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Soil and Water Research

Evaluation of ground penetrating radar and vertical electrical sounding methods to determine soil horizons and bedrock at the locality Dehtáře

Nováková E., Karous M., Zajíček A., Karousová M.:

Soil & Water Res., 8 (2013): 105-112

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Recently, geophysical methods have been widely used in many fields including pedology. Two of them, ground penetrating radar (GPR) and vertical electrical sounding (VES) were employed at the Dehtáře experimental site with the aim to evaluate their application in the Cambisol and Stagnosol soil types and crystalline bedrock survey in Czech conditions. These measurements were complemented by the classical soil survey using a gouge auger. As a result, interpreted soil and rock environment profiles were obtained, with the identification of boundaries of Bg, C, and R soil horizons and bedrock at various degrees of weathering. The interpretation of measurement records demonstrated suitability of the VES and GPR method application, using GPR for imaging the soil profile and the top of bedrock, while the VES method gave better results in imaging greater depths. The research demonstrated advantages of the geophysical methods such as instancy, continuous imaging, and no disturbance of the subsurface. In spite of needing

classical survey data for interpretation of the results obtained by the geophysical methods, their usage can bring better quality to the soil profile imaging.

Keywords:

geophysical method; parent rock; soil layer; soil survey

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