

## Measuring Sustainability: How Do We Get Agriculture 'Right'?

The Committee on Sustainable and Organic Agriculture (COSA) has planned a roundtable event you won't want to miss. The roundtable will take place on Monday, 6 October from 7:00–9:00 pm in the Lanier Grand Ballroom E of the Hilton America's Houston Hotel, and the theme will be "Promoting Sustainability through use of Metrics, Policy, and Education."

The keynote address will be given by Dr. Otto Doering, an agricultural economist from Purdue University who specializes in analysis of public policy relating to agriculture, energy, and natural resources issues. Dr. Doering will set the stage, discussing how the agriculture research community can develop and use metrics to achieve agricultural sustainability, getting agriculture "right."

Then COSA committee members will summarize sustainability issues relating to

1. on- and off-farm metrics;
2. regulation and industry; and
3. the connection between ag. research and agricultural policy.

There will be three breakout groups devoted to putting current knowledge of these issue areas into action by developing a list of needs for agricultural research, outreach, and extension. The Soil Quality Working Group and National SARE (Sustainable Agriculture Research and Education) are co-sponsoring this event and have chipped in to help support a great mixer. We hope to see you there and that you will get involved. For more information on COSA, please see: [www.cosagroup.org](http://www.cosagroup.org).

Nyle C. Brady *Frontiers of Soil Science Lectureship*

## Microbes Offer Lessons for Discipline Survival

Dr. Dani Or of the Laboratory of Soil and Environmental Physics in the School of Architectural, Civil, and Environmental Engineering at Ecole Polytechnique Federale de Lausanne (EPFL), Lausanne, Switzerland, will present the 2008 Nyle C. Brady Frontiers of Soil Science Lectureship on Monday, 6 October at 1:25 pm in Room 381BC of the George R. Brown Convention Center. The title of his presentation is "Biophysical Aspects of Soil Microbial Diversity—Lessons for Disciplinary Survival Strategies."

Notwithstanding the relatively harsh conditions prevailing near the earth surface, soils support the highest prokaryotic density and diversity of all biosphere compartments, Or says. The unparalleled biological activity and diversity in soils is often attributed to the extreme heterogeneity in physical and chemical environments formed within complex pore spaces



**Dani Or**

with highly dynamic and fragmented aquatic habitats that affect microbial mobility and nutrient fluxes. In his presentation, Or will explore the roles of physical factors controlling the extent and dynamics of diffusional pathways affecting microbial activity, colony expansion, and coexistence at the microscale. He says a quantitative framework for linking pore-scale physical processes and microbial activity and diversity involves challenging and rewarding collaboration across discipline boundaries similar to those observed at natural biophysical interfaces.

"Modeling and experimental findings highlight the roles of thin liquid films and fragmented and heterogeneous aquatic habitats in sustaining and promoting microbial coexistence,"

Or writes. "Guided by modeling, new experiments in simple and observable soil systems elucidate interplay between confined mobility, diffusion lengths, and diversity maintenance in unsaturated soils. Can these observations help us to draw parallels about the potential coexistence of soil science as a distinct scientific discipline?"

"First, development of quantitative and predictive tools for processes taking place in complex bio-physico-chemical soil environments requires numerous simplifications that must rely on knowledge distributed across disciplinary boundaries. Second, a small and specialized discipline such as soil science may flourish and coexist within a highly fragmented scientific environment. However, a more stable mode of existence for the information age may require a different survival strategy: association and formation of topical consortia capable of solving complex tasks ('scientific biofilms'). Third, [the adoption] of long-term survival strategies [should anticipate] changes in societal needs and effectively engage specialized contributions of our 'scientific species' (e.g., food and healthy environment with limited land and water resources)."

Or's research focus is on the distribution and transfer of mass and energy in porous mediums, and he is a renowned authority in the field of stochastic modeling. He received his B.A. and M.S. from Hebrew University of Jerusalem and Ph.D. from Utah State University. He has received several awards, including the Presidential Competitive Fellowship and the SSSA Don and Betty Kirkham Soil Physics Award. He is currently co-editor of *Vadose Zone Journal*.

The Nyle C. Brady Frontiers of Soil Science Lectureship honors the achievements of Nyle Brady to the profession and showcases a distinguished scientist who has made significant contributions to research in soil science. The program is administered by SSSA.