# Cadmium-induced growth and physiological disruptions in wheat

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The escalating environmental concern over heavy metal pollution necessitates a comprehensive understanding of its impact on vital crops like wheat. This study investigates the influence of Cadmium (Cd) on wheat growth, addressing a critical gap in our understanding of heavy metal-induced phytotoxicity. Employing a controlled greenhouse environment, wheat plants were subjected to varying concentrations of Cd through soil application. Meticulous monitoring of growth and physiological parameters revealed a negative induced impact by Cd exposure. The results reveal a dose-dependent reduction in wheat growth metrics, indicating a discernible inhibitory effect of Cd on both above-ground and below-ground biomass, which was complemented by in-depth biochemical analyses to unravel molecular changes induced by Cd exposure Further analysis highlights alterations in physiological processes, such as photosynthesis and nutrient uptake, underscoring the intricate mechanisms underlying Cd-induced toxicity in wheat. These findings provide valuable insights into the potential risks associated with Cd contamination in agricultural soils and emphasize the need for sustainable management practices to mitigate adverse effects on crop productivity. In conclusion, this study highlights the Cd dependent-dose adverse alterations on wheat growth and physiological performances and underscores the urgency of developing strategies to safeguard wheat cultivation from Cd-induced stress, ensuring global food security in the face of mounting environmental challenges.