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How fragile is it? A GIS-based multicriteria assessment of a Mediterranean terraced system.

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Mediterranean terraced landscapes can be considered inherently fragile because of climatic and anthropic conditions. Increasingly neglected because of their poor accessibility to machineries, these landscapes have more recently shifted toward neo-rurality and periurbanity. Newcomers and tourists bought here (second) houses and lands for settlement purposes, eventually restarting farming though just as part-time or hobby activity. However, current management practices appear to be fragmented and disconnected from the "system perspective" underpinning the design and conservation of terraced landscapes. Insofar, numerous studies and research projects addressed the terraced system management, encompassing various geographic locations and several disciplinary or integrative approaches. Yet, the observable current dynamics suggest instead that the major challenge is to capitalize past knowledge to provide a reliable support for the new land managers and to define new management strategies. By fragility of a Mediterranean terraced system we mean the assessment of the potential critical degradation of its key landmarks (i.e. terraces) due to natural and human factors, highly evident in the responses to external disturbance though difficult to quantify. The research we present aimed at providing a group of policy-makers and local land managers with a map of fragility hotspots to help prioritizing the terraced system management by a GIS-based multi-criteria analysis. The study area covers 62 km^2 of the south-western hillside of the Monte Pisano (43° 44' N - 10° 32' E, Tuscany, Italy) delimited on the administrative boundaries of the three municipalities participating to the research project. We worked at the scale ratio of 1:10k because of its adoption also for the local territorial planning, and constrained the analysis to the agricultural terraces because more threaten by changes in management. The area is characterized by 1,930,000 linear meters on 1,813 ha of total agricultural surface, with an average density of 1050m/ha; the highest value has been of 2,000 m/ha (Rizzo et al., 2007). These bases supported the selection and the elaboration of attributes, then aggregated to zone the study area into a set of ranked alternatives responding to the initial decision problem. Finally, the outputs validation provided stakeholders a measure of the reliability of the process. Study area shown a strong structural fragility though halved when agronomic attributes are added to it to calculate the overall fragility. On the base of these results is possible to assert that agricultural activities might achieve a fairly improvement of structural fragility. The results of Kappa analysis shown a wholesome reliability of the fragility assessment. Our results are being used by the local administration to support the planning and the design of new management actions for the terraced system conservation, finally capitalized into a handbook of best management practice, produced in cooperation with the local department of Civil Protection.

References

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