



## **Education on sustainable soil management for the masses? The Soil4Life MOOC**

Jerry Maroulis (1,2), Moore Demie (1), Michel Riksen (1), and Coen Ritsema (1)

(1) Wageningen University and Research Centre, Soil Physics and Land Management, Wageningen, Netherlands (jerry.maroulis@wur.nl), (2) International Centre for Applied Climate Science, University of Southern Queensland, Toowoomba, Australia (maroulis@usq.edu.au)

Although soil is one of our most important natural resources and the foundation for all life on Earth it remains one of the most neglected of our resources. We, in soil science know this, but what do we do to reach more people more quickly?

MOOCs, 'Massive Open Online Courses', are a vehicle for offering learning to virtually unlimited audiences at little cost to the student. Could MOOCs be the format for introducing more people worldwide to the importance of soil and sustainable soil management? MOOCs have their limitations and critics. However, depending on your goals, expectations and resources, they are a means for getting information to a much broader population than is possible through conventional educational formats. Wageningen University (WU) agreed and approved the development of a MOOC on sustainable soil management entitled Soil4Life. This presentation reviews the format and results of Soil4Life, concluding with some observations and reflections about this approach to soil science education.

The Soil4Life MOOC introduces the role of soil in life on earth, soil degradation, and socio-economic issues related to generating action for long-term sustainability of the many soil-related ecosystem services. The objectives of Soil4Life are to raise awareness about the many important aspects of soil and sustainable soil management, and to allow the educational materials we produced to be available for use by others.

The process of creating the Soil4Life MOOC involved 18 academic staff across all WU soil-related groups plus a vital team of education and technical staff. This number of people posed various challenges. However, with clear guidelines, lots of encouragement and technical support, Soil4Life was started in late 2015 and launched on the edx platform in May 2016.

Just over 5000 students from 161 countries enrolled in the first offer of the Soil4Life MOOC – a modest number for MOOCs, but not bad for soil science. The targeted audience was initially high school graduates possessing a general grounding in science. However, only 16.6% fitted this category with most enrollees already having a Bachelors or Master's degree and even 5.9% possessing doctorates. Multiple students mentioned that soil was pertinent to their field of work but they knew little about it or, in the case of teachers, had limited access to current teaching resources. Soil4Life provided a means to broaden knowledge and state of the art information for use in many settings.

In the post-survey (n=103), >90% stated that Soil4Life met or exceeded their expectations. Overall, students were happy with the workload (81.2% spent up to 8hr/wk). The WU approved the MOOC as a 2.0 credit course for all WU students. Some revisions were made and the MOOC was relaunched in November 2016.

Creating a MOOC is intensive and expensive, however its potential reach is enormous. Expecting a single MOOC to accomplish all goals or provide a return on investment is unrealistic. However, designing a MOOC that is relevant and can be re-used in multiple ways, provides a means for offering soil science education and disseminating WU soils expertise worldwide.