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Abstract

Selected Issues on Electromagnetic Standardization of Soil Moisture †

Wojciech Skierucha [1,*], Andrzej Wilczek [1], Agnieszka Szypłowska [1], Marcin Kafarski [1], Arkadiusz Lewandowski [2] and Jacek Majcher [3]

[1] Institute of Agrophysics PAS, 20-290 Lublin, Poland
[2] Institute of Electronic Systems, Warsaw University of Technology, 00-661 Warsaw, Poland
[3] Department of Electrical Engineering and Electrotechnologies, Lublin University of Technology, 20-618 Lublin, Poland
* Correspondence: w.skierucha@ipan.lublin.pl
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Abstract: A large number of electromagnetic sensors for measuring soil moisture available on the market, differing in their method of measurement, price, shape, measurement volume, durability, etc., mislead the potential user. They cannot compare the right measurement equipment because there is no easy and reliable way to do so. The response of the sensors depends on the measurement frequency used, soil salinity, density, and texture, just to name a few. The growing concern for the sustainable use of water resources for agricultural, industrial, and domestic purposes and the growing market for the right measuring tools are putting pressure on users making the right choice. The article presents the issues and efforts of working towards standardization of electromagnetic measurements of soil moisture, especially in the field of the selection of measurement methods and reference materials that would enable the comparison of the performance of dielectric sensors available on the market. Work on the standardization of electromagnetic soil moisture measurements requires the cooperation of an interdisciplinary group of scientists and producers. The work done so far is an initial attempt to synchronize research in some international laboratories, learn about mutual research methods, and formulate research tasks for the future. Key questions about the concept development process leading to standard testing and evaluation practices for electromagnetic soil moisture measurements are still unanswered.

Keywords: soil moisture; dielectric probe; dispersion effects; soil dielectric spectroscopy

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