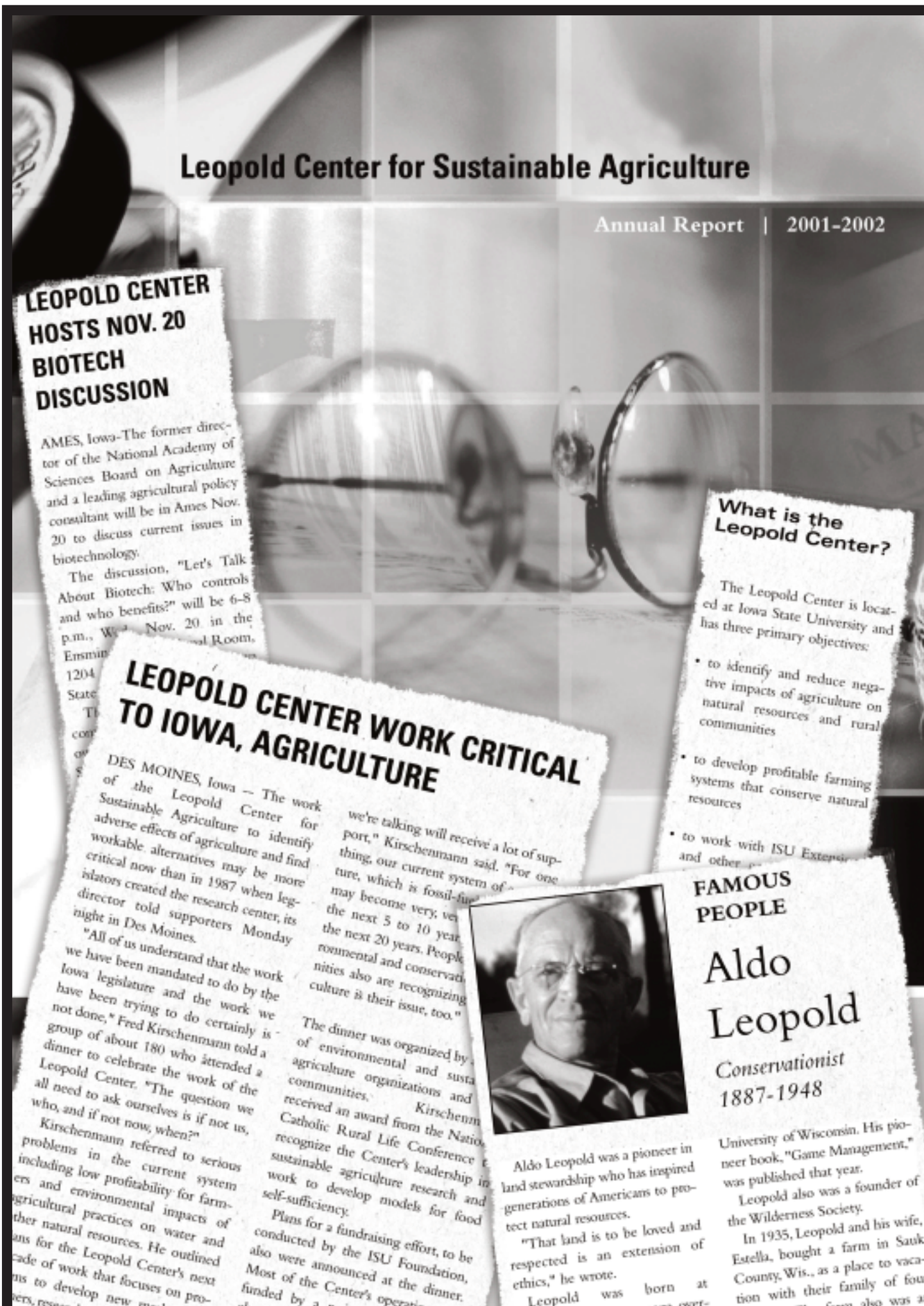

Leopold Center for Sustainable Agriculture
Annual Report | 2001-2002
LEOPOLD CENTER HOSTS NOV. 20 BIOTECH DISCUSSION
AMES, Iowa-The former director of the National Academy of Sciences Board on Agriculture and a leading agricultural policy consultant will be in Ames Nov. 20 to discuss current issues in biotechnology.
The discussion, "Let's Talk About Biotech: Who controls and who benefits?" will be 6–8 p.m., Nov. 20 in the
1204
LEOPOLD CENTER WORK CRITICAL TO IOWA, AGRICULTURE
DES MOINES, Iowa — The work of the Leopold Center for Sustainable Agriculture to identify adverse effects of agriculture and find workable alternatives may be more critical now than in 1987 when legislators created the research center, its director told supporters Monday night in Des Moines.
"All of us understand that the work we have been mandated to do by the Iowa legislature and the work we have been trying to do certainly is not done," Fred Kirschenmann told a group of about 180 who attended a dinner to celebrate the work of the Leopold Center. "The question we all need to ask ourselves is if not us, who, and if not now, when?"
Kirschenmann referred to serious problems in the current system including low profitability for farmers and environmental impacts of agricultural practices on water and other natural resources. He outlined plans for the Leopold Center's next decade of work that focuses on projects to develop new
we're talking will receive a lot of support," Kirschenmann said. "For one thing, our current system of
ture, which is fossil-fue
may become very, ve
the next 5 to 10 year
the next 20 years. People
ronmental and conservati
nities also are recognizing
culture is their issue, too."
The dinner was organized by
of environmental and susta
agriculture organizations and
communities.
Kirschenm
received an award from the Natio
Catholic Rural Life Conference t
recognize the Center's leadership in
sustainable agriculture research and
work to develop models for food
self-sufficiency.
Plans for a fundraising effort, to be
conducted by the ISU Foundation,
also were announced at the dinner.
Most of the Center's operatio
funded by
What is the Leopold Center?
The Leopold Center is located at Iowa State University and has three primary objectives:
• to identify and reduce negative impacts of agriculture on natural resources and rural communities
• to develop profitable farming systems that conserve natural resources
• to work with ISU Extens
and other
FAMOUS PEOPLE
Aldo Leopold
Conservationist
1887-1948
Aldo Leopold was a pioneer in land stewardship who has inspired generations of Americans to protect natural resources.
"That land is to be loved and respected is an extension of ethics," he wrote.
Leopold was born at
University of Wisconsin. His pioneer book, "Game Management," was published that year.
Leopold also was a founder of the Wilderness Society.
In 1935, Leopold and his wife, Estella, bought a farm in Sauk County, Wis., as a place to vaca-
tion with their family of fou
farm also was a

LEOPOLD CENTER
FOR SUSTAINABLE AGRICULTURE

Leopold Center for Sustainable Agriculture

ANNUAL REPORT ■ 2001-2002 ■ www.leopold.iastate.edu

INSIDE

Letter from the Director

By Frederick Kirschenmann, Director, Leopold Center for Sustainable Agriculture

As most everyone knows by now, the Leopold Center suffered an inordinately large cut in its FY2003 budget. The Iowa Legislature transferred 86 percent of our funding out of the Groundwater Protection Fund into the general fund to help balance the FY2003 budget. Some thought this would mean the end of the Center. Others thought it would so cripple the Center's work that it would become ineffective. Not quite true.

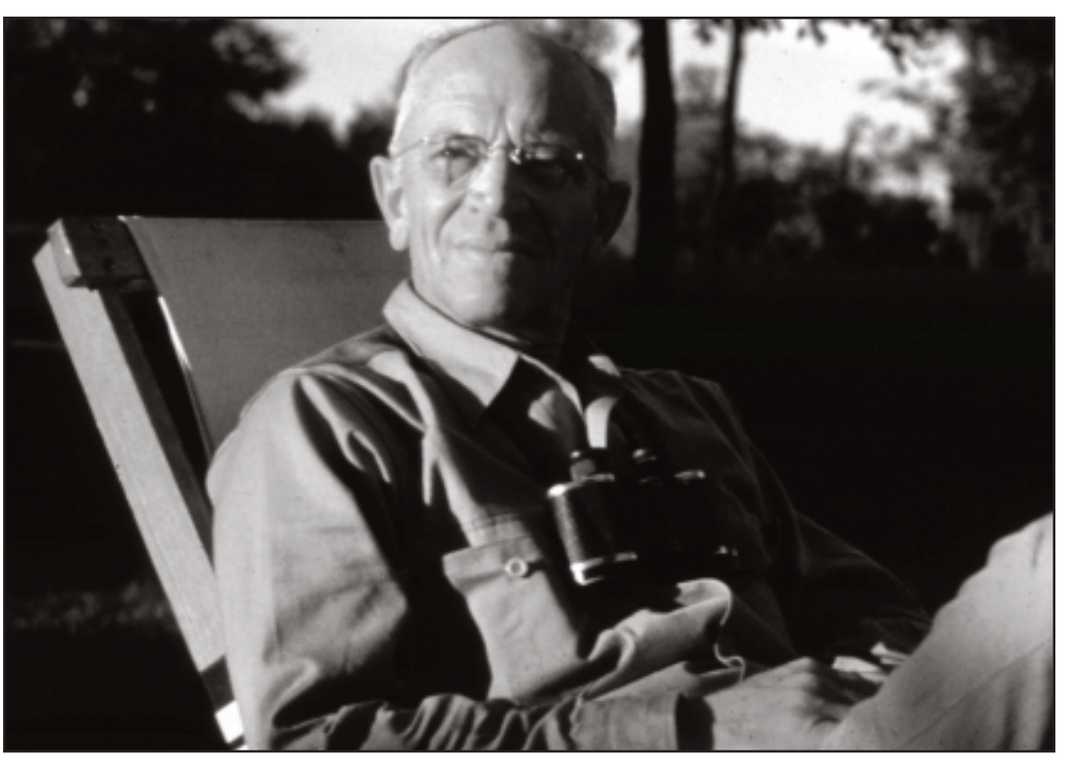
To be sure, the cuts were severe and it has drastically reduced the research work that has become so vital to the future of Iowa agriculture. But a number of positive things have happened. First, it led a number of individuals and grassroots organizations to come to the Center's defense, contribute to the Center's work, and remind the citizens of Iowa about the Center's importance to the future of Iowa. That is the kind of support money can never buy.

Second, it led us to develop important partnerships with those who share our vision for the future of agriculture. While such partnerships had already been part of our new strategic plan, the urgency placed on us by the budget cuts has led us to cast our net much wider than we might have, and as a result many new opportunities are in the wings. Some of these opportunities will take us beyond Iowa, but agriculture's problems don't stop at Iowa's borders, so working with colleagues in surrounding states may enable us to be more effective in Iowa than we would have been had we continued to limit the scope of our work strictly to issues in our state.

Third, it has alerted many of our colleagues to the important role that the Leopold Center has been playing and stimulated them to work with us to insure the Center's long-term future. As part of the new effort, the ISU College of Agriculture is working with the ISU Foundation on a fundraising campaign for the Center.

Of course, all of this is not just about the Center and its future; it is about agriculture and its future. If the Leopold Center were not here to address these vital issues, someone else would eventually have to take up the cause, because

See **Director**, Page 2



Aldo Leopold (1887-1948), the conservationist, ecologist, and educator for whom the Center was named.

