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OCCURRENCE OF CADMIUM, CHROMIUM, LEAD AND NICKEL IN CORN LEAVES DURING THE 1999 TOTAL SUN ECLIPSE BY ICP-AES

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Abstract

The August 11, 1999 sun eclipse was a very interesting phenomenon, from scientific point of view for researchers from all over the world.
The microelements, acting as ions in biological fluids, have a vital role in metabolic activities of live organisms, like to maintain its morphofunctional integrity.
This paper tries to demonstrate for the first time the behavior of the plants related to astronomic events. Studies have been performed in Constantza, Romania, in the summer of '99, before, during and after the total sun eclipse, on *Zea Mays sp.* leaves. The concentration of some heavy metals: cadmium (Cd), chromium (Cr), lead (Pb) and nickel (Ni) have been determined in corn leaves before, during and after the sun eclipse using the ICP AES technique.
The obtained values of concentrations vary between 0.05 – 0.75 mg/kg dry weight for cadmium, 1.8 – 6.31 mg/kg dry weight for chromium, 1.45 – 3.58 mg/kg dry weight for lead and 1.28 – 4.49 mg/kg dry weight for nickel.
Deviating patterns in trace element concentrations can be discerned: one day before the sun eclipse day all studied concentrations record high values, on August 11 all decrease cadmium and chromium having minimum values, and the day-after cadmium, chromium and lead record maximum values and nickel a minimum.
The evolution of metal concentration during the sun eclipse can be considered like a plant "premonition" and response to a stress factor, but the occurring mechanism is difficult to explain.

Keywords: cadmium, chromium, lead, nickel, maize leaves, sun eclipse, ICP-AES

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