Multifunctional soil conservation and land management through the development of a web based spatial decision supporting system

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This work aims to present the first results of the LIFE+ SOILCONSWEB project (LIFE08 ENV/IT/000408) aiming to produce, to test and to apply a decision supporting system (DSS) tool. The practical focus of this tool is to support (stakeholders) decision on landscape issues aiming to both the best soil conservation and land management and also to an easy landscape implementation of some important but complex environmental related EU directives. The project acknowledge that some of these EU directives/regulation have an intrinsic complexity because they apply to soils and landscapes which have the well recognized "multiple functions" as a fundamental feature. Then it is not surprising that this decision supporting tool requires, as fundamental feature, to include and mix many different high quality digital information, engine and processing in order to be successfully applied.

Our DSS tool has been developed in the framework of a "Web-based Spatial Decision Supporting System" (WS-DSS) and it will consider soil and landscape. Decision makers (individuals, groups of interests and public bodies) can have real-time (or near real-time) access to critical, accurate, complete and up-to-date spatial data held in multiple data stores. The system produce detailed spatial documents, report and maps on a series of questions including agriculture, environment and climate change.

The tool is available to and it will also allow to integrate classical top-down decision with bottom-up contributions to landscape planning and managing.

The tool, as prototype, has been developed, tested and applied in an area of about 20,000 hectares in South Italy (Valle Telesina, province of Benevento in the Campania region) but its development will enable future applications in other areas.

Among the several topics having a different level of complexity and already implemented in the DSS, we will show those concerning soil sealing and viticulture zoning (terroir). Emphasis will be on how combining digital soil databases, advanced digital soil mapping procedures (e.g. neural network analysis), physical-based modelling (i.e. SWAP model to calculate crop water stress indexes) and land assessment.

Finally, the high qualified tools (still under construction) and their main technical/scientific constraints, as those referring to the near real-time management of typical crops, will be discussed.

We believe that this work shows that web based Spatial Decision Supporting System must become a priority in future research to make soil science playing a larger role in landscape management and environmental assessment.