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MEACROS: a tool for multi-criteria evaluation of alternative cropping systems

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Abstract

A procedure aimed at identifying cropping systems suitable for environmentally sensitive areas has been developed within the framework of a coordinated Italian project. It has been implemented as a DSS software named **Multi-criteria Evaluation of Alternative CRopping Systems (MEACROS)** which makes it possible for decision-makers to compare different scenarios based on alternative cropping systems. A set of default technical—agronomic, economic, and environmental criteria have been included in MEACROS to allow for the different impacts induced by each scenario. Users can select between the proposed set of criteria and/or in-putting new ones. The software performs concordance analysis, providing preference rankings for the alternatives, based on computed indices and allowing a good sensitivity analysis of weighted values as well as displaying the results in graphic form. Indicative results are presented here in a case study concerning a farm in a flat, sensitive area in Northern Italy.

Author Keywords: Multi-criteria analysis; Cropping systems; Crop modeling

Article Outline

1. Introduction
 2. Software description
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 - 2.3. Index selection and normalization
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 - 3.2. Results and considerations
 4. Discussion
- Acknowledgements
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(38K)

Fig. 1. MEACROS assisted environment provided to create a new **Z**-matrix.



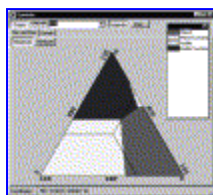
(64K)

Fig. 2. **Z**-matrix and result forms.



(48K)

Fig. 3. MEACROS weight manager form.



(62K)

Fig. 4. Sensitivity analysis performed on criteria clustered into three groups: map with the best ranked alternatives.



(50K)

Fig. 5. Mapping priorities and best ranked alternatives.



(46K)

Fig. 6. Mapping priorities and worst ranked alternatives.



Table 1. Alternative cropping systems (scenarios)  (<1K)

Table 2. Impact matrix for the case study considered here  (<1K)

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