Publication Information

Leopold Center for Sustainable Agriculture
Iowa State University
209 Curtiss Hall
Ames, Iowa 50011-1050
(515) 294-3711
FAX (515) 294-9696
e-mail:
leocenter@iastate.edu
website:
http://www. leopold.iastate.edu/

■

The Leopold Center was established by the Iowa Legislature as part of the Iowa Groundwater Protection Act of 1987. Its legislatively mandated goals are to identify and reduce impacts of agricultural practices, contribute to the development of profitable farming systems that conserve natural resources, and cooperate with Iowa State University Extension to inform the public of new findings.

The Leopold Center for Sustainable Agriculture explores and cultivates alternatives that secure healthier people and landscapes in Iowa and the nation.

Information for this report was compiled by Leopold Center staff with the help of its researchers and educators, who are committed to improving Iowa agriculture and the lives of Iowans.

■

Edited by
Mary Adams
Graphic design by
Juls Design, Ankeny, Iowa
Photos by
Leopold Center staff except where noted.

■

Iowa State University does not discriminate on the basis of race, color, age, religion, national origin, sexual orientation, sex, marital status, disability, or status as a U.S. Vietnam Era veteran. Any persons having inquiries concerning this may contact the Director of Affirmative Action, 1350 Beardshear Hall, (515) 294-7612.

PRINTED WITH SOY INK

Printed on Recycled Paper

Director, from Page 1

the challenges and opportunities facing agriculture will not go away. Most of the available indicators suggest that significant changes in agriculture must happen if we are to sustain a viable food and farming system in this country. The economics of commodity agriculture have now reached a point where farmers cannot recover their costs of production and public subsidies have almost become an institution. According to a recent *Progressive Farmer* article, the situation has now become so hopeless that some U.S. farmers are going to other countries, such as Mexico and Brazil, to acquire cheaper land and labor so they can continue to be "a least cost producer." But this in turn excludes and displaces farmers in those countries, causing social unrest.

Meanwhile, the ecological damage of our agricultural practices continues to devastate vital natural resources on which agriculture ultimately depends. The most recent report on the dead zone in the Gulf of Mexico indicates that it is now the largest it has ever been—half the size of the state of Iowa. Of course, the dead zone is only one indicator of a production system that fails to adhere to fundamental principles of ecological soundness. At the same time, the economies of our rural communities are being devastated, also largely due to the farming system we have developed.

Frederick Kirschenmann

Some argue that these are all inevitable consequences of a market system designed to achieve maximum efficiencies, and that ultimately everyone benefits from such efficiencies. We disagree. We believe it is still possible to develop a food and farming system that is simultaneously economically viable, ecologically sound, and socially resilient. The longer we delay, the more difficult it will be to develop the new agriculture that is required for our new century. We are determined to stay the course. This work is too important to give up.

This report offers a brief picture of the most recent fiscal year at the Leopold Center. As you read it, you will appreciate how the Center has continued to serve Iowans even while under considerable budget stress.

LEOPOLD CENTER STAFF 2001-2002

Frederick Kirschenmann, Director . . . . . .leopold1@iastate.edu
Michael Duffy, Associate Director* ** . . . . . .mduffy@iastate.edu
Mary Adams, Editor* . . . . . .madams@iastate.edu
Ken Anderson, Account Specialist . . . . . .kenman@iastate.ed
April Franksain, Secretary* . . . . . .twerp@iastate.edu
Laura Miller, Communications Specialist* . . . . .lwmiller@iastate.edu
Jeri L. Neal, Ecological Systems
Research Program Leader . . . . . .wink@iastate.edu
Rich Pirog, Marketing and Food Systems
Research Program Leader** . . . . . .rspirog@iastate.edu

*part-time or shared appointments
**partial Extension appointment

Center begins fundraising campaign

For the first time in its history, the Leopold Center prepared to embark on a fundraising campaign.

The aim will be to shore up the Center's financial position given the $1 million budget cut for FY2003. Donations will be solicited to help alleviate the results of this budget shortfall and to provide the beginnings of an endowment fund to secure the Center's financial future. After the events of the two previous legislative sessions, it was clear that the Center could no longer rely on a stable state appropriation to support its long-term sustainable agriculture research.

The Center began working with the ISU Foundation on the fundraising campaign, at the suggestion of Dean Catherine Woteki of the ISU College of Agriculture. Mary Adams will act as the Center's fundraising coordinator.

The first stage of the fund-raising effort was a letter soliciting donations from people who have been past supporters of the Center. A special "Friends of the Leopold Center" group will recognize those who donate $1,000, but any size of contribution will be gratefully accepted and acknowledged. Following the initial effort, appeals for funding will be made to individual donors and foundations and corporate sponsors.

Donations may be made directly to:
Leopold Center
209 Curtiss Hall
Iowa State University
Ames, Iowa 50011-1050

Leopold Center wrestles with budget cuts

How is the Leopold Center coping with a fiscal year that began with a $250,000 budget cut and ended with a $1 million "fee transfer"?

Perhaps it would be better to look at the impact on the recipients of Leopold Center research funding.

In July 2001, members of the Center's issue teams and initiatives (agroecology, animal management, alternative swine production, and organic crops) were told that the Center would be able to provide only one more year of support.

At the same time, the educational program that funded conferences and special events was dropped. A few educational events received support, but on a limited basis.

An interim Request for Proposals was issued in October 2001, but the number of projects accepted for funding was pruned from the usual 30 to 12.

An existing clerical staff position at the Center was not filled when the occupant resigned.

That was life after the first round of cuts.

In May 2002, the Iowa Legislature slashed $1 million from the Leopold Center's portion of the Groundwater Protection Fund and applied it to the general fund. At this point, the Center had to revert to use of its contingency funds, reserved for such an emergency.

No request for research proposals will be issued for the upcoming fiscal year, the first time since 1988 that the Center will seek no new research projects.

Projects that were underway as of May 28, 2002 were funded for the next fiscal year, but were put on notice that future funding may be uncertain.

Principal investigators, past and future, were informed that the Center would honor FY03 commitments, but beyond that there were no guarantees.

An existing full-time staff accounting position was to be reduced to halftime and the duties contracted to another department.

Given the financial realities of state government in 2002-3, no one is assuming that the fiscal landscape will be dramatically improved in the next 12 months. Center officials are contemplating a mix of alternative funding plans, several of which would substantially alter the character and composition of the Center's research and education efforts. Iowans will see a vastly different Leopold Center for Sustainable Agriculture in the years to come.

Center concludes work with Cavaliere Foundation funding

The Leopold Center requested and received $30,000 in support from the Cavaliere Foundation of Madison, Wisconsin, in September 2000. The grant was used to expand and enrich the visioning process in a manner to benefit the public and the larger agricultural community without jeopardizing the Center's ability to respond to emerging issues. With Cavaliere Foundation support, the Center set out four objectives for its visioning process:

1 Develop and implement a dynamic, inclusive process to create a vision for agriculture in the 21st century and the Center's role in that future.

2 Determine a specific course of action that will identify two to five areas for the Center to focus on within the larger sustainable agriculture framework.

3 Share what is learned with various stakeholders, including the greater agricultural community, so the process can be a model for others.

4 Develop an evaluation plan to assess and share intended outcomes and identify unexpected outcomes to the process.

The Center submitted an interim report to the Cavaliere Foundation in October 2001. Evaluation activities with urban and suburban audiences were then completed. The final report was filed with the foundation in June 2002.

Center sponsorship of educational events and conferences scaled back

The Leopold Center continued to be involved in working with the organizers of sustainable agriculture-related events despite the demise of the official financial sponsoring program. The table lists several events that were held in 2001-02 with some form of assistance from the Center. A limited amount of funding was used to support Iowa-based outreach activities that were a direct part of the research initiatives or closely related to the aims of the initiatives.

Pork and poultry meetings

Two conferences specifically related to the food systems and marketing initiative work were the Pork Niche Marketing Conference in September 2001, and the Poultry Marketing workshop held in January 2002 in conjunction with the Practical Farmers of Iowa annual meeting and co-sponsored by ISU Extension.

The theme of the pork meeting was "Niche and value added marketing: What's in it for me?" The event attracted more than 130 farmers, entrepreneurs, educators, researchers, and agribusiness people who wanted to hear more about the specialty marketing opportunities for pork producers. On the following day, a smaller group of keenly interested producers and processors joined with pork researchers to talk in more specific terms about the future for specialty pork value chains and direct marketing operations in Iowa. The offshoot of the second day's discussions was the formation of the Pork Niche Market Working Group, described on page 5 of this report.

The half-day poultry workshop looked at niche marketing prospects for Iowa producers who raised organic, pasture-fed, free-range, antibiotic-free, or other unique poultry market specialties. More detailed information for these producers is available on the web sites of the Leopold Center and the USDA's Sustainable Agriculture Research and Education (SARE) office.

Conference Title	Location	# of Participants
Maquoketa Valley Wine and Food Festival	Depot Restaurant, 600 East Platt Street, Maquoketa, IA	200
Upper Midwest Grazing Conference	Dubuque, IA	120
Composting Field Day	Camp Hantesa, Boone, IA	80
Human Health and the Environment: Iowa Problems, Iowa Solutions	Hotel Fort Des Moines, Des Moines, IA	115
Enjoy our Harvest Banquet	Pearson Memorial Center, Jackson County Fairgrounds, Maquoketa,IA	200
Commercial Enology 101 Workshop	Hawthorn Suites, 6905 Lake Drive, West Des Moines, IA	28
Iowa Organic Conference	DMACC, Ankeny, IA	200
Protecting the Environment through Nutrient Management	Neeley-Kinyon Research Farm, Greenfield, IA	31
Collaborative Cause Marketing Seminar	3140 Agronomy Hall, ISU Campus	25
One Bird Ten Thousand Treasures: Integrated Rice and Duck Farming	2050 Agronomy Hall, ISU Campus	75
Cornbelt Cow-Calf Conference	Ottumwa, IA	600
Upper Midwest Organic Farming Conference	La Crosse, WI	1400
Rural Ministry Conference	University of Dubuque, Dubuque, IA	300
From Farm to Fork: A Forum on Locally Grown Foods at University Campuses	23 McKay Hall, ISU Campus	45
Iowa Food Policy Conference	Agricultural Law Center, The Law School, Drake University, Des Moines, IA	105
Intensive Grazing for Dairy Cattle Project	N 147 Lagomarcino Hall, ISU Campus	117
Eco Fair 2002	Fairfield, IA	2,100
Practical Farmers of Iowa, Student Education and Youth Education Programs	EWALU Camp and Retreat Center, Strawberry Point, IA	25

Center ventures into agricultural policy arena

IN April 2002, the Center sponsored an invitation-only event called the "Future of Iowa Agriculture: A Policy Discussion." This was a working conference of leaders from various segments of the agricultural arena. Participants included farmers, academics, and representatives from commodity and non-profit organizations. The purpose was to explore the options, alternatives and possible consequences of potential policies for Iowa and U.S. agriculture.

The program was organized by associate director Mike Duffy as part of his duties as initiative leader on policy matters. He told those who were invited: "Today the problem is not that we can't produce enough commodities; the problem is how to produce those commodities profitably and in an environmentally sound manner. We cannot continue to pursue the goals of the past without recognizing the unintended consequences. We need to develop policies that more clearly reflect the will of the people with respect to what type of agriculture they desire. Too often people feel that the direction of change is inevitable. However, the directions we take are the result of policy choices, intended or unintended."

