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Titolo	Interaction and fate of pharmaceuticals in soil-crop systems : the impact of reclaimed wastewater // volume editors, Sandra Pe�rez Solsona [and three others] ; with contributions by E. Ammar [and forty-three others]
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ISBN	3-030-61290-2
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Descrizione fisica	1 online resource (X, 530 p. 1 illus.)
Collana	Handbook of environmental chemistry ; ; Volume 103
Disciplina	628.55
Soggetti	Soil pollution
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	The Journey of Human Drugs from Their Design at the Bench to Their Fate in Crops -- Sources of Pharmaceuticals in water -- Environmental, economic, and ethical assessment of the treated wastewater and sewage sludge valorization in agriculture -- Wastewater Reuse in Agriculture: Effects on Soil-Plant System Properties -- Uptake and Translocation of Pharmaceuticals in Plants: Principles and Data Analyses -- Soil Sorption and Degradation Studies of Pharmaceutical Compounds Present in Recycled Wastewaters Based on Enantiomeric Fractionation -- Uptake and effects of pharmaceuticals in the Soil-Plant-Earthworm System -- Metabolism of Pharmaceuticals in Plants and their Associated Microbiota -- Impact of PhACs on soil microorganisms -- Biomarkers in earthworms -- Vermiremediation of Pharmaceutical-Contaminated Soils and Organic Amendments -- Constructed wetlands and phytoremediation as a tool for pharmaceutical removal -- Development of methods for the determination of PhACs in soil/earthworm/crop system irrigated with reclaimed water -- Analytical approaches for the determination and identification of drug metabolites in plants after uptake -- Conclusions and Future Perspectives.
Sommario/riassunto	This book provides a comprehensive overview of the current knowledge on the fate and interaction of pharmaceuticals in soil-crop systems. It

addresses the principles of their transport, uptake and metabolism and reviews methodologies for their analytical determination. It also discusses ecotoxicological effects arising from their presence and highlights bioremediation approaches for their removal. The use of treated wastewater to irrigate crops is becoming more widespread in regions where freshwater is limited. This practice conserves freshwater resources and contributes to nutrient recycling. However, concerns remain regarding the safety of irrigation with treated wastewater since it contains residues of pharmaceuticals that have survived treatment, which means that soil and fauna are potentially exposed to these xenobiotics. Various pathways govern the fate of pharmaceuticals in crop-soil systems, including soil degradation; formation of non-extractable residues; uptake by soil-dwelling organisms (e.g. earthworms); and uptake, transport, and metabolism in agricultural crops. Investigations into these aspects have only recently been initiated, and there is still a long way to go before a meaningful assessment of the impact of wastewater has been completed.

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