

MECHANICAL ENGINEERING DEPARTMENT
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Will it be Corn Ethanol or Prairie Biofuels?

by

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Wednesday, January 24, 2007

3:30-4:30 p.m.

Room 402 Walter Digital Technology Center

Coffee and cookies will be available at 3:15 p.m. in Room 401 Walter DTC before the seminar

ABSTRACT — Biofuels derived from low-input high-diversity (LIHD) mixtures of native grassland perennials can provide more usable energy, greater greenhouse gas reductions, and less agrichemical pollution per hectare than can corn grain ethanol or soybean biodiesel. High-diversity grasslands had increasingly higher bioenergy yields that were 238% greater than monoculture yields after a decade. LIHD biofuels are carbon negative because net ecosystem carbon dioxide sequestration (4.4 megagram hectare⁻¹ year⁻¹ of carbon dioxide in soil and roots) exceeds fossil carbon dioxide release during biofuel production (0.32 megagram hectare⁻¹ year⁻¹). Moreover, LIHD biofuels can be produced on agriculturally degraded lands and thus need to neither displace food production nor cause loss of biodiversity via habitat destruction.

BIO — **G. David Tilman** is Regents Professor of Ecology and holds the McKnight University Presidential Chair in Ecology at the University of Minnesota. He is an experimental and mathematical ecologist studying the impacts of the loss of biological diversity and of other types of human-driven global change on the functioning and stability of ecosystems and on the services that ecosystems provide society. David Tilman is deeply interested in the interface of science, society, ethics and environmental policy. He has given expert testimony to committees of the US Senate and House and to the White House's Office of Management and Budget, has had his scientific findings on biodiversity added to the Congressional Record by a member of congress, and given invited briefings to the Minnesota House and Senate. He has served on scientific advisory committees for the White House (the Biodiversity and Ecosystems Panel of the President's Committee of Advisors on Science and Technology), for Public Radio International's *The World*, and for the National Academy of Sciences (*Board on Environmental Studies and Toxicology*). In 1996 he founded a new publication, *Issues in Ecology*, to foster communication among ecologists, the public and governmental decision makers. He served as its Editor-in-Chief for eight years. He has also served on the editorial boards of scientific publications including *Science*, *Proceedings of the National Academy of Science*, and *Ecology*. Honors include selection as a Guggenheim Fellow, and election as a Fellow of the American Association for the Advancement of Science, as a Fellow of the American Academy of Arts and Sciences and as a member of the National Academy of Science. Prizes and awards include Sweden's Per Brink Award, Pew Scholar in Conservation Biology, and the Ecological Society of America's Cooper Award and MacArthur Award. In 2001 he was designated the most highly cited environmental scientist for the decade by the Institute for Scientific Information, an honor he also received in 2003 and 2005 for the decades from 1992-2002 and 1995-2005. David Tilman has given more than 200 invited talks to both public and academic audiences, and had a comparable number of radio, newspaper, magazine, and television interviews, including guest appearances on NPR's *Science Friday*. The New York Times has reported the results of his research in numerous articles over the past decade, including coverage as *Scientist of the Week*. His research has also been reported by publications ranging from Newsweek and the Washington Post to Popular Science and Good Housekeeping, and been featured in several TV documentaries. He has written two books, edited three books, and published more than 180 scientific papers. After earning his Ph. D. at the University of Michigan in 1976, he has spent his academic career at the University of Minnesota, but also has served as a Member of Princeton's Institute for Advanced Study, a Senior Visiting Fellow at Princeton University, and a Fellow of the National Center for Ecological Analysis and Synthesis.

There will not be an Informal Faculty Luncheon with Regents Prof. Tilman on Wednesday, January 24, 2007.