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## **INFLUENCE OF SOIL MATRIX ON SOIL-WATER RETENTION CURVE AND HYDRAULIC CHARACTERISTICS**

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### **Abstract**

The composition and the structure of the soil matrix have an important role in determining the water and the air regime into the soil. In the soil pore the area occupied by water and air, capillary and adsorption phenomena occur, together defining the suction of the matrix. The suction-humidity relationship varies from one soil to another, but also to the same soil in time.

This paper sets out the results of investigations aimed at highlighting the influence of the composition and structure of the soil matrix over the soil-water retention curve and the unsaturated soil conductivity. The research was conducted on soil samples taken from three layers, in two places (Vișani and Mădârjac) located in the county of Iasi. The matrix of each soil sample was characterized by: the clay content, the humus and organic carbon content, the clay mineralogy and the total porosity. For each soil sample the soil-water retention curve was determined using theoretical and experimental methods. The suction-moisture pairs of values, extracted from the soil-water retention curves were then used for determination of the pore size distribution. With the soil-water retention curves and pore size distribution index were determined values of the hydraulic characteristics of the studied soils: degree of saturation with water ( $S_e$ ), suction depending on humidity [ $\Psi(\theta)$ ] and unsaturated hydraulic conductivity [ $k(\theta)$ ].

*Key words:* clay, humus, hydraulic conductivity, organic carbon, mineralogy, soil-water retention curve.

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