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Center for Sustainable Agricultural Systems Newsletter

November-December 1997

CSAS Publishes Book that Reviews Sustainable Ag Literature

Future Horizons: Recent Literature in Sustainable Agriculture (September 1997) is a compendium of reviews of 100 recent books and other resource materials. This spiral-bound book provides a current overview of our state of the art and recent thinking in this rapidly growing field. There are reviews about the present condition of planet Earth, as related to food and natural resources, also about historical and current lessons in sustainability. The often-repeated question of how to define sustainability and how it relates to agroecology are explored. Economic and social dimensions of sustainable systems, and lessons from farmers and others are reviewed. Other chapters include soil quality and health, living with crop pests, and the importance of ecology and natural systems. There is a chapter on different ways of knowing and learning, with reviews of texts, reference works, and even novels. Among the authors whose works are reviewed are David Orr, Wes Jackson, Herman Daly and John Cobb, Paul Hawken, Steve Gliessman, Miguel Altieri, Fred Kirschenmann, Richard Thompson, Joel Salatin, and Al Gore — plus more plus more than 80 others. Several of the reviews are reprinted with permission from journals, but most are the efforts of about 30 people who are actively working in this arena and volunteered for the task.

Modeled after the highly successful book *In Praise of Nature* by Stephanie Mills (also reviewed), this project was developed under the SARE grant "Increasing Trainer Literacy in Sustainable Agriculture," with a primary audience of Extension educators and NRCS specialists. It's also a valuable resource for the student who needs a quick appreciation of what is available in the library, for the agency person who needs to get up to speed on a completely new field, or for the farmer considering a conversion to more sustainable systems. Edited by Gabriel Hegyes and Charles Francis, the book is available for \$10 (includes shipping) from the Center for Sustainable Agricultural Systems, PO Box 830949, University of Nebraska, Lincoln, NE 68583-0949, 402-472-2056. Make checks payable to University of Nebraska, federal ID # 47-0491233.

By early next year the CSAS plans to have the reviews on its Web page:
<http://www.ianr.unl.edu/ianr/csas>.

Submitted by Chuck Francis

NCR SARE Solicits PDP Proposals

To clear up the alphabet soup title, the North Central Region Sustainable Agriculture Research and Education office is soliciting proposals for the next round of its Professional Development Program. The goal of PDP is to train Cooperative Extension field staff, campusbased specialists, employees of the Natural Resources Conservation Service, and other members of the agricultural community in the concepts and practices of sustainable agriculture. Two separate calls are being issued:

- Annual call for PDP proposals (due February 13). Approximately \$400,000 are available to fund educational/training projects such as demonstration tours, workshops, conferences, and educational material development. Encouraged are projects that: foster partnerships among private and public sectors, nonprofit sustainable agriculture organizations and land-grant institutions; involve multiple states; propose creative outreach programs; and include farmers/ranchers as meaningful partners.
- Call for regionwide sustainable agriculture PDP project and coordinator (due February 20). Details of this call are being finalized as this goes to press.

Both calls will be available on the Internet at:
<http://www.ces.ncsu.edu/san/htdocs/dev/nc/>

For further information or application materials, contact the NCR SARE office, 13-A Activities Bldg, University of Nebraska, Lincoln, NE 68583-0840, 402-472-7081, sare001@unlvm.unl.edu.

Education in Scandinavia: From Farming to Food Systems

How do ecologically-oriented farmers plan their products and farms to be viable components of the total food sector? This is a perspective seldom viewed by graduate students in agricultural sciences as they pursue narrow research questions in one department or discipline. The Scandinavian countries are looking for ways to provide such an experience in their regional educational program and special short courses.

