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# Editorial

This special issue gathers research investigations that rely on the crop model STICS (**S**imulateur mul**TI**disciplinaire pour les **C**ultures **S**tandard), with various objectives and methodologies. The main goal of this model is to simulate the effect of the climate, the soil and the crop management on the production (amount and quality) and the environment. In few years, the STICS model has become a tool that allows communication between disciplines, due to its "open" and "in progress" features making it easy for any scientist to handle it. It is developed by a large community of crop, soil and microclimate scientists under the leadership of the French National Institute for Agronomic Research (INRA). It is used by a larger community of scientists whose investigations require a functional description of agrosystems.

STICS is in the continuity of previous crop models, such as the Dutch (SUCROS) and American models (CERES). Those models are based on compartments simulating soil-plant system dynamics in interactions with climate and cropping techniques. STICS is different from other models by several originalities. First, it is a balanced model in the sense that all modules comprise analogous levels of complexity and reliance. This has been set up by the involvements of specialists from each discipline combined with the integrative work of the STICS team. Second, STICS is a generic model potentially adaptable to many crops, e.g. annuals, perennials, herbaceous, ligneous, industrial crops, vegetables, fruit crops and vineyards, actually functioning for about twenty from them. This objective of genericity is in relation with the growing importance of environmental purposes in agriculture. It relies on parameter and formalisation choices derived from comparative studies in terms of agrophysiology: plant physiology in interaction with cropping techniques.

Nevertheless we should bear in mind that a mathematical model in general, and STICS in particular, is just a simplified representation of reality based on a "point of view" of the simulated system. In other terms, there will always remain a discrepancy between reality and simulation. Yet the model is the image of the knowledge of the scientific community and, from a given level of maturity, it can be useful for specific and applied studies while remaining "open" for integrating new knowledge in the appropriate disciplinary domains.

This describes the framework of this special STICS number that encloses various usages of the model. STICS is used as a modeling structure able to enclose and valorise new modeling works on elementary processes or on innovative cropping systems. Taking into account multiple interactions, it allows the analysis of cropping management, technico-economical options or the impact of climate change. It can be applied at an over-field scale (region or country) with various choices to inform inputs, in either environmental or agricultural objectives. Methodological studies on parameterization are also presented. Most of those studies rely on a "reality" that can be either experimental, remote sensing or expert data; those data being used either for parameterize or evaluate the model.

The articles included in this issue were presented at the STICS workshop that took place in January 2003 and I very much want to thank Dr Gérard Guyot, the former redactor in chief of the review, for having suggested us this number "outside the norm".

**Nadine Brisson**
**(Avignon, France)**