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## Center for Sustainable Agricultural Systems Newsletter, May/June 1998

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# Center for Sustainable Agricultural Systems Newsletter

May-June 1998

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## A SNAPSHOT OF CSAS ACTIVITY IN RESEARCH, EDUCATION AND TRAINING

**Director Charles Francis highlights CSAS contributions to three areas of programs at the University of Nebraska:**

**Research:** The Integrated Farm at the University's Agricultural Research and Development Center has brought together scientists from Animal Science, Agronomy, Horticulture, Agricultural Economics, and the School of Natural Resource Sciences to look at cropping and grazing patterns, shelterbelt effects on horticultural crops, residue utilization, and economics of systems. On farms where livestock manure or compost is applied to crops, there is rarely an accurate cost/benefit accounting for this source of soil fertility and nutrients for field crops. Several studies are under way to determine the economic value of applied compost for crop production. Gary Lesoing's work has provided realistic estimates of the contribution of major elements to field crops, and an economic charge system that reflects this nutrient value. We estimate that compost from feedlot beef manure has a nutrient value of about \$7 per ton based on content of nitrogen and phosphorus, and hauling charges have to be considered in the total economics of application of this resource. Longer-term research will establish the sustained economic value of additional organic matter and changes in soil structure that contribute to crop yields.

Crop yield benefits or reductions as a result of stalk grazing have been studied over several years. Terry Klopfenstein and Lesoing have determined that there

is no difference between grazed and ungrazed residue areas when corn is grown on the same areas the next season. There was also no measurable difference between ridge-till and flat planted corn in this experiment, although there appeared to be less efficient use of stalks in the ridge-till field. Cattle gains were similar. We are currently preparing long-term data sets for comprehensive whole-farm analysis of results from the past decade. These integrative economic evaluations will allow simulation of different out-of-sample systems and combinations of enterprises, and a search for efficiency of scale with different farm sizes in eastern Nebraska. The Integrated Farm continues to illustrate the importance of long-term CSAS involvement as well as outside grant support in keeping systems research going for the needed number of years. Such research is less likely to happen under the department structure and annual funding cycles most common in our current research environment.

***Education:*** We are approaching the array of core courses needed to establish a minor in sustainable systems (or integrated production systems) in the College of Agricultural Sciences and Natural Resources. With agroforestry (Dr. Brandle), grazing systems management (Drs. Schacht and Brink), agroecology (Dr. Francis), and a new course in economic analysis of systems (Dr. Helmers), we have enough for a minor in systems. This will be proposed to the curriculum committee in mid-1999. The Center continues involvement in a regional educational group, the North Central Institute for Sustainable Systems; one upcoming activity is a three-state tour of alternative farms and rural organizations in August that will visit Minnesota, Iowa, and Nebraska.

***Training:*** The CSAS is in the middle of the fourth year of sustainable agriculture training funded by the SARE Professional Development Program. Over the past three years we have hosted almost 600 professionals in the region at thirteen training and evaluation workshops, provided comprehensive handbooks of materials and teaching methods, and practiced innovative learning activities on farms and in the classroom. Summaries of the workshop materials have been published each year through the CSAS, and over 1500 copies of these books in the "Extension and Education Materials in Sustainable Agriculture" series have been sent to educators throughout the U.S. We are waiting for a decision from the regional administrative council on our proposal for years five and six of this training program.

## **VOLLMAR TO BE INTERIM CSAS DIRECTOR**

In mid-June Charles Francis will begin a year-long sabbatic in Norway. Glen Vollmar will be the interim CSAS director. Vollmar has had many roles at UNL, including head of the Agricultural Economics Department, program director of an international sorghum/millet research program, dean and director of International Programs, and interim associate vice chancellor of the Institute of Agriculture and Natural Resources (IANR). In addition to serving as CSAS director, Vollmar will coordinate several special projects for IANR. He can be reached through the CSAS office, or e-mail him at [iaip004@unlvm](mailto:iaip004@unlvm).

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## **HIGHLIGHTS OF UPCOMING NEW BOOK: *UNDER THE BLADE***

This is the first in a series of articles highlighting information in a book to be published later this year titled *Under the Blade: The Conversion of Agricultural Landscapes*. The articles are written by Richard Olson, who co-edited the book with Tom Lyson. Co-authors contributing chapters are from universities around the country. For more information, contact Olson at the CSAS office, or e-mail him at [csas005@unlvm.unl.edu](mailto:csas005@unlvm.unl.edu).

