



FOOTPRINTS OF CLIMATE VARIABILITY
ON PLANT DIVERSITY SERIES

Plant Growth Regulators for Climate-Smart Agriculture

Edited by

Shah Fahad, Osman Sönmez, Shah Saud
Depeng Wang, Chao Wu, Muhammad Adnan
and Veysel Turan



CRC Press
Taylor & Francis Group

สำนักหอสมุด มหาวิทยาลัยเชียงใหม่

616580576

012534997

i22559218

Plant Growth Regulators for Climate-Smart Agriculture



Edited By
Shah Fahad
Osman Sönmez
Shah Saud
Depeng Wang
Chao Wu
Muhammad Adnan
Veysel Turan



CRC Press

Taylor & Francis Group

Boca Raton London New York

CRC Press is an imprint of the
Taylor & Francis Group, an informa business

Contents

Acknowledgements.....	vii
Editors.....	ix
List of Contributors.....	xi
1. Role of Gibberellins in Response to Stress Adaptation in Plants.....	1
<i>Mousumi Mondal, Sourav Garai, Jagamohan Nayak, Anirban Roy, Debjani Dutta, Snehashis Karmakar, Shah Fahad, and Akbar Hossain</i>	
2. Abscisic Acid and Abiotic Stress Tolerance in Crops.....	19
<i>Abdul Rehman, Hafiza Iqra Almas, Abdul Qayyum, Hongge Li, Zhen Peng, Guangyong Qin, Yinhua Jia, Zhaoe Pan, Shoupu He, and Xiongming Du</i>	
3. Plant Growth Regulators' Role in Developing Cereal Crops Resilient to Climate Change.....	31
<i>Adnan Noor Shah, Asad Abbas, Mohammad Safdar Baloch, Javaid Iqbal, Amjed Ali, Shah Fahad, and Muhammad Adnan Bukhari</i>	
4. Jasmonates: Debatable Role in Temperature Stress Tolerance.....	45
<i>Sherien Bukhat, Habib-ur-Rehman Athar, Tariq Shah, Hamid Manzoor, Sumaira Rasul, and Fozia Saeed</i>	
5. The Role of Gibberellin against Abiotic Stress Tolerance in Plants.....	63
<i>Sagar Maitra, Akbar Hossain, Chandrasekhar Sahu, Udit Nandan Mishra, Pradipta Banerjee, Preetha Bhadra, Subhashisa Prahara, Tanmoy Shankar, and Urjashi Bhattacharya</i>	
6. Role of Phytohormones in Drought Stress.....	81
<i>Abdul Rehman, Hafiza Iqra Almas, Abdul Qayyum, Hongge Li, Zhen Peng, Guangyong Qin, Yinhua Jia, Zhaoe Pan, Fazal Akbar, Shoupu He, and Xiongming Du</i>	
7. Cross-Talk between Phytohormone-Signalling Pathways under Abiotic Stress Conditions.....	99
<i>Asif Iqbal, Mazhar Iqbal, Madeeha Alamzeb, Shah Fahad, Mohammad Akmal, Shazma Anwar, Asad Ali Khan, Muhammad Arif, Inamullah, Shaheenshah, Muhammad Saeed, Manzoor Ahmad, Qiang Dong, Xiangru Wang, Huiping Gui, Hengheng Zhang, Xiling Zhang, Du Xiongming, and Meizhen Song</i>	
8. Salicylic Acid: Its Role in Temperature Stress Tolerance.....	117
<i>Nosheen Khalid, Imran Khan, Shehla Sammi, Inam-u-llah, Muhammad Liaquat, and Muhammad Jahangir</i>	
9. Ethylene: A Key Regulatory Molecule in Plant Appraisal of Abiotic Stress Tolerance.....	133
<i>Mona H. Soliman, Awatif M. Abdulmajeed, and Abdelghafar M. Abu-Elsaoud</i>	
10. The Role of Phytohormones in Heat Stress Tolerance in Plants.....	145
<i>Sagar Maitra, Akbar Hossain, Pradipta Banerjee, and Preetha Bhadra</i>	

11. Plant Resilience to Abiotic Stress Mitigated through Phytohormones' Production and Their Transcriptional Control.....	165
<i>Sammina Mahmood, Umair Ashraf, Zia ur Rehman, Muhammad Ikram, and Sajid Mehmood</i>	
12. The Role of Phytohormones in Combating Biotic Stress	187
<i>Fazal Akbar, Atta Ur Rahman, Abdul Rehman, Nisar Ahmad, Mohammad Ali, Akhtar Rasool, Muzafar Shah, Muhammad Israr, Muhammad Suleman, and Muhammad Rizwan</i>	
Index.....	207