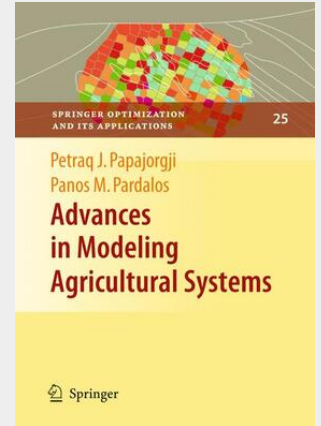


## Advances in Modeling Agricultural Systems

Agriculture has experienced a dramatic change during the past decades. The change has been structural and technological. Structural changes can be seen in the size of current farms; not long ago, agricultural production was organized around small farms, whereas nowadays the agricultural landscape is dominated by large farms. Large farms have better means of applying new technologies, and therefore technological advances have been a driving force in changing the farming structure. New technologies continue to emerge, and their mastery and use requires that farmers gather more information and make more complex technological choices. In particular, the advent of the Internet has opened vast opportunities for communication and business opportunities within the agricultural community. But at the same time, it has created another class of complex issues that need to be addressed sooner rather than later. Farmers and agricultural researchers are faced with an overwhelming amount of information they need to analyze and synthesize to successfully manage all the facets of agricultural production. This daunting challenge requires new and complex approaches to farm management. A new type of agricultural management system requires active cooperation among multidisciplinary and multi-institutional teams and refining of existing and creation of new analytical theories with potential use in agriculture. Therefore, new management agricultural systems must combine the newest achievements in many scientific domains such as agronomy, economics, mathematics, and computer science, to name a few.

This book presents an up-to-date review of advances in the mathematical modeling of agricultural systems. It covers a broad spectrum of problems and applications based on internet and communications technology, as well as methodological approaches based on the integration of different simulation and data management tools. Using real-world cases, each chapter presents a detailed solution of a problem in a particular field. This book demonstrates that regardless of the nature of the problem and the application domain, modeling is a central and important activity in the process of developing agricultural systems. Researchers and graduate students in the fields of agriculture and environmental studies will benefit from this book. It will also serve as an excellent reference for managers, team leaders, developers and modelers of agricultural and environmental systems and researchers in the applied computation field.



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