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## Biochar: the science behind the hype

Wednesday 26 February 2014 1 – 2pm

**Dr Kurt Spokas** Research Scientist, United States Department of Agriculture, and Adjunct Professor, Department of Soil, Water and Climate, University of Minnesota, USA

**Slatyer seminar room** R.N. Robertson Building (Bldg. 46), Linnaeus Way, ANU



Biochar (a form of black carbon) has been recently heralded as an amendment to revitalize worn-out/weathered soils, increase soil C sequestration, enhance agronomic productivity, and enter into future carbon trading markets. Soil application has been the assumed target for biochar. Biochar has been shown to occasionally cause immense benefits to both crop yields and soil fertility when added to degraded/weathered soils, but simultaneously has a documented history of negative to negligible agronomic impacts. Past research, as far back as the 1800's, has demonstrated that biochar has variable properties, which spans the full spectrum of black carbon residuals. Thus, suggesting that biochar is not a panacea for all soils. The mechanisms behind these biochar impacts are complex with multiple

potential hypotheses. This presentation will summarize on-going research into the potential role of sorbed organics on biochar in the mitigation potential for  $N_2O$  emissions, impacts of weathering on biochar, and the role of biochar in improving water quality through reduced nitrate and agrochemical leaching. With population expansion and the finite area of tillable ground, improving nonproductive soils with biochar could be a vital key to future global food production, food security, and energy supplies.

**Speaker Biography:** Kurt Spokas is a research soil scientist with the United States Department of Agriculture – Agricultural Research Service (USDA-ARS) in St. Paul, MN. USA. Kurt received his PhD in soil science from the University of Minnesota (USA). He also holds a graduate adjunct professor appointment in the Department of Soil, Water and Climate and the Water Resources Center at the University of Minnesota. Kurt's main research areas are: 1) impacts of management practices (particularly fungicides and biochar additions) on the cycling of carbon, nitrogen, and other greenhouse gases and 2) development of agricultural practices to improve overall water quality.

Presented by

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