Mike Duffy

The day's speakers and their topics were:

- **Dean Catherine Woteki**, ISU College of Agriculture—Welcome and overview of ISU College of Agriculture;
- **The Honorable Cooper Evans,** (former member of the U.S. House of Representatives from Iowa)—Possible directions for agricultural policy;
- **Daryll Ray**, University of Tennessee—Economic consequences of alternative policies;
- **Dean Moura Quayle**, Agricultural Sciences, University of British Columbia—International perspective on alternative agricultural policies; and
- **Karl Stauber**, President, Northwest Area Foundation—What we have heard and where we can go from here?

Marketing and Food Systems Initiative

Pork Niche Market Working Group (PNMWG) gets rolling

One of the notable examples of the Leopold Center's new food systems and marketing initiative in action is the Pork Niche Market Working Group (PNMWG), a coalition of organizations with an interest in selling pork products that will provide more value and profit to the farmer.

Iowa has a long history of family farm pork production, with a major shift in recent years toward larger facilities for raising pork. At the same time, the Leopold Center, its hooped house research group, and other agencies were looking at alternative production systems that would serve smaller farmers and specialty markets.

A conference in September 2001, "Niche and Value Added Marketing: What's in it for me?" brought together producers and the other players in the pork sales and processing business to consider what would help them be more productive and profitable. Their intensive discussions led to the formation of the Pork Niche Market Working Group.

The group's mission statement calls for the group "*to foster the success of highly differentiated pork value chains that are profitable to all participants, that incorporate farmer ownership and control, and that contribute to environmental stewardship and rural vitality.*"

Nearly 30 different organizations and agencies participate in the PNMWG. The group includes four work teams:

- Credit and Investment Team
- Production and Herd Health Research Team
- Certification, Promotion, and Market Assessment Team
- Business Planning and Feasibility Studies Team

The PNMWG has received funding from the W.K. Kellogg Foundation as part of the Value Chain Partnerships for a Sustainable Agriculture program being administered by the Leopold Center, in cooperation with Practical Farmers of Iowa and Iowa State University. This funding has allowed the PNMWG to fund five special projects. Efforts also are underway to understand and service the niche pork markets in the food service industry.

Gary Huber of Practical Farmers of Iowa is coordinator of the PNMWG, while Rich Pirog of the Leopold Center serves as chair of the PNMWG steering team. Pirog is also chair of the Kellogg project coordination team and head of the Center's marketing and food systems research initiative.

A structure was developed to help to address the challenges. It included a steering team made up of representatives of groups that had contributed financially to support a part-time coordinator for PNMWG.

Center happenings

Spencer Award established

The Leopold Center was chosen to present a new sustainable agriculture award. The **Spencer Award** for Sustainable Agriculture was endowed by Robert Spencer of LaCrosse, Wisconsin, and Elaine Spencer of Seattle, children of Norman and Margaretha Geiger Spencer, who farmed for 40 years near Sioux City in Woodbury County. The award is intended to honor an Iowa farmer, educator, or researcher who has made a significant contribution to the advancement of ecological and economic practices that make agriculture sustainable and the family farm secure for the future. The first Spencer Award was to be presented in late summer 2002.

Photo courtesy of the Spencer family

Seventh Generation Award goes to Kirschenmann

The Center for Rural Affairs and the Consortium for Sustainable Agriculture Research and Education named **Fred Kirschenmann** as the 2001 winner of the Seventh Generation Research Award. The award, named after the Native American tradition of planning their lives with seven generations of beneficiaries in mind, honors innovators in agricultural research. Kirschenmann

Fred Kirschenmann

received the award at the annual meeting of the Tri-Societies (American Society of Agronomy, Soil Science Society of America, and Crop Science Society of America) in October 2001.

First Leopold Fellow designated

As part of the Center's contribution to the success of Iowa State's new graduate program in sustainable agriculture, the advisory board chose to contribute up to $15,000 per year to support one or more graduate students. The first recipient of funding from the Leopold Fellowship was **Xiaofan Niu**, a student from Shenyang, China, who works with X.B. Yang in the department of plant pathology. To complement the program organization, the funds are awarded to a student/faculty team who will work on a specific topic related to sustainable agriculture.

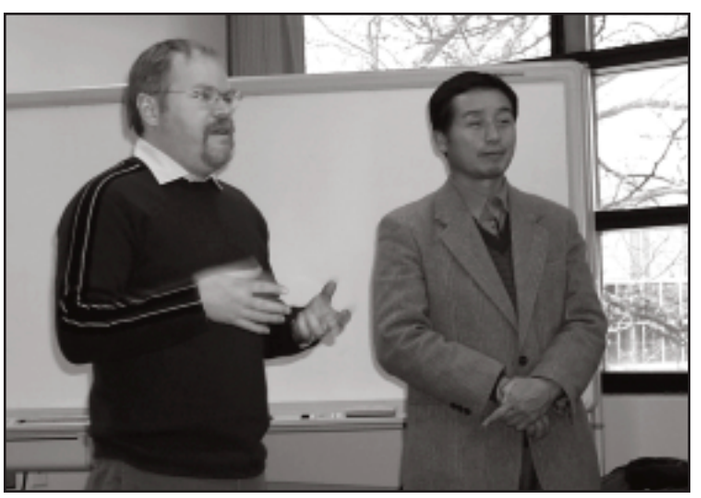
Xiaofan Niu

Campus presentations sponsored by the Leopold Center

June Holley, president and founder of the Appalachian Center for Economic Networks (ACEnet) presented a seminar on values-based marketing at ISU in October 2001. She visited the campus to work with the Center's fledgling marketing initiative. Holley explained her organization's experiences promoting unique food products in southeastern Ohio.

Takao Furuno is a Japanese farmer whose innovative use of multiple components in a single production system has become a staple feature of Fred Kirschenmann's speeches about the ways farmers can use natural systems more efficiently. Furuno visited Iowa State in February 2002 and spoke to

David Yoshiba (below left) translates for Takao Furuno during their visit to Ames in February.



"A Sense of Wonder," a one-woman play based on the life and works of **Rachel Carson**, was performed at the Maintenance Shop of the ISU Memorial Union on November 8. The Center hosted the production that was part of ISU's Women's Week activities. Following the performance Center director Fred Kirschenmann moderated a discussion of Carson's views on sustainable agriculture.

more than 200 people at two forums sponsored by the Center. He authored the book, *The Power of Duck: Integrated Rice and Duck Farming*, which illustrates how he has successfully raised ducks, rice, fish, and vegetables on the same plot of land.

The Center co-sponsored a special discussion on the need to move an ecological agenda into the mainstream of university research as part of ecologist **Wes Jackson**'s March 2002 visit to ISU. (Jackson is affiliated with The Land Institute of Salina, Kansas.) Questions discussed included keeping an ecological agenda in front of the public, redirecting federal research dollars toward ecological needs, and working with established interests opposed to ecological research. This event was part of the Center's incipient agroecology initiative.

Siddiqui meets with student Nathan Dahlen.

"From Farm to Fork: A Forum on Locally Grown Foods at University Campuses" was the topic of an April event at ISU's newly renovated Joan Bice Underwood Tearoom. The featured speaker was Nadeem Siddiqui, director of Cornell University Dining Services in Ithaca, New York, who shared how he had successfully integrated local and regional foods into his dining service offerings. A panel discussion after the speech focused on ISU attitudes toward local foods on campus. The event was part of the Center's marketing and food systems initiative.

Center conducts urban/ suburban conversations

From the beginning of the Center's re-visioning process, it was obvious that the success of the new vista for agriculture would require involvement and support from urban and suburban audiences.

Karl Stauber, head of the Northwest Area Foundation, was particularly eloquent about the importance of the genuine involvement of these audiences if the nation's midsize farmers are to survive.

The Leopold Center reached an agreement in December 2001 with Ecumenical Ministries of Iowa and the National Catholic Rural Life Conference to coordinate the local planning and to moderate some "get-acquainted" sessions involving urban and suburban residents and Leopold Center staff. These meetings provided staff and attendees with an opportunity to discuss why city dwellers should care what happens on the farm.

The Center received significant feedback on agricultural issues of interest to urban/suburban residents. It was clear that more in-depth discussions are needed to better understand how those concerns are framed, and in what context they can best be communicated to rural and farm audiences. Most participants were:

- concerned about the current direction of agriculture,
- receptive to a new vision for agriculture, and
- interested in finding linkages where they could directly or indirectly participate (through buying of local food, for example) in this vision.

It was clear that urban and suburban Iowans have many concerns and interests about the future of Iowa agriculture. The Center's strategy to engage urban and suburban residents must be multi-faceted to allow a number of points of entry (food issues, concern for environment and rural communities, land use, etc.).

THREE SESSIONS WERE HELD:

March 14, 2002 – Sioux City (25 participants)
Hosts: Grace Methodist and St. Joseph Catholic Churches
Other local partners: ISU Extension

March 18, 2002 - Des Moines (Beaverdale) (55 participants)
Hosts: Grace Lutheran and Holy Trinity Catholic Churches

April 15, 2002 - West Des Moines (40 participants)
Host: St. Francis of Assisi Catholic Church
Other local partners: ISU Extension and Natural Resources Conservation Service

Updates on local food systems and marketing work

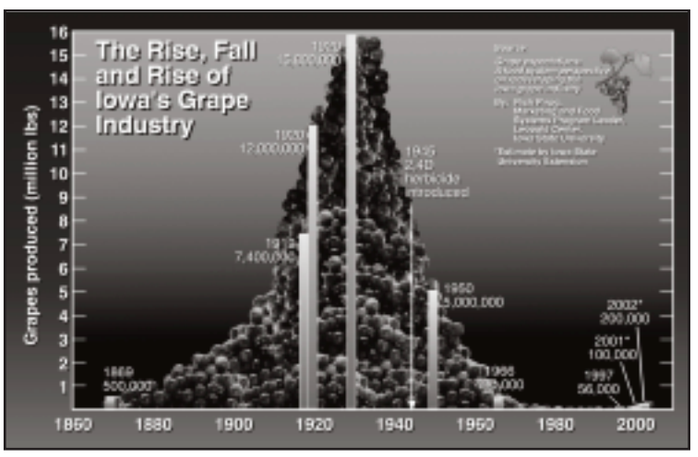
Grape production in Iowa increases

Since the publication of the "Grape Expectations" report in April 2000, the number of acres planted to grapes in Iowa has expanded from 30 to 400 acres and the number of wineries has increased from nine to 18. The Center has worked with several faith communities to encourage the use of locally produced wines and grape juice for their worship services. The grape research paper was useful in writing legislation that created a grape and wine commission for Iowa.

Food miles paper

The widely quoted paper, "Food, Fuel, and Freeways: An Iowa perspective on how far food travels, fuel usage and greenhouse gas emissions," which detailed how far food travels to reach your dinner table was updated in April 2002 after further examination of data from the Chicago Terminal Market. Rich Pirog (with assistance from ISU student Tim Van Pelt) found differences between distances traveled by certain produce items. Pumpkins and mushrooms were moved less than 500 miles from farm to market, but six other common fruits and vegetables (from broccoli to table grapes) traveled more than 2,000 miles to their destination. (Copies of the paper are available from the Center and on the web site.) Both the original paper and the updated version have been used in a wide array of food system publications in the United States and abroad.

