

Researchers propose 'whole-system redesign' of US agriculture

May 5 2011

Transformative changes in markets, policy and science, rather than just incremental changes in farming practices and technology, will be critical if the United States is to achieve long-term sustainability in agriculture, according to a nationwide team of agriculturists that includes a University of California, Davis, animal scientist.

The team's recommendations, first published as a 2010 report by the U.S. National Research Council, appear as a Policy Forum piece in the May 6 issue of the journal *Science*. Lead author on the paper is John Reganold, Regents Professor of soil science and agroecology at Washington State University, Pullman.

"For decades, the agricultural industry, research community and government, have looked to incremental improvements in agricultural procedures and technologies for achieving advances in productivity," said Deanne Meyer, a Cooperative Extension livestock waste management specialist in the UC Davis Department of Animal Science and a member of the research team.

She noted that such incremental improvements have included adoption of two-year crop rotations, precision [agriculture](#) technologies, classically bred and genetically engineered crops, and reduced- or no-tillage management systems.

"While all of these have resulted in important improvements, it's become apparent that as modern agriculture also grapples with important issues

such as [global climate change](#), biodiversity, resource conservation and public health problems, a more transformative approach is needed," she said.

Such an approach would balance production goals with long-term sustainability concerns involving the environmental, social and economic impacts of agriculture. It would focus on a "whole-system redesign" that would address policy and market issues, as well as technological issues, the researchers recommend in their report.

The approach would incorporate innovative agricultural systems such as organic farming, grass-fed and other alternative livestock production systems, mixed crop and livestock systems, and perennial grains. And it would require significant changes in market structures, policy incentives and public funding for agricultural science, according to the report.

The research team suggests that with a new version of the U.S. Farm Bill due in 2012, the time is now ripe to begin reforming U.S. agriculture.

More information: The team's 598-page 2010 National Research Council report, "Toward Sustainable Agricultural Systems in the 21st Century," is available online at:

books.nap.edu/openbook.php?record_id=12832&page=R1

Provided by University of California - Davis

Citation: Researchers propose 'whole-system redesign' of US agriculture (2011, May 5) retrieved 19 April 2024 from <https://phys.org/news/2011-05-whole-system-redesign-agriculture.html>

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