Record Nr. UNINA9910817969703321 Sustainable agriculture and the environment in the humid tropics // **Titolo** Committee on Sustainable Agriculture and the Environment in the Humid Tropics, Board on Agriculture and Board on Science and Technology for International Development, National Research Council Pubbl/distr/stampa Washington, D.C., : National Academy Press, 1993 **ISBN** 1-280-21161-X 9786610211616 0-309-58840-5 0-585-03739-6 Edizione [1st ed.] Descrizione fisica 1 online resource (720 p.) Disciplina 333.76/15/0913 Soggetti Agricultural systems - Tropics Sustainable agriculture - Tropics Land use, Rural - Tropics Agricultural ecology - Tropics Lingua di pubblicazione Inglese Materiale a stampa **Formato** Livello bibliografico Monografia Note generali Bibliographic Level Mode of Issuance: Monograph Nota di bibliografia Includes bibliographical references and index. Nota di contenuto Sustainable Agriculture and the Environment in the HUMID TROPICS --Copyright -- Preface -- Acknowledgments -- Contents -- Executive Summary -- FINDINGS -- LANDSCAPE MANAGEMENT: A GLOBAL REQUIREMENT -- THE HUMID TROPICS -- Forest Conversion -- CAUSES OF FOREST CONVERSION -- CONSEQUENCES OF FOREST CONVERSION -- Agriculture in the Humid Tropics -- Adopting an Integrated Approach to Land Use -- SUSTAINABLE LAND USE OPTIONS --RECOMMENDATIONS -- Technical Research Needs --DOCUMENTATION OF LAND USE SYSTEMS -- INDIGENOUS KNOWLEDGE -- MONITORING -- Policy Strategies -- POLICY REVIEWS -- GLOBAL EQUITY -- Supporting Sustainable Agriculture -- CREATION OF AN **ENABLING ENVIRONMENT -- INCENTIVES -- PARTNERSHIPS --**

CONCLUSION -- PART ONE -- 1 Agriculture and the Environment in the Humid Tropics -- THE HUMID TROPICS -- FOREST CHARACTERISTICS AND BENEFITS -- Local and Global Climatic Interactions -- Biological

Protection of Soils -- Stabilization of Hydrological Systems -- Water Availability and Quality -- Mitigation of Storm Impacts -- CONVERSION OF HUMID TROPIC FORESTS -- Deforestation Rates Within Regions of the Humid Tropics -- Causes of Forest Conversion -- Historical Patterns of Forest Conversion -- Consequences of Forest Conversion --ENVIRONMENTAL CONSEQUENCES -- SOCIAL CONSEQUENCES --ECONOMIC CONSEQUENCES -- SUSTAINABLE AGRICULTURE IN THE HUMID TROPICS -- Constraints on Agricultural Productivity -- CLIMATE -- SOILS -- BIOLOGICAL FACTORS -- The Path to Sustainable Agriculture -- THE NEED FOR AN INTEGRATED APPROACH -- MOVING TOWARD SUSTAINABILITY -- 2 Sustainable Land Use Options --INTENSIVE CROPPING SYSTEMS -- The Development of Intensive Agriculture -- Programs and Research Activities -- Implications for Forest Boundary Stabilization -- SHIFTING CULTIVATION --Stabilization Guidelines. Managed Fallows and Forests in Mexico: An Example -- Low-Input Cropping: A Transition Technology -- AGROPASTORAL SYSTEMS --Features and Benefits of Agropastoral Farms -- Requirements for Greater Sustainability -- CATTLE RANCHING -- Cattle Pastureland in Asia -- Cattle Pastureland in Africa -- Cattle Pastureland in Latin America -- Pasture Degradation: A Common Feature -- Reclamation of Degraded Pasture on Deforested Lands -- The Appropriate Pasture Technology for Sustainability -- AGROFORESTRY SYSTEMS -- Types of Traditional Agroforestry Systems in the Humid Tropics -- Improved Agroforestry Systems -- IMPROVED TREES AND WOODY SHRUBS --ARRANGEMENT OF TREES, CROPS, AND LIVESTOCK -- Advantages and Disadvantages of Agroforestry -- Research Priorities -- MIXED TREE SYSTEMS -- Past and Present Forest Management -- Mixed Tree Systems Throughout the World -- The Role of Mixed Tree Systems in Tropical Forest Conservation -- PERENNIAL TREE CROP PLANTATIONS -- Plantation Crops and Economic Development -- Environmental Effects -- Investments for Sustainability -- PLANTATION FORESTRY --REGENERATING AND SECONDARY FORESTS -- Factors Affecting Forest Regeneration -- SHORT-TERM FACTORS -- LONG-TERM FACTORS --Fire -- Acceleration of Forest Regeneration -- THE ROLE OF SECONDARY FORESTS -- NATURAL FOREST MANAGEMENT -- Forest Management in the Humid Tropics -- Management Systems --UNIFORM SHELTERWOOD SYSTEMS -- STRIP SHELTERWOOD SYSTEMS --SELECTION SYSTEMS -- Constraints on Sustainable Forestry --MODIFIED FORESTS -- FOREST RESERVES -- Defining a Role for Extractive Reserves -- 3 Technological Imperatives for Change --KNOWLEDGE ABOUT LAND USE OPTIONS -- A Comparison of Land Use System Attributes -- Indigenous Knowledge and Production Systems --LAND USE DESIGN AND MANAGEMENT CONSIDERATIONS --Sustainability and the Integration of Land Uses. Land Use Patterns and Land Classification -- Maintenance of Biomass -- Monitoring Systems and Methodologies -- ECOLOGICAL GUIDELINES FOR SYSTEMS MANAGEMENT -- TECHNICAL NEEDS COMMON TO ALL LAND USE OPTIONS -- Pest Management -- Nutrient Cycling -- Water Management -- COMMODITY-SPECIFIC RESEARCH NEEDS -- 4 Policy-Related Imperatives for Change -- MANAGING FOREST AND LAND RESOURCES -- Reviews of Existing Policies -- Planning of Major Infrastructure Projects -- National Resource Management Agencies --Biodiversity -- Global Equity Considerations -- REFERENCES --APPENDIX Emissions of Greenhouse Gases from Tropical Deforestation and Subsequent Uses of the Land -- EFFECTS OF LAND USE CHANGE ON GLOBAL CLIMATE -- MAJOR LAND USE CHANGES RESPONSIBLE FOR