Center food systems work was highlighted in three other publications. They were from the Practical Farmers of Iowa (*Expanding Local Food Systems by Marketing to Iowa Institutions*) and ISU Extension (*Local Food Connections: From Farms to Restaurants* and *Local Food Connections: Food Service Considerations.*)

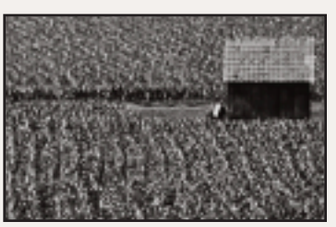


Center projects winding up in 2001

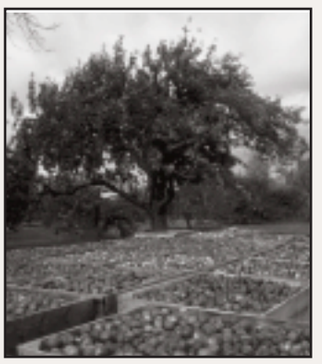
Twenty projects funded by the Leopold Center concluded their work in June 2001. Summaries of their efforts are found in the 2002 *Center Progress Report*, which is available from the Center office, along with further information on the projects.

Among the completed works were 17 research projects and three special projects:

- Alternative and horticulture crop education and marketing pilot project
- Biologically intensive manipulation of foxtail seed banks for enhanced mortality
- Chariton Valley Beef Initiative
- Crop response to zinc as a micronutrient in Iowa
- Demonstration of swine carcass composting as part of an environmentally friendly production system



- Development of switchgrass as a viable agricultural commodity for farmers in southern Iowa
- Ecological impact of herbicides associated with transgenic soybeans on spider mites
- Environmental impacts of the use of poultry manure for agricultural production systems
- Evaluation of organic soil amendments for certified organic vegetable and herb production
- Examining the potential for organic apple production—the Homestead Orchard Project



- Feasibility of organic soybean production following CRP land
- Growing dairy heifers in southwest Iowa
- Improving tree establishment with forage crops
- Integrating biologically rational strategies for control of anthracnose fruit rot of strawberries
- Making the connection—linking farms to hotels, restaurants, and institutions
- Non-target effects of Bt corn on pathogenic and toxigenic fungi
- Organic farming demonstration project—eastern Iowa

Special Projects

- Closing the Loop, Expanding the Circle: Educational outreach for institutional food waste on small farms
- Iowa Master Conservationist Program
- Our rural supermarket: Locally grown foods project

Director's travels

Center director Fred Kirschenmann continued to maintain a highly active travel schedule throughout the year. (Travel expenses were paid by the hosting organization.) Many of his public appearances were opportunities to talk further with varied audiences about his vision for the future of American agriculture.

August 2001
- Iowa Legislative briefing
- Iowa Cattlemen's Association meeting

September 2001
- Sustainable Agriculture curriculum coordinating committee
- Iowa Environmental Council
- Visit with Iowa legislators
- Rotary Club, Ames
- Pork Niche Conference
- Investor's Circle, Washington, D.C.
- CSARE-Kellogg

October 2001
- Environmental Grantmakers Conference, MN
- Bioneers Conference, CA
- Soil Science Society of America—7th Generation Award, NC
- Seminar and lecture, Central College, Pella

November 2001
- Concordia College, Moorhead, MN
- Jessie Smith Noyes Foundation Board, New York City
- St. John's Episcopal Church presentation, Ames
- American Farmland Trust, St. Charles, IL
- Soul of Agriculture Conference, NH
- Forage and Grasslands Conference, Des Moines
- Biotechnology Meeting, MN
- Iowa Organic Conference board meeting

December 2001
- Rural Life Day keynote speech, Jefferson City, MO
- Value-Added Producers Meeting, Western IA Tech CC, Cherokee
- Rotary Club, Rural/Urban Day, Des Moines
- Cornell University, Ithaca, NY

January 2002
- ISU graduate program in sustainable agriculture retreat
- Ames Women's Club
- Practical Farmers of Iowa annual meeting
- Oregon State University Horticulture Dept., Corvallis

February 2002
- NPSPS Conference, Mandan, ND
- Sustainable Ag Society, NE
- Sustainable Ag Committee of the Conservation 2000 Conference, Springfield, IL
- Missouri State Legislature, Jefferson City, MO
- Agribusiness Association of Iowa, Des Moines

March 2002
- Agriculture and Biosystems Engineering students club, Ames
- Drake Agricultural Law Club, Des Moines
- League of Women Voters, Cedar Rapids
- Rural Ministry Conference, Dubuque
- SPF Association talk, Ames
- Ducks Unlimited banquet, Vinton

April 2002
- Colorado Dietetic Association, Denver, CO
- CROP Organic Meeting, LaCrosse, WI
- Animal Disease Conference, ISU Veterinary Medicine
- Wendell Berry 25th Anniversary Conference, KY
- Iowa Valley Creative Retirement, Marshalltown

May 2002
- Glynwood Center Conference, NY
- Sustainable agriculture graduate program retreat
- Center for Respect of Land and Environment board meeting

June 2002
- Loess Hills conference, western Iowa
- Rockefeller Farm meeting, NY
- Bread for the World, Washington D.C.
- Council of Churches Conference, Dubuque
- Leopold Foundation meeting, Aldo's shack, Baraboo, WI
- Food, Agriculture and Society conference, Chicago

IN THE HOOP

Leopold hoop group thrives

The seven-member, ISU-based Alternative Swine Production Research Initiative (a.k.a. the "hoop group") was organized in 1997. The hoop group develops scientific-based information related to alternative swine production across a wide range of disciplines and applications. Primary funding for the group comes from U.S. Department of Agriculture monies acquired through the joint efforts of the Leopold Center and the Humane Society of the United States.

This year, Iowa State University honored the members of the hoop group for their team research efforts. They received the College of Agriculture's highest award for inter-disciplinary agricultural research (the Team Award) in February 2002.

Team members during 2001-02 were:

- **Mark S. Honeyman**
  co-leader
  Animal Science
- **James B. Kliebenstein**
  co-leader
  Economics
- **Jay D. Harmon**
  Agricultural and
  Biosystems Engineering
- **C. Clare Hinrichs**
  Sociology
- **Steven Lonergan**
  Animal Science
- **Thomas L. Richard**
  Agricultural and
  Biosystems Engineering
- **Brad J. Thacker**
  Veterinary Diagnostics
  and Production
  Animal Medicine

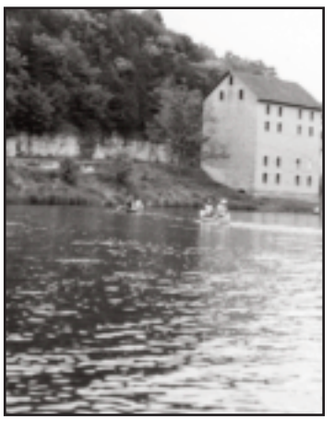
Major accomplishments

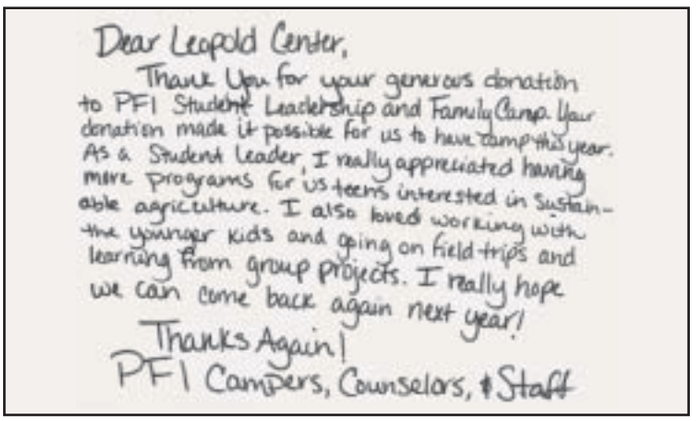
- Completed and published a survey of ISU area extension swine specialists, showing that there were 2,100 hoop barns in Iowa used to house swine on more than 770 swine farms.
- Completed work on housing weaned piglets in hoop barns on a year-round basis in Iowa. The study summary was published as an extension article and has been submitted to a scientific journal.
- Completed a three-year study comparing the performance of finishing pigs in hoop barns and confinement during winter and summer seasons in Iowa. The study summary was published as an extension article and has been submitted to a scientific journal.
- Completed a series of analyses on costs, labor needs, pig flow, premiums and returns of organic pig production. These summaries were published as extension articles and will be packaged for a journal article.
- Completed in-depth economic analyses of feeding finishing pigs in hoop barns and confinement for winter and summer in Iowa. Summaries were published as extension articles.
- Involved several graduate and undergraduate students in the team's work.
- Approximately 40 percent of the articles in the ISU 2001 Swine Research Report were attributable to work by the hoop group.
- Secured a U.S. Department of Agriculture Special Grant, "Hoop Barns for Livestock: An Alternative Sustainable Housing System," that totalled $187,072.
- Completed and reported at an international meeting on a health status analysis of pigs raised in hoops and confinement.

Continuing work

- Critical investigation related to housing gestating sows in bedded hoop barns continues.
- The potential of *Echinacea* as a feed additive for nursery work is being explored.
- Development is underway for feed intake, growth, and feed efficiency curves for pigs in hoops and confinement during winter and summer.
- Feeding oats to finishing pigs in bedded hoop barns is being evaluated.
- Various pig densities, i.e., square footage allowance per pig, in hoop barns are being studied.
- An in-depth analysis of gas emissions and air quality of deep-bedded hoop barns is underway.
- A case study of Niman Ranch Natural Pork Co. is being conducted.
- A widely used web site will be updated and responses to a stream of inquiries related to swine in hoop barns will continue.

Center staff and Robert Karp give Jay Knight of the Cavalieve Foundation a hoop barn tour.






Photos courtesy PFI

Practical Farmers of Iowa expand offerings

The Leopold Center continued to provide $50,000 of annual support for Practical Farmers of Iowa (PFI), as part of a five-year agreement to assist the farmer group. PFI used the money to support its on-farm research and trial and field days and to leverage funding from other granting agencies to support a variety of projects.

During this growing season, 40 research trials were conducted by 25 cooperator farmers, while several observational studies and numerous demonstrations were completed. A total of 19 scheduled farm field days were held and attended by more than 1,000 people. Center funding helped leverage grants from the federal Sustainable Agriculture Research and Education (SARE) program, the Initiative for Future Agriculture and Food Systems (IFAFS) of the U.S. Department of Agriculture (USDA), the Frontier Herb Cooperative, and the Henry A. Wallace Endowed Chair for Sustainable Agriculture, as well as significant new support from Iowa State University.

Compost/manure management

Five PFI collaborators participated in this two-year study of hoop house bedding management practices. Trials on farms and on ISU's research farms examined composting and the timing of application of the carbonaceous bedding/manure mixture. This nutrient-rich material is a potential liability to crop production unless C:N ratios can be reduced. However, the labor entailed in composting is another factor that must be considered.

