Record Nr. UNINA9910778789503321 Biologic markers of air-pollution stress and damage in forests // **Titolo** Committee on Biologic Markers of Air-Pollution Damage in Trees, Board on Environmental Studies and Toxicology, Commission on Life Sciences, National Research Council Pubbl/distr/stampa Washington, D.C.:,: National Academy Press,, 1989 **ISBN** 1-280-21456-2 9786610214563 0-309-55549-3 0-585-14414-1 Descrizione fisica 1 online resource (377 pages): illustrations Forest ecology Soggetti Plants - Effect of air pollution on Air - Pollution - Environmental aspects **Trees** Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Note generali Bibliographic Level Mode of Issuance: Monograph Nota di bibliografia Includes bibliographical references. Nota di contenuto 1 Front Matter; 2 Executive Summary; 3 Introduction; 4 Using Markers in Combination: 5 The Workshop: 6 Establishing Cause-and-Effect Relationships; 7 Using Markers in Surveys and Experimental Studies; 8 A Strategy for Using Biologic Markers of Stress in Forests; 9 Conclusions and Recommendations; 10 References; 11 Part II: The Workshop Papers: Introductory Session; 12 Air-Pollutant Distribution and Trends; 13 Elevational Gradients/Local Chemistry; 14 Large-Scale Monitoring; 15 Use of Biomarkers to Monitor Forest Damage in Europe; 16 Bioindicators in Air Pollution Research - Applications and Constraints; 17 New and Emerging Technologies; 18 Forest

Monitoring; 15 Use of Biomarkers to Monitor Forest Damage in Europe; 16 Bioindicators in Air Pollution Research - Applications and Constraints; 17 New and Emerging Technologies; 18 Forest Applications of Biologic Markers: Regional Session; 19 Decline of Red Spruce in the Northern Appalachians: Determining if Air Pollution is an Important Factor; 20 Forest Applications of Biomarkers in Southeastern Forests; 21 Biomarkers for Defining Air Pollution Effects in Western Coniferous; 22 Symptoms as Bioindicators of Decline in European

Forests; 23 Tree-Stand/Ecosystem Session; 24 Resource Allocation in Trees and Ecosystems: 25 Markers of Air Pollution in Forests: Nutrient Cycling: 26 Human Perturbation of C, N, and S Biogeochemical Cycles: Historical Studies with Stable Isotopes; 27 Tree-Ring Analysis as an Aid to Evaluating the Effects of Air Pollution on Tree Growth; 28 Evaluation of Root-Growth and Functioning of Trees Exposed to Air Pollutants; 29 The Use of Remote Sensing for the Study of Air Pollution Effects in Forests; 30 Indigenous and Cultivated Plants as Bioindicators; 31 Experiments and Observations on Epiphytic Lichens as Early Warning Sentinels of Forest Decline; 32 Fungal and Bacteria Symbioses as Potential Biological Markers of Effects of Atmospheric Deposition on Forest Health: 33 Microbial and Rhizosphere Markers of Air Pollution Induced Stress; 34 Biochemical/Cell-Tissue Session; 35 Foliar Nitrate Reductase: a Marker for Assimilation of Atmospheric Nitrogen Oxides; 36 Free-Radical Mediated Processes as Markers of Air Pollution Stress in Trees: 37 Biochemical Indicators of Air Pollution Effects in Trees: Unambiguous Signals Based on Secondary Metabolites and Nitrogen in Fast-Growing Species; 38 Metals in Roots, Stem, and Foliage of Forest Trees; 39 The Potential of Trees to Record Aluminum Mobilization and Changes in Alkaline Earth Availability; 40 Carbon Allocation Processes as Indicators of Pollutant Impacts on Forests Trees; 41 Photosynthesis and Transpiration Measurements as Biomarkers of Air Pollution Effects on Forests; 42 Nutrient-Use Efficiency as an Indicator of Stress Effects on Forest Trees; 43 Leaf Cuticles as Potential Markers of Air Pollution; 44 Air Pollutant-Low Temperature Interactions in Trees; 45 Alteration of Chlorophyll in Plants Upon Air Pollutant Exposure; 46 Co-occurring Stress: Drought