### **What are we losing?**

Many factors influence the productivity of U.S. farmland, but none is as pernicious and permanent as conversion to urban uses. Once paved, the agricultural productivity of the land is gone forever.

The only national survey of changes in the amount of developed land is the National Resources Inventory (NRI), a survey based on a grid of 800,000 sample points and conducted every five years, most recently in 1997. Until this data becomes available, the most current view of farmland loss involves the period from 1982 to 1992 (Table 1). During this decade, an average of 1.4 million acres of rural land was converted each year to housing, roads, shopping malls, and other development. Texas and Florida developed the most rural land -- more than 1 million acres each -- followed by North Carolina and California. Meanwhile, the economic and population growth of the mid-nineties, the

results of local and regional studies of farmland conversion, and anecdotal evidence derived from driving around the country all suggest that the rate of farmland conversion after 1992 remains high.

**Table 1. Land converted to development in the United States (excluding Alaska) during the period 1982 to 1992 (USDA 1995). U.S. population increased during this period by 23 million.**

<b>Land category</b>	<b>Acres converted</b>	<b>Acres converted per capita population increase</b>
cropland	3,910,000	.17
pastureland	2,383,000	.10
forest land	5,367,000	.23
rangeland	2,029,000	.09
other rural land	269,000	.01
water/federal land	21,000	.001
<b>Total</b>	<b>13,979,000</b>	<b>.60</b>

## **Sprawl**

Population growth drives this conversion of rural land, an average of .6 acres for each of the 23 million people added to the U.S. population during the decade. But farmland loss was accelerated by the adoption of diffuse, sprawling development patterns. In 1982, there was 0.34 acres of built land (e.g., housing, roads, factories) per U.S. resident. Had development per capita remained constant, the population increase from 1982 to 1992 would have resulted in conversion of 7.8 million acres rather than the 14 million acres actually developed.

Individual states and cities showed even greater decreases in land use efficiency. Pennsylvania had 0.25 acres built land per capita in 1982, but added three acres of development for each new resident gained from 1982 to 1992. IL, KY, MA, MS, and OH all added built land during this decade at a rate per new resident that was more than five times the per capita level in 1982. The Chicago area population grew by 4% from 1970 to 1990 while the urbanized area increased by 46%. And during 1982 to 1992, five states (IA, LA, ND, WV, WY) lost population, but still experienced a combined increase of 580,000 acres of developed land.

Some of this sprawl is the result of a desire by many for an acreage in the country, combined with improvements in transportation and telecommuting technology that allow them to live where they wish. The recent subdivision of 700 acres of ranchland in Gunnison County, CO into 19 ranchettes of about 35 acres each is one example of a nationwide trend. In Waukesha County, WI (near Milwaukee), developers are reporting that new residents want lot sizes of one-, three- or five acres; the suburban lifestyle with half-acre lots is no longer in demand.

[For a stunning view of the extent of urban land use in the United States, go to the Defense Meteorological Satellite Program homepage at [www.ngdc.noaa.gov/dmsp/dmsp.html](http://www.ngdc.noaa.gov/dmsp/dmsp.html), choose City Lights at Night from the menu, then click on the U.S. box to see Nighttime Lights of the Continental USA.]

### **Regions at highest risk**

Not all regions face equal development pressures, nor is all farmland equally productive. Prime and irrigated farmland is clearly more valuable for production than other classes of farmland. Another high value category is unique farmland, defined as farmland used to grow vegetables, grapes and horticultural crops including fruits, nuts and berries that have unique soil and climatic requirements. The combination of soils, climate and irrigation water found in the Sacramento and San Joaquin Valleys of California support more than 250 commodities, and the valleys account for 15% of U.S. vegetable production and 38% of fruit production. Fresno County, CA is the most

productive farm county in the U.S. Lancaster County, PA has the most productive non-irrigated agriculture. Other unique areas include South Florida (winter vegetable production) and western Michigan, where the lake-induced micro-climate supports orchards that account for most of the U.S. tart cherry production. Using a framework of Major Land Resource Areas (relatively homogeneous areas of soil, climate, water resources, land use and types of farming), the American Farmland Trust identified the 20 most-threatened regions in the U.S.(see [www.farmland.org](http://www.farmland.org)).

