(Herramientas didácticas para el manejo del agua y) – Teaching tools for managing water and organic material in crop systems

Contact information

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Technological Offers type

Software

Research and innovation areas

- Agricultura, silvicultura, recursos naturales, usos de la tierra y crecimiento azul

Where?

Agricultural Environmental Risk Management Research and Study Centre (CEIGRAM). Joint UPM-ENESA-AGROSEGURO Centre
Agricultural Systems Group (AgSystems)

Software description

I. PROGRAM FEATURES.
I.1 Programming language: Visual Basic (Microsoft Office Excel XML format)
I.2 Operating environment: Windows XP or Vista. The Excel program must be installed on the computer. Created in Office 2007.
I.3 List of files it contains:
Teaching tool Mo.xls
Teaching Tool Manual Mo.pdf
Teaching Tool Water Needs.xls
Teaching Tool Water Needs.pdf
II. DESCRIPTION OF THE PROGRAM AND FLOW CHARTS
II.1 Teaching tool Mo.xls.
This tool consists of seven spreadsheets: Definition, Balance, Maintenance, Correction, Organic material evolution, Mineralisation rate and Manure characteristics. The sheets are protected in such a way that the student has the option to modify some of the variables affecting the calculations, but only has visual access to the calculations made or the additional information supplied.
The main aim of our work was to develop a tool that would allow a student doing higher technical studies to resolve problems relating to calculating humic balances and managing organic waste in crops systems.
The tool developed was an Excel workbook consisting of seven spreadsheets enabling telematic distribution amongst the students. It compiles the information needed to resolve problems in controlling organic material in the soil and allows the student to make calculations for organic amendments in crop systems.

The program makes it possible to calculate the humic balance in soil where a known alternative is made to the crops. Within the program the user can change a series of parameters and variables relating to the soil, as well as the type of tillage or farming (dry or irrigated). The application also permits variation to the percentage of crop waste produced to calculate the balance and check if the soil is in equilibrium, or not. In the event that it is not, the program offers several types of manure to chose from, depending on the level of stability, calculating the amount and time for applying it to maintain the land¿s humic balance.

Another section offers the possibility of calculating the amount of manure needed to raise the organic material content to a level chosen by the user, and the amount of manure needed to maintain the organic material content in what is known as maintenance amendment plus correction. The student is, therefore, offered the chance to vary some of the determining factors in the systems and compare the various results obtained in each case, understanding and reasoning why they occur.

Reference

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