

Variation in Leaf Anatomical Characters in Response to Air Pollution in Some Euphorbiaceae Species

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Abstract

Dry and wet season studies of the leaf anatomy of ten plant species in the family Euphorbiaceae from three sites with different pollution levels in Southwestern Nigeria were carried out. This is with a view to establish the response of plant anatomical structures to air pollution. The species investigated were *Alchornea laxiflora* (Benth.) Pax & K. Hoffm., *A. cordifolia* (Schum. & Thonn.) Mull. Arg., *Euphorbia heterophylla* L., *E. hyssopifolia* L., *E. hirta* L., *Croton lobatus* L., *Flueggea virosa* (Willd) Voigt., *Manihot esculenta* Crantz., *Phyllanthus amarus* (Schum. & Thonn.) and *Acalypha ornata* Hochst. ex A. Rich. Standard anatomical procedures for examining leaf epidermal surfaces and cross sections of the leaves were employed. Epidermal characters such as stomatal number and stomatal size were investigated while other leaf tissues including thicknesses of the cuticles, thickness of the epidermis as well as palisade and spongy mesophyll tissues thickness. Our data revealed a significant ($P < 0.05$) reduction in all the examined anatomical characters in plants growing in polluted sites when compared with their counterparts from unpolluted environments, except for stomatal number which showed a corresponding significant ($P < 0.05$) increase. Changes in the anatomical characters reported in this study tend to corroborate responses observed in the morphological attributes of the same plant species to environmental pollution in an earlier report. This study further establishes the usefulness of anatomical studies in explaining the mechanism underlying the morphological responses of the plants to air pollution.