## **The future**

Driven by high rates of immigration and a rising birth rate, the U.S. population could reach 500 million by the year 2050. Will 140 million more acres of agricultural and forest land be converted to development as a result of this increase? Any long-term predictions of population and per capita land use for development have some uncertainty, but this is what current trends suggest. What would this mean for food security?

For a rough evaluation of the adequacy of the U.S. land supply to meet future needs for agricultural production, we can look at the 1994 export and set-aside statistics. Total U.S. farm sales in that year were \$180 billion, of which exports equaled almost \$46 billion. Correcting for agricultural imports of \$27 billion gives net exports equal to about 10.5% of total farm sales. At the same time, 32 million acres of cropland were enrolled in the Conservation Reserve Program, and 45 million acres of cropland were not cultivated for other reasons. Thus, approximately 83% of U.S. crop-, pasture-, and rangelands were devoted to production for domestic consumption, while 17% contributed to export and soil conservation or was uncultivated. Table 2 suggests that this 17% cushion could be depleted soon unless increases in agricultural productivity can keep pace with population growth and the loss of land to not only development, but also the ongoing degradation from erosion, salinization, and depletion of irrigation water.

**Table 2. Per capita land availability (acres) in the contiguous United States, 1992 and projected for 2020 and 2050 based on estimated population growth (500 million residents in 2050) and the conversion of land to development. Shown in ( ) is the percent change from 1992.**

<b>Land class</b>	<b>1992</b>	<b>2020</b>	<b>2050</b>
Forest land	2.41	1.77 (-27)	1.11 (-54)
Rangeland	2.30	1.72 (-25)	1.13 (-51)
Cropland and pasture	2.11	1.52 (-28)	0.94 (-55)
Inland and coastal waters and Great Lakes	0.37	0.28 (-24)	0.19 (-49)
Other rural	0.22	0.16 (-27)	0.11 (-50)
Developed	0.36	0.43 (+19)	0.49 (+36)
<b>Total area</b>	<b>7.76</b>	<b>5.88 (-24)</b>	<b>3.96 (-49)</b>

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## **CSAS PUBLISHES TWO MORE "GREEN VOLUMES"**

The CSAS has published two more volumes in its series, *Extension and Education Materials for Sustainable Agriculture* (affectionately referred to by our staff as the green volumes since all of them have green covers).

Volume 7, "Linking People, Purpose, and Place: An Ecological Approach, contains materials from the North Central SARE Professional Development Program workshops held in summer 1997 and was edited by Heidi Carter, Richard Olson and Charles Francis. It includes specific examples of some management practices that can be used to incorporate beneficial ecological functions into farming systems, and also identifies many other sources of information. Report sections include linking ecology and agriculture, whole farm planning, soil quality, agroforestry, grazing systems, weed and insect management, farmer groups, farmland conversion, resources and information sources.



Volume 8, "Procedures for Evaluating Alternative Farming Systems: A Case Study for Eastern Nebraska," demonstrates a low-cost procedure for conducting simple economic, energy, and environmental analyses of farming systems, and for synthesizing the results into a qualitative assessment of relative sustainability. The approach uses data from readily available sources, and can be tailored to meet the particular questions of a specific region or type of agriculture. Edited by Richard Olson, it is designed to serve as both an educational and a research tool. Sections include baseline and operational descriptions for five farm types, single-year economic comparisons, long-term economic variability, energy analysis and comparison of five farming systems, nutrient budgets and soil erosion, and relative sustainability of five farming systems

Additional information about these and the other volumes in the series is available at <http://www.ianr.unl.edu/ianr/csas/vol1-5.htm>. To order, send a check payable to the University of Nebraska for \$10.00 US per volume (note which volume you are ordering) to Center for Sustainable Agricultural Systems, U. Nebraska, PO Box 830949, Lincoln, NE 68583-0949. Price includes s&h in U.S. and ground rate to Canada; for air book rate to Canada, add \$5; for air rate to other countries, check with the CSAS office. For questions, call the CSAS office, or e-mail [csas003@unlvm.unl.edu](mailto:csas003@unlvm.unl.edu).

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## **USDA TO CHANGE PROPOSED ORGANIC STANDARDS**

The comment period for the proposed rule on organic standards ended on April 30, 1998, and on May 8 Agriculture Secretary Dan Glickman announced that USDA will make fundamental revisions to its proposed national organic standards as a result of the 200,000 comments it received on the initial proposal.

