

EGU22-8405

<https://doi.org/10.5194/egusphere-egu22-8405>

EGU General Assembly 2022

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



Soil moisture probes for mobile irrigation machines

Marcin Kafarski¹, Majcher Jacek², Wilczek Andrzej¹, Szyplowska Agnieszka¹, Lewandowski Arkadiusz³, and Skierucha Wojciech¹

¹Institute of Agrophysics, PAS, Lublin, Poland (m.kafarski@ipan.lublin.pl)

²Department of Electrical Engineering and Electrotechnologies, Lublin University of Technology, Lublin, Poland

³Institute of Electronic Systems, Warsaw University of Technology, Warsaw, Poland

The necessity of saving water is a very important issue in precision agriculture. It requires soil moisture monitoring of very large field areas. Soil moisture maps obtained in real time are very useful for proper and economic irrigation.

The soil moisture sensor market is very large. Sensors differ in accuracy, price, measurement speed, etc. However, typical soil moisture sensors are designed for fixed installation or manual insertion. The aim of this work was to present sensors which have high accuracy, high speed of measurement and high mechanical strength required for field mapping performed by an automated platform, which makes hundreds or thousands measurements at a given field. In addition to the aforementioned properties, the sensors should have a big sensitivity zone, which would minimize the impact of air gaps, stones, roots and soil local heterogeneity on moisture measurement results. The presented results involve the design of the sensors and laboratory verification of their performance.

Acknowledgments: The research was supported by the Polish National Agency for Academic Exchange under Grant no. PPI/APM/2018/1/00048/U/001.