

**MAKING POLICY TO ACHIEVE SUSTAINABLE AGRICULTURE:
LIST OF REFERENCES**

American Farmland Trust
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THE FUTURE OF AGRICULTURE

The American Farm Bureau Federation recently published their report on what agriculture will look like in 2019 summarizing a two-year study by the Making American Agriculture Productive and Profitable (MAAPP) committee. Available at <http://www.fb.org/maapp/>

AGRICULTURE'S IMPACTS ON THE ENVIRONMENT

For a comprehensive background on conservation programs and environmental challenges in agriculture:

USDA's Economic Research Service reports at
<http://www.ers.usda.gov/Browse/NaturalResourcesEnvironment/>

Soil and Water Conservation Society reports at <http://www.swcs.org/>

James Hrubovcak, Utpal Vasavada, and Joseph Aldy, July 1999. **Green Technologies for a More Sustainable Agriculture**. Agriculture Information Bulletin No. (AIB752) 48 pp, July 1999. Available at <http://www.ers.usda.gov/publications/AIB752/>

Lambert, Dayton, Patrick Sullivan, Roger Claassen and Linda Foreman. February 2006. **Conservation-Compatible Practices and Programs: Who Participates?** Available at www.ers.usda.gov/publications/ERR14

REGULATING AGRICULTURE

Ruhl, J. B. January 2001. **Keeping the Agriculture in Sustainable Agriculture: The Challenge of Environmental Policy Reform for Agriculture in the American Midwest**. Midwest Commodities and Conservation Initiative. World Wildlife Fund, American Farmland Trust and Winrock International. Proposes a comprehensive set of regulations that rely on limited conventional prescriptive regulation and implement more broadly applicable information-based and market-based solutions. Not currently on our website but contact AFT for more information (tbullock@niu.edu).

Esseks, J. Dixon, Steven E. Kraft and Lettie M. McSpadden. 1998. **Owners' Attitudes Towards Regulation of Agricultural Land: Technical Report on a National Survey**. AFT Center for Agriculture in the Environment WP98-3. Available at <http://www.aftresearch.org/research/publications/detail.php?id=3021eaa810291df77f7c89305c646bed>. Surveyed landowners about property rights and the appropriateness of land use regulations. Respondents endorsed the principle that the burden of protecting the environment

should be shared with the public paying partial compensation and the owners bearing the remaining losses in property value.

Esseks, J. Dixon and Steve Kraft. 1992-2001. **Series of producer surveys focused on conservation compliance.** Not currently on our website but contact AFT for more information (tbullock@niu.edu).

INCREASING INCENTIVES FOR CONSERVATION

Esseks, J. Dixon. 2001. **Protecting Our Most Valuable Resources: The results of a national public opinion poll.** Website presents policy insights from AFT polls in 2001 (of 2,213 voters nationwide) and 2002 surveys of urban edge agricultural landowners—including whether farmers are willing to provide environmental benefits to urban and suburban residents. (See: <http://www.aftresearch.org/farmland/report.html>—we are redesigning our website but have left this link in place for the time being.)

For a comprehensive background on conservation programs and environmental challenges in agriculture:

USDA's Economic Research Service reports at <http://www.ers.usda.gov/Browse/NaturalResourcesEnvironment/>

Soil and Water Conservation Society reports at <http://www.swcs.org/>

AFT's 2007 Farm Policy Reform Campaign: Our vision is for well-managed, protected farm and ranch land that provides open space, clean water, healthy food, wildlife habitat and a renewed connectedness between the farm community and the rest of America. See <http://www.farmland.org/programs/campaign/default.asp>

ECOSYSTEM SERVICES

Potential Benefits of Farmland

AFT Center for Agriculture in the Environment, 2005. **The Environmental Benefits of Well-Managed Farmland.** A comprehensive review of the literature on the environmental benefits of farmland and the environmental indicators that have been proposed to track the health of agricultural land. (See <http://www.aftresearch.org/research/publications/detail.php?id=7a9c139a482ce2872497fd50927739ac>)

USDA's Conservation Effects Assessment Program (CEAP) has assembled several literature reviews including:

