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Adapting Landscape Mosaics of medIteranean Rainfed Agrosystems for a sustainable management of crop production, water and soil resources: the ALMIRA project.

Frédéric Jacob (1,2), Insaf Mekki (1), Mohamed Chikhaoui (3), and the ALMIRA project Team

(1) INRGREF, Tunis, Ariana, Tunisia (insaf.mekki@laposte.net), (2) IRD - UMR LISAH, Montpellier, France, (3) IAV HASSAN II, Rabat, Morocco

In the context of mitigating the pressures induced by global change combined with demography and market pressures, there is increasing societal demand and scientific need to understand the functioning of Mediterranean Rainfed Agrosystems (MRAs) for their potential to provide various environmental and economic services of importance such as food production, preservation of employment and local knowhow, downstream water delivery or mitigation of rural exodus. Efficient MRAs management strategies that allow for compromises between economic development and natural resources preservation are needed. Such strategies require innovative system based research, integration across approaches and scales. One of the major challenges is to make all contributions from different disciplines converging towards a reproducible transdisciplinary approach. The objective of this communication is to present the ALMIRA project, a Tunisian - Moroccan - French project which lasts four years (2014 - 2017). The communication details the societal context, the scientific positioning and the related work hypothesis, the study areas, the project structure, the expected outcomes and the partnership which capitalizes on long term collaborations. ALMIRA aims to explore the modulation of landscape mosaics within MRAs to optimize landscape services. To explore this new lever, ALMIRA proposes to design, implement and test a new Integrated Assessment Modelling approach that explicitly i) includes innovations and action means into prospective scenarii for landscape evolutions, and ii) addresses landscape mosaics and processes of interest from the agricultural field to the resource governance catchment. This requires tackling methodological challenges in relation to i) the design of spatially explicit landscape evolution scenarii, ii) the coupling of biophysical processes related to agricultural catchment hydrology, iii) the digital mapping of landscape properties and iv) the economic assessment of the landscape services. The new Integrated Assessment Modelling approach is implemented and tested within three catchments located in Tunisia, France, and Morocco. Beyond the obtaining of significant advances in the aforementioned methodological domains, and the understanding of landscape functioning and services for the considered catchments, outcomes are expected to help in revisiting former recommendations at the levels of agricultural field and resource governance catchment, and in identifying new levers that improve MRA management at the intermediate level of landscape mosaics.