Hoop house finishing rations

The PFI Farming Systems Program is collaborating with Mark Honeyman and ISU research farm personnel to investigate alternative finishing rations for swine in hoop houses.

Six cooperators are comparing their customary corn-soymeal finishing ration to one containing 20 percent oats. Oats, a generally less expensive feedstock, may improve the economics of finishing in hoop houses. This study, supported by the USDA's IFAFS program, is part of a multi-state investigation of small farm profitability.

Herd health and food safety issues in alternative livestock systems

In 2002, PFI cooperators worked with ISU scientists on finding non-synthetic chemical controls for gastrointestinal parasites. The effort was supported by the Organic Farming Research Foundation.

Integrated Farming Systems Project

The project seeks to document and model the environmental, social, and economic consequences of the integration of crops and livestock in Iowa, Maine, and Michigan, with the support of the USDA's IFAFS program. An important aspect of the Iowa component is the Practical Farmers' exploration of identity-preserved markets that reward farms for the social and economic benefits that integration provides.

Soil fertility paradigms

This SARE-funded project addresses a communications gap between land grant university science and many producers and consultants in the sustainable agriculture community. Replicated side-by-side trials on six private farms and two ISU facilities explored the varying perspectives on soil fertility.

Sustainable landlord-tenant relations

Rural sociologist Mike Bell has been the leader of this SARE-funded project. The first year was devoted to interviews and research. During the second year, information tools were developed to help landlords and tenants who want to implement sustainable practices on their farmland.

International agriculture

The PFI staff has been working with immigrant agriculturists employed at the Iowa Beef Pack plant in Perry as part of the "zarcillo verde" (green shoot) project which is under the auspices of ISU's Henry A. Wallace Endowed Chair for Sustainable Agriculture. Center funding has helped pay for language classes to support this work.

Corn genetics

The Farming Systems Program is collaborating on a project to evaluate open-pollinated and varietal hybrid corn across the Midwest. PFI cooperators have been reimbursed for their participation using Center funds.

Organic crop studies continue

U.S. organic industry sales are expected to increase with implementation of the October 2002 federal organic standards. Fourteen Iowa organic projects were conducted in 2001-2002, as part of the Long-Term Agroecological Research Initiative supported by the Center since 1997. This research is directed by Kathleen Delate, ISU horticulture, and Cindy Cambardella, National Soil Tilth Laboratory.

Among the year's projects were:

Long-Term Agroecological Research (LTAR), Neely-Kinyon Farm

Several Iowa sites were established in 1998 to examine the agronomic, environmental and economic effects of organic practices over the long term. Neely-Kinyon organic LTAR plots became certified organic in 2000. Results from 2001 represent crop yields after one full


Alfalfa

rotation. All crops in all rotations at the LTAR site are replicated four times, and include conventional Corn-Soybean, organic Corn-Soybean Oats/Alfalfa, organic Corn-Soybean-Oats/Alfalfa-Alfalfa, and Soybean-Wheat/crimson clover.

The Effect of Natural Mulches on Crop Performance, Weed Suppression, and Herb Quality in Organic Field Production of Catnip and St. John's Wort

An excellent marketing opportunity exists for Midwestern organic farmers to plant high-value niche crops, such as medicinal herbs. An experiment was conducted in 2001 and 2002 near Gilbert to study crop performance, weed suppression, and environmental conditions associated with the use of several organic mulches in two herbs, catnip and St. John's wort.

Integrating Organic Soybean Production following Conservation Reserve Program (CRP) Land into Sustainable Farming Systems

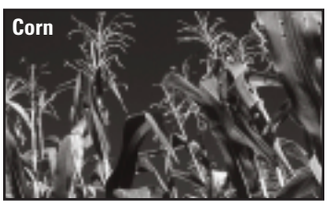
Four tillage methods in a randomized complete block arrangement with four replications were investigated for effects on organic soybean production following CRP land in 1999 and 2000 at the ISU McNay Farm in Chariton. In 2000, a full three-year crop rotation was added to each system to meet certified organic requirements.

Evaluation of Corn, Soybean and Barley Varieties for Certified Organic Production, Crawfordsville Trial

Organic trials were initiated in 1998 at the Southeast Research Farm in Crawfordsville. Organic plots follow a rotation of corn-soybean-barley/red clover. Because of the need for organically grown seeds in certified organic farms, beginning in 2004, the focus has been on the performance of organic corn varieties, and conventional soybean and barley varieties grown under organic management.

Evaluation of Corn Varieties for Certified Organic Production

The Allee Farm was the first ISU farm to meet certified organic production standards and certify acreage through the Organic Crop Improvement Association in 1999. In 2001, the State of Iowa (IDALS) certified the farm through their Organic Certification Program. In 2000, a soybean variety trial was planted to land formerly in alfalfa.


Corn

Evaluation of Soil Amendments and Cover Crops for Certified Organic Pepper Production

In 1998, Iowa producers identified the need for research on soil amendments and cover crops for certified organic horticultural operations. Strip-tilling or conservation tillage of cover crops is one method advocated to help mitigate soil erosion and aid in weed management. Beginning in 1999, research has included the incorporation of a legume cover crop in the fertility comparison trials. In order to meet certified organic requirements (IDALS, 2000), a soil-building cover crop is required for at least one out of five years of horticulture production in Iowa.

Evaluation of Organic Pest Management Treatments for Bean Leaf Beetle

The majority of organic crops grown in Iowa are soybeans destined for the Japanese and domestic tofu and soymilk market. These soybeans are bred for a specific seed size and protein requirement and a white seed color is required. The rejection rate for stained organic tofu beans increased from 1997 to 2000. After consultation with local farmers of the Heartland Organic Marketing Cooperative and support from the USDA-ARS National Soil Tilth Laboratory, six organic pest management treatments were selected and compared to a control (no treatment) for management of bean leaf beetle populations at the Neely-Kinyon Farm in 2001.

Evaluation of Soybean Varieties for Certified Organic Production

Organic soybean variety trials were continued for the third year at the Neely-Kinyon Farm in order to assist producers with soybean


Soybeans

selections for high protein, bean leaf beetle and staining tolerances, and high yields.

Compost Rate Study, Neely-Kinyon LTAR Site, 2001

Many farmers are interested in utilizing manure and compost as sources of nutrients and microbial populations necessary for nutrient cycling in agroecosystems. Compost and synthetic fertilizer effects on corn yields and soil fertility have been compared in a Practical Farmers of Iowa cooperative trial at the Neely-Kinyon Farm since 1999.

Open-Pollinated Corn Variety Trial, 2001

Based on requests from Iowa organic producers for information on yields and grain quality of open-pollinated corn, a variety trial was developed at the Neely-Kinyon Farm in 2000 and 2001. (Open-pollinated (O-P) corn often is preferred by organic farmers.)

Edamame (Vegetable Soybean) Variety Trial at Neely-Kinyon Farm, 2001

U. S. interest in edamame or vegetable soybeans has been increasing. In 2001, edamame research trials were established on organic fields at the ISU Neely-Kinyon Farm and processed at Iowa State University to determine yields and taste. Three varieties of edamame soybeans were evaluated.

Agroecology Issue Team

Now in its second decade of work, the Agroecology Issue Team (AIT) continues to expand its range of buffer strips, research topics, and collaborative activities. The group is led by Richard Schultz, Tom Isenhart, and Joe Colletti of the ISU Natural Resource Ecology and Management department.

The long-term goal of the AIT is to develop locally acceptable watershed management systems that increase the sustainability of agriculture in the midwestern United States with respect to surface and groundwater quality while improving the integrity of the aquatic and terrestrial ecosystems. These systems include re-establishing a suite of perennial plant-based conservation buffers, constructing or restoring strategically placed wetlands, and implementing management practices that are meant to complement in-field best management practices. Through partnering with local landowners and businesses, public resource management agencies, and non-governmental organizations, the team strives for acceptability and sustainability in buffer implementation.

Aerial Photo - Bear Creek National Restoration Demonstration Watershed north of Roland, Iowa. Streamside buffers in the foreground were planted in 2001 and those to the northeast were planted in 1999.

Ongoing projects

- The **Bear Creek Watershed** project remains the flagship for the issue team. Research this year focused on:
  - Developing geophysical and hydrological methods for estimation of nitrate removal efficiency in the groundwater of riparian buffers and
  - Defining the relationship between denitrification and carbon under various aged riparian buffers.
- Effectiveness of **riparian forest buffers** in headwaters of the western Corn Belt Plains Eco-region in regulating non-point source nitrogen. (This is a cooperative project with the University of Missouri Center for Agroforesty.)
- "Impacts of **Managed Grazing** on Stream Ecology and Water Quality" is a cooperative project of the Agroecology and Animal Management Issue Teams of the Leopold Center for Sustainable Agriculture and the Iowa Cattlemen's Association. The focus of this research is to quantify the impact of grazing systems on the structure and growth of forages and the production of sediment, phosphorus, and nitrogen to surface runoff.

Awards

The 2002 Trees Forever Presidents Award honored the team for outstanding contributions to the mission of Trees Forever. The award was given in recognition of five years of partnership in the Iowa Buffer Initiative.

New grant awarded

The AIT was awarded a $312,000 grant from the U.S. Department of Agriculture (USDA) National Research Initiative Competitive Grants Program. The project is entitled *Assessment and Prediction of the Fate of Nitrate in Re-Established Riparian Buffers.* The overall goal of this work is to determine the effectiveness of riparian buffers re-established on previously cropped land in regulating nitrate flux to surface and groundwater. In combination with grant renewals, the AIT has secured more than $3.5 million in external funding since its inception in 1991.

Publications

Peer-reviewed publications

Team members had six peer-reviewed manuscripts published or accepted for publication within the last year. Journals in which the work is being published include *Ecology*, *Journal of Soil and Water Conservation*, *Water Science and Technology*, and *Agroforestry Systems*.

Extension publications

Working with agency and non-governmental partners, the AIT has produced two new extension publications as part of the award-winning "Stewards of Our Streams" series. This series of publications has been adopted by the Iowa Department of Natural Resources, Trees Forever, and the USDA-Natural Resources Conservation Service (NRCS) for use in their land management programs. New titles in the series are: *Maintenance of riparian buffers* and *Assessing the need for a riparian management system*.

Riparian forest buffer on the Ron Risdal farm. Planted in 1990, it has been the site of extensive research by the Agroecology Issue Team. (Soybeans are shown in the foreground, grass is switchgrass.) *Photos courtesy Tom Isenhart*

Partnering

National Conservation Buffer Initiative

The AIT has partnered with the USDA-NRCS and other organizations to promote the National Conservation Buffer Initiative (NCBI). Images and research results from Bear Creek are used in many of the nationally distributed promotional materials, which have recently been compiled in the USDA-NRCS *Tried Buffers Yet?* Communications toolkit. Bear Creek is one of three sites nationally to be featured in a video highlighting the successes of the NCBI. A poster entitled "Lessons Learned From Bear Creek" has been produced

Agroecology, Page 14

Agroecology, from Page 13

to support the Initiative. The Bear Creek Watershed also has been used extensively for training natural resource professionals in support of the initiative.

Iowa Buffer Initiative

The IBI is a public/private partnership coordinated by Trees Forever with the goal of establishing and promoting 100 riparian management and demonstration sites over five years. This initiative is an outgrowth of the efforts of the AIT.

