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Nota di contenuto	1 The Long Road to Developing Agromining/Phytomining -- 2 Agronomy of ‘Metal Crops’ Used in Agromining -- 3 Processing of Bio-ore to Products -- 4 Processing of Bio-ore to Products: REEs, and other elements -- 5 Life Cycle Assessment and Ecosystem Services of Agromining -- 6 Global Distribution and Ecology of Hyperaccumulator Plants -- 7 Physiology and Molecular Biology of Trace Element Hyperaccumulation -- 9 Tools for the Discovery of Hyperaccumulator Plant Species and Understanding Their Ecophysiology -- 10 Genesis and Behaviour of Ultramafic Soils and Consequences for Nickel Biogeochemistry -- 11 The Role of the Rhizosphere and Microbes Associated with Hyperaccumulator Plants in Metal Accumulation -- 12 Incorporating Hyperaccumulator Plants into Mine Rehabilitation in the Asia-Pacific Region -- 13 Agromining of High-Value Elements and Contaminants from Minerals Wastes -- 14 Agromining from Various

Industrial Wastes -- 15 Phytoextraction of Cadmium: Feasibility in Field Applications and Potential Use of Harvested Biomass -- 16 Metal recovery with agromining from former mine and industrial sites under restoration -- 17 Element Case Studies: Nickel (temperate/Mediterranean regions).

Sommario/riassunto

This second and expanded edition of the first book on agromining (phytomining) presents a comprehensive overview of the metal farming & recovery of the agromining production chain. Agromining is an emerging technology that aims to transform the extraction of sources of target elements not accessible by traditional mining and processing techniques. Agromining, which is based on sustainable development, uses hyperaccumulator plants as 'metal crops' farmed on sub-economic soils or minerals wastes to obtain valuable target elements. This volume is edited and authored by the pioneers in the rapidly expanding field of agromining and presents the latest insights and developments in the field. This book provides in-depth information on the global distribution and ecology of hyperaccumulator plants, their biogeochemical pathways, the influence of rhizosphere microbes, the physiology and molecular biology of hyperaccumulation, as well as aspects of propagation and conservation of these unusual plants. It describes the agronomy of metal crops and opportunities for incorporating agromining into rehabilitation and mine closure, including test cases for agromining of nickel, cobalt, manganese, arsenic, selenium, cadmium, zinc, thallium, rare earth elements and platinum group elements. Since the first edition was published, there have successful nickel agromining field trials in the tropics (in Malaysia and Guatemala), and these are presented in a dedicated case study chapter. Other new chapters focus on the processing of bio-ore for elements other than nickel, such as rare earth elements and cadmium, and on agromining from industrial wastes such as tailings, and industrial by-products and sites. Furthermore, the book features two new chapters that provide a comprehensive assessment of accumulation a very wide range elements from the Periodic Table in various plant species around the globe, and a chapter on practical methods for discovery of hyperaccumulator plant species in the field and in the herbarium. This book is of interest to environmental professionals in the minerals industry, government regulators, and academics.