Mathematical modeling in soil science

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Teaching in context can be defined as teaching a mathematical idea or process by using a problem, situation, or data to enhance the teaching and learning process. The same problem or situation may be used many times, at different mathematical levels to teach different objectives. A common misconception exists that assigning/teaching applications is teaching in context. While both use problems, the difference is in timing, in purpose, and in student outcome. In this work, one problem situation is explored thoroughly at different levels of understanding and other ideas are suggested for classroom explorations.

Some teachers, aware of the difficulties some students have with mathematical concepts, try to teach quantitative sciences without using mathematical tools. Such attempts are not usually successful. The answer is not in discarding the mathematics, but in finding ways to teach mathematically-based concepts to students who need them but who find them difficult. The computer is an ideal tool for this purpose.

To this end, teachers of the Soil Science and Mathematics Departments of the UPM designed a common practice to teach to the students the role of soil on the carbon sequestration. The objective of this work is to explain the followed steps to the design of the practice.