The Third Nordic Postgraduate Course in Ecological Agriculture was held in early summer 1997 for one week in Stange, Norway. Eighteen doctoral students and eight faculty from eleven countries worked toward three educational goals: (1) to acquire methods and conduct an in-depth analysis of an ecological farming operation; (2) to evaluate each farm in the context of processing, marketing, policy, and consumer demand for ecological food products; and (3) to develop a farm plan to improve its financial, ecological, and social viability for the long-term future. Students worked in three teams

in cooperation with nearby farmers and families to develop these plans, following several visits to the farms and meetings with local shopkeepers, policy makers, and consumers. The course culminated in group reports presenting the potentials of each farm to better use their total resource base to meet goals of the farm family.

Although one week is a short time to provide new methods and put them into practice, the student/faculty teams did a remarkable job of assimilating large amounts of information about each farm, learning about current and future market opportunities, and developing farm plans consistent with the soils, topography, climate, and economic environment of the region. Students commented on the importance of learning soft systems methods for dealing with complex human dimensions of farming operations. They appreciated the chance to work with farmers first-hand, and to make multiple visits to a farm to ask more questions and pursue key issues in greater depth. Several noted the need to frame their own specific research questions in a broader context of the whole food and social system.

The course provides a prototype for the development of learning modules in a region-wide educational program for graduate study in Scandinavia. Among the ideas for this network of learning institutions are practical in-field education, working directly with specialists in all parts of the food system, interactions among students and faculty in several countries, and distance learning. There are important implications for future collaborative learning activities with our own North Central Institute for Sustainable Systems in the exchange of ideas, teaching materials, students, and faculty.

Submitted by Chuck Francis

NSAS 1998 Annual Meetings

The 1998 Annual Meeting of the Nebraska Sustainable Agriculture Society will address *Wise Choices, Bright Futures: Questioning Trends in Food and Farming Systems*. The meeting will be in Aurora, Nebraska on February 28.

Dr. Charles Benbrook will join NSAS members for a day of presentations and workshops on critical issues facing agriculture today. Dr. Benbrook will present the implications of biotechnology on production agriculture, the environment and consumers. His discussion will focus on changes in the seed and pesticide industry, labeling issues, and the treatment of genetically engineered organisms in the organic certification process. Dr. Benbrook is a private consultant who works with consumer and environmental groups, researchers and the government to explore policy issues and possible solutions. Practical workshops will be held on sustainable hog production, organic farming and gardening, biological pest management, urban gardening, and rural zoning issues. An overview of the past ten years of research and education projects funded through the USDA Sustainable Agriculture Research and Education program will be presented. Registration

materials will be included in the winter NSAS newsletter. For more information, call NSAS at 402-254-2289.

The annual NSAS Western Conference will be held on January 31 in North Platte. The theme will be Renewing People, Profit and the Environment for Agriculture: Rural Community-Friendly Strategies. For details, contact western organizer Jane Sooby at 308-254-3918.

Ecosystems Provide Valuable "Services" Worth \$33 Trillion

The "services" of the earth's ecosystems "represent part of the total economic value of the planet," and are valued at \$33 trillion per year, according to an article by 13 ecologists, economists, and geographers in *Nature* (May 15, 1997). "Because ecosystem services are not fully 'captured' in commercial markets or adequately quantified in terms comparable with economic services and manufactured capital, they are often given too little weight in policy decisions," the authors wrote. "This neglect may ultimately compromise the sustainability of humans in the biosphere. The economies of the Earth would grind to a halt without the services of ecological life-support systems, so in one sense their total value to the economy is infinite."

Among the 17 services provided by ecosystems are nutrient cycling, including "nitrogen fixation, N, P, and other elemental or nutrient cycles" (valued at \$17 trillion); erosion control and sediment retention, including "prevention of loss of soil by wind, runoff, or other removal processes, and storage of silt in lakes and wetlands;" soil formation, including "weathering of rock and the accumulation of organic material;" pollination, including "provisioning of pollinators for the reproduction of plant populations;" biological control, including "keystone predator control of prey species;" and genetic resources, including "medicine; products for materials science; genes for resistance to plant pathogens and crop pests; pets; ornamental species; and horticultural varieties of plants."