The earlier draft, published on December 16, 1997, proposed standards for growing, processing, labeling, importing, and certifying organically grown food. The bulk of the extraordinary number of comments opposed including the products of biotechnology, the use of irradiation in food processing, and the application of biosolids (municipal sludge) in organic food production.

"Biotechnology, irradiation, and biosolids are safe and have important roles to play in agriculture, but they neither fit current organic practices nor meet current consumer expectations about organics, as the comments made clear," said Glickman. "Therefore, these products and practices will not be included in our revised proposal, and food produced with these products and practices will not be allowed to bear the organic label."

Before publishing the revised proposal, USDA will evaluate the comments submitted in response to the December 1997 proposal. This record will guide the drafting of the revised proposal, which USDA will issue for public comment later this year.

Source: Press release on USDA Web site, May 8, 1998.

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## **\$31 MILLION AWARDED IN FUND FOR RURAL AMERICA GRANTS**

In April USDA awarded \$31 million to 115 proposals (out of 1100 submitted) in the Standard Grant portion of the Fund for Rural America program. Titles of the three grants to Nebraska are: International Tourism and Attraction Development for Rural Communities; Effective Use of Carbon and Nutrients in Manure Using Site-Specific Application; and Consumer Evaluation of Beef Classified for Tenderness. More information is available at <http://www.reeusda.gov/fra/>.

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## **SUSTAINABLE AG SEMINAR SERIES TO FOCUS ON ALTERNATIVE FARMING SYSTEMS AND FOODSHEDS**

The CSAS and the Department of Agronomy are sponsoring a two-part seminar series to be held on the UNL campus:

I. *Alternative Farming Systems for the Midwest: Countering the Trend toward Fewer, Larger Farms* -- Fall Semester 1998;

II. *Re-forming the Foodshed: Localizing Agriculture and Community* -- Spring Semester 1999.

We are soliciting recommendations for speakers/topics. Funding is available to cover speaker travel expenses and a small honorarium. Abstracts of each talk will be available on the Internet, and a volume of papers from each series will be published. There will also be a listserv for discussion of seminar topics. Contact: Richard Olson, 402-472-0917, [csas005@unlvm.unl.edu](mailto:csas005@unlvm.unl.edu).

Details will be in future newsletters. For information as it becomes available, see <http://www.ianr.unl.edu/ianr/csas/majorsem.htm>.

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## **CALL FOR 1999 NCR SARE PREPROPOSALS**

The North Central Region (NCR) Sustainable Agriculture Research and Education (SARE) program is calling for innovative researchers, educators, institutions and organizations to apply for competitive grants in sustainable agriculture. Approximately \$1.3 million will be available in September 1999 to fund one- or two-year projects addressing long-term enhancement of food and fiber systems in the 12-state region: IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD, and WI.

Details on priority areas for 1999 will be outlined in the Call for Preproposals, but will contain topics such as diversifying farming systems, sustainable livestock systems, networking, marketing sustainable products, and environmentally sound management practices. The program encourages preproposals that include holistic approaches, involvement of interdisciplinary teams, meaningful participation of farmers and ranchers, significant outreach, and an eye for measurable results.

Applications will be available July 15, 1998, from the NCR SARE office, 402-472-7081, [sare001@unlvm.unl.edu](mailto:sare001@unlvm.unl.edu), [www.sare.org/ncrsare](http://www.sare.org/ncrsare). Preproposals are due on September 11, 1998.

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## NEWSLETTER MAILING LIST CLARIFICATION

We have been getting requests from IANR faculty (particularly extension educators) regarding receipt (or lack thereof) of this newsletter. The newsletter is automatically addressed to all IANR faculty and administrators from a centralized employee database; we have no control over the accuracy of this list, nor can we selectively alter the list. We also maintain a mailing list in the CSAS office for those who are not on the above list; this we do have control over and will correct/update upon request.

Because there is no charge for the newsletter, we do not send it to foreign addresses. Interested individuals in other countries who have Internet access are encouraged to read the newsletter and other CSAS information on our Web page.

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## RESOURCES

*pork - The Other Producers: A Better Way to Raise Hogs*. \$10. Video illustrates changes happening in hog production and presents alternatives. Center for Rural Affairs, PO Box 406, Walthill, NE 68067-0406, 402-846-5428, <http://www.cfra.org>.

