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Lectures	Sustainable use of soils Interactions in plant-soil systems
Key words	Sustainability concept in land/soil use, soil functions and quality, soil information and maps, spatio-temporal scales, pedometrics, pedotransfer functions. Soil-plant interactions, plant nutrition, element antagonism and interactions, nutrient uptake by plants, nutrient mobility and availability, nutrient balances, fertilization.
Learning objectives	The aim of the lectures is to provide for students possibility to acquire basic knowledge about soil functions and soil quality. Students will understand importance of appropriate selection and interpretation of soil information across various spatio-temporal scales. Students will know basic aspects of nutrient mobility and availability in soil-plant system. Students will understand diversity of plant nutrient forms in soil and are able identify some ways to regulate soil fertility and plant nutrition in cropping systems.
Main subjects	- Sustainability concept in land/soil use - Soil functions - Soil quality concept and indicators - Soil quality rating systems - Soil indicators in context of spatio-temporal scales - Soil maps and information systems - Pedometrics and pedotransfer functions (from soil data into decisions) - Soil-plant interactions - Soil forming factors - Plant nutrient elements in soil (mobility and availability) - Antagonism and interactions of plant nutrients in soil - Mechanisms of nutrient uptake - Role of fertilization on nutrient balances, crop productivity and soil fertility

Relevance to EduSaPMan	Lectures are intended to cover topics of applied soil science within in scope to increase knowledge for appropriate use and interpretation of soil information across various spatio-temporal scales.
Recommended literature	Tóth, G., Stolbovoy, V. and Montanarella, L. 2007. Soil Quality and Sustainability Evaluation - An integrated approach to support soil-related policies of the European Union. EUR 22721 EN. 40 pp. Office for Official Publications of the European Communities, Luxembourg. ISBN 978-92-79-05250-7. Web: eusoils.jrc.ec.europa.eu/ESDB_Archive/eusoils_docs/.../EUR22721.pdf Malingreau, J., Eva, H., Albino Maggio, A. 2012 NPK: Will there be enough plant nutrients to feed a world of 9 billion in 2050? EUR 25327 EN. 30pp. Luxembourg: doi: 10.2788/26603 European Soil Data Centre (ESDAC): http://esdac.jrc.ec.europa.eu/