Diversity -- Products and Commodities -- Nutrient Cycling --

THE FLUX OF GREENHOUSE GASES -- Permanent Agriculture -- Pastures -- Degradation of Croplands and Pastures -- Shifting Cultivation --TRADITIONAL LONG-ROTATION SHIFTING CULTIVATION -- SHORT-ROTATION SHIFTING CULTIVATION -- ENCROACHING CULTIVATION --Tree Plantations -- Logging -- Degraded Forests -- ESTIMATED FLUX OF GREENHOUSE GASES FROM LAND USE CHANGES -- Carbon --BIOMASS BURNING -- TROPICAL SYSTEMS AS CARBON SINKS -- Other Greenhouse Gases -- METHANE -- NITROUS OXIDE -- CARBON MONOXIDE -- Total Radiative Effect from All Gases Released as a Result of Tropical Deforestation -- ESTIMATING FUTURE IMPACTS -- Carbon Accounting Models -- Models that Integrate Socioeconomic and Ecologic Aspects of Land Use Change -- FACTORS AFFECTING LAND USE CHANGES -- MODELS -- SUSTAINABILITY AND THE REDUCTION OF FUTURE IMPACTS -- Agroforestry -- Carbon Sinks -- Priorities for Future Research -- ACKNOWLEDGMENTS -- REFERENCES -- PART TWO -- Country Profiles -- Brazil -- BASIS FOR SUSTAINABILITY ANALYSIS OF AMAZONIAN AGRICULTURE -- THE BRAZILIAN HUMID TROPICS --The Environment -- Macroecologic Units -- AGRICULTURAL DEVELOPMENT.