- Environmental Effects of U.S. Department of Agriculture Conservation Programs, August 2004
- Implementing Agricultural Conservation Practices: Barriers and Incentives, August 2004
- Data and Modeling for Environmental Credit Trading, August 2004
- Agricultural Conservation Practices and Related Issues: Reviews of the State of the Art and Research Needs, August 2004

- Wetlands in Agricultural Landscapes, September 2006
- Environmental Effects of Conservation Practices on Grazing Lands, September 2006

These bibliographies offer more than 5,200 citations with abstracts where available, and with Internet addresses for documents available on-line. Hard copies of the bibliographies are available by contacting wqic@nal.usda.gov. See <http://www.nrcs.usda.gov/Technical/nri/ceap/review.html>

Current and Future Conditions

The Millennium Ecosystem Assessment Reports: Available at

<http://www.maweb.org/en/index.aspx>

The Millennium Ecosystem Assessment assessed the consequences of ecosystem change for human well-being. From 2001 to 2005, the MEA involved the work of more than 1,360 experts worldwide. Their findings provide a state-of-the-art scientific appraisal of the condition and trends in the world's ecosystems and the services they provide, as well as the scientific basis for action to conserve and use them sustainably. They identify four categories of ecosystem services: provisioning (e.g. timber, food), regulating (e.g. climate, floods), supporting (e.g. pollination and pest control for food production) and cultural (e.g. serenity, inspiration).

The Heinz Center. **The State of the Nation's Ecosystems** is most comprehensive report on the condition of U.S. lands, waters and living resources. Starting in 2002, “the unique strength of this project derives from its focus on ecosystem indicators—agreed upon by hundreds of experts from universities, government agencies, corporations, and environmental organizations—presented without prescriptive recommendations.” Available at <http://www.heinzctr.org/ecosystems/index.shtml>.

Soil and Water Conservation Society. January 2003. **Conservation Implications of Climate Change: Soil Erosion and Runoff from Cropland.** (See www.swcs.org). This report concludes that global climate change may lead to increased rain events that in turn leads to increases in soil erosion ranging from 4 percent to 95 percent and increases in runoff from 6 percent to 100 percent.

Markets for Environmental Services

Useful Website: <http://ecosystemmarketplace.com/index.php>. This website provides one stop shopping for information on markets and payment schemes for ecosystem services. The idea for this information service arose at a meeting in Katoomba, Australia in 1999. The work of The Katoomba Group was launched by Forest Trends, a DC-based environmental non-profit and includes forest product companies, businesses, bankers, grassroots activists, and journalists.

Salzman, James. 2005. **Creating Markets for Ecosystem Services: Notes from the Field.**

This article is one of the best overviews of ecosystem services, informed by the author's attempts to establish a market for water quality in Australia and engagingly written. Salzman reviews the policy challenges, the basics of an ecosystem services approach, tours the globe for examples, considers the role of government, reviews objections and concludes with a survey of the landscape of service markets, charting out the most promising routes for the future. See <http://eprints.law.duke.edu/archive/00001237/>

Kieser and Associates, April 2004. **Ecosystem Multiple Markets: A White Paper** (prepared for the Environmental Trading Network). Thoroughly examines the potential applications of multiple environmental commodities markets to support restoration projects in the Great Lakes. Considers the ups and downs of selling credits for greenhouse gas emission reductions, nutrient or sediment reductions (water quality credits), wetlands and wildlife habitat creation in local, regional or global environmental markets (see www.envtn.org/etn_projects.htm#emms). Kieser and Associates are now part of a team that AFT has brought together to combine AFT's unique approach to help farmers adopt Best Management Practices (BMPs) by addressing economic risks (see www.farmland.org/resources/bmpchallenge/default.asp) with water quality trading credits to improve water quality and agricultural profitability in the Minnesota River water basin.

Chan, Kai M., M. Rebecca Shaw, David R. Cameron, Emma C. Underwood and Gretchen Daily. November 2006. **Conservation Planning for Ecosystem Services**. PloS Biology Volume 4, No. 11, e379: pp. 2138-2152 (available at www.plosbiology.org). Mapped and modeled ecosystem services to explore the trade-offs and opportunities for aligning conservation goals with biodiversity in California's Central Coast region. Used six ecosystem services (carbon storage, crop pollination, flood control, forage production, outdoor recreation and water provision). Good overview of the complexity of the challenge.

