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Introductory Chapter

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Urban expansions endanger agricultural, natural, and green areas. Therefore, urban agriculture is suggested as an important solution toward minimizing urban pollution and allowing more beautiful scenery in our cities. Additionally, urban agriculture could be an important source of income. The yielded agricultural products can be sold at farmer's markets in urban locations. Urban agriculture is practiced in a variety of forms and scales. Practices range from the production of crops in small to large lots, vertical production on walls, windows (window farms), and rooftops (green roofs). Therefore, this book was composed to provide useful information about urban agriculture which includes urban farming, urban gardens, domestic gardens, urban agriculture, intra-urban agriculture, peri-urban agriculture, peri-urban farming, green roofs, window farm, irrigated urban agriculture, urban landscaping, landscape, suburban livestock farming, urban beekeeping, food security, urbanization, land-use change, agricultural systems, and land-use planning.

This book introduces several concepts of urban agriculture with case study examples representing practices. These case studies highlight farmer's markets, urban gardens, walls, rooftops, and roof deck where crop varieties are grown on top of buildings. The diversity of these activities exhibits transferable concepts to many locations around the world. The challenges for these practices include adaptability of crops, structural and community support, and the presence of a viable market.

In order to evaluate the agricultural systems in the context of urban agriculture, economic models are highly required. Accordingly, economic models of urban gardening are presented in this book, such as the avoided costs model (ACM) and the business model (BM). The main economic differences between the economic models are exemplified. An analysis of the phenomenon of urban gardening as a business model for small family homes or allotment gardens is presented in this book.

On the other hand, important methodologies to investigate the evolution of land uses are presented in this book, where cutting-edge technologies are implemented, such as the

geographic information systems (GIS) and the orthophotomaps to evaluate the spatial planning of the land uses. Subsequently, this provides important understanding of the impacts of land uses on ecosystems in the frame of sustainable development. As a result, sustainable spatial development scenarios are proposed.

In this book, a descriptive approach for the functionality of peri-urban agricultural systems is presented, where this approach focuses on multifunctionality and the goods and services of agricultural systems. This book shows a wide variety of functions that can be grouped according to their economic dimension, social dimension, and environmental dimension. A methodology to quantify the functionality of peri-urban agricultural systems by means of indicators is proposed in this book.

This book provides a methodology to investigate the effect of population in determining which areas see population increases and are under pressure. The methodology is to determine population in the neighborhoods, the distribution of rural areas in the city plans in the neighborhoods, and for this reason implements the geographical information systems to conduct the analyses. This methodology investigates further the existence of a negative or positive interaction between population and agricultural areas. This methodology leads to describe the problems of rural areas located in urban areas and indicate their status according to the population.

Further important agricultural systems are implemented in urban areas which are the aquaculture systems. Therefore, this hot topic is discussed in this book. The modern aquaculture technologies are made in recirculating systems, which require the use of high-performance methods for recirculating the treated wastewater. This book presents the wastewater treatment processes in intensive aquaculture systems.

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