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Sommario/riassunto	In recent years, heavy metals have been widely used in agricultural, chemical, domestic, and technological applications, causing environmental and soil contaminations. Heavy metals enter the plant system through soil or via the atmosphere, and can accumulate, affecting physiological processes, plant growth, yield, and human health if heavy metals are stored in edible tissues. Understanding the regulation mechanisms of plant heavy metals accumulation and partitioning is important to improve the safety of the food chain. In this Special Issue book, a total of 19 articles were included; four reviews covering phytoremediation, manganese phytotoxicity in plants, the effect of cadmium on plant development, the genetic characteristics of Cd accumulation, and the research status of genes and QTLs in rice, respectively, as well as fifteen original research articles, mainly regarding the impact of cadmium on plants. Cadmium was therefore the predominant topic of this Special Issue, increasing the attention of the research community on the negative impacts determined by cadmium or cadmium associated with other heavy metals. The articles have highlighted a great genetic variability, suggesting different possibilities for accumulation, translocation and the reduction or control of heavy metal toxicity in plants.