According to an article about the study in *The New York Times* (May 20, 1997), "nature performs a long list of other economic services as well. Flood control, soil formation, pollination, food and timber production, provision of the raw material for new medicines, recreational opportunities, and the maintenance of a favorable climate are among them."

One way to put a value on such services, according to *Newsweek* (May 26, 1997), "is to figure out what it would cost to substitute technological fixes for what nature does. Substituting chemical fertilizer for natural nitrogen fixation, for instance, would cost at

least \$33 billion a year. Growing crops without soil by substituting the hydroponic systems beloved of urban gardeners would cost \$2 million per acre in the United States."

Source: Reprinted from *Alternative Agriculture News*, June 1997, published by Wallace Institute for Alternative Agriculture.

Editor's Note: See also

<http://www.nature.com/Nature2/serve?SID=78715411&CAT=NatGen&PG=ecosystem/ecosystem1.html>

Integrated Farm Update

Impact of Spring-Grazing Crop Residues

In Nebraska there are opportunities to spring-graze crop residues after rotating cattle around stalk fields during the fall and winter. Snow cover is too heavy some years for grazing during the winter, but stalks may be grazed in the spring. We studied grazing impact on residue cover, water infiltration rate, soil compaction, and subsequent crop yields in 1996 and 1997 on the Integrated Farm at the University of Nebraska Agricultural Research and Development Center. The objectives were to determine effects of spring-grazing of corn residue on subsequent corn yields under irrigation, evaluate impacts on soil compaction and water infiltration rates, and determine change in residue cover.

The 1996 experiment was located on an irrigated three-acre site where soil ranged from a sandy loam to a clay loam from the bottom to the top of the hill. At a stocking rate of one head/acre, three steers averaging 650 lbs grazed corn stalks from February 26 to April 22 (55 days). Enclosures were placed in the field to compare grazed and ungrazed treatments. Following removal of the cattle, soil infiltration measurements were taken using the on-farm soil quality indices guide developed by John Doran of USDA Agricultural Research Service. Measurements were taken in ungrazed plots and in cattle hoof tracks in the grazed plots. Soil bulk density, a measure of soil compaction, was taken to a depth of 6". Using the line-transect method described by Dave Shelton of UNL, percent tracking and residue cover were measured. Corn was planted no-till into this field on May 17 due to late rainfall. This experiment was repeated in 1997 at the same location. Cattle grazed the corn stalks from March 1 to April 22 (53 days), and corn was no-till planted on May 8.

There were no differences in corn yields between spring-grazed and ungrazed areas in either year. In 1996, corn yields were 205 and 193 bu/acre for grazed and ungrazed treatments. It was one of the driest winters on record, with approximately 1.2" of precipitation from January through March. Very little rain fell while cattle were grazing corn stalks. There was considerably more precipitation (primarily snow) in 1997. Wet

conditions kept fields muddy during the grazing period. Yields were reduced 9% by grazing, from 209 to 228 bu/acre. In both years, only corn yields on the sandy soil area showed considerably lower yields for the grazed treatment compared to the ungrazed.

In both years, water infiltration rates were lower for the grazed treatment compared to the ungrazed. In 1996, rates were .92 and 8.54"/hour for the grazed and ungrazed treatments, respectively. Very dry conditions contributed to the high infiltration rates for the ungrazed treatment. In 1997, water infiltration rates were .88 and 4.02"/hour for the grazed and ungrazed treatments. The sandy soil site also had a very high water infiltration rate compared to the silty loam and clay sites. Percent tracking by cattle hooves was 49 and 54% for 1996 and 1997. By using the average of the tracked and untracked areas, the water infiltration rates for the grazed treatment were 4.80"/hour in 1996 and 1.92"/hour in 1997. Compared to ungrazed areas, this is a reduction of 44 and 52% in water infiltration rates. Fields with low infiltration rates may be subject to potential runoff and erosion problems during an intense storm event, and dryland corn could exhibit stress as a result of this water loss.

