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## Land capability assessment by combining LESA and GIS in a calcareous watershed, Iran

- [Mohammad Akbari](#)<sup>1</sup>✉,
- [Mohammad Tahmoures](#)<sup>2</sup>,
- [Aliasghar Azma](#)<sup>3</sup>✉,
- ...
- [Ramin Kiyanfar](#)<sup>4</sup> &
- [Farzad tat shahdost](#)<sup>5</sup>

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### Abstract

Evaluating land capability by using a comprehensive method is essential for determining the mainland potentials and limitations. With an increasing demand for protecting croplands, it is necessary to use and develop a scientific and reasonable method for the evaluation of farmlands within a high-risk destruction and degradation area. In the present study, we tried to integrate the LESA (Land Evaluation and Site Assessment developed by NRCS) system and GIS for evaluating and mapping the land capability for agriculture production purposes in some calcareous soils of Zanzan province, Iran. The LESA system consists of two parts including the land evaluation (LE) and the site assessment (SA). The LE part consists of soil characteristics data, while the SA part contains the non-soil characteristics data affecting agriculture productions. We also produced the thematic map of land capability by integrating the output results of the LESA method with GIS. The results of this study indicated that the specific weight for the LE and SA parts were 0.4 and 0.6, respectively. Combining the results of the LESA method with GIS showed that 0.07, 21.84, 67.10, and 10.99% of the study site were

classified as “not-suitable,” “marginal,” “good,” and “best” areas for crop farming, respectively. We suggested that the rangelands and agroforestry land uses could be good ideas for unsuitable and marginal classes. We concluded that the LESA method integrated with GIS could help users or decision-makers to recognize limitations for land-use planning.

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**Fig. 1**

**Fig. 2**

**Fig. 3**

**Fig. 4**

**Fig. 5**

**Data availability**

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

## Code availability

No custom code.

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## Author information

### Affiliations

1. Department of Civil Engineering, University of Birjand, Birjand, Iran  
Mohammad Akbari
2. Department of Soil Conservation and Watershed Management, Zanjan Agricultural and Natural Resources Research Center, AREEO, Zanjan, Iran  
Mohammad.Tahmoures
3. School of Hydraulic Engineering, Faculty of Infrastructure Engineering, Dalian University of Technology, Dalian, 116024, China  
Aliasghar Azma
4. Department of Art and architecture, Payame Noor University, 19395-4697, Shiraz, Iran  
Ramin Kiyanfar
5. Faculty of Engineering, University of Garmsar, 35817-55796, Garmsar, Iran  
Farzad tat shahdost

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## Corresponding authors

Correspondence to [Mohammad Akbari](#) or [Aliasghar Azma](#).

## Ethics declarations

### Ethics approval

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Not applicable.

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### Conflict of interest

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- Land evaluation
- Land-use planning
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