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Nota di contenuto	Preface -- 1. In vitro and in vivo bioassays -- 2. Root morphology -- 3. Plant photosynthetic pigments: Methods and tricks for correct quantification and identification -- 4. Measuring photosynthesis and respiration with infrared gas analysers -- 5. Chlorophyll fluorescence: a practical approach to study ecophysiology of green plants -- 6. Thermoluminescence: a tool to study ecophysiology of green plants -- 7. Determining plant water relations -- 8. Thermal imaging and infrared sensing in plant ecophysiology -- 9. Photoprotection and photo-oxidative stress markers as useful tools to unravel plant invasion success -- 10. Reactive oxygen species and antioxidant enzymatic systems in plants: role and methods -- 11. Flow cytometric measurement of different physiological parameters -- 12. Flow cytometry: cell cycle -- 13. Mitotic index -- 14. Fluorescent probes and live imaging of plant cells -- 15. Confocal and transmission electron

microscopy for plant studies -- 16. Plant programmed cell death (PCD): using cell morphology as a tool to investigate plant PCD -- 17. Visualization of plant microtubules -- 18. Multiprobe in-situ hybridization to whole mount Arabidopsis seedlings -- 19. Proteomics analysis of plant tissues based on two-dimensional gel electrophoresis -- 20. Metabolomics and metabolic profiling – investigation of dynamic plant-environment interactions at the functional level -- 21. SAR / QSAR -- 22. Elucidating the phytotoxic potential of natural compounds -- 23. Exploring plants strategies for allelochemical detoxification -- 24. Chemical characterization of volatile organic compounds (VOCs) through headspace solid phase micro extraction (SPME) -- 25. Carbon radiochemicals (14C) and stable isotopes (13C): crucial tools to study plant-soil interactions in ecosystems -- 26. Stable-isotope techniques to investigate sources of plant water -- 27. Soil microorganisms -- 28. Computational approach to study ecophysiology.

Sommario/riassunto

This handbook covers the most commonly used techniques for measuring plant response to biotic and abiotic stressing factors, including: in vitro and in vivo bioassays; the study of root morphology, photosynthesis (pigment content, net photosynthesis, respiration, fluorescence and thermoluminiscence) and water status; thermal imaging; the measurement of oxidative stress markers; flow cytometry for measuring cell cycle and other physiological parameters; the use of microscope techniques for studying plant microtubules; programmed-cell-death, and other parameters; last-generation techniques (metabolomics, proteomics, SAR/QSAR); hybridization methods; isotope techniques for plant and soil studies; and the measurement of detoxification pathways, volatiles, soil microorganisms, and computational biology. Every chapter is focused on the measurement of a parameter from a very practical point of view, including its use in plant ecophysiology and the meaning of the results that can be obtained.