Conservation Reserve Enhancement Program

The Iowa Department of Agriculture and Land Stewardship used wetlands research initiated by the Leopold Center to develop Iowa's new Conservation Reserve Enhancement Program (CREP) in 2001. The CREP is providing $38 million over three years to construct and restore up to 8,000 acres of wetlands and buffers in 37 targeted counties. AIT members are providing coordination for the Iowa CREP.

Tours, Tours, Tours

The Agroecology Issue Team hosted more than 25 tours of the Bear Creek sites for visitors from around the world and made over 30 presentations at regional and national meetings. Examples of groups hosted include:

- Iowa Farm Bureau Federation State Office
- Trees Forever Annual Iowa Buffer Initiative Celebration.

Video

The Bear Creek Watershed was the focus of a video entitled *Riparian Forest Buffers,* produced by the University of Missouri Center for Agroforestry.

Animal Management Issue Team studies lower cost grazing systems

James Russell, ISU animal science professor, has been leading the Leopold Center's Animal Management Issue Team for nearly a decade. He noted that the optimal use of forages in beef cattle production systems was the team's primary focus this year. He cited the fact that forages minimize soil erosion, pesticide use, and production costs.

Cutting feed costs

The major factor separating high- and low-profit cow-calf producers is the cost of feeding stored feeds. The Animal Management Issue Team has emphasized development and evaluation of grazing systems to extend grazing into the fall and winter that would minimize those producer costs.

A three-year project was completed comparing animal production and hay use in two systems. In the control system, spring-calving cows grazed 3.33 acres of smooth bromegrass-orchardgrass-birdsfoot trefoil pastures per cow during summer. First cutting hay was harvested from these pastures and fed to the cows in a dry lot over winter. In the year-round grazing system, spring-calving cows with calves, pregnant fall-calving cows and an equivalent number of yearling stocker calves grazed smooth bromegrass-orchard grass-birdsfoot trefoil, smooth bromegrass-red clover, and endophyte-free tall fescue-red clover pastures at 2.77 acres per animal unit during summer. During winter, pregnant spring-calving cows grazed 2.5 acres of corn crop residues and 2.5 acres of stockpiled smooth bromegrass-red clover per cow and fall-calving cows with calves grazed 2.5 acres of stockpiled tall fescue-red clover per cow.

While body condition scores differed between spring- and fall-calving cows throughout the winter and summer grazing periods, there were no differences in body condition at the end of each winter or summer grazing season or in reproductive performance of spring-calving cows in either system or fall-calving cows. However, spring- and fall-calving cows in the year-round grazing system required 3,654 and 3,830 lb less hay per cow during winter than the spring-calving cows in the control system. Weaning weights of spring calves did not differ between systems, but were lower for fall calves.

Winter grazing effects

While previous research has shown that winter grazing of stockpiled forages reduces the amounts of hay needed to maintain mature cows, the effectiveness of winter grazing for bred heifers was unknown. To evaluate winter grazing of bred heifers, two 30-acre blocks were seeded with "Fawn" endophyte-free tall fescue in spring, 2000 and with red clover in February, 2001. Forage was stockpiled after two hay cuttings in August 2001. In October, each 30-acre block was divided into two 6.25 and 8.75-acre pastures that were subdivided into 8 paddocks. Three bred Angus heifers were allotted to each pasture to attain 70 and 50 percent forage utilization rates in the 6.25 and 8.75-acre pastures. Eight similar heifers were allotted to two dry lots and fed tall fescue hay.

Grazing high-quality stockpiled forage during winter can be an effective means of reducing the costs of heifer production.

Corn gluten feed was supplemented to heifers in the remaining pastures at a level to meet the target weight for fetal growth only if forage availability was limited by snow and/or ice. Over 136 days, heifers fed hay and corn gluten feed in the drylots gained 1.17 lb/day. In comparison, heifers that grazed on stockpiled pastures at the low and high grazing allowances gained 1.98 and 1.93 lb/day when supplemented with .81 lb corn gluten feed/day. Heifers supplemented only for fetal growth showed 2.10 and 1.84 lb/day gains at the low and high grazing allowances. These variations in performance likely reflect differences in forage production and/or quality between the two pastures.

ECOLOGY ■ MARKETING AND FOOD SYSTEMS ■ POLICY

Work begins on grants to support new initiatives

Thirteen new grants were set to begin work in FY2003. They were considered and selected in terms of their relevance to the Center's three new initiatives. These initiatives focus on:

Marketing and food systems: promotion, development, and discovery of markets for food, fuel, and fiber that support vibrant local communities and protect natural resources;

Ecology: development of ecologically friendly systems that are more resilient and less costly to farmers, communities, and the environment; and

Policy: analysis and development of new food, agriculture, and natural resource policies that are community, farmer, and environmentally friendly.

After the May 2002 budget cuts, the grant project leaders were told that the Center could only guarantee funding for one year. The time period listed is the project period set for completion of the project, with or without Center funding.

Ecology Initiative

Alternative farrowing systems during cold weather, 2 years

M. Honeyman, ISU Research Farms; J. Harmon, ISU agricultural and biosystems engineering; and J. Kliebenstein, ISU economics

Many of the new pork niche markets have requirements for farrowing outdoors or indoors in bedded pens, which makes winter farrowing difficult and results in a scarcity of marketable fresh pork during the summer. Management skills and tools to support winter farrowing are not well developed. This project is designed to document successful practices, design appropriate technology, and develop budgets and sensitivity tables for producers interested in winter farrowing.

Biological control of the soybean aphid in organic and sustainable soybean production systems, 3 years

J. Obrycki, ISU entomology; R. Exner, Practical Farmers of Iowa and ISU Extension

Soybean aphids were first detected in Wisconsin in 2000, then throughout the upper Midwest in 2001. The primary treatment response has been sprays. This project will explore biological management options in field situations, training farmers about different options for managing levels of aphid predators as well as aphid populations.

Developing prototypes of environmentally sustainable family-owned beef feedlots in the Elk River watershed, 3 years

B. Van Laere, Natural Resources Conservation Service, Clinton County; J. Zacharakis-Jutz, ISU Extension

Project coordinators will work with cooperating farmers to develop and construct three to four prototypes of environmentally-friendly cattle feedlots suitable for family farms. No- or low-cost third-party environmental assessments will be offered for interested feedlot operators in the watershed. Activities and education activities associated with the project will be coordinated through the Elk River Watershed Council.

Integrating hunting and grazing – A southern Iowa investigation into management issues, 1 year

J. Lawrence, Iowa Beef Center; J. Pease, ISU animal ecology; and D. Otto, ISU economics

Investigators will first evaluate bird use in cool- and warm-season grass pastures and then use the information to make early assessments of management practices that meet both wildlife and farming needs. In a related phase of the project, investigators will try to identify and understand the stakeholder concerns and motivations, including economic interests, and use this to identify policy alternatives that encourage multifunctional land use for hunting and grazing. Survey work will be conducted in the southern three tiers of counties of Iowa, using Van Buren, Lucas, and Montgomery as focus counties.

Squaw Creek watershed – Rapid assessment of water quality and natural resource knowledge and beliefs, 1 year

M. Wagoner, ISU landscape architecture; J. Cooper, Prairie Rivers RC&D, Nevada

Past attempts to organize watersheds have met with limited success. The proposed work is to conduct a knowledge and beliefs assessment across the Squaw Creek community to determine what the watershed residents understand about water quality, local ecology, and their role in insuring a sustainable environment. The knowledge gained will inform a larger model project — led by a core of concerned area citizens — to improve watershed planning for Squaw Creek.

Upper Iowa hot spot reforestation project, 2 years

L. Friest, Northeast Iowa RC&D

Northeast Iowa farmers could produce high quality hardwoods on the area's steep slopes, so this project will attempt, through education and farmer incentives, to reintegrate hardwood production into area farming systems as a long-term investment. The project uses Geographic Information Systems (GIS) to identify the erosion "hot spots" so reforestation and reintegration of timber can have the maximum environmental and economic benefits. Water quality monitoring preceded the project and will be continued.

See **Initiatives**, Page 16

Initiatives, from Page 15

Marketing and Food Systems Initiative

Grinnell area local food system initiative, 2 years

J. Andelson, Center for Prairie Studies, Grinnell College

The Grinnell Area Local Food Alliance (GALFA) will strategically expand the local food system in and around Grinnell with a two-year initiative. Plans for the first year are to survey local institutions to determine which have an interest in locally produced food and are in the best position to participate in a pilot project. Then a plan will be developed to supply participating institutions with selected food items, carefully tracking over time the variables that would determine the attractiveness of the local food option, including taste, price, reliability of supply, and processing requirements. Plans for the second year are to expand the range of foods offered and the number of participating institutions.

Industrial co-location opportunities for meat processing, 1 year

M. Holz-Clause and S. Johnson, ISU Extension Value-Added Program

This study will analyze the feasibility and desirability of co-locating ancillary industries next to multi-species meat packing plants. Special focus will be on niche co-product markets from sheep, cattle and hogs grown naturally or organically. Both technical feasibility and market opportunities for these organic, natural, or traceable products will be explored. This study will be generic, but results may be used for a proposed facility in the Upper Mississippi Valley watershed.

Investigating Iowa plants as natural dyes, 2 years

S. Kadolph, ISU apparel, educational studies, and hospitality management

Once the only means of adding color, natural plant-derived dyes were replaced after the 1850s because of the development of synthetic dyes. However, in many parts of the world, natural dyes are being investigated as renewable and sustainable agricultural products. Currently, both concentrated extracts and powders of a few natural dyes are commercially available. In this project, Iowa plants (fruits, vegetables, flowers, trees, and vines) will be examined for their potential as natural dyestuffs.

Johnson County food education project, 1 year

C. Hunt, Johnson County Soil and Water District

A barrier to greater production and consumption of locally grown food is a lack of consumer knowledge about the implications of personal food choices, and about how to actually purchase and use fresh/minimally-processed food. The Johnson County Food Education Program will partner with other groups and businesses to teach Iowans about local food use. Classes, demonstrations/tasting sessions, farm and garden tours/demonstrations, information booths, and general outreach and networking activities will increase consumer knowledge about locally grown food.

Let the vineyards be fruitful: A study of the potential market for Iowa grape juice, 1 year

J. Higgins-Freese, Prairiewoods Center, Hiawatha

This survey effort will assess the market potential for grape juice made from Iowa grapes. The goal is to expand the production and processing of locally grown grapes in Iowa by providing reliable data on retailers' willingness to carry such a product and consumers' willingness to purchase it. The results of the study will be supplied to the Iowa Grape and Wine Commission, the Iowa Department of Economic Development, grape growers, and potential grape juice processors.

Life in Iowa Homecoming Institute, 3 years

N. Bevin, ISU Extension

"Life in Iowa" is a new ISU undergraduate credit program. The program invites participation from all ISU colleges, and places students in Iowa communities for ten weeks during the summer for paid internships and unpaid service learning. The Center will sponsor up to three interns per year over the next year that focus on sustainable agriculture, food systems, and the environment.

