

AIR POLLUTION BY METALLURGICAL UNITS AND THEIR IMACP IN ACTIVITY PHOTOSYNTHETIC OF CERCIUS SILICUASTRUM PLANTS

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Abstract

Air pollution by the metallurgical units, as the other stressors, can modify the optical and fluorescence properties of leaf plants either directly or indirectly. Therefore stress effects on plants are detectable via changed on fluorescence signature of leaves. Air pollution could induce decrease of chlorophyll (Chl) content as well as significant decline of photosynthetic activity. The chlorophyll fluorescence as a nondestructive method for the in vivo analysis of plants allow to study the photosynthetic light processes and quantum conversion to detect stress effect on the activity of the photosynthetic apparatus. Metallurgical factory in Elbasan that release chemicals and particulates into the atmosphere is considered a source of air pollution. Some plant species grown in area near the factory were studied to evaluate the efficiency of photosynthetic apparatus in pollution conditions via chlorophyll fluorescence imaging during induction kinetics. Different fluorescence ratios which describe the photosynthetic light processes and the potential and effective quantum yields of Photosystem II were considered too. Chlorophyll fluorescence images were measured using the Fluor Cam 700MF imaging system (Photon Systems Instrument) as a technique that offers the possibility to study the distribution and patchiness of fluorescence signatures over the whole leaf area. Chl fluorescence images were measured on the leaves of spontaneous plants grown in sites with different level of steel plant air pollution assessed on base of different distances and different directions from the source of the pollution. Contamination effect reflected on photosynthetic activity of leaves was very high particularly on plants located nearer the metallurgical units.

Keywords: *Chlorophyll fluorescence, chlorophyll fluorescence imaging, spontaneous plant, induction kinetics, photosynthetic apparatus.*