrial area, such as *Tabebuia*, *Acacia auriculiformis*, *Calotropis gigantea*, and *Bougainvillea spectabilis*. The comparison between the two locations revealed that the overall tolerance level of plant species was higher outside the industrial area than inside. Plants located both inside and outside the zone contribute to air quality, thus their existence needs to be conserved.

Keywords: Plant diversity, air pollution tolerance, bioindicator, APTI, industrial area