Policy Initiative

Development of potential savanna/prairie conservation models for southern Iowa, 1 year

D. Sand, Iowa Natural Heritage Foundation

The first phase of the project will include three focus groups exploring motivations for land purchase, problems with land ownership, and opportunities for cooperative ventures. This knowledge will be used to determine community attitudes toward recreation and eco-tourism activities to help pay for land conservation and management. A second phase will explore, through directed interviews with a wide range of state, federal, and non-profit employees, how government programs and tax code may both help accomplish conservation goals and help provide economic incentives for ecosystem management.

COMPETITIVE GRANTS

1 AGRICULTURE AND COMMUNITY

Developing a local food system in association with business and industry, 3 years

W. Johnson, Limestone Bluffs RC&D, Maquoketa

A group of agricultural producers, in conjunction with local businesses and a sheltered workshop, were to create a subscription sales demonstration project for local food. The second year of the project was harmed by the loss of several early crops due to severe weather and flooding. Weekly subscription lists have been altered to emphasize frozen meats and value-added goods.

Establishment of a local food system in eastern Iowa, 3 years

W. Jones, Johnson County Soil and Water Conservation District, Iowa City (ending 2002)

Activities in this project included linking producers and restaurants, serving all-Iowa meals, developing a producer directory, and collecting sales and cost data to help build a local food system in Johnson and surrounding counties.

Institutional and commercial food service buyers' perceptions of benefits and obstacles to purchase of locally grown and processed foods, 2 years

C. Strohbehn and M. Gregoire, ISU hotel, restaurant and institution management (ending 2002)

The three major project phases investigated procurement issues for institutional or commercial food services related to purchasing of locally grown or processed foods.

Benefits and obstacles related to local food purchases were determined, along with the importance of food safety in the selection of a vendor by food service providers of all types.

Competitive grants program winds down

The Leopold Center continues to fund a number of research efforts that were in the midst of their investigations at the time that the budget cut occurred. Twenty-three projects were renewed for an additional year of funding. Seventeen projects (indicated here as ending 2002) closed June 30, 2002, and were to provide their final reports to the Center later in the year.

An internship program to help institutional food buyers develop links to local farms in northeast Iowa, 3 years

K. Enshayan, Center for Energy and Environmental Education, University of Northern Iowa

This project seeks to facilitate a stable local food-buying process by placing trained interns in several hospitals and nursing homes, and with other large food buyers. The interns attended a four-day training workshop and took field trips. They identified nearby farmers and processors and assisted the institutions in buying a greater portion of their food from local/regional sources.

Local food connections: from farms to restaurants, 2 years

R. Karp, Practical Farmers of Iowa

Drawing upon experience in their local food systems program, investigators are developing information for two workshops and a resource manual for producers who want to market their products to restaurants. Topics will include post-harvest handling, quality control, pricing, packaging, marketing, customer relations, legal/health issues, and producer cooperation. *(Start of the project delayed.)*

Planning for grass-based dairies and dairy networks/promotions, 2 years

B. Beaman, Ag Connect, Lenox

Ag Connect is leading an initiative to promote, provide information for, and help establish a grass-based dairy network in southern Iowa. Investigators should receive data for their final analysis of the project in early 2003.

Sustainability and community food systems in four Iowa counties, 3 years

C. Hinrichs, ISU sociology (ending 2002)

Investigators worked in Benton, Audubon, Marshall, and Johnson counties to collect information on land use, agricultural production, food processing, food retailing, and education and social services related to agriculture and food. They interviewed people involved with new food system ventures and traditional food system outlets. They also conducted a "learning circle" in each county, where community members shared reactions to the research. For each county, they produced a 20-page "atlas" conveying trends and opportunities for developing community food systems.

Sustaining agricultural producers through direct marketing of processed foods, 3 years

C. Chase, Black Hawk County ISU Extension, Waterloo

This project investigates potential returns for farmers who are considering the switch from commodity to food crops. One segment, Project Freeze, is a demonstration on how to extend the season for fresh produce (strawberries, green beans, sweet corn, and apples) through light processing and freezing. An institutional buying survey will determine demand for these products.

2 CROP AND/OR FORAGE SYSTEMS

Black walnut cultivar performance, 3 years

B. Hanson, Iowa Nut Growers Association, Centerville

Members have planted a number of black walnut cultivars at several sites throughout Iowa and are tracking costs and performance. Initial plantings the first year were small (144 trees) and lessons learned were applied to the second year's planting of 456 new trees at 36 new sites. Two additional volunteer growers are needed in western Iowa.

Demonstration and technology transfer to producers implementing sustainable rotational grazing systems, 2 years

M.D. Boswell, Southern Iowa Forage and Livestock Committee, Corning; and B.C. Peterson, Natural Resources Conservation Service, Creston (ending 2002)

Using the Adams County Conservation Reserve Program (CRP) farm and producer acres in a multi-county area, investigators conducted a series of demonstrations to address issues and practices related to rotational grazing systems.

Development of dormancy breaking mechanisms in eastern gamagrass, 3 years

L.R. Gibson and A.D. Knapp, ISU agronomy

This research is targeted at developing a protocol for supplying high germinating, dry seed to forage producers and conservationists who want to tap the potential of this warm-season grass. In the second year, researchers tested various priming materials aimed at breaking seed dormancy in eastern gamagrass.

Development of switchgrass as a viable agricultural commodity for farmers in southern Iowa, 2 years,

D. Guffey, Chariton Valley RC&D, Centerville

This project continues funding to develop and distribute information and educational materials for the multi-county, multi-agency Chariton Valley Biomass power project. Funds supported a web site, media relations, a conference in July 2002, publication updates, and a display for project-related events.

Evaluating the adaptability of forage species and varieties in northwest Iowa, 3 years

D. Haden, ISU Northwest Research and Demonstration Farm, Sutherland

Stands of legumes and grass species are being evaluated at the Doone research farm site to determine regional adaptation, longevity, and forage traits. Stands were established in 2000, and first forage harvest was scheduled in June of 2001. Researchers experienced difficulty in establishing stands for some varieties.

Improving productivity of warm-season pastures by interseeding legumes, 3 years

K. Moore, ISU agronomy

Growing legumes in mixtures with warm-season grasses could improve the quality of forage to grazing animals, and potentially reduce or eliminate nitrogen fertilizer requirements of a pasture. Fifteen annual, biennial, and perennial legumes were interseeded into existing switchgrass and big bluestem pastures at the ISU Western Research Farm near Castana as part of earlier Leopold-funded work. Early results showed big bluestem/legume pastures with the highest gains for cattle. Gains for 2001 were higher for the switchgrass and switchgrass/ legume pastures. More research is being done on species composition, soil properties, and landscape position.

Incorporating grassland agriculture into row crop production systems, 3 years

M. Mensching, USDA-Natural Resources Conservation Service, Knoxville

The project goal is to increase farmer use of grass-based conservation alternatives in Madison, Warren, Marion, and Mahaska counties. A farm was selected in each county to serve as a demonstration site. The producers (who will receive incentive payments for participation) are providing economic and management information for incorporating grasslands into crop production systems on marginal soils. Each farm offers a unique perspective and soil conservation and management challenge.

Iowa location for pawpaw regional trials, 3 years

P. O'Malley, Johnson County ISU Extension, Iowa City (ending 2002)

This project established a site in Louisa County to evaluate the potential of the indigenous pawpaw fruit as a commercial crop for Iowa. It was part of a regional trial conducted by the Pawpaw Foundation to evaluate 28 varieties for fruit and growth characteristics.

Local ecotype prairie seed—an alternative agricultural product for increasing the viability of smaller farming operations, 4 years

J. Selby and K. Fletcher, The Nature Conservancy, Des Moines (ending 2002)

Investigators assessed the potential for local ecotype prairie seed as an alternative agricultural product for Iowa through market analysis and on-farm production demonstrations at Broken Kettle Grasslands on a portion of the Briar Cliff College campus adjacent to the Sioux City Prairie, and on private lands of three area cooperators. *A Practical Guide to Prairie Reconstruction* was published in cooperation with Carl Kurtz.

Sustainable grape production for the reestablishment of Iowa's grape industry, 3 years

G. Nonnecke, ISU horticulture

In response to increased interest in viticulture in Iowa, researchers are looking at whole-systems management practices related to culture and training, pest management, and cultivars


Gail Nonnecke

suitable for grape growing in Iowa. In the first year, plots were prepared at the ISU Horticulture Station and the Armstrong Research and Demonstration Farm. Soil test analyses were conducted, soil amendments added, and a bluegrass cover crop established. Vine cultivars were planted and trellis systems constructed at both locations. Data that were collected and analyzed at the ISU Horticulture Station included 2,4-D susceptibility and frost tolerance.

The value of CRP filter strips for grassland bird communities, 2 years

L. Best, ISU natural resource ecology and management

The investigator plans to evaluate bird use and productivity in Conservation Reserve Program (CRP) filter strips to determine if the strips represent a positive or negative influence on bird populations. Thirty-four filter strips in four Iowa counties were studied in the first season. Presence of woody vegetation (a feature of some riparian strips) seemed to have an adverse effect on bird abundance as well as nest density and success.

3 LIVESTOCK MANAGEMENT

Complementary grazing systems for beef cattle production, 3 years

K.J. Moore, ISU agronomy (ending 2002)

This grazing study at the McNay Research Farm near Chariton measured the impact of legumes and warm-season grasses (birdsfoot trefoil, alfalfa, big bluestem, switchgrass, kura clover) on season-long productivity of complementary grazing systems (stocked with crossbred steers). Eight complementary and four continuous grazing systems were evaluated.

Evaluating pork production systems for niche markets, 3 years

D. Stender, Cherokee County ISU Extension, Cherokee

The investigator is working with seven area producers to establish on-farm baseline data for side-by-side hoop and confinement operations. A database is being constructed to compile information on seasonal environment, nutrition, genetics, and operator management differences in sustainable systems. Economic data are being assembled for labor efficiency, bedding, facilities, interest, and operation costs.

Winter grazing of corn residues: effects on soil properties and subsequent crop yields from a corn-soybean crop rotation, 3 years

D. Busby, Southwest Area Extension Center, Lewis (ending 2002)

This project surveyed the effects of grazing corn residues in different winter months on soil physical and chemical properties, and on subsequent crop production (corn-soybean rotation using either conventional or no-tillage methods). Data also were collected on monthly cow condition scores and amounts of hay fed.

4 NUTRIENT MANAGEMENT

Agronomic and environmental soil testing for phosphorus and threshold levels in soils, 3 years

A. Mallarino, ISU agronomy

The overall goal of the project is to provide practical information for more efficient use of phosphorus (P) resources in agronomic settings. Preliminary results suggested that the placement method used to apply fertilizer or manure P has little or no effect on crop grain yield. However, deep banding or injection and broadcast application using variable-rate technology according to soil-test P reduced the accumulation of P at or near the soil surface compared with conventional uniform applications over the soil surface without immediate incorporation. Study of plots with surface runoff and subsurface drainage is providing useful information to improve the Iowa P index.

