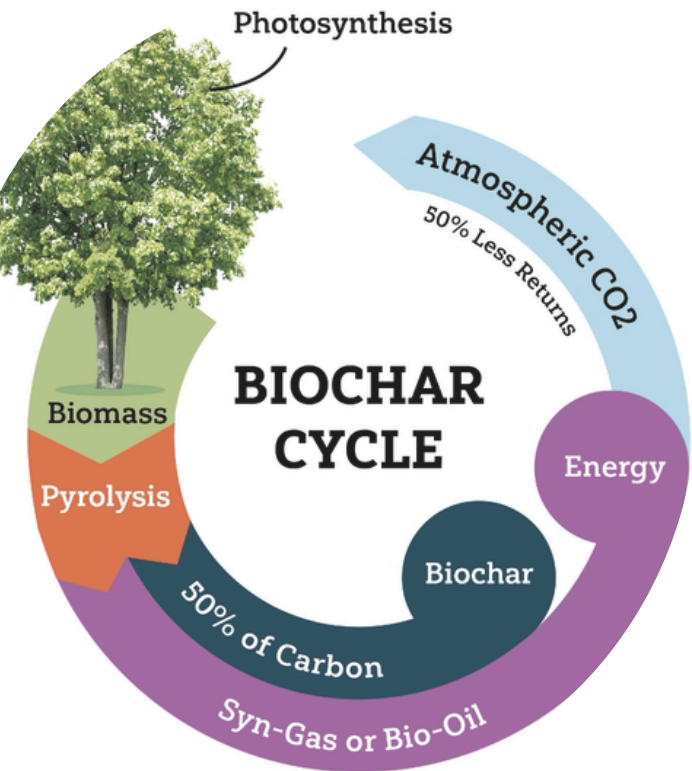


Thinking in Circles for climate change mitigation and food security: sustainable networks with **BIOCHAR**



Johannes Lehmann

Lectio Magistralis

11 MARCH 2026, 10.30

Area della Ricerca di Firenze

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Johannes Lehmann is Professor of Soil Biogeochemistry and Soil Fertility Management at Cornell University. He earned his graduate degrees in Soil Science from the University of Bayreuth, Germany. He led research on nutrient and carbon management in the central Amazon where he began studying Terra Preta soils. His work focuses on soil organic matter, black carbon biogeochemistry, and the development of biochar and bioenergy systems. He is co-founder of the International Biochar Initiative. He is co-founder of the International Biochar Initiative and serves as Associate Editor of the Proceedings of the National Academy of Sciences.





Beniamino Gioli, director, and Silvia Baronti, researcher at CNR IBE, in collaboration with **Ichar-Italian Biochar Initiative** are pleased to present this lectio magistralis which explores the role of biochar within a circular bioeconomy and nutrient cycle, where residual biomass is converted through pyrolysis into stable carbon and value-added co-products.

The lecture will examine the physicochemical properties that enable long-term carbon sequestration and negative emissions, as well as the mechanisms through which biochar enhances soil functionality, including nutrient retention, water-holding capacity, and microbial dynamics.

By linking carbon cycling, soil ecology, and renewable energy co-generation, the talk outlines scalable strategies for climate change mitigation and resilient, sustainable food production.

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