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*Montana FarmLink ToolBox*. \$10. Addresses tools for dealing with inflated land prices, creative business arrangements for structuring farm links and agricultural enterprises, community and third-party investor support for new farmers, sources of credit, and programs that provide technical and financial support to conservation-minded farmers and ranchers. Alternative Energy Resources Organization, 25 South Ewing, Suite 214, Helena, MT 59601, 406-443,7272.

## COMING EVENTS

Contact CSAS office for more information.

### 1998

July 1-3 -- Small Farmers Free-Range Poultry Short Course, Creola, OH

July 5-9 -- Soil and Water Conservation annual conference, Balancing Resource Issues: Land, Water, People, San Diego, CA

Aug. 12-14 -- Small Farmers Free-Range Poultry Short Course, Creola, OH

Sep. 3-5 -- Small Farmers Free-Range Poultry Short Course, Creola, OH

Sep. 10-11 -- The Performance of State Programs for Farmland Retention: A National Research Conference, Columbus, OH

Oct. 4-7 -- North American Conference On Enterprise Development Through Agroforestry, Minneapolis, MN

Nov. 8-11 -- New Crops & New Uses: Biodiversity & Agricultural Sustainability, Phoenix, AZ

<http://www.hort.purdue.edu/newcrop/announce/symposium.html>

Nov. 16-21 -- 12th International Federation of Organic Agriculture Movements (IFOAM) Scientific Conference and General Assembly, Buenos Aires, Argentina

<http://ecoweb.dk/ifoam/conf/conf98/>

Nov. 23-27 -- First International Agronomy Congress - Agronomy, Environment, and Food Security for 21st Century, New Delhi, India

Nov. 29 - Dec. 4 -- AFSRE 15th Symposium - Rural Livelihoods, Empowerment and the Environment: Going Beyond the Farm Boundary, Pretoria, South Africa

Dec. 10 -- Conference - Farming Profitably in a Changing Environment,  
Urbana, IL

## 1999

Jan. 8-9 -- Great Plains Regional Vegetable Conference, St. Jo, MO

Jan. 21-22 -- Farm Marketing into the Next Millenium - joint conference of the  
North American Farmers' Direct Marketing Association and the Great Lakes  
Vegetable Growers Convention, Grand Rapids, MI

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## DID YOU KNOW...

Toxic pesticides that are banned or otherwise forbidden in the U.S. were shipped from U.S. ports at a rate of more than 14 tons per day in 1995 and 1996 -- a total of more than 21 million pounds -- according to a new report by the Foundation for Advancements in Science and Education. The entire report, "Exporting Risk: Pesticide Exports from U.S. Ports 1995-1996," is available online: [www.fasenet.org](http://www.fasenet.org). On 5/29/98 Sen. Patrick Leahy said chemical manufacturers should be barred from exporting pesticides that are banned or not registered in the U.S., pointing out that residues from risky pesticides could wind up on fruits and vegetables shipped to the U.S. market -- creating a "circle of poison." Leahy plans to file a new bill on this issue soon.

According to an article in a recent Soil and Water Conservation Society magazine, food travels an average of 1,300 miles from the farm to your table, and almost every state in the U.S. buys 85-90% of its food from someplace else.

Americans spend 11.4% of their personal income on food, compared with 26% in Italy and 53% in Japan.

Six multinational corporations account for more than 46% of the retail purchases of food in the U.S. Similar economic concentration exists in the input

sector.

Seven out of ten biologists believe that "we are in the midst of a mass extinction of living things, and that this loss of species will pose a major threat to human existence in the next century," according to a nationwide survey by the American Museum of Natural History in New York City that interviewed 400 members of the American Institute of Biological Sciences.

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## Quote:

"Everything that can be invented has been invented."

-- Charles H. Duell, Director of U.S. Patent Office,  
1899.

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The Center for Sustainable Agricultural Systems bimonthly newsletter is currently available free in hard copy to U.S. addresses. Current and back issues, along with other sustainable agriculture information is also available on our Web page:  
<http://www.ianr.unl.edu/ianr/csas/>  
For comments or questions, or to be added to the mailing list for hard copy, contact the editor at the masthead address, or e-mail [csas001@unlvm.unl.edu](mailto:csas001@unlvm.unl.edu).

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