

Arafat Abdel Hamed Abdel Latef *Editor*

# Sustainable Remedies for Abiotic Stress in Cereals

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# Contents

## Part I Cereals and Abiotic Stress

- 1 Cereals Under Abiotic Stress: An Overview . . . . .** 3  
Asif Bashir Shikari, Murat Dikilitas, Mehmet E. Guldur,  
Eray Simsek, F. F. Kaya Demirsoy, Aafreen Sakina,  
and Arafat Abdel Hamed Abdel Latef
- 2 Organic Solutes in Cereals Under Abiotic Stress . . . . .** 29  
Vaishali Sharma and Neera Garg
- 3 Oxidative Stress and Antioxidant Enzymes in Cereals Under  
Abiotic Stress . . . . .** 51  
Kanika Thakur and Neera Garg

## Part II Role and Responses Under Abiotic Stress

- 4 Maize: Role and Responses Under Abiotic Stress . . . . .** 85  
Sidra Shafiq, Nudrat Aisha Akram, Muhammad Ashraf,  
and Arafat Abdel Hamed Abdel Latef
- 5 Sorghum: Role and Responses Under Abiotic Stress . . . . .** 107  
Aisha Kamal and Farhan Ahmad
- 6 Rice: Role and Responses Under Abiotic Stress . . . . .** 125  
Mohammad Mahfujur Rahman, Md. Ibrahim, Md Abdul Muktedir,  
Abdus Sadeque, Arafat Abdel Hamed Abdel Latef, and Md  
Ashrafuzzaman
- 7 Oats: Role and Responses Under Abiotic Stress . . . . .** 149  
Rahul Kapoor, Harshavardan J. Hilli, and Amandeep
- 8 Millets: Role and Responses Under Abiotic Stresses . . . . .** 171  
Tara Satyavathi Chellapilla, Supriya Ambawat, and Narayan Ram  
Gurjar
- 9 Triticale (*X Triticosecale* Wittmack): Role and Responses Under  
Abiotic Stress . . . . .** 209  
Seyyed Hamid Reza Ramazani and Mohammad Zabet

<b>10</b>	<b>Quinoa: Role and Responses Under Abiotic Stress</b> . . . . .	229
	Harmanjit Kaur, Bhawna Sunkaria, and Neera Garg	
<b>Part III Application of Organic Fertilizers and Phytohormones in Cereals Against Abiotic Stress</b>		
<b>11</b>	<b>Cereals and Organic Fertilizers Under Abiotic Stress</b> . . . . .	275
	Siamak Shirani Bidabadi and Arafat Abdel Hamed Abdel Latef	
<b>12</b>	<b>Cereals and Phytohormones Under Salt Stress</b> . . . . .	291
	Varunendra Kumar Singh, Sakshi Pandey, Nidhi Verma, Madhulika Singh, Jitendra Pandey, and Sheo Mohan Prasad	
<b>13</b>	<b>Cereals and Phytohormones Under Drought Stress</b> . . . . .	313
	Mohamed Ait-El-Mokhtar, Fatima El Amerany, Abdessamad Fakhech, Fatima-Zahra Akenous, Youssef Ait-Rahou, Raja Ben-Laouane, Mohamed Anli, Abderrahim Boutasknit, Said Wahbi, Cherkaoui El Modafar, Abdelilah Meddich, and Marouane Baslam	
<b>14</b>	<b>Cereals and Phytohormones Under Temperature Stress</b> . . . . .	351
	Siamak Shirani Bidabadi and Arafat Abdel Hamed Abdel Latef	
<b>15</b>	<b>Cereals and Phytohormones Under Heavy Metal Stress</b> . . . . .	369
	Ishta Bhardwaj and Neera Garg	
<b>16</b>	<b>Cereals and Phytohormones Under Mineral Deficiency Stress</b> . . . . .	395
	Mona F. A. Dawood and Arafat Abdel Hamed Abdel Latef	
<b>17</b>	<b>Cereals and Phytohormones Under UV Stress</b> . . . . .	425
	Tayyaba Shan, Bushra Gul, Mazhar Rafique, Ayesha Jabeen, Ali Raza Gurmani, and Ibrahim Ortas	
<b>18</b>	<b>Cereals and Phytohormones Under Ozone Stress</b> . . . . .	443
	Md. Nahid Hasan, Mohammad Anwar Hossain, David J. Burritt, and Md Ashrafuzzaman	
<b>Part IV Improvement in Abiotic Stress Tolerance Through Biostimulants</b>		
<b>19</b>	<b>Use of Biostimulants to Improve Salinity Tolerance in Cereals</b> . . . . .	471
	Ben-Laouane Raja, Lahbouki Soufian, Toubali Salma, Benaffari Wissal, Raho Ouissame, Wahbi Said, El Modafar Cherkaoui, Baslam Marouane, and Meddich Abdelilah	
<b>20</b>	<b>Use of Biostimulants to Improve Drought Tolerance in Cereals</b> . . . . .	519
	Mohmed Anli, Abderrahim Boutasknit, Raja Ben-Laoaune, Mohamed Ait-El-Mokhtar, Abdessamad Fakhech, Cherkaoui El Modafar, Marouane Baslam, and Abdelilah Meddich	