Soil bulk density measurements for the 0-6" depth in 1996 showed a 7% increase for the grazed tracked areas compared to the ungrazed areas. In 1997 there were no differences. Following grazing, percent residue cover was 68% in 1996 compared to 90% for the ungrazed treatment. In 1997, residue cover was reduced from 94% (ungrazed) to 82% (grazed areas). The lower residue cover measurements in 1996 may be attributed to lower corn yields in 1995 (160 bu/acre). While percent residue cover was significantly reduced by grazing, observations following an intense spring rain indicated the amount of corn stalk residue remaining following grazing was still sufficient to prevent erosion.

Results of this study indicate spring grazing can provide a readily available feedstuff and reduce feed costs by reducing the time, labor, and cost of feeding hay to cattle in the spring before they go out on pasture. Producers should implement the practice of spring-grazing of corn stalks on a small scale and use careful management under muddy conditions because grazing may impact subsequent crop yields. More research will be conducted in 1998 on a larger scale to determine the effect of tillage following grazing, and the effect on soybean yields following grazing of corn stalks under irrigation.

Submitted by Gary Lesoing

USDA Creates Office Of Pest Management

The USDA announced in September the creation of an Office of Pest Management that will serve as the agency's focal point for pesticide regulatory issues. The new office is charged with integrating and coordinating pesticide issues within the USDA, along with improving communications with and strengthening the existing network of grower organizations and crop specialists at land grant institutions. The agency can now be more

responsive to the agricultural community in developing alternative pest management practices to meet critical needs that develop as a result of the regulatory process, according to Deputy Agriculture Secretary Richard Rominger.

Source: *Alternative Agriculture News*, October, 1997, published by Wallace Institute for Alternative Agriculture.

SANET-mg Archives: A Valuable Resource

Most readers of this newsletter are familiar with SANET-mg, an e-mail group coordinated by the Sustainable Agriculture Network. What you may not know is how easy it is to access archived messages on specific topics via Web pages. For example, let's say you are interested in what e-mail messages have been posted regarding the nutritional value of organically grown versus conventionally grown food. In the SANET-mg DEBATES Web page (<http://www.pmac.net/debpost.htm>), you will see a hot button titled Nutrition and Food Systems. Clicking on that will get you a list of messages under the heading "Is Organic Food More Nutritious?" The list shows sender, date posted, and subject. Simply click on those you wish to read. Genetic Engineering is one of the choices on the TOPICS Web page (<http://www.pmac.net/topics.htm>). Selections under this heading include Bt Transgenic Crops, Herbicide Tolerant Varieties, and Labeling. Learn what your colleagues around the world are sharing via SANET-mg. For information about subscribing to the e-mail group, see <http://www.ces.ncsu.edu/san/htdocs/hypermail/>. Note: you do not need to be subscribed to SANET-mg in order to access the archived messages on the Web pages.

Did You Know...

In response to calls from members of parliament to make the country totally organic by 2010, the Danish government is initiating an assessment of the impacts of a total pesticide ban in the country. A committee of experts from government, the food and chemical industry, labor and environmental, health, and consumer organizations will deliver a report to the Ministers of Environment and Energy by the end of 1998.

USDA, EPA and FDA have called for a national committee to develop and implement IPM methods on 75% of total U.S. crop acreage by 2000.

Representatives of 163 nations agreed to phase out methyl bromide, a highly toxic pesticide that is also a powerful ozone depleter, at the 10th anniversary of the Montreal Protocol, September 9-17, 1997. The agreement states that industrialized nations will completely phase out methyl bromide by 2005, and developing countries by 2015. The U.S. accounts for approximately 40% of global methyl bromide use and has already set 2001 as the phaseout date.

In a November 12 release, the Energy Information Administration said U.S. energy use is expected to increase by 27% between now and the year 2020.

