

Demystifies the genetic, biochemical, physiological, and molecular mechanisms underlying heat stress tolerance in plants

Heat stress—when high temperatures cause irreversible damage to plant function or development—severely impairs the growth and yield of agriculturally important crops. As the global population mounts and temperatures continue to rise, it is crucial to understand the biochemical, physiological, and molecular mechanisms of thermotolerance to develop 'climate-smart' crops. *Heat Stress Tolerance in Plants* provides a holistic, cross-disciplinary survey of the latest science in this important field.

Presenting contributions from an international team of plant scientists and researchers, this text examines heat stress, its impact on crop plants, and various mechanisms to modulate tolerance levels. Topics include recent advances in molecular genetic approaches to increasing heat tolerance, the potential role of biochemical and molecular markers in screening germplasm for thermotolerance, and the use of next-generation sequencing to unravel the novel genes associated with defense and metabolite pathways. This insightful book:

- Places contemporary research on heat stress in plants within the context of global climate change and population growth
- Includes diverse analyses from physiological, biochemical, molecular, and genetic perspectives
- Explores various approaches to increasing heat tolerance in crops of high commercial value, such as cotton
- Discusses the applications of plant genomics in the development of thermotolerant 'designer crops'

An important contribution to the field, *Heat Stress Tolerance in Plants* is an invaluable resource for scientists, academics, students, and researchers working in fields of pulse crop biochemistry, physiology, genetics, breeding, and biotechnology.

DR. SHABIR HUSSAIN WANI is Senior Assistant Professor, Department of Genetics and Plant Breeding, Mountain Research Centre for Field Crops, Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, Jammu and Kashmir, India.

DR. VINAY KUMAR is Assistant Professor, Department of Biotechnology, Modern College of Arts, Science and Commerce, Ganeshkhind, Pune, India, and a Visiting Faculty, Department of Environmental Sciences, Savitribai Phule University, Pune, India.

Cover Design: Wiley

Cover Images: Maize plant damaged ©Aphakorn

Fuengtee/Shutterstock, DNA structure isolated

© andrea crisante/Shutterstock

www.wiley.com

WILEY



Also available
as an e-book

ISBN 978-1-119-43236-4



9

781119

432364