Recarbonization of the biosphere: ecosystems and the global carbon cycle

Rattan Lal, editors

Abstrak

This book describes comprehensively carbon (C) cycle process in global ecosystems and the potential and co-benefits of recarbonization of the biosphere. An ever increasing human population is disposing increasing amounts of carbon dioxide (CO2) into the atmosphere by land use and land cover changes but most importantly by burning of fossil fuels. This process severely perturbs the natural global C cycles and Earth system processes. Recarbonization of the biosphere is a potential strategy to redistribute C among global pools, and to enhance ocean but most importantly land-based C sinks. Sustainably managed and protected must be, in particular, the large and sensitive C stocks in permafrost, wetlands, peatlands, tropical rainforests and savannas, grasslands, degraded/desertified lands, and croplands. Recarbonization requires long-term management because C stocks grow with a progressive improvement in ecosystem health. Protecting and enhancing land-based C sinks serves food security aside contributing to climate change mitigation and adaptation.