Title: Sulfate improves cadmium tolerance by limiting cadmium accumulation, modulation of sulfur metabolism and antioxidant defense system in maize

Authors: Sinchan Adhikari, Supriya Ghosh, Ikbal Azahar, Ayan Adhikari, Arun K. Shaw, Saptarshi Konar, Sankhajit Roy, Zahed Hossain

PII: S0098-8472(18)30681-6
DOI: https://doi.org/10.1016/j.envexpbot.2018.05.008
Reference: EEB 3445

To appear in: *Environmental and Experimental Botany*

Received date: 17-12-2017
Revised date: 7-5-2018
Accepted date: 8-5-2018

Please cite this article as: Adhikari, Sinchan, Ghosh, Supriya, Azahar, Ikbal, Adhikari, Ayan, Shaw, Arun K., Konar, Saptarshi, Roy, Sankhajit, Hossain, Zahed, Sulfate improves cadmium tolerance by limiting cadmium accumulation, modulation of sulfur metabolism and antioxidant defense system in maize.Environmental and Experimental Botany https://doi.org/10.1016/j.envexpbot.2018.05.008

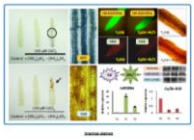
Sulfate improves cadmium tolerance by limiting cadmium accumulation, modulation of sulfur metabolism and antioxidant defense system in maize

Sinchan Adhikari[1] • Supriya Ghosh[1] • Ikbal Azahar[1] • Ayan Adhikari[1] • Arun K. Shaw[2] • Saptarshi Konar[3] • Sankhajit Roy[4] • Zahed Hossain[1*]

[1]Department of Botany, University of Kalyani, Kalyani 741235, West Bengal, India
[2]Department of Botany, West Bengal State University, Kolkata-700126, West Bengal, India
[3]Department of Molecular Biology & Biotechnology, University of Kalyani, Kalyani 741235, West Bengal, India
[4]Department of Agricultural Chemicals, Bidhan Chandra Krishi Viswavidyalaya, Mohanpur-741252, West Bengal, India

[*]**Correspondence**:
Dr. Zahed Hossain
Department of Botany
University of Kalyani
Kalyani 741235, Nadia, West Bengal, India
E. mail: zahed_kly@yahoo.com
Office Fax: +91-33-2582-8282
Telephone: +91-33-2582-8750 (Ext. 217)

Graphical abstract:



Highlights:

- Study highlights role of added sulfate in alleviating Cd stress effects in maize.
- Presence of excess sulfate markedly reduced Cd uptake and tissue Cd accumulation.
- Sulfate application markedly restored shoot biomass under Cd treatment.
- Histochemical staining indicates severe oxidative burst following Cd stress.
- Maintaining high GSH and PC levels are essential for plant survival under Cd stress.