Eco-certification Efforts. According to a recent report, programs operating in the United States (including Food Alliance, Forest Stewardship Council, Rainforest Alliance and Protected Harvest) reported certifying a combined 26 million U.S. acres and 216.5 million acres worldwide in 2006. These organizations lent their "eco-labels" to qualifying products to signify that participating producers have met standards including on-site verification of Integrated Pest Management (IPM) practices. In comparison, organic certification covered 4 million U.S. acres generating \$14.6 billion in consumer sales in 2005. See: http://ipminstitute.org/newsletter/newsletter_v8i1%20.htm:

Pattanayak, S.K., B. A. McCarl, A. J. Sommer, B.C. Murray, T. Bondelid, D. Gillig and B. Deangelo. 2004. **Water Quality Co-Effects of Greenhouse Gas Mitigation in U.S. Agriculture**. Climate Change XXX. 32 pp. Land management practices that preserve and enhance the storage of carbon in the soil include switching from conventional to low- or no-till agriculture, reducing the use of fertilizer to decrease nitrous oxide emissions, establishing riparian buffers and reducing the production of methane from livestock management. Many of these same practices have historically been used to improve environmental quality by reducing farm-generated non-point source pollution. In modeling the effects of increasing practices to store more carbon on agricultural land, a recent study confirmed the substantial overlap with practices that improve water quality, finding that nationally, water quality improves by 2 percent, enough so that most streams and rivers would move into the "swimmable" range. More importantly, the study found that the potential reductions in nitrogen loadings resulting from the portfolio of GHG mitigation activities could mean a 8.7 percent to 9.7 percent reduction in annual loadings to the Gulf—or nearly one-half to one-third of the reduction goals established by the Watershed Nutrient Task Force in 1997. It is also worth noting that the two regions producing the largest GHG reductions are the Corn Belt and Lake States. The Corn Belt could produce the largest absolute GHG reduction at over 27 million metric tons of carbon equivalent (MMTCE) emissions—much attributable to the adoption of conservation tillage practices.

Overall, these authors concluded that agricultural cropland could mitigate about 60 to 70 metric million tons of carbon equivalent emissions annually in the United States.

Murtough, Greg, Barbara Aretino and Anna Matysek. 2002. **Creating Markets for Ecosystem Services**. Productivity Commission Staff Research Paper, AusInfo, Canberra. Reviews the development of ecosystem services markets and concludes that climate change is the environmental problem that is most suitable for market creation. They also recommend that policy makers pay particular attention to the issues of scientific uncertainty, market liquidity and the role of supporting regulation. See <http://www.pc.gov.au/research/staffres/cmfes/>

Markets to Address Global Climate Change

Paustian, Keith, John M. Antle, John Sheehan and Eldor A. Paul. September 2006.

Agriculture's Role in Greenhouse Gas Mitigation. Pew Center on Global Climate Change.

Great overview of the significant role agriculture could play in mitigating global climate change: if farmers widely adopt best management techniques to store carbon and reduce nitrous oxide and methane emissions, aggregate U.S. greenhouse gas emissions could be reduced by 5 percent to 14 percent. Furthermore, biofuels could displace a significant fraction of fossil fuels and reduce U.S. GHG by 9 percent to 24 percent. See http://www.pewclimate.org/global-warming-in-depth/all_reports/agriculture_s_role_mitigation/index.cfm

Richards, Kenneth R., R. Neil Sampson and Sandra Brown. September 2006. Agriculture and Forestlands: U. S. Carbon Policy Strategies. Pew Center on Global Climate Change.

Companion report to previous paper that reviews available resources and the range of policy approaches (changing practices on public lands, land use regulations on privately owned forestlands, practice-based incentives for forest and agricultural lands and results-based incentives for forest and agriculture lands. See http://www.pewclimate.org/global-warming-in-depth/all_reports/ag_forestlands/index.cfm