



## **Spreadsheet as a motivational tool in learning and professional development in Agricultural Engineering**

Silvia Medina, Ruben Moratiel, Ana Maria Tarquis, and Jose María Durán  
GIE Riskmetrics. ETSI Agrónomos, Universidad Politécnica de Madrid

For the past few decades, Spanish universities have been introduced gradually, the use of so-called New Technologies in the classroom. This is because its use contributes to improve outcomes in education at all levels. In this sense, it helps not only to expand knowledge as in traditional education, but teaches students to learn and encouraged them to be more independent, to develop and apply their knowledge in practice, their future employment use.

The aim of this paper is to analyse the educational content and the degree of satisfaction students get through the use of a spreadsheet program to perform various practices of Agricultural Engineers courses of the Polytechnic University of Madrid.

Weekly, the professor poses a practice with a detailed explanation of what is required and students have the opportunity to submit as many times as they want, over two weeks, the work developed. Students are encouraged to undertake individual work and to submit in the same day the exercise done because earlier is the presentation of results more opportunities to correct the mistakes.

Regardless of students' knowledge on Excel, the professor explains each one of the Excel resources to be employed in the presented practice. Then, they have the opportunity to ask about them avoiding the scenario of not performing the practice due to ignore some Excel resources. The number of practices that are performed per year depend on the hours / credits that are assigned to each subject.

On the other hand, to check the degree of student satisfaction with these practices, a anonymous questionnaire was performed consisting of 15 questions that can be grouped into four categories: consolidation of knowledge (4 questions), practice organization (7 questions), following indications (2 questions) and knowledge of Excel (2 questions). Results show high degree of students' satisfaction in their learning process and their applicability in the future.

### **Acknowledgments**

Funded provided by educational innovation projects "Training of mentors' students in different subjects in the first degree and postgraduate ETSI Agrónomos" and "Students mentoring system in undergraduate and graduate courses at ETS Ingenieros Agrónomos" given by UPM are gratefully appreciated.