According to the report, *Searching for the "O-Word"* (see Resources), USDA devotes less than one-tenth of one percent of its research budget to organic farming systems.

RESOURCES

Agroecology: Ecological Processes in Sustainable Agriculture, 1998. \$49.95. Stephen Gliessman examines agroecological principles and theories in textbook format for students at introductory and more advanced levels. Provides overview of plant ecology, nutrition, photosynthesis and environmental factors, and examines system-level phenomena in agriculture such as population processes, genetic resources, diversity and energy use. Provides case studies on several subjects, including soil management, intercropping, cover cropping, raised-field systems in Mexico, and Hopi agriculture. Ann Arbor Press, 121 South Main Street, Chelsea, MI 48118, 313-475-8787.

How to Find Agricultural Information on the Internet. \$12 (add \$3 handling + \$0.99 Calif. tax). Shows farmers, ranchers, Extension agents, consultants and gardeners the basics of choosing an Internet provider, figuring costs, using electronic mail, getting

answers from e-mail discussion groups, searching the World Wide Web for practical information, finding graphics on the Web, and copying information for their own use. University of California DANR Communication Services, 6701 San Pablo Ave., Oakland, CA 94608-1239 (checks payable to UC Regents). VISA, MasterCard or purchase orders: 800-994-8849 or 510-642-2431. Excerpts are on the SAREP Web site: <http://www.sarep.ucdavis.edu>

Reorganizing U.S. Agriculture: The Rise of Industrial Agriculture and Direct Marketing, 1997. \$6. Examines rise of corporate agriculture and associated shift in production decisions to off-farm firms, and argues that farmers' markets and community supported agriculture (CSA) programs are part of a social movement to maintain farm-level control over production decisions. Discusses changes in some state laws meant to prevent corporations from controlling agriculture, and provides sales and production data about farmers' markets and CSAs. Henry A. Wallace Institute for Alternative Agriculture, 9200 Edmonston Rd, Suite 117, Greenbelt, MD 20770, 301-441-8777, hawiaa@access.digex.net, <http://www.hawiaa.org>.

Maximizing Shareholder Retention in Southeastern CSAs: A Step Toward Long Term Sustainability, 1997. \$8. Presents findings of study on what makes community supported agriculture programs (CSAs) successful. Focuses on CSAs in southeastern U.S., but provides conclusions that may have wider relevance, including recommendations regarding marketing, farm management and public education. Provides listing of CSA-related resources nationally. Deborah Kane, 2703 NE 11th, Portland, OR 97212, 503-335-5970, tfa@teleport.com.

Suppliers of Beneficial Organisms in North America. Free. The 1997 edition lists 130 organisms available from 142 suppliers. California Department of Pesticide Regulation, Environmental Monitoring and Pest Management Branch, Attn.: Beneficial Organisms, 1020 N Street, Room 161, Sacramento, CA 95814-5624, 916-324-4100, chunter@cdpr.ca.gov. Also available at <http://www.cdpr.ca.gov>.

Sustainable Farming Systems: A Guide to the Transition, 1997. \$6.50. Describes transition to sustainable agriculture by 12 California farmers, emphasizing general information rather than crop-specific guidelines. Examines challenges and opportunities in social, economic and agricultural aspects of this transition, including soil, water and pest management. Sustainable Agriculture Research and Education Program, One Shields Ave., University of California, Davis, CA 95616-8716, 916-752-7556, sarep@ucdavis.edu, <http://www.sarep.ucdavis.edu>.

Searching for the "O-Word": Analyzing the U.S. Department of Agriculture (USDA) Current Research Information System for Pertinence to Organic Farming, 1997. \$15. Examines extent of U.S. government funding for research aimed at organic agriculture compared to conventional agriculture. Describes history of U.S. organic research policy and usefulness of USDA research for organic farmers. Makes recommendations for improving USDA's role in organic research and information dissemination to organic

farmers. Organic Farming Research Foundation, PO Box 440, Santa Cruz, CA 95061, 408-426-6606, research@ofrf.org.

