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CHAPTER

# 4

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# Crucial plant processes under excess of metals/metalloids and tolerance through omics approaches

[AU1]
[AU2]

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## 4.1 Introduction

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[AU3]

para0001 Certain trace elements are required by plants for proper functioning and overall growth. These trace elements are often HMs required in trace amounts as growth regulators or cofactors in different biochemical pathways. They also form an integral part of various proteins and biomolecules (Hasanuzzaman et al., 2013). Heavy metals, when present in low quantities, stimulate growth and development of plants by acting as cofactors for a number of enzymes engaged in numerous metabolic and physiological pathways (Mohammed et al., 2011). Plants' cellular, biochemical, and molecular functions are harmed by greater HMs concentrations. Excessive concentration beyond normal levels of any trace elements poses inexorable adverse effects on plants growth and development (Pirselova et al., 2011). HM






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