Environmental impacts of the use of poultry manure for agricultural production systems, 1 year

R. Kanwar, ISU agricultural and biosystems engineering (ending 2002)

Iowa is among the top national producers of poultry. This project was granted an additional year of funding to finish its work to determine the effects of poultry manure application on surface and groundwater quality. The results of this study show that use of poultry manure in field plots resulted in significantly higher corn yields in comparison with UAN applications, but excessive use of poultry manure may increase the pollution potential of water bodies from NO_3-N, PO_4-P, *Escherichia coli*, fecal coliform, and fecal streptococcus bacteria. Also, this study showed that poultry manure when applied at a lower N rate of 168 kg-N/ha, resulted in the lowest NO_3-N, PO_4-P, and bacteria concentrations in subsurface drain water and the highest average corn yields from field plots. This clearly shows that higher crop yields and better water quality benefits could be achieved using poultry manure as a source of nutrients.

Livestock and the environment project in Sioux County, 3 years

K. Kohl and J. DeJong, Buena Vista and Plymouth County ISU Extension, Storm Lake and LeMars (ending 2002)

Members of the Northwest Iowa Extension environmental team determined how producers used manure as a crop nutrient, what barriers deterred producer use of manure as a nutrient, and if a new pit-sampling method was useful for producers. The project determined that a sample could be taken off the top of manure pits several weeks ahead of application to determine the proper application. The project also helped producers to calibrate their manure spreaders to apply the appropriate amount of manure. Because of the Sioux County project, producers are improving their manure management skills.

Optimizing swine hoop manure management for soil quality and crop system performance, 3 years

T. Richard and M. Liebman, ISU agricultural and biosystems engineering and agronomy; D. Exner, Practical Farmers of Iowa and ISU agronomy; C. Cambardella, USDA-ARS National Soil Tilth Laboratory (ending 2002)

Researchers conducted experiments to evaluate the impacts of alternative hoop manure management strategies (fresh bedded manure vs. composted manure, spring and fall applications) on soil quality and cropping system performance. Six on-farm cooperators and research stations at Rhodes and Boone were involved. Results indicated equivalent nitrogen use efficiencies for fresh and composted hoop manure after fall application, but compost outperformed fresh manure in the spring application.

Optimizing solid manure application by improving distribution, 3 years

M. Hanna, ISU agricultural and biosystems engineering

Researchers are evaluating the uniformity of existing spreaders, developing a model to explain how manure is distributed, and making recommendations for operating strategies that will improve uniformity. One of two experiments with both side and rear delivery spreaders showed trends that the deflection and speed of unloading affect the spread pattern of the manure spreaders. In some cases, reduced application rates had a less uniform swath.

Reducing anhydrous ammonia application by optimizing distribution, 3 years

M. Hanna, ISU agricultural and biosystems engineering (ending 2002)

In ongoing work to minimize inconsistent application by anhydrous ammonia equipment, researchers compared field distribution by a conventional manifold and other commercial, prototype, and research manifolds. Replacement of a conventional manifold with most other types tested reduced application variation.

Soil amendment effects on crop-weed interactions, 3 years

M. Liebman, ISU agronomy; and T. Richard, ISU agricultural and biosystems engineering (ending 2002)

This research investigated how amending soil with compost made from hog manure and cornstalks affected the growth and competitive ability of three weed species commonly found in Iowa corn fields (giant foxtail, velvetleaf, and waterhemp). The manure and cornstalk bedding came from swine hoop structures. Investigators used both field experiments and laboratory analyses. Results indicate that compost increased soil fertility and crop and weed nutritional status, especially P and K concentrations in plant tissue. Waterhemp growth was consistently increased by compost; smaller and less consistent increases in growth were observed for velvetleaf, giant foxtail, and corn. The ability of compost to stimulate weed growth more than crop growth indicates that farmers will need to manage weeds carefully when compost is applied.

5 PEST MANAGEMENT

Biotic interference of biological control of purple loosestrife, 3 years

J. Obrycki, ISU entomology

In an earlier grant, the Leopold Center and Iowa Department of Natural Resources funded a biological control program to develop a mass rearing and release program for *Galerucella* beetles. They are natural enemies of an invasive, exotic wetland plant (purple loosestrife) that is overpopulating wetland areas in the state. Purple loosestrife densities were measured at three original release sites, two sites at which beetles were recently released and two sites at which no beetles had been released.

Development of *Sporidesmium sclerotivorum* as a biocontrol agent for Sclerotinia stem rot of soybean, 2 years

C.A. Martinson, ISU plant pathology (ending 2002)

Prior Leopold Center research had found that *Sporidesmium* spores applied to soybean fields after a white mold epidemic reduced the amount of disease in a subsequent soybean planting by 50 to 100 percent. Further management information for farmers was needed, as was a better method of mass producing the spore itself.

The effects of thrips on strawberry production in Iowa, 2 years

J. Obrycki, ISU entomology

Beginning in 1994, strawberry growers adopted regular early-season insecticide applications to control thrips, minute insects whose feeding habits are suspected of being the agent behind bronzing damage. Initial results have not shown the presence of certain species of thrips to be associated with bronzed fruit in three central Iowa fields.

Effects of transgenic *bacillus thuringiensis* corn pollen on the monarch butterfly, 2 years

J. Obrycki, ISU Entomology (ending 2002)

The monarch butterfly is a species that was thought to be affected by the increasingly widespread plantings of Bt corn. The objectives of this research were to 1) determine the sub-lethal effects of Bt corn pollen exposure on monarch larval development and adult characteristics, 2) quantify use of milkweeds adjacent to Bt and non-Bt corn fields by monarchs, and 3) compare survival of experimental cohorts and natural populations of monarchs adjacent to Bt and non-Bt corn fields.

Evaluating sustainable, integrated management of muskmelon diseases, weeds, and insect pests in partnership with Iowa growers, 3 years

M. Gleason, ISU plant pathology

Investigators are testing management techniques to reduce synthetic chemical use on muskmelons without sacrificing crop quality and yield. Adopting the Melcast early warning system saved growers from using as many as six applications of fungicide. A trap-and-kill strategy against cucumber beetles was tested with mixed success and some modifications will be tried this year. Cover crops were used as a weed control and while crop yields were acceptable, weed pressure was fairly intense in some plots.

Mark Gleason

Investigation of the influence of tillage for management of woolly cupgrass, 4 years

M. Owen, ISU agronomy

Woolly cupgrass continues to be a problem weed in corn and soybeans. This research will look at woolly cupgrass response to various management practices. In early results, the no-tillage regime has been effective in reducing plant numbers, and there is a possibility that tillage may stimulate germination of the cupgrass. However, the added cost of no-tillage operations may render it less efficient than single application management in reduced tillage.

Managing weeds by integrating smother plants, cover crops and alternate soil management, 4 years

D. Buhler and K. Kohler, USDA-ARS National Soil Tilth Laboratory (ending 2002)

This research looked at several weed management alternatives: encouraging "untimely" weed emergence through tillage soil disturbance; managing of the light environment, cover crop, and surface residue; and developing spring-seeded smother plant systems that can provide consistent weed control without sacrificing crop yield.

6 WATER QUALITY

Economically sustainable riparian buffer to promote bank stability and reduce gully erosion and phosphorus runoff in the Loess Hills, 3 years

M. Kelly, ISU natural resource ecology and management.

Investigators propose to evaluate the effectiveness of a tree-based riparian buffer in the Deep Loess Hills for suitability in managing landscape issues such as erosion and phosphorus movement. During the first year, the buffer was successfully installed and has exhibited good growth for the cottonwoods. The direct-seeded walnut planting showed very high germination and survival rates. Initial measurements were taken and long-term measurements begun.

Evaluating the effectiveness of restored wetlands for reducing nutrient losses from agricultural watersheds, 3 years

A. Van der Valk, ISU botany

This study examines at two levels—the sub-watershed and wetland—the effectiveness of wetland restorations for reducing nutrients in agricultural runoff in the Iowa Great Lakes watershed. Preliminary results suggest that restoring wetlands can reduce concentrations of nitrates significantly in the outflow from sub-watersheds in the Iowa Great Lakes region. However, they are ambiguous for total phosphorus. Monitoring of restored wetlands also indicates that they are effective filters for nitrates.

Impact of swine manure applications on phosphorus, NO_3-N and bacterial concentrations in surface runoff and subsurface drainage water, 3 years

R. Kanwar, ISU agricultural and biosystems engineering

The goal of this research is to demonstrate the impact on surface and groundwater quality of liquid swine manure application when application is based on nitrogen (N) and phosphorus (P) needs of crops. Six different nutrient (N and P) management systems are being evaluated in this study to determine systems effects on surface and subsurface water quality. Fall application of manure resulted in highest corn yields in 2000, 2001, and 2002, whereas spring-injected manure resulted in higher yields in 2001 and 2002 but lower yields in 2000. Three-year average yields for the fall-injected application of manure were found to be the highest compared to all other treatments. The work is being conducted at ISU's Northeast Research Farm near Nashua.

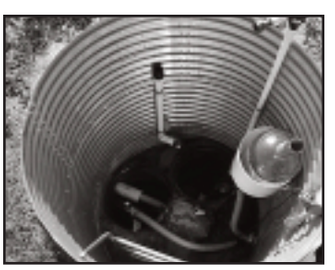
Soil carbon quality and interactions in Iowa wetlands, 2 years

T. Fenton, ISU agronomy (ending 2002)

Researchers examined soil chemical and physical variability, carbon sequestration, water movement, microbial processes, and denitrification in three north central Iowa wetlands in the Des Moines Lobe. The wetlands contained sites under natural conditions and also under restoration management periods of one, five, and 15 years.

Understanding the potential of phosphorus transport to water resources via leaching, 2 years

J. Baker, ISU agricultural and biosystems engineering



Investigators in this project hope to provide new information and understanding about the reduction in phosphorus (P) movement with water in P-deficient subsoils, and to determine if such soils significantly lose their capacity to remove P over time. The field portion of the study was begun to determine the rate of and capacity for P removal from water flowing laterally through P-deficient subsoils as it travels to subsurface tile drains.

FINANCE

LEOPOLD CENTER FOR SUSTAINABLE AGRICULTURE

STATEMENT OF REVENUES AND EXPENDITURES ■ FY02 JULY - JUNE

	Actual Total
REVENUES:	
AMA	1,160,622
GPR	554,158
Total Revenues	**1,714,780**
Beginning Temporary Balancing Fund	1,109,371
Funds Available	**2,824,151**
EXPENDITURES:	
Operational:	
Salaries & Benefits	468,614
Info systems	6,306
Office Equipment	4,503
Office Expenses	18,514
Printing	
Newsletter	10,228
Annual Report	11,495
Other	15,215
Postage	
Newsletter	3,239
Other	5,990
Travel	9,791
New Publications	0
Board Meetings	2,584
Office Completion	46,472
Total Operational Expenditures	**602,951**
Research and Other Grants:	
Competitive Grants	771,747
Issue Teams/Initiatives	238,502
PFI Partnership	50,000
New Initiatives	8,911
Special Projects	41,080
Wallace Chair Support	40,000
Assoc Director's Research	63,145
Total Grants	**1,213,385**
Center Sponsored Outreach:	
Sustanable Ag Assistantship	15,000
Conference Grants	29,774
Education Programs	0
Center Directed Conferences	1,399
Total Outreach	**46,173**
Total Expenditures	**1,862,509**
Returned from Grants	93,331
Ending Temporary Balancing Fund	1,054,974
Reserve Fund Balance	
Salary Contingencies	244,000
Research Contingencies	278,000
General Contingencies	100,000

LEOPOLD CENTER
FOR SUSTAINABLE AGRICULTURE