Beyond Silent Spring: Integrated Pest Management and Chemical Safety, 1996. \$45.95. Explores how pesticide use and pest control have developed since publication of Rachel Carson's *Silent Spring*. Describes health and environmental problems of pesticides, and examines integrated pest management (IPM). Discusses international and institutional approaches to implementing IPM and reducing hazardous pesticide use. Chapman & Hall, 7625 Empire Dr., Florence, KY 41042, 800-842-3636, order@chaphall.com.

EPA has a Web site showing quality rankings of U.S. watersheds. Consumers can look to the Internet to learn about the quality of water they drink or use for recreation and to find which polluters threaten that water under a program the EPA recently launched. The program includes the EPA's first assessment of the quality of the 2,111 watersheds in the 48 contiguous states, which showed 16% with good water quality and 21% with poor quality or serious pollution threats. The EPA site gives information on 15 signs of the health of a watershed: <http://www.epa.gov/surf/iwi>.

The Gene Exchange. Free. Newsletter monitors policy, industry and research regarding biotechnology worldwide. Beginning with the next issue, it will be available via e-mail. Send e-mail to: genex@ucsusa.org. In the message type: subscribe genex and your e-mail address. UCS Agriculture and Biotechnology Program, 1616 P Street NW, Suite 310, Washington, DC 20036-1434, 202-332-0900, jrissler@ucsusa.org, <http://www.ucsusa.org>.

Results from the extensive Nebraska Rural Poll (1996-97) are available at <http://www.ianr.unl.edu/ianr/agecon/rural/ruralpaper.htm>.

Coming Events

Contact CSAS office for more information.

- **Jan. 9-10**—Great Plains Vegetable Conference, St. Joseph, MO
- **January 21-24**—18th Annual Ecological Farming Conference, Pacific Grove, CA
- **Jan. 22-25**—Southern SAWG Annual Conference & Trade Show, Memphis, TN
- **Jan. 30**—17th Annual Organic Conference and Eco-Products Trade Show, Ontario, Canada

<http://www.gks.com/OrgConf/>

- **Jan. 31**—NSAS Western Conference (see article November-December 1997 issue)
- **Feb. 10-12**—Managing Manure in Harmony with the Environment and the Society, Ames, IA
- **Feb. 20-21**—Upper Midwest Organic Farming Conference, Sinsinawa, WI
- **Feb. 26-28**—Conference of the North American Farmers' Direct Marketing Association and the North American Strawberry Growers Association, Victoria, BC Canada

<http://www.agf.gov.bc.ca/agric/nafdmc/dfmchome.htm>

- **Feb. 28**—NSAS Annual Meeting (see article November-December, 1997 issue)
- **Mar. 5-6**—National SARE Conference - Building on a Decade of Sustainable Agriculture Research & Education: Sharing Experiences to Improve Our Agriculture, Austin, TX

<http://www.ces.ncsu.edu/san/>

- **Mar. 29-Apr. 1**—1998 North American Conference on Pesticide Spray Drift Management, Portland, ME

<http://www.state.me.us/agriculture/pesticides/drift/>

- **June 1**—First International Conference: Geospatial Information in Agriculture and Forestry, Lake Buena Vista, FL

<http://www.erim.org/CONF/conf.html>

- **June 3-6**—Conference: Who Owns America II: How Land and Natural Resources are Owned and Controlled, Madison, WI
- **July 5-9**—Soil and Water Conservation annual conference, Balancing Resource Issues: Land, Water, People, San Diego, CA

"Aldo Leopold wrote that every farm is a portrait of the farmer, but I would add that every landscape is a portrait of the community."

Paul Johnson, former USDA-NRCS Chief

"Yesterday is history. Tomorrow is a mystery. Today is a Gift.

That is why it is called the Present." --Unknown.

Happy Holidays Everyone!

CSAS Staff

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