Chronological Agricultural Development -- Physical and Economic Agricultural Development -- AGRICULTURAL DEVELOPMENT IN NORTHEASTERN PARÁ -- AGRICULTURE IN VÁRZEA FLOODPLAINS --AGRICULTURE IN FRONTIER EXPANSION AREAS -- AGRICULTURE IN OFFICIAL COLONIZATION AREAS -- AREAS OF FOREST PRODUCT **EXTRACTION -- DEFORESTATION FOR AGRICULTURAL DEVELOPMENT** -- Extent of Deforestation -- Rate of Deforestation -- Environmental Impacts of Deforestation -- MACROLIMITATIONS FOR SUSTAINABLE AGRICULTURAL DEVELOPMENT -- Climate -- Biotic Pressure -- Soil-Related Limitations -- Sociocultural Limitations -- Political Limitations -- ENVIRONMENTAL BOTTLENECKS FOR SUSTAINABLE AGRICULTURAL DEVELOPMENT -- PRESENT KNOWLEDGE BASE FOR AGRICULTURAL **DEVELOPMENT -- Domestication of Nontimber Forest Extraction** Products -- Natural Resources-Climate, Soil, and Vegetation -- Forest Exploration -- Annual Food and Fiber Crops -- Perennial Crops --Pastures and Animal Production -- Aquaculture -- Agroindustrial Technology -- Basic Knowledge -- DIFFUSION AND UTILIZATION OF TECHNOLOGY -- AMAZONIAN AGRICULTURAL LAND USE SYSTEMS AND THEIR SUSTAINABILITIES -- Extraction of Nontimber Forest Products --SUSTAINABILITY OF NONTIMBER RESOURCE EXTRACTION -- RESEARCH NEEDS -- Extraction of Timber Products -- SUSTAINABILITY OF TIMBER EXTRACTION -- RESEARCH NEEDS -- Shifting Agriculture in Upland Areas -- SUSTAINABILITY OF SHIFTING AGRICULTURE IN UPLAND AREAS -- RESEARCH NEEDS -- Várzea Floodplain Agriculture --SUSTAINABILITY OF FLOODPLAIN AGRICULTURE -- RESEARCH NEEDS --Cattle Raising on Pastures that Have Replaced Forests --SUSTAINABILITY OF CATTLE RAISING -- RESEARCH NEEDS -- Cattle Raising on Native Grassland Ecosystems -- WELL-DRAINED SAVANNAH GRASSLANDS (WDSG) -- CATTLE RAISING ON ALLUVIAL FLOODPLAIN (VÅRZEA) GRASSLANDS (FPG) -- CATTLE RAISING ON POORLY DRAINED SAVANNAH GRASSLANDS (PDSG). Perennial Crop Agriculture -- SUSTAINABILITY OF PERENNIAL CROP

AGRICULTURE -- RESEARCH NEEDS -- Agroforestry -- LAND USE
INTENSITY, RESEARCH, AND TECHNOLOGY: THE KEY FOR
SUSTAINABILITY -- Institutional Capacity -- A FUTURE SCENARIO -EXPANSION POTENTIAL OF PRESENT LAND USE SYSTEMS -- REFERENCES
-- Côte d'Ivoire -- POPULATION -- FOREST RESOURCES -- DOMESTIC
ECONOMY -- AGRICULTURE -- Export Crops -- Food Crops -- Sources
of Agricultural Growth -- CAUSES OF DEFORESTATION -- Principal

Causes -- AGRICULTURE -- LOGGING -- FUELWOOD -- CATTLE GRAZING -- Underlying Causes of Deforestation -- SHIFTING CULTIVATION -- LAND TENURE REGIMES -- GOVERNMENT POLICIES --EFFECTS OF DEFORESTATION -- Climate and Microclimate --Biodiversity -- Agricultural Productivity -- Forest Damage and Timber Production Potential -- AGRICULTURAL INTERVENTIONS AND SUSTAINABILITY -- Technological Interventions -- ORGANIC MATTER -- MULCHES AND COVER CROPS -- INORGANIC FERTILIZERS --AGROFORESTRY -- CONSERVATION TILLAGE -- Policy Interventions --SECURE PROPERTY RIGHTS -- FISCAL POLICIES -- CREDIT, PRICE POLICIES, AND MARKETS -- SUMMARY -- Three Deforestation Scenarios -- TECHNOLOGY OPTIONS -- POLICY OPTIONS -- REFERENCES --Indonesia -- DESCRIPTION OF THE COUNTRY AND ITS TROPICAL FORESTS -- Population -- Agriculture -- Forest Resources --DESIGNATED FORESTLANDS -- PRODUCTION FORESTS -- Ecologic Characteristics and Issues -- BIOGEOGRAPHICAL DIVERSITY --Economic Activity -- Economic Importance of Forestry -- TIMBER PRODUCTION AND DEVELOPMENT OF PRIMARY WOOD-BASED INDUSTRIES -- DEVELOPMENT OF SECONDARY WOOD-BASED INDUSTRIES -- Contribution of Forestry to the National Economy --HISTORICAL ASPECTS AND CAUSES OF DEFORESTATION -- Rates of Deforestation -- Population Pressure and Demand for Agricultural Land -- Logging in Natural Forests -- Shifting Cultivation -- Transmigration Program.

Tree Crop Development.