1. Record Nr. UNINA9910805576103321

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| Titolo | Digital Agriculture [[electronic resource] ] : A Solution for Sustainable Food and Nutritional Security / / edited by P. M. Priyadarshan, Shri Mohan Jain, Suprasanna Penna, Jameel M. Al-Khayri |
| Pubbl/distr/stampa | Cham : , : Springer International Publishing : , : Imprint : Springer, , 2024 |
| ISBN | 3-031-43548-6 |
| Edizione | [1st ed. 2024.] |
| Descrizione fisica | 1 online resource (634 pages) |
| Altri autori (Persone) | JainShri Mohan<br>PennaSuprasanna<br>Al-KhayriJameel M |
| Disciplina | 338.16 |
| Soggetti | Agriculture<br>Food security<br>Botany<br>Application software<br>Biotechnology<br>Food Security<br>Plant Science<br>Computer and Information Systems Applications |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Nota di contenuto | 1. Digital Agriculture for the years to come -- 2. Agriculture and food security in the era of climate change -- Part. 1 Vertical farming and nurseries (both controlled and uncontrolled environments) -- 3. Soilless smart agriculture systems for future climate -- 4. Intelligent Nutrient Controlling System for Precision Urban Agriculture -- 5. Vertical farming of Medicinal plants -- 6. Vertical farms in future cities -- Part. 2 IoT (internet of things) in agriculture for improved farm use efficiency, plant and soil management -- 7. Remote sensing in Precision Agriculture -- 8. Sensing Climate Change through Earth Observation: Perspectives at Global and National level -- 9. Satellite-based remote sensing approaches for estimating evapotranspiration from agricultural systems -- 10. Satellite imagery in precision |

agriculture -- 11. Applications of UAVs: Image-based Plant Phenotyping -- 12. Digital yield predictions -- Part. 3 Digital agriculture: roles in genetic conservation, speed breeding/fast forward breeding -- 13. Crop phenomics and high-throughput phenotyping -- 14. Speed Breeding for crop improvement -- 15. Digital agriculture for enhancing yield, nutrition and biological stress resistance -- 16. Plant-based Electrical Impedance Spectroscopy for plant health monitoring -- 17. Data analytics in agriculture/ Data science and artificial intelligence -- Part 4. Precision agriculture technologies -- 18. Sensing systems for Precision agriculture -- 19. Applications of Robotics in Agriculture -- 20. Analysing data from open sources to manage risks in food production -- 21. Crop modelling for future climate change adaptation.

Sommario/riassunto

The world population is increasing while arable land is decreasing at an alarming rate. About one-quarter of arable land is degraded and needs significant restoration before it can sustain crops again. By 2030, the water supply will fall 40% short of meeting global demand. Moreover, looming climate change poses additional challenge to increasing food production to feed 10 billion people by 2050. Current major agricultural systems are on a largely unsustainable trajectory because of their contributions to greenhouse gas emissions, water pollution, and biodiversity loss. For these reasons, innovative technologies are being introduced in modern agriculture to sustain food production. They include digital and geospatial technologies to manage soil, climate and plant genetic resources. With the development of tools and sensors integrated into the internet of things (IoT) environment, physically collected information is converted into computer-readable language. Digital innovations thus allow real-time analysis, machine learning, and artificial intelligence (AI) that manage massive amount of data, also known as big data. Accordingly, digital agriculture affords greater potential for sustainable farming and economic benefits. This book summarizes the latest advances in AI-integration of agriculture practices. Specific focus includes but not limited to, big data, yield mapping, pests management, and optimal fertigation. As such, it presents a forward-looking approach to meet multiple UN Sustainable Development Goals, specifically, SDG 2, 6, 13 and 15.