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**Development of an expert system for classification of Brazilian soil profiles**

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The Brazilian Soil Classification System (BSCS) is the official taxonomic system for soil classification in Brazil. With the collaboration of professionals from several research and teaching institutions in the country, BSCS is in its third printed edition. Although it has been published many years ago, there is still no widely available computer program that simulates the decision-making of domain experts for the classification of Brazilian soils. The objective of this work is to build an expert system to assist professionals who need to classify Brazilian soil profiles. Based on the BSCS rules, the system simulates the reasoning of a domain expert when performing the classification of soil profiles. In addition to assisting the work of pedologists, the system can be used as a didactic resource, since it can explain in detail the path that leads to a particular solution. The system is in the prototype phase and has been developed in the Prolog language. It is able to classify soil profiles according to BSCS in different categorical levels, according to the data provided. Tests are being conducted on hundreds of samples already classified by domain experts. The development of this system brings many benefits, to wit: a) it increases the availability of knowledge on soil classification; b) it assists in the dissemination of BSCS, since it is documented not only in the form of publication, but also in software format; c) it is a rule-based system, so its development can be incremental, enabling consistency and performance tests as new knowledge is introduced; d) it has been developed using free software, resulting in reduced costs for its operation and maintenance, by the research institutions and users interested in its functionalities. Apart from these benefits, this software tool can still be used to validate previously classified profiles, classify new soil profiles and subsidize the evolution of BSCS, since it is an open taxonomic system.

**Keywords:** soil classification, BSCS, expert system

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