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MULTIDISCIPLINARY AND INNOVATIVE METHODOLOGIES FOR SUSTAINABLE MANAGEMENT IN AGRICULTURAL SYSTEMS

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Abstract

Sustainability issues have driven academic researchers towards the definition of methodological tools to assess the impacts derived from products and services and to make them more ecologically friendly, economically profitable and socially suitable, and whose results have to be clear and understandable to a broad public. In the evaluation of complex socio-environmental systems, like agricultural ones, uncertainty often arises and the quality of decision processes can be a high concern. This paper presents the conceptual and methodological framework of an Italian research project entitled “MIMeSMAS”, i.e. Multidisciplinary and Innovative Methodologies for Sustainable Management in Agricultural Systems. Through a multi-disciplinary, multi-methodological, systemic and participatory approach, the project attempts to define an integrated approach for the assessment of environmental, economic and social sustainability of innovative agricultural practices in Mediterranean areas. The project activities are carried out by four Italian research institutions in order to bring together agronomic, hydraulic and mechanical expertise and to conduct a combined implementation of Life Cycle methodologies (LCA, LCC and s-LCA) and multi-criteria analysis tools. The approach is applied to assess and rank alternative cropping systems scenarios; results are expected to help optimising the management of soil, water and energy macro-systems of perennial crops (olive), horticultural crops (artichoke) and dedicated energy crops (giant reed). In this paper the theoretical concept of the project, the preliminary results of project's activities linked to the identification of experimental trials scenarios and to the definition of specific indicators are presented.

Key words: agricultural sustainability, life cycle methodologies, multidisciplinary approach, multi-criteria decision analysis, participatory approaches

Received: December, 2014; Revised final: June, 2015; Accepted: June, 2015

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