Proximal soil sensing technologies for soil fertility assessment

The low efficiency use of fertilizers is a main cause for the high environmental footprint of agriculture. Precision agriculture may increase the efficiency, productivity, and profitability of agricultural production, while reducing negative environmental impacts, due to the exact quantification and application of fertilizers without compromising crop yields. However, to achieve this aim we need increased expertise in proximal sensing technologies to assess soil fertility. This course, developed in the framework of the SOILdarity project (www.soildarity.eu), takes advantage of the knowledge and experience of two world leading institutions in precision agriculture, one from MIGAL (Israel) and other from Gent University (Belgium). The course will take place at Faculdade de Ciências da Universidade de Lisboa (Lisbon) from 9 to 19th of May 2022. The course, taught in English and free of charges, will be a face-to-face activity and includes theoretical expositions, practical challenges, informal discussions, and field trips.

The objective of the course is to train ESR, students, technicians, farmers, and scientists engaged in precision agriculture and in its relationship with soil fertility, aiming at increasing the future adoption of precision agriculture by farmers and related actors. The number of participants is limited to 20.

Come and join us on this journey through soil fertility and precision agriculture!

SOILdarity - Proximal soil sensing technologies for soil fertility assessment
Faculdade de Ciências da Universidade de Lisboa
9-19th May 2022

Schedule (Pt time)	Instructor/s	Course description
9th) 9:00 - 13:00	Prof Iggy Litaor (MIGAL)	Theoretical lectures ➢ Electrical conductivity of soils ➢ Electromagnetic Induction techniques ➢ EMI survey techniques
9th) 14:00 - 18:00	Prof Iggy Litaor and Assaf Israeli (MIGAL)	Theoretical lectures ➢ Case Studies ➢ Data analysis
10th) 9:00 – 20:00	Prof Iggy Litaor and Assaf Israeli (MIGAL)	Practical Session ➢ EM38 MK2 operation, calibration, and survey ➢ Field trip and measurements

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11th) 9:00 -13:00	Prof. Iggy Litaor Assaf Israeli (MIGAL)	Practical Session ➢ Demonstration of data analysis and mapping techniques
12th) 9:00 – 18:00	Prof. Iggy Litaor (MIGAL)	Practical assignments ➢ Soil sample preparation
13th) 9:00 – 13:00	Prof. Iggy Litaor (MIGAL)	Final classroom session • Summary, results discussion and concluding remarks
16th) 10:00 - 13:00	Prof Mouazen (UGENT)	Theoretical lectures • Optical techniques • Electrochemical technique • Gamma ray technique
16th) 14:00 - 18:00	Prof Mouazen & Dr. Munnaf (UGENT)	Practical session • Demo of UGent laboratory spectroscopy methods • Demo on UGent sensing platforms
17th) 10:00 - 13:00	Prof Mouazen (UGENT)	• Theoretical lectures • Multi-sensor data-fusion
17th) 14:00 -18:00	Dr. Munnaf (UGENT)	Theoretical lectures • Data analysis techniques • Mapping techniques
18th) 9:00 – 18:00	Dr. Munnaf (UGENT)	Practical assignments • Field trips & field measurement • Soil sample preparation • Spectra collection
19th) 9:00 – 18:00	Dr. Munnaf (UGENT)	Practical assignments • Modelling of collected spectra Mapping using Geostatistical software

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