



Challenges to teach soil science at Eesti Maaülikool in local and international level

Endla Reintam (1), Alar Astover (1), Merrit Shanskiy (1), Przemysław Charzyński (2), and Philipp von Wrangell (3)

(1) Estonian University of Life Sciences, Institute of Agricultural and Environmental Sciences, Department of Soil Science and Agrochemistry, Tartu, Estonia (endla.reintam@emu.ee), (2) Department of Soil Science and Landscape Management, Faculty of Earth Sciences, Nicolaus Copernicus University in Toruń, (3) Ulm University

Challenges in teaching on the field of soil and plant ecology are often related to their high complexity. In the higher education in these subjects is mainly dominated by strong theoretical courses, but potential interconnections with practice and related economy sectors (agriculture, forestry, bio economy, environmental protection etc) are not fully exploited. This limits students' competitiveness at labour market. Plant production is highly dependent on environmental factors such as temperature, water availability, extreme events etc. Many of the soil productivity issues are again related to the environment but also to soil nutrients and management issues. Some of them like soil erosion or compaction can even lead to long-term losses in biomass productivity and affect food security. It is therefore important to transport the knowledge on these issues to various fields of higher education and to establish links to potential users. There has developed several e-learning platforms and study courses and materials during last decades to increase the teaching effectiveness in higher education. However, these materials are usually not for open use and there is still lack of high quality e-materials in soil and plant ecology. Also the high level research methods are often not used as a part of the teaching and are not understandable for wider audience. Another problem is that in higher education students get good theoretical knowledge, but they do not have skills to use this knowledge in practice not in local or regional level. Education have to be based on up-to-date knowledge and resources, needs to give students opportunity to commune with the latest achievements of science and up-to-the-minute educational solutions. However, the main target is to create interest and not to kill it during the study process.

Within the ERASMUS+ strategic partnership projects, such Freely Accessible Central European Soils (FACES), Educational Network on Soil and Plant Ecology and Management (EduSapMan) and International Applied Soil and Plant Ecology Knowledge (IntASEK) different approaches to teach soil classification, soil and plant ecology were and will be developed. Developed curricula/system of international intensive courses and trainings will put students in a situation of necessity to exchange information and prove than only good understanding and proper usage of common denominator, enables cooperation and scientific development. Good quality e-materials helps to understand the topic and provides support in study process. However, real contact with the problem forces them to find solutions and study theory behind that. So far students don't have to think about popularization and dissemination of soil knowledge. This has been tested during last three years at Eesti Maaülikool (the Estonian University of Life Sciences). Giving to the students only the topic "SOIL", have been resulted several interesting solutions, such games, interactive posters, tests and short videos to promote soil knowledge. The students have been highly valued such kind of activity so far.