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<b>21</b>	<b>Heat Stress in Cereals and Its Amelioration by Biostimulants . . . . .</b>	<b>557</b>
	Vinay Shankar and Heikham Evelin	
<b>22</b>	<b>Use of Biostimulants to Increase Heavy Metal Tolerance in Cereals . . . . .</b>	<b>575</b>
	Ali Fakhar, Bushra Gul, Mazhar Rafique, and Ibrahim Ortas	
<b>23</b>	<b>Use of Biostimulants to Improve UV Tolerance in Cereals . . . . .</b>	<b>599</b>
	Mona F. A. Dawood and Arafat Abdel Hamed Abdel Latef	
<b>24</b>	<b>Use of Biostimulants to Improve Ozone Tolerance in Cereals . . . . .</b>	<b>625</b>
	Sercan Pazarlar	
<b>Part V</b>	<b>Application of Gene Editing Approaches and Nanotechnology for Induction of Abiotic Stress Tolerance</b>	
<b>25</b>	<b>Genome Editing and miRNA-Based Approaches in Cereals under Abiotic Stress . . . . .</b>	<b>647</b>
	Ameena Premnath, Ajay Prasanth Ramalingam, Shobica Priya Ramasamy, Krishna Sai Karnatam, and Bharathi Raja Ramadoss	
<b>26</b>	<b>Nanotechnology and Its Role in Cereal Crops under Abiotic Stress . . . . .</b>	<b>675</b>
	Asif Bashir Shikari, Murat Dikilitas, Eray Simsek, Mehmet E. Guldur, Ummuhan Simsek, Sema Karakas, and Arafat Abdel Hamed Abdel Latef	



# Sorghum: Role and Responses Under Abiotic Stress

# 5

Aisha Kamal and Farhan Ahmad

## Abstract

Sorghum is an important staple crop that can also be used as an alternative source of energy, human food, animal feed, and other industrial purposes throughout the world. Despite the fact that sorghum is a tolerant crop, extreme environmental conditions and poor agriculture systems reduced the nutritional quality and productivity of the crop. Understanding the effects of stress and plant response is essential for developing more stress-tolerant plants with higher quality. As sorghum has a small genome size, this makes it a model species for genetic and genomic studies to develop tolerant species. In this chapter, we will discuss the use of marker-assisted breeding and other advanced molecular studies to improve sorghum tolerance to drought, salinity, cold, heavy metal stress, etc. The negative impact of abiotic stress on sorghum growth and development, such as osmotic potential, which impedes germination and embryonic structures, and photosynthetic rates, manifested in the form of significant reductions in grain yield and quality will also be discussed.

## Keywords

Abiotic stress · Osmoprotectant · Molecular marker

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107

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