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Developing transportable agricultural decision support systems: Part 2. An example

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Abstract

Information in the area of developing transportable decision support systems (DSSs) (agricultural or otherwise) has been scarce. Therefore, developers of DSSs have had some difficulties in constructing DSSs which could be widely used. In the first part of this two-part paper series, a conceptual framework was introduced which proposes methods for making DSSs transportable. This framework serves as a checklist and includes recommendations about general implementation, user interaction, data management, and model aspects. To illustrate the implementation of these recommendations, the development of a DSS within a project called SYBIL is discussed in detail. Therein, portable and public domain tools have been used to build the DSS with a graphical user interface (GUI) which satisfies the general implementation aspects of the framework. Further, the development of a flexible data management system has been essential in the project so that different types of data can be easily handled without changing the models. In order to allow models embedded within the DSS to be successfully transported between regions, a novel artificial intelligence (AI) adaptation methodology was implemented. The main component of this adaptation methodology is a genetic algorithm (GA), an AI search technique. By linking a GA to an agricultural model, the model becomes more robust because the model is able to *adapt* to the region in which it is being used. Overall, by using the framework criteria to select/create these tools/components, the DSS has been made easy to transport and disseminate.

Author Keywords: Decision support system; Modeling; Adaptation; Portability; Genetic algorithm

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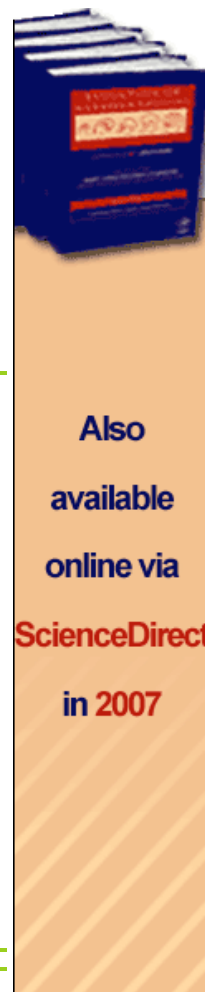
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